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San Pablo Dam Road–La Honda Road Storm Drain and Slide Repair Project

Initial Study/Mitigated Negative Declaration

Contra Costa County, California

PREPARED FOR:

Contra Costa County

Department of Conservation and Development
30 Muir Road
Martinez, CA 94553
925.655.2700

Contact: Syd Sotoodeh, Senior Planner

PREPARED BY:

FirstCarbon Solutions

2999 Oak Road, Suite 250
Walnut Creek, CA 94597
925.357.2562

Contact: Mary Bean, Project Director
Prathna Maharaj, AICP, Project Manager

May 15, 2026

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CEQA ENVIRONMENTAL CHECKLIST FORM

Project Title:	San Pablo Dam Road–La Honda Road Storm Drain and Slide Repair Project County Project Number: 0672-6U6272, CP#23-18
Lead Agency Contact	Syd Sotoodeh, Senior Planner Contra Costa County Department of Conservation and Development 30 Muir Road, Martinez CA, 94553 (925) 655-2877, syd.sotoodeh@dcd.cccounty.us
Contact Person and Phone Number:	Christina Kelleher, Environmental Analyst II Contra Costa County Public Works Department, Environmental Services Division (925) 812-7386, Christina.Kelleher@pw.cccounty.us
Project Location:	On San Pablo Dam Road, approximately 200 feet southeast of La Honda Road, in unincorporated El Sobrante, CA. Assessor's Parcel Number: 433-242-018
Project Sponsor's Name and Address:	Contra Costa County Public Works Department 255 Glacier Drive, Martinez, CA 94553
General Plan Designation:	Resource Conservation (RC) Contra Costa County 2045 General Plan
Zoning:	Single-family Residential District (R-7)

Description of Project:

The San Pablo Dam Road–La Honda Road Storm Drain and Slide Repair Project (proposed project) involves the stabilization of an embankment failure, repair of the northern side of San Pablo Dam Road, and replacement of an existing culvert approximately 200 feet southeast of La Honda Road in unincorporated El Sobrante, Contra Costa County (County), California. The proposed project would install a stitch pile wall 50 feet north of San Pablo Dam Road, between the roadway and San Pablo Creek, with an approximate length of 150 feet. The wall consists of cast-in-drilled-hole concrete piles about 50 feet in depth that are spaced 6 feet apart. The slope between the proposed stitch pile wall and San Pablo Dam Road would be excavated to a maximum depth of 24 feet. The slope would be rebuilt with the excavated material reinforced with layers of geogrid placed at 2-foot vertical spacing with 6-inch diameter underdrains to provide long-term stabilization.

The 18-inch existing culvert outfall within the embankment failure area would be relocated west of the proposed stitch pile wall with the installment of two manholes and 116 feet of reinforced concrete pipe intended to convey stormwater to the outfall location. The existing 18-inch culvert under San Pablo Dam

Road would be repaired using cured-in-place-pipe lining through the installation of a flexible liner inside the culvert to restore previous hydraulic conditions while the damaged segment toward San Pablo Creek would be removed. The 18-inch relocated culvert outfall would be reinforced concrete pipe enhanced with a concrete flared end section out falling to a rock slope protection pad to disperse flow and prevent bank erosion around the inlet. Approximately 200 feet of San Pablo Dam Road would be repaired along the embankment failure including restriping and placement of a 380-foot guardrail.

Demolition and Construction Activities

Construction of the proposed project is expected to begin in late-2026 and would last approximately 100 working days. Construction activities would involve excavations 50 feet in depth for the installment of the cast-in-drilled-hole concrete piles associated with the stitch pile wall and excavations 24 feet in depth between the stitch pile wall and San Pablo Dam Road, minimal grading in front of the stitch pile wall, the removal of approximately 67 trees, and roadway repairs including restriping and placement of approximately 380 feet of guardrail. Construction activities would require the establishment of three temporary staging areas, with the first on the northbound lane on La Honda Drive, a second on the north shoulder of San Pablo Dam Road, and a third smaller staging area south of San Pablo Dam Road directly across the embankment failure (Exhibit 1).

Surrounding Land Uses and Setting:

The proposed project is located on the northern side of San Pablo Dam Road approximately 100 feet south of San Pablo Creek and directly east of the San Pablo Dam Road and La Honda Road intersection in unincorporated El Sobrante, Contra Costa County, in the eastern San Francisco Bay Area of California (Exhibit 2). The 1.62-acre project site consists of one Assessor's Parcel Number (APN) with APN 433-242-018 within the *Richmond, California* 7.5-minute Topographic Quadrangle, Township 1 North, Range 4 West, Section 3 (Latitude 37° 57' 45.13'' North and Longitude 122° 17' 08.54'' West).

Contra Costa County 2045 General Plan and Zoning Designations

The Contra Costa County 2045 General Plan (General Plan) delineates the project site having a land use designation of Resource Conservation (RC). The purpose of the RC land use designation is to preserve ecologically significant and environmentally sensitive areas that allow land uses intended for resource management, low-intensity agriculture and recreation with associated low-density structures while prohibiting land uses that increase density including urban development and the establishment of subdivisions.

The project site is zoned within the Single-family Residential (R-7) District. The R-7 zoning district permits one detached single-family dwelling unit on lots that are greater than 7000 square feet in area, 70 feet in average width, and 90 feet in depth and that shall remain less than 35 feet in height. Furthermore, the R-7 zoning district requires a side yard width of 15 feet, a front yard setback of 20 feet, and a rear yard of 15 feet, along with two off-street covered or open surfaced parking spaces.

Environmental Setting

The project site is located in unincorporated El Sobrante, Contra Costa County, California, along an approximate 480-foot segment of San Pablo Dam Road, an arterial roadway that extends from the northern end of Orinda, California, to Interstate 80 (I-80) in San Pablo, California, to the northwest. The project site is approximately 155 feet above mean sea level (AMSL) and is relatively flat in terrain along San Pablo Dam Road, with relatively steep terrain beginning north of San Pablo Dam Road that

decreases by 120 feet AMSL toward San Pablo Creek. The segment of San Pablo Dam Road within the project site consists of four total lanes; the right westbound lane is temporarily closed due to the embankment failure approximately 200 feet southeast of the La Honda Road and San Pablo Dam Road intersection. This segment of San Pablo Dam Road contains three private driveways, with two on the north side of the roadway approximately 200 feet east of the embankment failure and one private driveway on the south side of the roadway directly southwest of the embankment failure. Private driveways serve as access points to the single-family residential units. Overhead power lines run parallel to San Pablo Dam Road along the northern unpaved shoulder. San Pablo Dam Road is surrounded by dense vegetation on both sides. Riparian habitat located north of the roadway along San Pablo Creek consists of coast redwood (*Sequoia sempervirens*), bigleaf maple (*Acer macrophyllum*), California bay (*Umbellularia californica*), coast live oak (*Quercus agrifolia*), California buckeye (*Aesculus californica*), and glossy privet (*Ligustrum lucidum*), with an understory of non-native and invasive vegetation. Photos of the Biological Study Area (BSA) are included in Appendix B and locations of the photos are provided here in Exhibit 4.

The San Pablo Creek is an approximately 18.7-mile-long perennial stream serving as a tributary to the San Pablo Bay in a southeast-to-northwest direction about 100 feet north of San Pablo Dam Road. Headwaters of San Pablo Creek begin approximately 2 miles southeast at the San Pablo Dam, which conveys northwest directly north of the project site before emptying into the San Pablo Bay. The watershed consists of grasslands, evergreen forests, and low-intensity residential development with tributaries of numerous creeks and artificial storm drains. This includes the project site which consists of an existing 18-inch culvert outfall located beneath San Pablo Dam Road that conveys stormwater northward into San Pablo Creek.

The project site is surrounded by low-density residential development with built features consisting of overhead power lines, collector roads, single-family residential units, and associated structures and infrastructure. San Pablo Dam Road transects the project site in a southeast and northwest direction. Natural features are comprised of dense native and non-native trees and understory with San Pablo Creek approximately 100 feet north of San Pablo Dam Road (Exhibit 3). Land uses surrounding the project site are delineated as having a General Plan Land Use Designation of Residential-Low Medium Density (RLM) to the north and south and Residential-Low Density (RL) and Residential-Medium High Density (RMH) to the east and west.

Other public agencies whose approval may be required (e.g., permits, financing, approval, or participation agreement). Please be advised that this may not be an exhaustive list and that approval may be required from other public agencies not listed here:

Contra Costa County has discretionary authority over the proposed project and is the California Environmental Quality Act (CEQA) Lead Agency for the preparation of this Draft Initial Study/Mitigated Negative Declaration (Draft IS/MND). Other agencies whose approval may be required could include:

- California Department of Fish and Wildlife (CDFW): Section 1602, Lake and Streambed Alteration Agreement
- California Department of Transportation (Caltrans)
- National Environmental Policy Act (NEPA)

- San Francisco Bay Regional Water Quality Control Board (San Francisco Bay RWQCB): Porter-Cologne General Waste Discharge Notice of Applicability

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, has consultation begun?

A Notice of Opportunity to Request Consultation was sent on June 5, 2025, to Wilton Rancheria and the Confederated Villages of Lisjan Nation. As of the writing of this IS/MND, the Wilton Rancheria has not responded to the Opportunity to Request Consultation. The Confederated Villages of Lisjan Nation requested consultation. Consultation was conducted with the Confederated Villages of Lisjan Nation that discussed methods for resource investigation, identification and avoidance, mitigation, and monitoring measures for any Tribal Cultural Resources (TCRs) that may be potentially uncovered on the project site or area. Discussed measures were agreed upon and consultation concluded on September 25, 2025. Therefore, consultation with Native American Tribes has occurred in relation to the proposed project. As a courtesy, the County will provide a copy of this environmental document for the Tribe's comments.

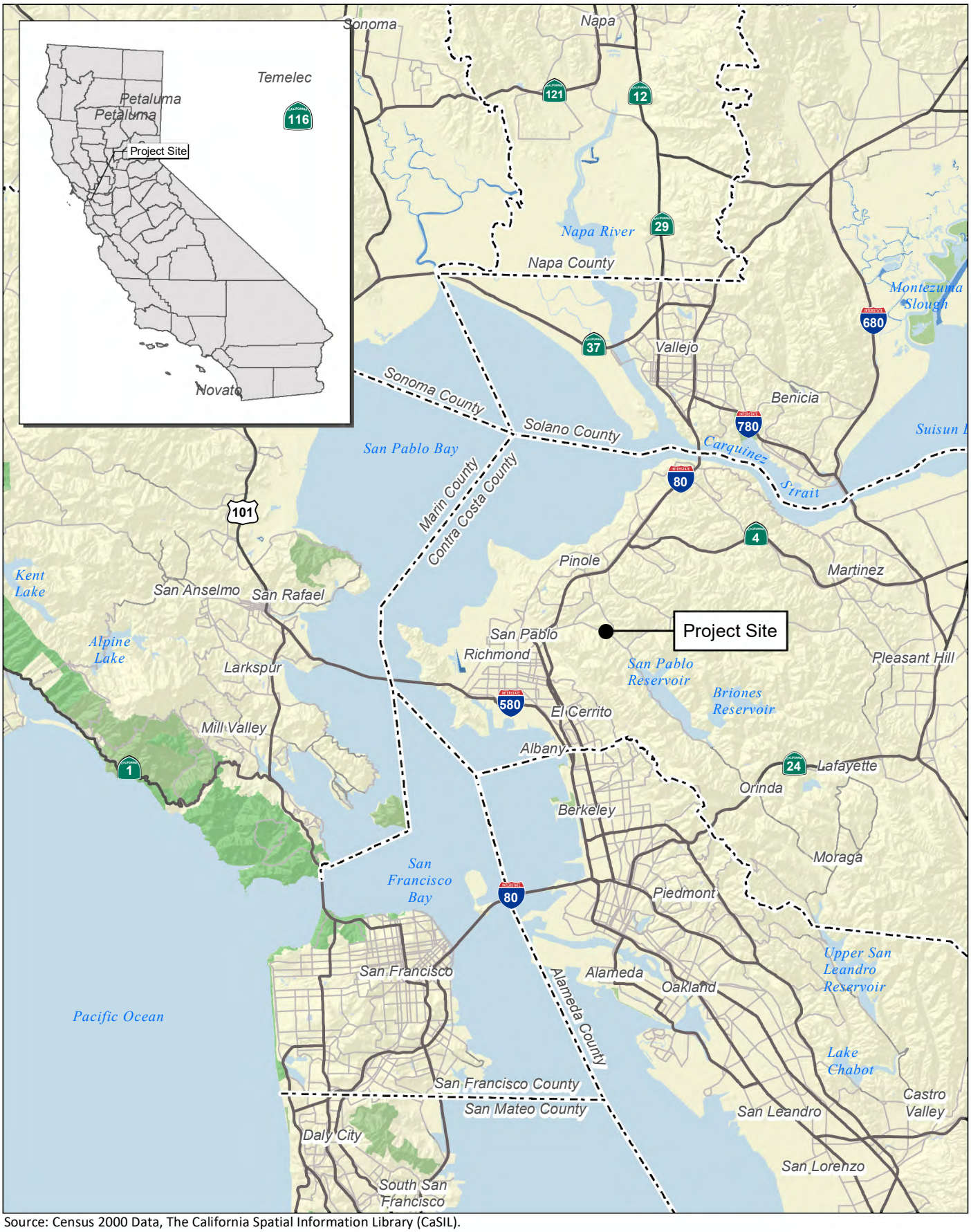


Source: ESRI Aerial Imagery. Contra Costa County Public Works Department.

FIRSTCARBON SOLUTIONS™

80 40 0 80 Feet

Exhibit 1
Impact Area

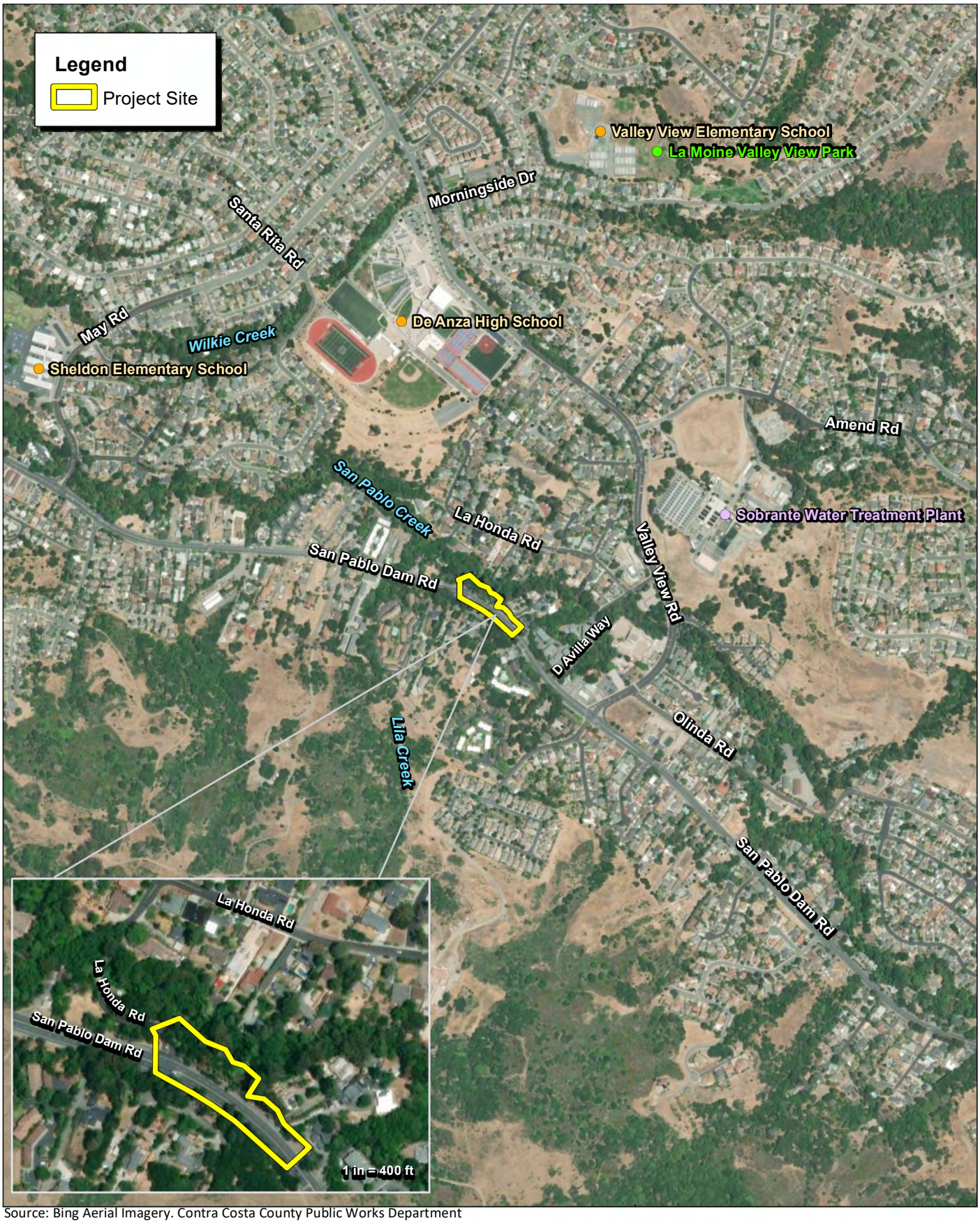


Source: Census 2000 Data, The California Spatial Information Library (CaSIL).

FIRSTCARBON SOLUTIONS™

5 2.5 0 5 Miles

Exhibit 2
Regional Location Map



Source: Bing Aerial Imagery. Contra Costa County Public Works Department

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1,000 500 0 1,000 Feet

Exhibit 3
Local Vicinity Map

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CONTRA COSTA COUNTY
SAN PABLO DAM ROAD–LA HONDA ROAD STORM DRAIN AND EROSION REPAIR PROJECT
DRAFT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION



Source: ESRI World Imagery. Contra Costa County Public Works Department.

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Exhibit 4
Photo Locations

Environmental Factors Potentially Affected

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

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

Environmental Determination

On the basis of this initial evaluation:

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

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

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

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

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

Syd Sotoodeh — May 26, 2026

Syd Sotoodeh
Senior Planner
Contra Costa County
Department of Conservation and Development

Date

ENVIRONMENTAL CHECKLIST

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

SUMMARY:

a) Would the project have a substantial adverse effect on a scenic vista?

Less Than Significant Impact. The General Plan Conservation, Open Space, and Working Lands Element defines scenic vistas as consisting of scenic ridges, hillsides, and rock outcroppings, along with the San Francisco Bay/Delta estuary system. The closest scenic ridge is the San Pablo Ridge located approximately 0.9-mile southwest of the project site. The San Pablo Ridge provides scenic views of the greater El Sobrante Valley, portraying single-family residential units intermixed with evergreen trees and patches of herbaceous grasslands, with the San Pablo Bay forming a scenic backdrop. As determined by General Plan Policy COS-P12.3, development within 100 vertical feet of the top of designated scenic ridges and within 50 vertical feet of other visually prominent ridges is prohibited. The proposed project would not construct any new structures or be constructed directly along the ridgeline. Although the proposed project would not directly alter the scenic vista, the proposed project would involve the removal of approximately 67 trees, which could expose excavation, grading, and construction staging, along with power lines and roadways that could degrade the scenic quality of the viewshed from San Pablo Ridge. In compliance with General Plan Policy COS-P12.4, there would be no unnecessary vegetation removal in relation to the proposed project. However, the proposed project would restore the project site to match and potentially improve previous conditions of low-value invasive species cover through revegetation of native trees and hydroseeding of the disturbed areas with a native seed mix. Thus, views of the project site are not anticipated to be substantially altered. Therefore, the proposed project would not have a substantial adverse effect on a scenic vista, and impacts would be less than significant.

b) *Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic building within a State Scenic Highway?*

Less Than Significant Impact. The proposed project site is not located in proximity to any Officially Designated or Eligible State Scenic Highway as classified by Caltrans under the State Scenic Highway Program. The closest State Scenic Highway is an approximately 0.2-mile segment of converged I-80 and I-580 in Albany, California, about 5.4 miles southwest of the project site, with an Eligible designation. The proposed project is not visible from the converged I-80 and I-580 segment due to distance and intervening topography.

Although the proposed project would not damage any scenic resources within a State Scenic Highway, the General Plan Conservation, Open Space, and Working Lands Element identifies locally significant scenic routes as public roadways that pass through picturesque natural landscapes, typically offering sweeping views of valleys or mountain ranges. General Plan Figure COS 12, Scenic Resources, identifies San Pablo Dam Road as a County-designated scenic route. The General Plan requires projects with the potential to significantly impact public views along a scenic route designated by the County to undergo a visual impact analysis (Policy COS-P12.8). The proposed project would restore the public right-of-way within San Pablo Dam Road to pre-project conditions and potentially improve habitat quality through replanting of native vegetation following construction.

Since the proposed project is not located within the scenic corridor of a State Scenic Highway and would restore the San Pablo Dam Road segment to pre-project conditions with native vegetation, the proposed project would not substantially damage scenic resources within a State Scenic Highway or scenic routes within the County's Scenic Routes Plan. Therefore, the proposed project would have a less than significant impact on State Scenic Highways or any locally designated scenic routes.

c) *In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?*

Less Than Significant Impact. The California Code of Regulations Title 14, Section 15387 defines an urbanized area as either a city or group of contiguous cities with a population of at least 50,000 residents together with adjacent areas having a population density of at least 1,000 persons per square mile. The proposed project is located within the unincorporated community of El Sobrante, California. While the population of the unincorporated community of El Sobrante is approximately 12,670 residents, this community is contiguous with the City of Richmond, which has a population greater than 50,000 residents. Thus, for the purposes of this analysis, the project site would be considered as within an urbanized area as defined by California Code of Regulations Title 14, Section 15387, and impacts pertaining to conflict with applicable zoning and other regulations governing scenic quality are discussed.

The proposed project would be consistent with existing uses on the project site and would not introduce any new structures that could conflict with the project site's R-7 zoning. The proposed project would repair an embankment failure, a segment of the far-right westbound lane of San Pablo Dam Road, and an existing culvert system that is consistent with the project site's RC land use designation through resource management purposes for San Pablo Creek. As discussed

above, the proposed project would also be consistent with General Plan Policy COS-P12.4 by limiting vegetation removal and replanting following completion of construction activities to restore the project site to consistent with existing conditions.

Therefore, the proposed project would not conflict with applicable zoning and other regulations governing scenic quality, and impacts would be less than significant.

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

Less Than Significant Impact. The proposed project is located in a low-density residential area with single-family homes, dense vegetation, and arterial and collector roads. Existing mobile and stationary sources of light and glare in the project area include vehicular traffic along San Pablo Dam Road, as well as low-intensity lighting and windows from residential units. The proposed project would not install any permanent stationary sources of light and would not include nighttime construction activities that would require the use of temporary lighting. While project construction could result in a minimal increase in sources of light and glare from construction equipment, parked vehicles, and increased vehicular traffic from lane closures on nearby roadways, these impacts would be temporary and would cease upon completion of construction activities.

Operation of the proposed project would not introduce any structures or land uses that would generate new sources of light and glare compared to existing conditions. Therefore, the proposed project would have a less than significant impact pertaining to light and glare.

Sources of Information

California Department of Transportation (Caltrans). 2026. Scenic Highways: California State Scenic Highways. Website: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed February 23, 2026.

Contra Costa County. 2024. 2045 General Plan. Chapter 4: Land Use Element. Website: https://www.contracosta.ca.gov/DocumentCenter/View/84934/Chapter-4---Land-Use-Element-PDF. Accessed February 23, 2026.

Contra Costa County. 2024. 2045 General Plan. Chapter 9: Conservation, Open Space, and Working Lands Element Open Space Element. Website: https://www.contracosta.ca.gov/DocumentCenter/View/84948/Chapter-7--Conservation-Open-Space-and-Working-Lands-Element-PDF. Accessed February 23, 2026.

Contra Costa County. n.d. El Sobrante. Website: https://www.contracosta.ca.gov/4368/El-Sobrante. Accessed February 23, 2026.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
2. *AGRICULTURAL AND FOREST RESOURCES–Would the project:*				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
a) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment, which due to their location or nature, could result in conversion of farmland, to nonagricultural use?	☐	☐	☐	☒

SUMMARY:

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

No Impact: The project site is located in an unincorporated area of El Sobrante, within Contra Costa County. The project site is designated as Urban and Built-Up Land on the California Important Farmland Map and is not considered Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. For this reason, the proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to nonagricultural use. No impact would occur.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act Contract?

No Impact: The project site is zoned as R-7 and is not subject to a Williamson Act contract, as indicated by the State of California Geographical Information System (GIS) Property Assessment interactive mapping tool. The proposed project is limited to repair and improvement of existing storm drainage infrastructure and would not introduce land uses that would conflict with the existing zoning. As such, the proposed project would not conflict with agricultural zoning or with a Williamson Act Contract. No impact would occur.

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

No Impact: The project site is zoned as R-7 and is not zoned as forest land, timberland, or timberland zoned Timberland Production. Therefore, the proposed project would not conflict with existing zoning or cause rezoning of forest land, timberland, or timberland zoned Timberland Production. No impact would occur.

d) *Would the project involve or result in the loss of forest land or conversion of forest land to non-forest use?*

No Impact: As described above in Impact 2(c), the project site is not zoned as forest land. The project site does not contain, nor is it adjacent to forest land. Therefore, the proposed project would not result in a loss of forest land or a conversion of forest land to non-forest uses. As such, no impact would occur.

e) *Would the project involve other changes in the existing environment, which due to their location or nature, could result in conversion of farmland, to nonagricultural use?*

No Impact: The project site is not located within an area zoned for agriculture. There is no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance in the vicinity. The project site is not zoned for forestry-related uses, nor is the project site forested. The proposed project would not result in the conversion of farmland to nonagricultural use or conversion of forest land to non-forest use. No impact would occur.

Sources of Information

Contra Costa County Code. 2026. Title 8–Zoning. Website: https://library.municode.com/ca/contra_costa_county/codes/ordinance_code?nodeId=TIT8ZO. Accessed February 24, 2026.

California Department of Conservation. 2022. California Important Farmland Finder. Website: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed February 24, 2026.

California Department of Conservation. 2025. Williamson Act Enrollment Finder. Website: https://maps.conservation.ca.gov/dlrp/WilliamsonAct/App/. Accessed February 24, 2026.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3. *AIR QUALITY–Would the project:*				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

SUMMARY:

a) *Would the project conflict with or obstruct implementation of the applicable air quality plan?*

Less Than Significant Impact: Contra Costa County is within the San Francisco Bay Air Basin, (SFBAAB), which is regulated by the Bay Area Air Quality Management District (Bay Area Air District). The most currently adopted Air Quality Plan (AQP) is the *Spare the Air, Cool the Climate Final 2017 Clean Air Plan* (2017 Clean Air Plan). The purpose of the 2017 Clean Air Plan is to bring the SFBAAB into compliance with the requirements of federal and State air quality standards and to protect the climate through the reduction of criteria pollutants and greenhouse gas (GHG) emissions.

Air quality is also regulated by the County through its General Plan. The following policies related to air quality are contained within the General Plan, Health and Safety Element, and are relevant and applicable to the proposed project and would be required to be implemented. Implementation of these policies would help to reduce air pollutant emissions associated with the proposed project.

HS-P1.1 Support efforts to reduce air pollution from stationary and mobile sources, including industrial facilities, construction activities, and vehicle emissions, especially in areas with high pollution levels and pollution levels and vulnerable populations.

HS-P1.2 Require new development projects to incorporate best practices for air quality protection, including dust control measures, low-emission construction equipment, and landscaping that reduces airborne particulates.

HS-P1.9 Require construction activities that involve large grading operations to implement additional construction measures identified in BAAQMD's CEQA Guidelines to reduce air pollutant emissions.

PS-P1.10 Prohibit nonessential diesel engine idling countywide and nonessential idling of all vehicles within 100 feet of sensitive receptors.

A project would be determined to conflict with or obstruct the 2017 Clean Air Plan implementation if it would result in substantial new regional emissions not foreseen in the air quality planning process. The Bay Area Air District's 2022 CEQA Guidelines outlines the following criteria that should be used for determining a project's consistency with the AQP.

- Does the project support the primary goals of the AQP?
- Does the project include applicable control measures from the AQP?
- Does the project disrupt or hinder implementation of any AQP control measures?

Primary Goals of the AQP

The primary goals of the 2017 Clean Air Plan are to attain air quality standards, reduce population exposure to unhealthy air and protect the public health in the Bay Area, and reduce GHG emissions and protect the climate.

The proposed project would not introduce ongoing sources of operational-related air pollutant emissions. Project compliance with CEQA pollutant emission thresholds is a test of consistency with 2017 Clean Air Plan air quality control strategies and noninterference with the attainment of 2017 Clean Air Plan goals. As discussed under Impact 3(b), the proposed project's construction-related emissions would not exceed Bay Area Air District CEQA significance thresholds for the Bay Area's nonattainment pollutants. Therefore, the proposed project would not impede the region's ability to attain air quality standards.

The proposed project would not introduce ongoing sources of operational-related toxic air contaminant (TACs) or diesel particulate matter (DPM) emissions. Furthermore, as discussed in Impact 3(c), the proposed project would not expose nearby sensitive populations to TACs or DPM emissions during construction because there are no sensitive receptors within close proximity to the proposed project.

Finally, the Contra Costa County Climate Action and Adaptation Plan (CAAP) establishes a framework to reduce GHG emissions 40 percent below 1990 levels by 2030 and prepare for climate-related hazards. The proposed project aligns with several CAAP goals and policies, particularly those focused on infrastructure resilience, low-emission construction practices, and environmental stewardship. The CAAP includes incentives for construction equipment upgrades and other strategies to reduce emissions of construction vehicles on a plan level; while not directly applicable to the proposed project, overall, the CAAP encourages the use of low-emission construction equipment (Policy TR-2). In addition, the CAAP seeks to protect and restore natural stormwater systems (Policy IS-2) and minimize vegetation loss and require revegetation with native species (Policy OS-1). The CAAP also incorporates erosion and runoff control measures (Policy IS-4). Overall, the proposed project's use of targeted excavation for slope stabilization, revegetation of disturbed areas with native species, and improvements to stormwater conveyance through culvert realignment and repair would support the County's climate adaptation priorities while also complying with broader GHG reduction strategies.

The CAAP focuses on reducing long-term operational emissions from land use, energy, and transportation. After its construction is complete, the proposed project would not include any new pollutant emission sources, nor would it require energy from external sources or transportation resources for its operation. Thus, it would have no effect on land use, energy,

transportation, or other assumptions that underlie the CAAP. Accordingly, the proposed project is consistent with the County's CAAP.

Therefore, the proposed project is consistent with the first criterion in demonstrating consistency with the 2017 Clean Air Plan.

Applicable Control Measures

The 2017 Clean Air Plan contains 85 control measures that describe specific actions to reduce air pollutants and GHGs at the local, regional, and global levels. Stationary source control measures are implemented via Bay Area Air District's permitting program and enforcement of the Bay Area Air District Rules and Regulations. Along with the traditional stationary, area, mobile source, and transportation control measures, the 2017 Clean Air Plan contains several control measures designed to protect the climate.

To establish compliance with the 2017 Clean Air Plan, the proposed project would be required to comply with applicable 2017 Clean Air Plan control measures. The only measures relevant and applicable to the proposed project are

SS36: Particulate Matter from Trackout and

SS38: Fugitive Dust

For consistency with Clean Air Plan Measures SS36 and SS38, the proposed project would implement mitigation measure (MM) AQ-1, which would require the implementation of Bay Area Air District's Best Management Practices (BMPs) to reduce fugitive dust during construction.

Accordingly, the proposed project would comply with all applicable measures under the 2017 Clean Air Plan with implementation of mitigation and is therefore consistent with criteria two as set forth by Bay Area Air District.

Hindrance of Implementation of Air Quality Plan Control Measures

The proposed project includes the repair and realignment of storm-damaged culverts and the stabilization of a failed embankment along San Pablo Dam Road and therefore would not preclude extension of a transit line or bike path, propose excessive parking beyond parking requirements, or otherwise create an impediment or disruption to implementing any AQP control measures. The proposed project is construction-only and will not result in parking or parking requirements or ongoing sources of air pollutant emissions. Considering this information, the proposed project would not disrupt or hinder the implementation of any AQP control measures.

Accordingly, the proposed project would comply with all applicable measures under the 2017 Clean Air Plan and is therefore consistent with the third criterion as set forth by Bay Area Air District.

As addressed above, the proposed project would not conflict with or obstruct implementation of the 2017 Clean Air Plan and meets all three criterion set out by Bay Area Air District for demonstrating consistency, and impacts would be less than significant.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard?

Less Than Significant Impact: There would be a potential impact if the proposed project would result in exceedances of State or federal standards for ozone precursors, reactive organic gases (ROG), nitrogen oxide (NO_X), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), of which the SFBAAB is in nonattainment. NO_X and ROG emissions are of concern during construction because of their participation in the formation of ground level ozone—for which the SFBAAB is in nonattainment. PM_{10} and $PM_{2.5}$ are of concern during construction because of potential exhaust emissions from the operation of off-road construction equipment and fugitive dust during demolition and earth-disturbing activities (construction fugitive dust).

The significance criteria recommended by the Bay Area Air District were used to make the following CEQA significance determinations. The Bay Area Air District has adopted standards of significance for criteria pollutants that could occur during construction and operation. The thresholds of significance are shown in Table 1. Therefore, a project that would not exceed the Bay Area Air District thresholds of significance on an individual project level also would not be considered to result in a cumulatively considerable contribution to these regional air quality impacts. The proposed project's construction and operational emissions are discussed separately below.

Construction Fugitive Dust Emissions

Construction emissions from the proposed project would be "short-term" or temporary in nature and duration. Construction of the proposed project would result in the temporary generation of ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions from construction activities, including site preparation, demolition, grading, stitch pile wall construction, concrete work, and roadway rehabilitation.

Fugitive dust emissions are primarily associated with demolition, earth disturbance, and grading activities and vary as a function of soil silt content, soil moisture, wind speed, acreage of disturbance area, and miles traveled by construction vehicles on-site and off-site. Construction-related activities, such as soil disturbance, grading, demolition, and material delivery and hauling, result in fugitive dust emissions (e.g., $PM_{2.5}$ and PM_{10}). $PM_{10}/PM_{2.5}$ is recognized to impact local communities. The Bay Area Air District does not have a numerical threshold of significance for fugitive dust particulate matter emissions. Instead, the Bay Area Air District bases the determination of significance for fugitive dust on whether feasible and effective control measures are implemented.

The Bay Area Air District recommends implementing basic construction measures for all projects regardless of emissions. Therefore, to further reduce emissions, implementation of MM AQ-1, provided below, would include Bay Area Air District-recommended measures for the control of short-term emissions and basic fugitive dust BMPs to assure that ambient particulate standards are not exceeded at local sensitive receptors during project construction. Therefore, the proposed project would have a less than significant impact related to short-term construction fugitive dust emissions with implementation of MM AQ-1.

Construction Exhaust Emissions: ROG, NO_X, PM_{10}, and $PM_{2.5}$

Construction-related NO_X, PM_{10}, and $PM_{2.5}$ emissions are primarily generated by exhaust emissions (running and idling) from off-road heavy-duty construction equipment, on-road material delivery and haul trucks, and construction worker vehicles. ROG emissions are mainly generated by off-gas emissions associated with architectural coatings and asphalt paving.

Construction emissions were quantified and estimated using California Emissions Estimator Model (CalEEMod) Version 2022.1 for a typical construction scenario for a construction project of this size and incorporating appropriate project-specific information. CalEEMod provides a consistent platform for estimating construction and operational emissions from a wide variety of land use projects and is the model recommended by the Bay Area Air District for estimating project emissions. Construction emissions were estimated and compared with the applicable thresholds of significance established by the Bay Area Air District to assess ROG, NO_X, exhaust PM_{10}, and exhaust $PM_{2.5}$ construction emissions to determine significance for this criterion.

The following project characteristics and assumptions were utilized in the CalEEMod analysis:

- It is anticipated that construction would begin in April 2027 and last approximately 100 days. Although it does not form the basis of the evaluation or conclusion in this document, it is reasonable to assume that future improvements in technology would be incorporated into regulatory requirements related to equipment and fuels, which would result in lower emissions. Therefore, if the construction schedule moves to months or years beyond what was modeled or takes longer than assumed, construction emissions would be expected to decrease because of mandatory compliance with improvements in technology and more stringent regulatory requirements that would affect future construction equipment and fuels.
- It was estimated that approximately 5,400 square feet of asphalt would be removed through a combination of grinding and excavating of the structural section of the roadway, resulting in approximately 230 tons of excavated material that would be exported (which represents a worst-case, conservative scenario).
- Approximately 67 trees would be cleared and removed and asphalt would be repaired (which would be associated with five additional one-way vendor trips per day during the site preparation phase).
- There would be 1,500 cubic yards of soil export.
- CalEEMod default assumptions for equipment were supplemented with equipment associated with the activities as described in the Project Description, including but not limited to tractors, loaders, backhoes, rubber tired loaders, excavators, dozers, cranes, forklifts, generator sets, welders, trucks, pavers, paving equipment, rollers, and cement and mortar mixers (noted in each phase in the CalEEMod output report).
- The modeling assumed use of average tier engines in construction equipment represents a conservative scenario, and emissions would likely be lower than what is shown in Table 1.
- The modeling assumed implementation of the Bay Area Air District Basic Construction BMPs for fugitive dust control.

Additional details on the assumptions and inputs are included in the CalEEMod output reports (Appendix A).

Table 1 shows the proposed project's average daily emissions from construction-related exhaust emissions. As indicated in Table 1, construction exhaust emissions from all construction activities would be significantly below the recommended thresholds of significance for emissions of ROG, NO_X, exhaust PM_{10}, and exhaust $PM_{2.5}$; therefore, impacts would be less than significant.

Table 1: Regional Criteria Pollutant Exhaust Emissions–Project Construction

		Air Pollutants (lbs/day)			
Average Daily	**Year**	**ROG**	**NO_X**	**PM_{10} (Exhaust)**	**$PM_{2.5}$ (Exhaust)**
Project Construction (Average daily emissions)	2027	0.91	8.14	0.29	0.28
Significance Threshold (lbs./day)		**54**	**54**	**82**	**54**
Exceeds Significance Threshold?		**No**	**No**	**No**	**No**

Notes:
lbs = pounds
NO_X = oxides of nitrogen
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
ROG = reactive organic gases

Emissions were calculated by dividing the pounds of emissions by the number of non-overlapping working days of construction (100 workdays).
Assumes implementation of MM AQ-1 for dust control.
Source: California Emissions Estimator Model (CalEEMod) Output (see Appendix A).

Potential Impacts:

The Bay Area Air District recommends implementing basic construction measures for all projects regardless of emissions. Therefore, the proposed project would implement MM AQ-1 for the control of short-term emissions and basic fugitive dust BMPs to assure that ambient particulate standards are not exceeded at local sensitive receptors during project construction and that impacts would remain less than significant.

MM AQ-1 Implement Bay Area Air District Basic Construction Best Management Practices:

1) All exposed surfaces (e.g., parking areas, staging areas, graded areas, and unpaved access roads) shall be watered two times per day.
2) All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3) 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.
4) All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
5) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.
6) Idling times shall be minimized either by shutting equipment off when not in use.
7) or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure [ATCM) Title 13, Section 2485 of California

Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

8) All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
9) Post a publicly visible sign with the telephone number and contact information for the designated on-site construction manager available to receive and respond to dust complaints. This person shall report all complaints to Contra Costa County and take immediate corrective action as soon as practicable but not more than 48 hours after the complaint is received. The Bay Area Air District's phone number shall also be visible to ensure compliance with applicable regulations.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. Construction activities associated with the proposed project would be short-term in nature, lasting approximately 100 working days, and would not involve continuous or high-intensity pollutant sources. Construction-related emissions are inherently short-term and intermittent, typically occurring only during active phases of site preparation, grading, and building. These emissions (primarily from diesel-powered equipment and dust-generating activities) are temporary and diminish significantly once construction is complete. Additionally, the proposed project would implement the Bay Area Air District Basic Construction BMPs, such as regular watering of exposed surfaces, covering of haul trucks, and minimizing idling times, which would substantially reduce particulate matter emissions.

Given the limited duration of construction, the relatively small scale of earthwork and equipment usage, and the incorporation of dust suppression and BMPs, the proposed project is not expected to expose nearby sensitive receptors to substantial pollutant concentrations. Furthermore, the proposed project consists solely of infrastructure repair and stabilization and does not include any new operational components that would generate long-term emissions. Once construction is complete, the project site would return to its previous use with no ongoing activities that could expose sensitive receptors to pollutant concentrations. Therefore, impacts related to pollutant exposure would be less than significant.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact: The ability to detect odors varies considerably among the population and can be subjective. People may have different reactions to the same odor. Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. Odor intensity depends on the concentration in the air. When an odor sample is progressively diluted, the odor concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odor reaches a level that is no longer detectable.

According to Bay Area Air District 2022 CEQA Guidelines, odor impacts could occur if the proposed project introduces a new odor source near existing receptors. The presence of an odor impact is dependent on several variables, including the nature of the odor, the frequency of odor

generation, the intensity of odor, the distance of the odor source to sensitive receptors, the wind direction and the sensitivity of the receptor.

If the proposed project would be an odor-generating facility, then the Bay Area Air District provides a list of recommended odor screening distances for evaluating potential odor impacts. The Bay Area Air District does not indicate that temporary construction projects are odor-generating facilities.

Potential sources that may emit odors during the proposed project's construction activities include exhaust from diesel construction equipment. However, because of the temporary nature of these emissions, the intermittent duration of construction activities, and the highly diffusive properties of DPM exhaust, any nearby receptors would not be adversely affected by diesel exhaust odors associated with project construction. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site. The proposed project would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Thus, the proposed project would not result in a new odor source adversely affecting a substantial number of nearby existing receptors. Furthermore, the proposed project is construction-only and would not include any ongoing sources of odors. Impacts would be less than significant.

Sources of Information

CalEEMod Output Report. Appendix A.

Bay Area Air Quality Management District (Bay Area Air District). 2022. California Environmental Quality Act, Air Quality Guidelines. April 20. Website: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines. Accessed March 5, 2026.

Bay Area Air Quality Management District (Bay Area Air District). 2017. Spare the Air, Cool the Climate. Final 2017 Clean Air Plan. Adopted by the Bay Area Air District Board of Directors on April 19, 2017. Website: https://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en. Accessed March 5, 2026.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
4. *BIOLOGICAL RESOURCES–Would the project:*				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or United States Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan?	☐	☐	☐	☒

FirstCarbon Solutions (FCS) Biologist(s) evaluated potential Biological Resources for the San Pablo Dam Road–La Honda Road Storm Drain and Slide Repair Project in May 2024, including a background review and reconnaissance field survey. A draft Natural Environmental Study (Minimal Impacts) (NESMI) was prepared by FCS in April 2025, and an Arborist Report was prepared by FCS in September 2025 (Appendix B). The comprehensive literature review included the evaluation of the CDFW, California Natural Diversity Database (CNDDB), a special-status species and plant community account database; the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) system; and the California Native Plant Society (CNPS) Inventory of Rare Plants (CNPS Inventory) for the *Richmond*, *California* USGS 7.5-minute Topographic Quadrangle Map and the eight surrounding quadrangles (Appendix B) (CDFW 2025; CNPS 2025; USFWS 2025). The on-site assessment of biological resources within the project footprint and surrounding area (BSA), was completed by a qualified FCS Biologist and FCS Botanist on May 28, 2025. The BSA includes the project site and potential staging areas.

The following analysis is based on the results of the NESMI analysis of the BSA prepared by FCS in May 2025. Potential impacts to biological features within the project site are analyzed in this section. The BSA includes the project site and proposed staging areas. Three biotic habitats and land cover types were identified within the 1.62-acre BSA, as shown in Table 2 below.

Table 2: Impact Table

Biotic Habitat/Land Use	Total Area (acres)	Permanent Impacts (acres)	Temporary Impacts (acres)	Potential Staging (acres)
Developed	0.88	0.00	0.78	0.10
Disturbed Riparian Woodland	0.74	0.20	0.48	0.06
Total Area	**1.62**	**0.20**	**1.26**	**0.16**

SUMMARY:

a) *Would the project 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 United States Fish and Wildlife Service?*

Less Than Significant Impact with Mitigation Incorporated:

Special-status Plants: The Special-status Plant Species Habitat Value Evaluation Table (NESMI Table 1, Appendix B) provides a summary of the listing status, habitat requirements, and the potential for occurrence of other sensitive plant species that have been documented within the *Richmond, California* USGS 7.5-minute Topographic Quadrangle Map and the eight surrounding quadrangles. A total of 99 special-status plant species were evaluated for their potential to occur within the proposed project parcels based on the literature review described above. Of the 99 species evaluated, no special-status plant species occur or are expected to occur within the proposed project parcel due to the absence of suitable habitat, previous land uses, and the extent and frequency of ground disturbance.

Many special-status plant species are known to occur in the greater region of the project site. However, many of these plants require habitat types that do not currently occur within the BSA. Additionally, special-status plants analyzed during the literature review occur at elevations outside of the range of elevations that occur on the BSA or are present on specific soil substrates that are not present within the on-site. While there were special-status plants known to occur locally in mesic and riparian woodland, the level of disturbance and abundance of non-native vegetation, specifically the dense ground cover of Canary ivy (*Hedera canariensis*), generally precludes the growth of most native vegetation. Moreover, the proposed project parcel lacks microhabitats such as vernal pools, chenopod scrub, and alkaline or acidic soils that are typically necessary to support many rare plants. For the reasons outlined above, it is reasonable to conclude that special-status plant species are determined to be absent from the proposed project site.

Special-status Wildlife: The potential for wildlife species to occur on the proposed project parcel was evaluated based on the presence of suitable habitats and occurrences recorded by the CNDDB in the general vicinity of the project site, as well as a site survey conducted by a qualified

Biologist. The Special-status Wildlife Species Habitat Value Evaluation (NESMI Table 2, Appendix B) provides a summary of the listing status, habitat requirements, and the potential for occurrence of other sensitive wildlife species that have been documented within the *Richmond, California* USGS 7.5-minute Topographic Quadrangle Map and the eight surrounding quadrangles.

A total of 50 special-status wildlife species were evaluated for their potential to occur within the proposed project parcels. Of the 50 species evaluated, three species, California red-legged frog (CRLF; *Rana draytonii*), northwestern pond turtle (NWPT; *Actinemys marmorata*), and San Francisco dusky-footed woodrat (SFDFW; *Neotoma fuscipes annectens*) have a low potential to occur within the proposed project site. These species are discussed in further detail below.

Because of the presence of trees, potential for special-status bat species to occur was evaluated. There were four special-status bat species that were evaluated: pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), western red bat (*Lasiurus frantzii*), and big free-tailed bat (*Nyctinomops macrotis*). When analyzed for potential to occur, it was determined that there is no habitat for western red bat or for big free-tailed bat. While there is marginally suitable habitat for Townsend's big-eared bat and pallid bat, it was determined that there is low potential for these species to occur given the lack of visible evidence of bats such as guano and staining, and CNDDB occurrences within 7 miles were over 80 years old.

California Red-legged Frog

CRLF is listed under the federal Endangered Species Act as threatened and is a California Species of Special Concern (SSC). This species is found in lowlands and foothills in or near perennial sources of water with deep pooling features and dense, shrubby, or emergent riparian vegetation. The CRLF requires that aquatic features hold water for 11–20 weeks for successful larval development and must have access to aestivation habitat. CRLF have been reported to disperse up to 1.7 miles from breeding habitat following the onset of fall/winter rainfall (Fellers and Kleeman 2007).

CRLF was not observed during the reconnaissance-level field survey. The project site contains riparian woodland and is adjacent to but outside of the ordinary high water mark (OHWM) and top of bank associated with San Pablo Creek, which has a recent occurrence of CRLF recorded downstream. The project site does not provide breeding habitat for CRLF due to the lack of suitable aquatic habitat; however, riparian woodland is present adjacent to San Pablo Creek. Because of previous disturbances in the project site and the vicinity to a highly trafficked roadway combined with the overall biological composition, it is unlikely that this species would occur. Given the creek adjacent to the BSA, and the recorded occurrence of CRLF approximately 1.7 miles downstream from the project site, there is a potential for CRLF to utilize the areas in and around the project site for upland dispersal habitat after the onset of fall/winter rains. Out of an abundance of caution, avoidance measures (MM BIO-1a) would be carried out by the proposed project to ensure no significant impact to CRLF occurs. Therefore, the proposed project would not adversely impact CRLF.

Northwestern Pond Turtle

NWPT is proposed as threatened under the federal Endangered Species Act and is a California SSC. This species nests in ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation and requires upland habitat for basking.

NWPT was not observed during the reconnaissance-level field survey. The project site contains riparian woodland with coast redwood and a dense understory. The project site provides potential suitable habitat in the form of disturbed riparian woodland with coast redwood and a dense understory, in addition to the adjacent creek. Given the recorded occurrence of NWPT ~2.5 miles from the project site along Pinole Creek in 1994, 1996, 2012, and 2017 and 2 miles downstream from the project site within the San Pablo Reservoir in 1992, there is a potential for NWPT to disperse through the project site in search of areas of more suitable habitat.

The project site does not contain critical habitat or provide suitable breeding habitat due to the intermittent nature of the creek within the site and a general lack of basking habitat due to overstory vegetation. Because of previous disturbances in the project site and the vicinity to a highly trafficked roadway combined with the overall biological composition, it is unlikely that this species would occur. However, due to the marginally suitable adjacent creek off-site and riparian woodland within the BSA, there is a potential for NWPT to utilize the areas in and around the project site for in-stream and upland dispersal habitat. Out of an abundance of caution, avoidance measures would be carried out by the proposed project to ensure that no significant impact to NWPT occurs (MM BIO-1b). Therefore, the proposed project would not adversely impact NWPT.

San Francisco Dusky-footed Woodrat

SFDFW is listed as a California SSC and is found in forest habitats of moderate canopy and moderate to dense understory, possibly preferring chaparral and redwood habitats. This species was not observed during the reconnaissance-level field survey. The project site contains riparian woodland with coast redwood and a dense understory. The project site provides potential suitable habitat in the form of disturbed riparian woodland with coast redwood and a dense understory. Given the recorded occurrence of SFDFW approximately 2.5 miles from the project site in similar habitats, there is a potential for SFDFW to disperse through the project site in search of areas of more suitable habitat.

The project site does not overlap with final critical habitat designated for SFDFW due to the general lack of chaparral and redwood habitat. Because of previous disturbances in the project site and the vicinity to a highly trafficked roadway, combined with the overall biological composition, it is unlikely that this species would occur. However, due to the disturbed riparian woodland within the BSA, there is potential for SFDFW to utilize the areas in and around the project site. Out of an abundance of caution, avoidance measures would be carried out by the proposed project to ensure that no significant impact to SFDFW occurs (MM BIO-1c). Therefore, the proposed project would not adversely impact SFDFW.

Nesting Birds

The Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code protect migratory birds, including their eggs, nests, and young. The majority of migratory birds that have the potential to nest within the project site are not special-status species and are regionally

common. Nonetheless, the proposed project would implement measures to avoid and minimize effects on active nests of migratory birds to comply with the MBTA and California Fish and Game Code. Several avian species covered under the MBTA and California Fish and Game Code have the potential to nest within or adjacent to the project site. Avian species seen during the reconnaissance-level field survey include Anna's hummingbird, Bewick's wren, bushtit, chestnut-backed chickadee, lesser goldfinch, oak titmouse, and yellow-rumped warbler. No active nests were observed during the reconnaissance-level field survey. There is suitable nesting habitat within the project site, specifically in the form of trees. Trees would be removed to support the culvert replacement and temporary impacts due to construction noise and vibration disturbance have potential to occur. However, all trees removed would be replanted after construction-related activities have ceased. While there is potential for birds to nest within the project site during the nesting season, implementation of MM BIO-1d described below would ensure that impacts would be less than significant.

Potential Impacts:

Implementation of the following mitigation measures would bring potential project-related impacts on biological resources and aquatic organisms to less than significant levels:

MM BIO-1a **California Red-legged Frog Mitigation:** Implementation of the following measures would ensure avoidance of impacts on California red-legged frog (CRLF):

Work Restriction: To the greatest extent practicable, project activities shall be restricted to the period between April 15 and October 15, when CRLF are the least active. If project activities are proposed outside of the work restriction period, consultation with the California Department of Fish and Wildlife (CDFW)/United States Fish and Wildlife Service (USFWS) shall be required to ensure appropriate avoidance and/or minimization measures are incorporated.

Worker Environmental Awareness Program: Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program (WEAP) for all construction personnel. At a minimum, the training shall include a description of the CRLF and its habitat; the regulatory protections afforded for these species; the general measures that are being implemented to conserve them as they relate to the proposed project; and the boundaries within which the project may be accomplished.

Pre-Construction Survey: A qualified Biologist shall survey the Biological Study Area (BSA), no more than 5 days before the onset of work activities, and present survey results to the County for submittal to CDFW. If any life stage of the CRLF is detected, construction activities shall not be allowed to commence until consultation with USFWS has occurred.

Temporary Silt Fencing: Prior to project work activities, temporary silt fencing shall be installed between the aquatic habitat and the development footprint in a manner that will prevent CRLF from entering the project impact areas. A qualified Biologist shall be present during the installation of the temporary silt fencing. The barrier fencing shall be removed within 72 hours of completion of

work. The location and design of the fence shall be approved by a qualified Biologist, and the qualified Biologist shall also be present on-site to monitor installation until the temporary silt fence is complete. At a minimum, the temporary silt fencing shall be at least 3 feet high and the lower 6 inches of the fence shall be buried in the ground to prevent animals from crawling under. The remaining 2.5 feet shall be left above ground to serve as a barrier for animals moving on the ground surface. Fencing shall be installed and maintained in good condition during all construction activities and shall be inspected and maintained daily until the completion of project construction.

Revegetation: Areas disturbed by the project shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by activities associated with the project unless CDFW, USFWS, and the project applicant determine that it is not feasible or practical.

MM BIO-1b **Northwestern Pond Turtle Mitigation:** Implementation of the following measures would ensure avoidance of impacts on northwestern pond turtle (NWPT):

Worker Environmental Awareness Program: Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program (WEAP) for all construction personnel. At a minimum, the training will include a description of the NWPT and its habitat; the regulatory protections afforded for these species; the general measures that are being implemented to conserve them as they relate to the proposed project; and the boundaries within which the project may be accomplished.

Pre-construction Survey: A qualified Biologist shall survey the Biological Study Area (BSA), no more than 5 days before the onset of work activities, and present survey results to the County, for submittal to the California Department of Fish and Wildlife (CDFW). If any life stage of the NWPT is detected, construction activities shall not be allowed to commence until consultation with the CDFW and the United States Fish and Wildlife Service (USFWS) has occurred.

Temporary Silt Fencing: Prior to project work activities, temporary silt fencing shall be installed between the aquatic habitat and the development footprint in a manner that will prevent NWPT from entering the project impact areas. A qualified Biologist shall be present during the installation of the temporary silt fencing. The barrier fencing shall be removed within 72 hours of completion of work. The location and design of the fence shall be approved by a qualified Biologist, and the qualified Biologist shall also be present on-site to monitor installation until the temporary silt fence is complete. At a minimum, the temporary silt fencing shall be at least 3 feet high and the lower 6 inches of the fence shall be buried in the ground to prevent animals from crawling under. The remaining 2.5 feet shall be left above ground to serve as a barrier for animals moving on the ground surface. Fencing shall be installed and maintained in good

condition during all construction activities and shall be inspected and maintained daily until the completion of project construction.

Revegetation: Areas disturbed by the project shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by activities associated with the project unless the CDFW, USFWS, and the project applicant determine that it is not feasible or practical.

MM BIO-1c **San Francisco Dusky-footed Woodrat Mitigation:** Implementation of the following measures would ensure avoidance of impacts on San Francisco dusky-footed woodrat (SFDFW):

Worker Environmental Awareness Program: Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program (WEAP) for all construction personnel. At a minimum, the training will include a description of the SFDFW and its habitat; the regulatory protections afforded for these species; the general measures that are being implemented to conserve them as they relate to the proposed project; and the boundaries within which the project may be accomplished.

Pre-construction Survey: A qualified Biologist shall survey the Biological Study Area (BSA) no more than 5 days before the onset of work activities and present survey results to the County, for submittal to the California Department of Fish and Wildlife (CDFW). If any life stage or nest of the SFDFW is detected, construction activities shall not be allowed to commence until consultation with CDFW and the United States Fish and Wildlife Service (USFWS) has occurred.

Temporary Silt Fencing: Prior to project work activities, temporary silt fencing shall be installed between the aquatic habitat and the development footprint in a manner that will prevent SFDFW from entering the project impact areas. A qualified Biologist shall be present during the installation of the temporary silt fencing. The barrier fencing shall be removed within 72 hours of completion of work. The location and design of the fence shall be approved by a qualified Biologist, and the qualified Biologist shall also be present on-site to monitor installation until the temporary silt fence is complete. At a minimum, the temporary silt fencing shall be at least 3 feet high and the lower 6 inches of the fence shall be buried in the ground to prevent animals from crawling under. The remaining 2.5 feet shall be left above ground to serve as a barrier for animals moving on the ground surface. Fencing shall be installed and maintained in good condition during all construction activities and shall be inspected and maintained daily until the completion of project construction.

Revegetation: Areas disturbed by the project shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by

activities associated with the project unless the CDFW, USFWS, and the project applicant determine that it is not feasible or practical.

MM BIO-1d **Migratory Bird Mitigation:** Implementation of the following measures would ensure avoidance of impacts on migratory birds.

Avoidance of Nesting Season: To the extent practicable, vegetation and/or tree removal shall be scheduled to avoid the avian nesting season. The nesting season typically runs from February 1 through August 31.

Pre-Construction Surveys for Active Nests: For any construction during the nesting season (February 1 to August 31), pre-construction nesting bird surveys shall be conducted no more than 7 days prior to the start of ground or vegetation disturbance (including tree removal) and survey results presented to the County, for submittal to the California Department of Fish and Wildlife (CDFW).

Buffer zone for Active Nests: If an active nest is located during pre-construction surveys, a qualified Biologist, in consultation with the CDFW, shall determine an appropriately sized avoidance buffer based on the species and anticipated disturbance level. The CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species, a 500-foot no-disturbance buffer around active nests of smaller raptors such as accipiters (*Accipiter* sp.), a 1,000-foot no-disturbance buffer around active nests of large raptors such as buteos (*Bueto* sp.), and up to a 1-mile no-disturbance buffer around active nests of bald eagle (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) if visible from the project site. A qualified Biologist shall delineate the avoidance buffer using Environmentally Sensitive Area fencing, pin flags, and/or yellow caution tape. The buffer zone shall be maintained around the active nest site(s) until the **qualified Biologist has determined that the nesting attempt is complete**. No construction activities or construction foot traffic is allowed to occur within the avoidance buffer(s). In consultation with CDFW, the qualified Biologist shall monitor the active nest during the subject construction activities and modify the protection zone accordingly to prevent project-related nest disturbance, until the young have fledged, or nests fail due to other natural causes.

b) Would the project 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 United States Fish and Wildlife Service?

Less Than Significant Impact with Mitigation Incorporated: Habitats are considered sensitive when they are either restricted in distribution, support sensitive species within the region, or subject to regulatory protections at the federal, State, or local level. Within the nine USGS 7.5-minute quadrangles that intersect or surround the project site, six California Sensitive Natural Communities were identified by the CNDDB. These include coastal brackish marsh, coastal terrace prairie, northern coastal salt marsh, northern maritime chaparral, serpentine bunchgrass grassland, and valley needlegrass grassland. Because of unsuitable soil composition and microclimatic conditions, these specific habitats are not expected to occur within the project

site. Nonetheless, all riparian woodland habitats are generally regarded as sensitive natural communities.

The project site does not contain an aquatic feature with a defined bed, channel, or bank of any river, stream, or lake that would fall under Regional Water Quality Control Board (RWQCB) or CDFW jurisdiction. It should be noted that San Pablo Creek, a potentially jurisdictional feature under the RWQCB and CDFW, falls outside the northern project boundary. San Pablo Creek would be avoided as a part of the proposed project. However, the project site contains a culvert in need of repair that conveys flow into San Pablo Creek and would be modified as part of this proposed project. Therefore, as a part of the proposed discretionary approvals, the County will obtain a Waste Discharge Requirement (WDR) from the RWQCB to address potential water quality impacts to San Pablo Creek due to the proposed culvert repairs.

Although San Pablo Creek is located outside of the project site, the feature contains disturbed riparian woodland that falls within the project site's boundaries. The disturbed riparian woodland present in the project site supports woody vegetation including coast redwood, bigleaf maple, California bay, coast live oak, California buckeye, glossy privet, and others. This 0.74-acre disturbed riparian woodland sensitive community is anticipated to be impacted by proposed construction activities. Project activities are expected to temporarily affect 0.48 acre of riparian woodland and permanently impact 0.20 acre of riparian woodland with an additional 0.06 acre of riparian woodland impacted by potential staging. Trees proposed for preservation within the existing disturbed riparian woodland would adhere to Tree Preservation Measures outlined in the project-specific Arborist Report throughout all phases of construction, including grading, trenching, and material storage, to prevent construction-related damage to preserved trees on-site (MM BIO-2).

All riparian woodland habitats are generally regarded as sensitive natural communities. The riparian vegetation associated with San Pablo Creek is regulated under Fish and Game Code Section 1602. Therefore, as a part of the proposed discretionary approvals, the project applicant would be required to consult with CDFW under the Lake and Streambed Alteration Program for proposed impacts to riparian vegetation. Additionally, temporary and permanent impacts to the existing disturbed riparian woodland would be addressed by post-construction revegetation measures (MM BIO-1a through MM BIO-1c) indicating that any locations slated for grading or where existing vegetation is cleared would be replanted with a mix of native upland species that are ecologically appropriate for the project site. It should be noted that in addition to the revegetation efforts on-site, the County shall obtain the required CDFW permit as a discretionary approval for the proposed project; however, final permits have not yet been awarded by the regulatory agency. Through implementation of MM BIO-1a through MM BIO-1c listed above, MM BIO-2 below, and adherence to project discretionary approvals, including obtaining final regulatory permits, impacts to the on-site riparian woodland would be reduced to a less than significant level.

Potential Impacts:

Implementation of MM BIO-1a through MM BIO-1c and the following mitigation measure would bring potential project-related impacts on sensitive natural communities to less than significant levels:

MM BIO-2: **Compliance with Arborist Report Tree Preservation Measures** Trees proposed for preservation shall be protected in accordance with the Tree Preservation Measures outlined in the project-specific Arborist Report. The County, Contractor, and all site personnel must adhere to these Tree Preservation Measures throughout all phases of construction, including grading, trenching, and material storage. Preservation measures include but are not limited to protective fencing, root zone safeguards, and other specified actions that shall be installed and/or maintained by qualified personnel to prevent construction-related damage to preserved trees on-site.

c) Would the project 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?

No Impact: The United States Army Corp of Engineers (USACE) and the United States Environmental Protection Agency (EPA) are two of the primary federal agencies which enforce the Clean Water Act (CWA) and administer the associated permitting program. As such, these agencies define wetlands as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Waters of the Unites States include navigable and interstate waters, tributaries, impoundments, and adjacent wetlands with a continuous surface connection, with USACE jurisdiction typically extending to the OHWM. Wetlands indicators include hydrophytic vegetation, hydric soils, and hydrology, with continuous surface connection to a traditional navigable water (TNW).

According to the field survey conducted by FCS, the property does not contain wetlands that may be considered jurisdictional by the USACE, EPA, CDFW, or RWQCB because the project site lacks evidence of all three parameters (hydric soils, hydrology, and hydrophytic vegetation) that are required to indicate the presence of wetlands. Discussion of other jurisdictional non-wetland aquatic features, including waters of the State, are analyzed in checklist question (b) above. Therefore, the proposed project will have no impact on State or federally protected wetlands.

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

Less Than Significant Impact with Mitigation Incorporated: Based on the CDFW's Areas of Conservation Emphasis (ACE) geospatial data set, which uses habitat modeling to identify areas of land with value as wildlife corridors, the project site is defined as having limited connectivity opportunities (CDFW 2025). The site is also adjacent to developed land that is also defined as having limited connectivity opportunities. The project site provides minimal habitat connectivity for local wildlife, as the majority of the site constitutes either a developed two-lane road or disturbed riparian woodland surrounding the road. Therefore, the proposed project would not impact wildlife movement corridors.

The project site does not contain native wildlife nursery sites. No significant breeding/nesting colonies were observed during the field survey. However, individual nesting birds have the potential of being present on-site, during nesting seasons. Potential impacts to individual nesting

birds are addressed through the implementation of MM BIO-1d. As such, impacts to wildlife nursery sites would be less than significant with implementation of MM BIO-1d.

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

Less Than Significant Impact: An Arborist Report was produced for the proposed project by an FCS Arborist (International Society of Arboriculture [ISA] Certification ID: WE-15232A) on August 1, 2025. Contra Costa County provided FCS with a preliminary tree inventory and associated DBHs based on a tree survey conducted by the County in March 2025. It was requested that an FCS Arborist verify the preliminary March 2025 tree inventory and measurements, as well as evaluate, for species, size (i.e., height, crown), and condition, all trees with a diameter at breast height (DBH) of 6.5 inches or greater within the proposed project grading limits. The FCS Arborist performed a supplemental Arborist survey of existing trees on the project site on July 16, 2025.

An ISA-certified Arborist evaluated a total of 81 trees within the BSA, including 56 native, 18 non-native trees, and seven unknown tree species (Appendix B). Of the 81 trees evaluated within the BSA, approximately 67 trees were assessed as being within the proposed grading limits and proposed for removal while the remaining 14 trees would be avoided and preserved, as depicted in the project design. The project site contains County-protected tree species with a DBH of 6.5 inches or greater, as defined by local Municipal Code Chapter 816-6 – Tree Protection and Preservation Ordinance, which typically fall under County tree regulations. However, County Public Works Department projects are considered exempt from the local ordinance and therefore are not subject to local tree regulations. Therefore, the proposed project would not conflict with any local ordinances protecting biological resources, including trees.

Although the proposed project is exempt from the local tree ordinance, the County proposes to revegetate areas through implementation of MM BIO-1a through MM BIO-1c, which address post-construction revegetation measures, indicating that any locations slated for grading or where existing vegetation is cleared would be replanted with a mix of native upland species that are ecologically appropriate for the project site. Additionally, adherence to MM BIO-2 would reduce potential construction-related impacts to trees proposed for removal and/or preservation that fall within the on-site riparian woodland under protection of the CDFW. The project applicant is currently consulting with CDFW and RWQCB, to address the proposed impacts to protected waters and associated riparian vegetation. Therefore, through adherence to MM BIO-1a through MM BIO-1c and MM BIO-2 listed above, any potential impacts due to project development would be further reduced to less than significant levels.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan?

No Impact: The proposed project site is located within the western area of Contra Costa County which is not covered by any Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP). Thus, the proposed project would not conflict with any HCP or NCCP.

Sources of Information

California Department of Fish and Wildlife (CDFW). 2025. California Natural Diversity Database RareFind 5, California Natural Diversity Database Query for Special-Status Species. Website: https://apps.wildlife.ca.gov/rarefind/view/RareFind.aspx. Accessed March 11, 2025.

California Native Plant Society (CNPS). 2025. California Native Plant Society Rare and Endangered Plant Inventory. Website: rareplants.cnps.org/. Accessed March 11, 2025.

East Contra Costa County Habitat Conservancy. 2020. Proposed Project, County File Number DP20-3011. Agency Comment Response Letter. June 2.

Fellers, Gary M., and Kleeman, Patrick M. 2007. California Red-legged Frog Movement and Habitat Use. Journal of Herpetology, Volume 41, No. 2: 276–286.

United States Fish and Wildlife Service (USFWS). 2025. Information for Planning and Consultation (IPaC). Website: ecos.fws.gov/ipac/. Accessed March 2, 2026

FirstCarbon Solutions (FCS). Draft Natural Environment Study (Minimal Impacts). Prepared for Contra Costa County. April 4, 2025.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
5. *CULTURAL RESOURCES–Would the project:*				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

This section describes the existing cultural resources setting and potential effects from the proposed project implementation on the project site and its surrounding area. Descriptions and analysis in this section are based on information provided in the November 2024 Historic Property Survey Report and Archaeological Survey Report for the San Pablo Dam Road Storm Drain and Slide Repair Project prepared by Cogstone Resource Management.

***SUMMARY**:*

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to California *Environmental Quality Act Guidelines Section 15064.5?*

No Impact: Historical resources in this context refer to the built environment, mainly buildings and structures over 45 years in age that may be eligible for inclusion on the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR). Cogstone Resource Management conducted a records search at the Northwest Information Center (NWIC) on July 29, 2024, which did not identify any historical resources within the area of potential effect (APE); however, two historical resources have been recorded with the 0.5-mile search radius of the APE. Additionally, the pedestrian survey, conducted on May 22, 2025, failed to identify any historical resources within the APE. Thus, the proposed project would not cause a substantial adverse change to historical resources and no mitigation measures are required.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to California Environmental Quality Act Guidelines Section 15064.5?

Less Than Significant with Mitigation Incorporated: The project site is located over a previously reconstructed embankment with imported fill down to approximately 45 feet. Records search results from the NWIC indicate that five pre-contact archaeological resources have been recorded within the 0.5-mile search radius, none of which are located within the APE. Additionally, the pedestrian survey conducted on May 22, 2025, failed to identify any previously unidentified archaeological resources; however, visibility and exposure to native soil varied through the APE due to the dense covering of ivy, various low-lying vegetation, annual grasses, and a thick layer of organic duff. Nevertheless, it is possible that earthmoving activities associated with project construction could encounter previously undiscovered archaeological resources. Archaeological resources can include but are not limited to stone, bone, wood, or shell artifacts or features, including hearths and structural elements. Damage or destruction of these resources

would be a potentially significant impact. Implementation of MM TCR-1 and MM CUL-1 would ensure that this potential impact is reduced to a less than significant level.

As such, the proposed project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 with the implementation of MM TCR-1, MM CUL-1 and MM CUL-2. Impacts would be less than significant with mitigation incorporated.

Potential Impacts:

Implementation of the following mitigation measures would bring potential project-related impacts on cultural resources to less than significant:

MM CUL-1 Unanticipated Discovery of Cultural Resources:

- The Contractor shall be notified of the possibility of encountering historic or archaeological materials during ground-disturbing activities. A standard inadvertent discovery clause shall be included in every construction contract to inform Contractors of requirements during construction.
- Prior to the initiation of construction activities, a qualified Archaeologist and representative of consulting Tribe(s) shall provide Worker Environmental Awareness Program (WEAP) training to construction personnel with an overview of applicable laws, project mitigation measures, and procedures to be followed with regards to historical, archaeological, and Tribal resources that may be encountered over the course of the project.
- Procedures for discovery include:
    - If potential archaeological or Tribal cultural materials are encountered during construction, the Contractor shall cease all ground-disturbing activities within a 100-foot radius of the find. The Contractor shall immediately notify the District Resident Engineer or their designated representative to request a qualified Archaeologist and Confederated Villages of Lisjan Nation Representative to assess the nature and significance of the find. The Archaeologist shall stake the area of discovery, placing stakes no more than 10 feet apart, forming a circle having a radius of no less than 100 feet from the point of discovery.
    - If the finding(s) is not determined to be potentially significant, work may resume.
    - If the finding(s) is determined to be potentially significant, the Archaeologist, in consultation with the Tribal Representative, shall develop a mitigation plan, which shall be implemented by the entity in accordance with State guidelines and in consultation with the consulting Tribe. The mitigation plan shall include avoidance of the resource or, if avoidance of the resource is not feasible, the plan shall outline appropriate treatment of the resource in coordination with the consulting Tribe and, if applicable, a qualified Archeologist. Examples of appropriate mitigation for the Tribal Cultural Resources (TCRs) include but are not limited to protecting the cultural character and integrity of the resources, protecting traditional use of the

resources, protecting the confidentiality of the resources, or heritage recovery. Preservation in place (i.e., avoidance) is typically the preferred manner of treatment of Tribal resources and cultural items. No photography of resources is permitted.

- Any previously undiscovered resources found during construction within the project site shall be recorded on appropriate California Department of Parks and Recreation (DPR) 523 forms and shall be submitted to the Contra Costa County Department of Conservation and Development, Northwest Information Center (NWIC), and California Office of Historic Preservation (OHP), as required.

c) *Would the project disturb any human remains, including those interred outside of dedicated cemeteries?*

Less Than Significant with Mitigation Incorporated: While no dedicated cemeteries or areas containing human remains are known to be within the APE or in the vicinity of the APE, the possibility always exists that construction-related ground disturbance may uncover previously undiscovered human remains. In the unlikely event such a discovery is made, CEQA Guidelines Section 15064.5, Health and Safety Code Section 7050.5, and Public Resources Code Section 5097.94 and Section 5097.98 must be followed. Additionally, implementation of MM CUL-1 and MM CUL-2, which detail inadvertent discovery procedures, would reduce potential impacts of previously undiscovered human remains to a less than significant level.

Potential Impacts:

Implementation of the following mitigation measure would reduce the potential to disturb any human remains, including those outside of dedicated cemeteries, to a less than significant level:

MM CUL-2 Impact to Previously Undiscovered Human Remains:

- In the event of the accidental discovery or recognition of any human remains, there shall be no further excavation or disturbance within 100 feet of the remains until the Contra Costa County Coroner is contacted to determine whether the remains are Native American and if an investigation of the cause of death is required. At the same time, a qualified Archaeologist shall be contacted to assess the situation.
- If the Coroner determines the remains to be Native American, the Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours of this identification. The NAHC shall identify a Most Likely Descendant (MLD) to inspect the project site and provide recommendations for the proper treatment of the remains and associated funerary objects.
- If the Confederated Villages of Lisjan Nation is designated as the MLD, the Tribe shall make every effort to recommend keeping ancestral remains and funerary objects in situ and protected. If removal of burials is necessary, Tribal Representatives shall work with the qualified Archaeologist to ensure that excavation and documentation are treated carefully, ethically, and respectfully. No photography, testing, or scientific study, destructive or non-destructive, shall be conducted on ancestral

human remains. All bone, if not identifiable as human or animal, shall be treated as human remains and the appropriate protocols followed. The Archaeologist shall prepare a report of all activities, including documenting methods and results as well as recommendations for the treatment of the human remains and any associated archaeological materials. The report shall be submitted to the District, the Northwest Information Center (NWIC), and the Tribe.

- Tribal representatives shall rebury the Native American human remains and associated funerary objects with appropriate dignity either: (1) In accordance with the recommendations of the MLD if available; or (2) In the project vicinity at a location mitigated between the Confederated Villages of Lisjan Nation Representative and the County, where the reburial would be accessible to Tribal members in perpetuity and would not be subject to further disturbance. The discovery is to be documented on California Department of Parks and Recreation (DPR) 523 forms and otherwise kept confidential and secure to prevent any further disturbance.

Sources of Information

Cogstone Resource Management. 2025. Confidential Historic Property Survey Report and Archaeological Survey Report for the San Pablo Dam Road Storm Drain and Slide Repair Project. July. (See Appendix C.)

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
6. *ENERGY–Would the project:*				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

SUMMARY:

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

Less Than Significant Impact. The proposed project is a repair and stabilization project along a segment of San Pablo Dam Road and San Pablo Creek, including the installation of a stitch pile wall, replacement and rehabilitation of stormwater infrastructure, and roadway repair over approximately 100 working days in 2027. Energy usage will primarily occur during construction, with no long-term operational energy demands or usage expected beyond periodic maintenance typical for road infrastructure. Because this is a replacement and rehabilitation project (rather than new infrastructure), it avoids expansion-related operational emissions or energy demands.

Construction

The proposed project would result in temporary energy use during construction activities. Key sources of energy use during construction include diesel or gasoline fuel use for heavy equipment, transportation for hauling materials and workers to and from the project site, and electricity or fuel use for concrete and grout mixing operations (if conducted on-site).

The proposed project is limited to the repair and stabilization along a segment of San Pablo Dam Road and San Pablo Creek, including the installation of a stitch pile wall, replacement and rehabilitation of stormwater infrastructure, and roadway repair, and will not require energy use once constructed. Project construction will result in an incremental increase in energy usage associated with construction equipment (i.e., fuel in vehicles and power generators). However, energy usage during construction would be minimal and would not require excessive amounts of wasteful usage of energy. Therefore, impacts from construction would be less than significant.

Operation

The proposed project would not be associated with ongoing energy use from operations. Once completed, the relocated and repaired storm drain infrastructure, including the new reinforced concrete pipe, manholes, flared end section, and stitch pile wall, would function passively and would not require energy-consuming features such as pumps, street lighting, or mechanical systems. Similarly, the rehabilitated segment of San Pablo Dam Road—including restriping and guardrail repair—would not introduce new operational energy demands beyond those associated with existing roadway use. Routine maintenance of the roadway and storm drain system would

be conducted as part of standard County infrastructure operations and would not represent a new or significant energy demand. Therefore, impacts from operation would be less than significant.

The proposed project would not result in wasteful, inefficient, or unnecessary energy consumption during construction or operation, given the limited scope, short duration of construction, and use of energy-efficient construction practices. The overall energy impacts of the proposed project would be less than significant.

b) Would the project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

Less Than Significant Impact: The proposed project is located in unincorporated Contra Costa County. The analysis considers whether the proposed project would conflict with or obstruct the General Plan, adopted in 2024; the County's CAAP, adopted in 2024; and the 2022 California Air Resources Board (ARB) Scoping Plan.

2045 General Plan and CAAP

Energy goals and policies are integrated into the General Plan and the CAAP. Initiatives include reducing vehicle emissions. Implementation of these initiatives would help promote energy efficiency and reduced energy use associated with the proposed project.

Consistency Analysis

The proposed project would repair and stabilize an embankment failure, replace and rehabilitate existing storm drain infrastructure, and restore a damaged section of San Pablo Dam Road. These actions support the General Plan/CAAP by maintaining and enhancing critical transportation infrastructure, improving long-term resilience, and extending asset life without inducing growth or requiring expanded vehicle use. The proposed project would include targeted geotechnical and drainage improvements (e.g., installation of a stitch pile wall, reinforced culvert realignment, and roadway repair) that do not result in additional permanent energy-consuming infrastructure.

Construction would be short-term and limited to standard roadway repair and culvert replacement activities. Although energy would be used for equipment and material transport, the proposed project would be designed to avoid unnecessary energy consumption by minimizing haul distances and locating staging areas directly adjacent to the work area, which supports TR-2 Actions of the CAAP. No new lighting, mechanical systems, or traffic-inducing infrastructure is proposed, and the proposed project would not expand roadway capacity. Additionally, by addressing existing infrastructure failure, the proposed project would contribute to community climate resilience and risk reduction associated with slope instability and extreme weather events, which aligns with the General Plan and CAAP's broader climate adaptation goals.

2022 Scoping Plan

The 2022 ARB Scoping Plan outlines how the State will achieve carbon neutrality by 2045, including strategies to reduce energy demand, electrify equipment, and decarbonize infrastructure projects.

Consistency Analysis

The proposed project does not conflict with the 2022 Scoping Plan as it involves passive infrastructure improvements that do not generate long-term GHG emissions or expand fossil fuel reliance. By repairing existing infrastructure and avoiding expansion or intensification of vehicle use, the proposed project supports the 2022 Scoping Plan's emphasis on maintaining climate-resilient infrastructure without increasing emissions.

Therefore, the proposed project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency, and impacts would be less than significant.

Sources of Information

Contra Costa County. 2024. 2045 General Plan. November 5. Website: https://www.contracosta.ca.gov/4732/General-Plan. Accessed March 5, 2026.

Contra Costa County. 2024. Climate Action and Adaptation 2024 Update. November 5. Website:https://www.contracosta.ca.gov/DocumentCenter/View/84967/Contra-Costa-County-2024-Climate-Action-and-Adaptation-Plan-PDF?bidId=. Accessed March 5, 2026.

California Air Resources Board (ARB). 2022. 2022 Scoping Plan. Adopted November 16, 2022. Website: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Accessed March 5, 2026.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
7. *GEOLOGY AND SOILS–Would the project*:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

SUMMARY:

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:

i) *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?*

No Impact. Surface rupture occurs when strong seismic shaking causes an active fault to offset and break through the surface. Because of the greater threat surface rupture poses to structures directly located on, or in proximity to active fault lines, the State of California established regulatory zones under the Alquist-Priolo Earthquake Fault Zoning Act of 1972 along fault lines capable of producing surface rupture.

The project site is not located on or in direct proximity to an active fault line delineated as a Special Study Zone. The closest Special Study Zone is 2.5 miles west of the project site that is associated with the Hayward Fault where the risk of surface rupture is negligible. Since the project site is not situated within a Special Study Zone, the proposed project would not directly or indirectly risk the loss or injury of individuals from surface rupture. Therefore, the proposed project would have no impact pertaining to substantial adverse effects involving the rupture of a known earthquake fault.

ii) Strong seismic ground shaking?

No Impact. Seismic ground shaking is caused by the sudden movement along active fault lines resulting in the release of stored energy in the form of seismic waves. The intensity of ground shaking depends on many factors including subsurface conditions beneath the project site, distance from the epicenter, depth of the hypocenter, the direction of surface rupture, and the strength of building materials. The project site is located within the San Andreas Fault System comprised of multiple right-lateral strike slip faults striking in a northwest direction and other lesser-known faults. The closest major fault line is the Hayward Fault is located approximately 2.5 miles west of the project site.

Although the project site is in a seismically active region that is susceptible to experiencing strong seismic shaking, the proposed project involves the stabilization of an embankment failure, as well as repairs to San Pablo Dam Road and an existing culvert, and would not develop any structures that could expose individuals to the risk of injury or loss from strong seismic shaking. Completion of the proposed project would result in similar infrastructure as existing conditions, and no impact would occur.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Liquefaction is a secondary hazard generated from strong seismic shaking that occurs in loose water-saturated sandy soils with a shallow water table. Strong seismic shaking causes the water table to temporarily pull aggregates apart, turning soils from a solid into a liquid-like state and may cause the subsidence or tilting of structures and utilities to rise to the surface. Areas susceptible to liquefaction are mapped as regulatory zones by the California Geological Survey (CGS) under the Seismic Hazard Mapping Act.

According to the CGS, the project site is not located within a Liquefaction Zone of Required Investigation, and the closest Liquefaction Zone of Required Investigation is directly north of the project site. Furthermore, the proposed project would not construct any structures intended for human occupancy that could expose individuals to the risk of loss or injury from seismically induced liquefaction. Rather, the proposed project involves the stabilization of an embankment, as well as the repair and replacement of the roadway and existing culvert system. Therefore, the proposed project would have a less than significant impact pertaining to seismically induced liquefaction.

iv) Landslides?

Less Than Significant Impact. Landslides are the downslope movement of earthen materials that are typically located on steep slopes comprised of weak soils and rock that can be generated from strong seismic shaking. The project site is located on relatively steep terrain ranging from approximately 155 feet AMSL that slopes downward to 120 feet AMSL toward San Pablo Creek

to the north. The CGS maps regulatory zones for areas susceptible to seismically induced landslides under the Seismic Hazard Mapping Act that have geographical characteristics consisting of a steep slope gradient, the strength of subsurface materials, existing landslide features, and expected strong seismic shaking.

According to the CGS, the project site is within a Landslide Zone of Required Investigation where the proposed stitch pile wall and infrastructure associated with the repairs to San Pablo Dam Road and the existing culvert system could fail from seismically induced landslides, resulting in a risk of loss or injury to those utilizing San Pablo Dam Road. A site-specific Geotechnical Report was conducted by Crawford & Associates, Inc, a registered design professional (Appendix D). The report determined that the project site exists on an embankment which failed and was repaired in 1971. In order to promote ongoing rehabilitation of the embankment, the Geotechnical Report recommends the use of primary and secondary geogrid reinforcement prior to reconstructing the slope. The proposed project would incorporate applicable design recommendations from the Geotechnical Report to reduce seismically induced landslides. The proposed project would enhance slope stability on the project site and enhance the site as compared to existing conditions. Therefore, the proposed project would not result in the risk of injury or loss of individuals from seismically induced landslides. Therefore, the proposed project would have a less than significant impact related to seismically induced landslides.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. The proposed project would involve construction activities that could increase the rate and amount of soil erosion. While the proposed project would disturb less than 1 acre of soil and no Storm Water Pollution Prevention Plan (SWPPP) is required under the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Construction General Permit, a Water Pollution Control Plan (WPCP) for compliance with County standards would be prepared prior to construction. The WPCP would establish stormwater pollution prevention measures through implementing good housekeeping BMPs to manage non-stormwater discharges. These measures include, but are not limited to, mulching or hydroseeding, perimeter sediment control, and the installation of temporary sediment basins.

The County Resident Engineer would inspect the project site to ensure that erosion and sedimentation control measures are implemented and has the authority to abate any nuisances that generated excessive soil erosion. Lastly, the proposed project would be required to comply with General Plan Goals and Policies, such as PFS-A5.4, mandating programs for development projects along watercourses, to include erosion control. Since the proposed project would be required to comply with State and local regulations on soil erosion, the proposed project would not result in substantial soil erosion or the loss of topsoil. Therefore, the proposed project would have a less than significant impact on soil erosion and the loss of topsoil.

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

Less Than Significant Impact. According to the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey, the project site is located on the Conejo Clay Loam soil series, which typically consists of a soil profile of clay

loam having slow to medium runoff with a consistence of very hard when dry, friable when moist, and moderately sticky to moderately plastic when wet.

Landslides: As previously discussed above, the proposed project is located on relatively steep terrain ranging from approximately 155 feet AMSL that slopes downward to 120 feet AMSL toward San Pablo Creek to the north, and the CGS delineates the project site to be within a Landslide Zone of Required Investigation. The purpose of the proposed project is to repair the roadway and embankment that experienced failure in early 2023 due to storm damage. Construction of the proposed project would involve ground-disturbing activities, such as excavation, grading, and tree removal, that could result in on- or off-site landslides. However, General Plan Health and Safety Element Policy HS-P11.1 requires areas containing steep slopes to conduct a geotechnical investigation to evaluate slope stability and to prepare a Geotechnical Report that would provide design recommendations to be implemented into the proposed project to reduce any potential landslides generated by the proposed project. In addition, the proposed project involves the repair of the embankment failure and San Pablo Dam Road by utilizing geogrid reinforcement to provide long-term stability to the slope. Since the proposed project would implement any design recommendations from the site-specific Geotechnical Report and would install permanent erosion control measures, the proposed project would not generate on- or off-site landslides. Therefore, impacts pertaining to project-induced landslides would be less than significant.

Liquefaction: Soils susceptible to liquefaction are loosely consolidated sandy soils with a shallow groundwater table. The CGS delineates the project site as not within a CGS Liquefaction Zone of Required Investigation. In addition, the Conejo Clay Loam soil series has a clay loam texture with a 27 to 35 percent clay content and a consistency of very hard when dry, friable when moist, and moderately sticky to moderately plastic, indicating cohesive properties and a high resistance to rupturing. As such, the proposed project would not result in liquefaction. Therefore, the proposed project would have a less than significant impact on project-induced liquefaction.

Lateral Spreading: Lateral spreading occurs on nearly horizontal slopes with a soil profile comprised of coherent materials overlaying saturated and loose sediments. As previously discussed, the proposed project is not delineated within a Liquefaction Zone of Required Investigation by the CGS and is situated on steep terrain. As such, the project site may be situated on subsurface conditions susceptible to lateral spreading. However, as previously discussed above, the proposed project would be required to perform a geotechnical investigation following Chapter 18 of the California Building Standards Code (CBC) where results and design recommendations would be combined into a site-specific Geotechnical Report and incorporated into the proposed project. Since any design recommendations would be from the Geotechnical Report would be implemented into project design to reduce the potential of project-induced lateral spreading, the proposed project would not result in lateral spreading. Therefore, the proposed project would have a less than significant impact on project-induced lateral spreading.

Subsidence: Subsidence is the gradual and widespread sinking of the surface that can occur naturally through underlying soil conditions or from the overexploitation of resources such as groundwater resulting in the compaction of sediments. Soils highly susceptible to natural subsidence are clays and silts, due to their shrink and swell potential. As such, the project site could be located on unstable soil susceptible to subsidence or could generate subsidence from additional loading. However, the proposed project would be required to prepare a geotechnical

investigation that would address soil stability and provide design recommendations to reduce the potential of subsidence. Since the proposed project would incorporate design recommendations from the site-specific Geotechnical Report, the proposed project would not result in project-induced subsidence. Therefore, the proposed project would have a less than significant impact on project-induced subsidence.

Collapse: Collapsible soils are soils having a structure with sand and silt-sized particles held together by clay with high void ratios that reduce in volume from wetting or additional loading. Naturally occurring collapsible soil typically occurs in loosely unconsolidated materials that can be associated with alluvial deposits in arid to semi-arid environments and further exacerbated from additional sources of wetting including alterations in stormwater runoff. As previously discussed, the Conejo Clay Loam soil series is typically situated on alluvial fans and consists of clays, silts, and sands throughout the soil profile. As such, naturally occurring collapsible soil could be present on the project site. However, as mentioned above, the proposed project would be required to undergo a geotechnical investigation and prepare a Geotechnical Report that would address soil stability on the project site and provide design recommendations to be incorporated into the proposed project. Since the proposed project would prepare a geotechnical investigation and report that would address soil stability and provide design recommendations, the proposed project would not result in project-induced collapse. Therefore, the proposed project would have a less than significant impact on project-induced collapse.

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

Less Than Significant Impact. Expansive soils are medium to high plasticity clays or silty clays that experience significant volume changes with the removal or addition of moisture that can cause damage to foundations, underground utilities, and structures. As such, the project site is situated on the Conejo Clay Loam soil series, which could have expansive capabilities. However, the proposed project does not involve the construction of any structures. As such, the proposed project would not create any direct or indirect risk to life or property generated from expansive soils, and the proposed project would have a less than significant impact related to expansive soils.

e) Would the project 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?

No Impact. The proposed project involves the stabilization of a bank failure, repair of San Pablo Dam Road, and replacement of an existing culvert to ensure long-term stabilization and to restore hydraulic conditions. As such, the proposed project would not construct any septic tanks or alternative wastewater disposal systems. Therefore, the proposed project would have no impact on having soils incapable of supporting septic tanks or alternative wastewater disposal systems.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact With Mitigation Incorporated. Fossils are nonrenewable paleontological resources that consist of large or small identifiable vertebrate, or invertebrate, plant, or trace fossils that provide critical information for a range of scientific disciplines and

require protection from impacts generated from development projects as mandated by federal, State, and local rules and regulations. Areas that have high paleontological potential for uncovering significant paleontological resources usually have a stratigraphy comprised of sedimentary formations temporally or lithologically suitable for the preservation of fossils such as fine-grained fluvial and marine sandstones, and argillaceous paleosols within areas of lower elevation such as alluvial deposits within valleys, basins, and floodplains where deposition has historically occurred.

Geologic mapping identifies the project site to be situated on alluvial gravel, sand, and clay of valley areas (Qa) of Holocene age with landslide rubble (Qls) and the Orinda Formation (Tor) situated within the higher elevations of the lower El Sobrante Valley. The Orinda Formation (Tor) is a highly fossiliferous geologic unit comprised of terrestrial pebble conglomerate of Franciscan detritus interbedded by sandstone and claystone of Pliocene to Miocene age that has yielded numerous terrestrial vertebrates, a few marine vertebrates, and plant fossils from the excavation of the Caldecott Tunnel that suggest a floodplain paleoenvironment.

Overall, the project site is situated on the Orinda Formation that consists of sedimentary deposits that previously underwent deposition yet has yielded many fossil localities. As such, excavations could encounter the Orinda Formation (Tor) and potentially uncover significant paleontological resources. However, construction of the proposed project would implement mitigation measure (MM) GEO-1, construction activities would be temporarily halted in the event of uncovering any significant paleontological resources until a qualified professional Paleontologist is retained to assess the significance of the find and recommend any further mitigation measures throughout construction. With the implementation of MM GEO-1, the proposed project would not directly or indirectly destroy a unique paleontological resource, and impacts would be less than significant.

Potential Impact

Ground disturbance during the proposed project's construction phase has the potential for disturbing previously unknown unique paleontological resources. In addition to the mitigation measures for Cultural Resources, the following mitigation measure would ensure that, in the event unique paleontological resources are discovered, the proper actions are taken to reduce the adverse environmental impacts to unique paleontological resources to a less than significant level.

MM GEO-1 Should unique paleontological materials be uncovered during grading, trenching, or other on-site excavation(s), the County shall be immediately notified and all earthwork within 100 feet of the materials shall be stopped immediately until a qualified Paleontologist is contacted and retained to evaluate the significance of the find. If the find is not significant, work may resume. If the find is potentially significant, the Paleontologist, in coordination with the County, shall implement appropriate sampling, salvaging, identification, and reporting procedures consistent with California Public Resources Code 30244.

Sources of Information

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

SUMMARY:

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

Less Than Significant Impact. GHG emissions would occur during construction activities associated with implementation of the proposed project. GHG emissions would also come from the use of trucks transporting equipment and material to/from the project site and from the motor vehicles of the construction workers. GHG emissions were estimated using CalEEMod; detailed assumptions and outputs are available in Appendix A. Construction-related GHG emissions associated with the proposed project were estimated as 87 metric tons in total. It is anticipated that the construction would begin in April 2027 and last approximately 100 working days. As vehicle and equipment fuel efficiencies and emission control standards continue to incrementally improve each year, construction emissions would be likely to decrease nominally and therefore the GHG emissions estimated from the modeled construction start date of 2027 represent a conservative assessment should the construction schedule move to later months or years.

The Bay Area Air District's 2022 CEQA Guidelines do not propose a construction-related climate impact threshold. However, the California Governor's Office of Land Use and Climate Innovation (LCI) supports the use of qualitative thresholds based on consistency with applicable regulations, plans, policies, and regulatory programs as a valid approach for evaluating GHG impacts under CEQA. This includes assessing whether a project aligns with State climate goals, local Climate Action Plans, standard conditions or ordinances, and other adopted frameworks for GHG reduction. When a project demonstrates such consistency, it provides substantial evidence that its incremental contribution to climate change is not cumulatively considerable and is therefore less than significant.

Once the proposed project is complete, there would be no operational GHG emissions. The proposed project components include the installation of a stitch pile wall, replacement and rehabilitation of stormwater infrastructure, and roadway repair. Once this work is complete, the proposed project would not have any associated GHG emissions. Thus, in comparing the proposed project against Bay Area Air District's operational-related thresholds of significance for GHGs, there would be no natural gas use, no inefficient energy use, and no Vehicle Miles Traveled (VMT) generated. There would be no parking, and therefore the electric vehicle (EV) infrastructure component of the GHG thresholds is not applicable.

Therefore, impacts would be less than significant.

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

Less Than Significant Impact. The proposed project is located in Contra Costa County. The analysis considers whether the proposed project would conflict with or obstruct the Contra Costa County CAAP adopted in 2024 and the 2022 California Air Resources Board (ARB) Scoping Plan.

Contra Costa County Climate Action and Adaptation Plan

The CAAP establishes a framework to reduce GHG emissions 40 percent below 1990 levels by 2030 and prepare for climate-related hazards. The proposed project aligns with several CAAP goals and policies, particularly those focused on infrastructure resilience and low-emission construction practices. Relevant policies include protecting and restoring natural stormwater systems (Policy IS-2), minimizing vegetation loss and requiring revegetation with native species (Policy OS-1), and incorporating erosion and runoff control measures (Policy IS-4). Overall, the proposed project's use of trenchless cured-in-place pipe lining, stabilization of a storm-damaged roadway embankment through a stitch pile wall and reinforced slope reconstruction, relocation and upgrade of stormwater culverts to improve conveyance, and revegetation of disturbed areas support the County's climate adaptation and infrastructure resilience priorities under the CAAP.

Furthermore, the CAAP focuses on reducing long-term operational emissions from land use, energy, and transportation. The proposed project would not result in new operational-related vehicle trips or buildings, would improve transportation infrastructure resilience, and would incorporate erosion control and revegetation methods. Therefore, the proposed project is consistent with the County's CAAP.

2022 Scoping Plan

The proposed project is consistent with the 2022 Scoping Plan which outlines the State's strategy to reduce GHG emissions 85 percent below 1990 levels by 2045 and achieve net-zero emissions economy-wide by 2045. Specifically, the proposed project aligns with the 2022 Scoping Plan's emphasis on resilient infrastructure and climate adaptation, as identified in Chapter 4 (Carbon Neutrality) and Chapter 8 (Natural and Working Lands). By upgrading critical storm-damaged culverts and stabilizing the roadway to withstand future extreme weather events, the proposed project supports the 2022 Scoping Plan's goals of investing in climate-resilient infrastructure and reducing vulnerability to climate impacts (Climate Resilience). By stabilizing a storm-damaged roadway embankment, repairing and relocating culverts to improve stormwater conveyance, and using trenchless cured-in-place pipelining to minimize construction emissions and disturbance, the proposed project advances the 2022 Scoping Plan's objectives of strengthening climate-resilient infrastructure, reducing vulnerability to extreme weather events, and supporting lower-emission construction practices.

Therefore, the proposed project would not conflict with applicable State and local plans and policies adopted for the purpose of reducing GHG emissions, and impacts would be less than significant.

Sources of Information

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Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
9. *HAZARDS AND HAZARDOUS MATERIALS–Would the project:*				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

***SUMMARY**:*

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

Less Than Significant Impact: Construction of the proposed project would involve the transport, use, and disposal of hazardous materials, including cements, metals, paints, and diesel fuels. However, the transportation, use, and disposal of hazardous materials would be required to comply with federal and State regulations including the Hazardous Materials Transportation Act, the California Health and Safety Code, and California Code of Regulations Title 8, that establish preventive measures on the transportation, use, and disposal of hazardous materials, including identification, packaging, and labeling provisions for hazardous materials and waste transport, safety training and supervision, and permit requirements for transport and disposal of hazardous waste. Safe and approved haul routes would be used for import and export. Any soil that would need to be off hauled would be tested and disposed at an appropriate facility.

Operation of the proposed project would require routine maintenance, similar to existing infrastructure through the County. The proposed project would not require routine transportation, use, or disposal of hazardous materials. Since construction of the proposed project would be required to abide by federal, State, and local General Plan policies mandating the transportation, use, and disposal of hazardous materials, the proposed project would not create a significant hazard through the transport, use, and disposal of hazardous materials and impacts would be less than significant.

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

Less Than Significant Impact: As discussed above, construction of the proposed project would involve the temporary use of hazardous materials. Although there are numerous ways an accident can occur that could release hazardous materials into the environment, those that are reasonably foreseeable due to the nature of the proposed project would involve vehicles transporting hazardous materials and waste to and from the project site where collisions could release hazardous materials or waste into the surrounding environment or accidental exposure of construction workers through the misuse of hazardous materials on the project site.

However, the use of construction-related hazardous materials would occur in compliance with established federal and State regulations, including the Hazardous Materials Transportation Act, California Health and Safety Code, and California Code of Regulations Title 8. Specifically, California Code of Regulations Title 8 provides regulations on the identification, packaging, and labeling of hazardous materials and waste and employee safety training and establishes procedures for identifying and evaluating workplace hazards, such as conducting frequent inspections to ensure corrective action is taken. Therefore, following compliance with established regulations and policies, the proposed project would have a less than significant impact regarding the release of hazardous materials into the environment.

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

No Impact: The proposed project would implement construction and ground-disturbing activities involving the use of hazardous materials including aggregates, cements, metals, paints, and diesel fuels resulting in potential exposure to a surrounding school. However, there are no schools located within 0.25 mile of the project site. The nearest school is the De Anza High School, located approximately 0.3 mile north of the project site. Furthermore, the operation of the proposed project would consist of new permanent erosion control, roadway safety, and stormwater drainage infrastructure and would not introduce any land uses that would emit hazardous emissions or handle hazardous materials near any foreseeable proposed schools in the surrounding area. Since the proposed project is not located within 0.25 mile of an existing school and would not introduce any land uses handling or emitting hazardous materials and emissions in proximity to a proposed school, the proposed project would not emit or handle hazardous emissions or materials within 0.25 mile of an existing or proposed school. Therefore, the proposed project would have no impact on hazardous emissions in proximity to a school.

d) Would the project 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?

No Impact: The Cortese List is managed by the California Department of Toxic Substances Control (DTSC) and the California State Water Resources Control Board (State Water Board). The DTSC provides a list of hazardous waste facilities and sites subject to corrective action, while the State Water Board compiles a list of sites with leaking underground storage tanks (LUST), solid waste disposal sites with waste discharges outside their management unit, and sites with active cease and desist and cleanup and abatement orders. According to the Cortese List, the project site is not located on any hazardous waste facility sites or sites subject to corrective action. No LUST sites, solid waste disposal sites with excess discharges, or any sites with an active cease and desist or cleanup and abatement order are situated on the project site. Since the project site is not located on any hazardous materials sites, the proposed project would not create a significant hazard through being located on a hazardous materials site. Therefore, the proposed project would have no impact pertaining to hazardous materials sites.

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

No Impact: The project site is not located within the vicinity of any public airport and is not delineated in any airport land use plan. The closest airport is the Buchanan Field Airport located approximately 12.5 miles east of the project site. Therefore, the proposed project would not present any safety or noise hazards for people working in the project area.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact: The Contra Costa County 2024 Hazard Mitigation Plan is the applicable emergency response and evacuation plan for the County that identifies potential hazards and strategies to reduce long-term risk from natural and human-caused disasters and hazards through planning, programs, and policy changes. The 2024 Hazard Mitigation Plan is compiled into the General Plan that identifies emergency response strategies and evacuation routes depending on the type, extent, and location of the disaster. According to the General Plan Health and Safety Element, San Pablo Dam Road is considered as a potential evacuation route. Furthermore, the project site is within the Contra Costa County Fire Protection District (CCCFPD), which strives to maintain a minimum fire suppression and emergency medical service response time of 4 minutes 90 percent of the time depending on the severity of the emergency based on the General Plan Public Facilities and Services Element.

Construction of the proposed project would involve repairs to the north side of San Pablo Dam Road and the establishment of three temporary staging areas. Additionally, construction activities could result in the need for temporary lane closures that could interfere, during construction, with emergency response times to the project site and evacuation of the surrounding area, especially for residential dwellings located along private driveways directly adjacent to San Pablo Dam Road. To address the construction-related impacts, a traffic control plan would be prepared and approved prior to construction, which would ensure emergency vehicles would have access at all times. Further, roadwork phasing would ensure that one lane is open at all times.

Safeguard features would be installed to ensure the least interference possible with the public right-of-way, and encroachments would be removed after construction is completed. Furthermore, the 2022 California Fire Code requires fire access for construction sites through maintaining a road width of 20 feet without obstruction and would ensure that repairs to the north side of San Pablo Dam Road meet fire apparatus access road width, weight load, and grading requirements.

Lastly, the closest CCCFPD fire station is Station 69 located nearly 1.2 miles northwest of the project site. Assuming average traffic patterns, terrain, weather conditions, and slowing due to intersections, a fire engine traveling at a constant speed of 35 miles per hour (mph) would be able to arrive at the project site in approximately 2 minutes and 41 seconds, which is well below the 4-minute threshold response time established in the General Plan Public Facilities and Services Element. Since the proposed project would maintain access to emergency vehicles at all times during construction and would maintain fire apparatus access road requirements, and the CCCFPD would be able to serve construction activities on the project site through maintaining an emergency response time below the 4-minute threshold, the proposed project would not impair or physically interfere with an emergency response or evacuation plan. Following construction, all obstructions would be removed to ensure the roadway is restored for safe and efficient travel. Therefore, the proposed project would have a less than significant impact on impairing or interfering with an emergency response or evacuation plan.

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

Less Than Significant Impact: The California Department of Forestry and Fire Protection (CAL FIRE) delineates State Responsibility Areas (SRAs) and Local Responsibility Areas (LRAs) into moderate, high, or very high Fire Hazard Severity Zones (FHSZ), which are areas containing wildfire hazards, such as natural vegetation, terrain, climate, and fire history, that influence wildfire likelihood or behavior over a 30- to 50-year period without considering mitigation measures. According to FHSZ maps provided by CAL FIRE, the project site is in a very high FHSZ within an LRA designating the CCCFPD as the responsible agency providing fire suppression services. Although the proposed project would not establish any permanent structures intended for human occupancy, the proposed project involves the repair of an embankment failure, a segment of San Pablo Dam Road, and an existing culvert system that could expose construction workers to wildland fire hazards. However, the proposed project would be required to abide by Chapter 33 of the 2022 California Fire Code, which provides fire safety and prevention requirements for construction projects through the development of a written site safety plan that highlights procedures for staff training, fire safety inspections, temporary fire protection equipment, combustible materials storage, and hot work safety requirements. In addition, the 2022 California Fire Code establishes vehicle access requirements for construction sites by maintaining a width of 20 feet for the fire apparatus access road.

Finally, the project site is located approximately 1.2 miles southeast of CCCFPD Fire Station 69, which would provide fire suppression services throughout the construction phase of the proposed project with an estimated response time of 2 minutes and 41 seconds. Since the proposed project would adhere to the 2022 California Fire Code and is within the CCCFPD's service area, the proposed project would not directly or indirectly expose people or structures to a risk of wildland

fires. Therefore, the proposed project would have a less than significant impact on wildland fire exposure.

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Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
10. *HYDROLOGY AND WATER QUALITY–Would the project:*				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☒	☐
i) Result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
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?	☐	☐	☒	☐
iv) Impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

SUMMARY:

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Less Than Significant Impact: The project site is located within the San Pablo Basin, where surface waters from multiple tributaries and artificial drainages in the project area are conveyed to the San Pablo Creek prior to being transferred to the San Pablo Bay to the northwest. The San Francisco Bay RWQCB Water Quality Control Plan (Basin Plan) establishes numeric and narrative water quality objectives that establish maximum pollutant thresholds and pollution control measures for a variety of contaminants, substances, and compounds to prevent the degradation of established beneficial uses for surface and groundwater. Surface water also percolates into the East Bay Plain (EBP) Groundwater Subbasin, which has minimum thresholds for primary Maximum Contaminant Levels (MCLs) of nitrate and arsenic and secondary MCLs

for chloride and total dissolved solids (TDS) established by the EBP Subbasin Groundwater Sustainability Plan (GSP).

Construction activities would include excavation, grading, and the use of construction equipment and materials like metals, paints, aggregates, concrete, and diesel fuels that could entrain downslope toward the San Pablo Creek, resulting in the degradation of surface and groundwater quality. While the proposed project disturbs less than 1 acre of soil and no SWPPP is required under the 2022 NPDES Construction Stormwater Construction General Permit, a WPCP would be prepared prior to construction for compliance with County standards, including stormwater pollution prevention measures for construction projects less than 1 acre in size with implementation of good housekeeping BMPs to manage non-stormwater discharges. These BMPs would include, but are not limited to, mulching or hydroseeding, perimeter sediment control, and the installation of temporary sediment basins. Since the proposed project would implement a WPCP, the proposed project would not substantially degrade surface or groundwater quality. Therefore, the proposed project would have a less than significant impact pertaining to surface and groundwater quality.

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

Less Than Significant Impact: The proposed project is located within the EBP Groundwater Subbasin and is directly south of the San Pablo Creek, which is designated as a potential groundwater-dependent ecosystem (GDE) consisting of ecological communities that are highly dependent on groundwater occurring near the ground surface. The proposed project would not construct any groundwater wells or introduce any land uses requiring the extraction of groundwater and would not have the potential to substantially decrease groundwater supplies.

Furthermore, the proposed project would not introduce any new impervious surfaces that could interfere with groundwater recharge but rather would replace and repair the existing impervious surfaces on the project site and restore the roadway to its previous condition. The remainder of the project site consists of pervious surfaces including vegetated areas that would remain upon project implementation. The proposed project would not impact the existing drainage patterns or impact pervious surfaces in a manner that would interfere with groundwater recharge. Since the proposed project does not require any groundwater extraction and would not remove any pervious surfaces, the proposed project would not impede sustainable groundwater management of the basin, and impacts would be less than significant.

c) Would the project substantially alter the existing drainage pattern of area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

- *i) Result in substantial erosion or siltation on- or off-site.*
- *ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.*
- *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.*
- *iv) Impede or redirect flood flows.*

Less Than Significant Impact: Construction activities would include excavation, grading, and tree removal. While operation would introduce new infrastructure installed for the existing culvert system, runoff would be sent to the San Pablo Creek, therefore not altering the existing drainage pattern. Further, while the proposed project would not require a SWPPP under the NPDES General Permit, a WPCP would be prepared prior to construction for compliance with County standards. The WPCP would include BMPs that would prevent sediment runoff from impacting the creek and existing flow patterns.

The proposed project would not require any in water work and is located entirely above the OHWM. The proposed project would also be subject to Chapter 6, Section 1602, of the California Fish and Game Code, which prohibits the diversion or obstruction of the natural flow of a stream either through the use of materials from the bank or through the deposition of materials unless the applicant provides written notice or pays an applicable fee to CDFW. In addition, the design of new infrastructure associated with the existing culvert system would be required to abide by minimum and maximum design velocities and adequate sizing to carry the design flow entraining through earthen channels and street-crossing culverts under Division 914 of the Contra Costa County Ordinance Code. The proposed project would not install any permanent infrastructure that would impede or redirect flood flows. Lastly, the proposed project would revegetate and hydroseed all disturbed areas as construction is completed, which would further prevent on- or off-site erosion or siltation. Therefore, the proposed project would have a less than significant impact on existing drainage patterns.

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

No Impact: The Federal Emergency Management Agency (FEMA) establishes Flood Insurance Rate Maps (FIRMs) that identify areas susceptible to inundation from a base flood, also known as the 100-year flood—a flood having a 1 percent annual chance of equaling or exceeding the flood elevation of historic levels—which are delineated as Special Flood Hazard Areas (SFHAs). The project site is not located within a SFHA; the closest SFHA is directly north, around San Pablo Creek, and approximately 35 feet lower in elevation than the staging areas. In addition, the proposed project is not in a tsunami hazard area as depicted by the CGS or near any large bodies of water capable of generating a seiche. Since the project site is not located within any flood hazard, tsunami, or seiche zone and would not consist of any infrastructure capable of releasing pollutants, the proposed project would not risk the release of pollutants from inundation by a flood, tsunami, or seiche. Therefore, the proposed project would have no impact on pollutant release from project inundation.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less Than Significant Impact: The San Francisco Bay RWQCB Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) governs surface and groundwater quality in the region and outlines beneficial uses and water quality objectives to maintain those beneficial uses, including the San Pablo Reservoir. Existing beneficial uses for the San Pablo Creek north of the project site include freshwater replenishment, cold and warm freshwater habitat, fish migration and spawning, the preservation of rare or endangered species and wildlife use, and noncontract recreational use.

The EBP Subbasin GSP is the groundwater sustainability plan for the East Bay Plain Subbasin, and the project site, to maintain sustainable groundwater management. The GSP establishes six sustainability indicators related to preventing reduction in groundwater levels, storage, interconnected surface water, and degradation of groundwater quality to prevent undesirable results and ensure continued sustainable groundwater management. Each indicator provides measurable objectives to achieve the sustainability goal of the EBP Subbasin GSP and minimum thresholds to prevent undesirable results. The GSP establishes a minimum threshold for a reduction of groundwater storage of 12,500 acre-feet annually, a 2-foot decline in the water table beneath San Pablo Creek, and concentrations of 10 milligrams per liter (mg/L) for nitrate, 10 micrograms per liter (µg/L) for arsenic, 250 mg/L for chloride, and 500 mg/L for TDS.

The proposed project would include demolition, excavation, concrete pouring, and tree removal that could increase surface runoff and discharge pollutants conflicting with the Basin Plan or GSP. However, the proposed project is required to comply with the CWA through obtaining a General Waste Discharge Notice of Applicability Permit from the RWQCB. In addition, the proposed project would prepare a WPCP as required by County standards and would be required to implement good housekeeping BMPs to prevent the discharge of stormwater pollutants.

The proposed project would not involve any groundwater extraction or add new impervious surfaces and would manage disturbed areas through revegetation and hydroseeding that would be similar to pre-project conditions. Therefore, the proposed project would not influence any undesirable results that would conflict with the GSP. Since the proposed project would comply with federal and State regulations, would implement good housekeeping BMPs, and would not involve any uses that could interfere with groundwater levels, the proposed project would not conflict or obstruct implementation of the Basin Plan or EBP Subbasin GSP. Therefore, the proposed project would have a less than significant impact pertaining to water quality control and sustainable groundwater management plans.

Sources of Information

California Department of Conservation. 2022. Contra Costa County Tsunami Inundation Maps. Website: https://www.conservation.ca.gov/cgs/Pages/Tsunami/Maps/ContraCosta.aspx. Accessed March 18, 2026.

United States Department of Homeland Security. n.d. Federal Emergency Management Agency (FEMA) Flood Map Service Center (MSC). Website: https://msc.fema.gov/portal/home. Accessed March 18, 2026.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
11. *LAND USE AND PLANNING–Would the project:*				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

***SUMMARY**:*

a) Would the project physically divide an established community?

No Impact. The physical division of an established community would occur if construction of the proposed project would remove or impair any infrastructure that provides connection to an existing community. The proposed project would repair failure of a segment of the far-right westbound lane of San Pablo Dam Road and an existing culvert system. The project site is surrounded by low-density residential neighborhoods where repair of San Pablo Dam Road could temporarily impede access along San Pablo Dam Road and temporarily divide an established community. However, construction of the proposed project would keep a minimum of one lane open in each direction. Lastly, no permanent structures would be installed on San Pablo Dam Road that could physically divide an established community, and the road would be restored to previous existing conditions prior to the embankment failure. Since the proposed project would keep San Pablo Dam Road open and would not install any permanent linear features on San Pablo Dam Road, the proposed project would have no impact on physically dividing an established community.

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

Less Than Significant Impact: The General Plan Land Use Element provides mandatory countywide policies and implementation measures to manage the location, density, and intensity or land uses within the County and delineates the project site with a land use designation of RC. The RC land use designation is intended for resource management, low-intensity agriculture, and recreation to preserve ecologically significant and environmentally sensitive areas prohibiting urban development that increases the density of the surrounding area. The project site is also located within the El Sobrante Specific Geographic Area and is within the R-7 zoning district.

The proposed project would have a significant environmental impact if it would incorporate any development conflicting with the RC land use designation, the El Sobrante Specific Geographic Area, and other General Plan goals, policies, and implementation measures. However, the proposed project would involve the repair of an embankment failure, a segment of the far-right westbound lane of San Pablo Dam Road, and an existing culvert system, which is consistent with the RC land use designation through resource management purposes for San Pablo Creek and would not encourage any urban development. The proposed project would not construct any structures and would therefore not incorporate any development that would be inconsistent with

regulations under the RC land use designation or R-7 zoning district. Since the proposed project would be consistent with General Plan goals, policies, and implementation measures, as well as the R-7 zoning district development standards, the proposed project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, the proposed project would have no impact in this regard.

Sources of Information

Contra Costa County. 2024. 2045 General Plan. November 5. Website: https://www.contracosta.ca.gov/4732/General-Plan. Accessed March 5, 2026.

Contra Costa County Code. Title 8 – Zoning. Website: https://library.municode.com/ca/contra_costa_county/codes/ordinance_code?nodeId=TIT8ZO. Accessed May 4, 2026.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
12. *MINERAL RESOURCES–Would the project:*				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

***SUMMARY**:*

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

No Impact: According to Figure COS-13 (Mineral Resource Areas) of the General Plan, the project site is not located within an area of El Sobrante containing known mineral resources that would be of value to the region or residents of the State. As stated above, neither the State Geologist nor the State Mining and Geology Board has classified any areas in Orinda as containing mineral deposits which are either of Statewide significance or of significance which requires further evaluation. As such, no impact would occur.

b) Would the project 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?

No Impact: According to Figure COS-13 of the General Plan, the project site is not within an area of locally important mineral importance. The project site is not located within a mineral resource site delineated on a local general plan, specific plan, or other land use plan. As a result, the proposed project would not result in the loss of availability of a locally important mineral recovery site. No impact would occur.

Sources of Information

Contra Costa County. 2024. 2045 General Plan, Chapter 7: Conservation, Open Space, and Working Lands Element. November 5. Website: https://www.contracosta.ca.gov/DocumentCenter/View/84948/Chapter-7--Conservation-Open-Space-and-Working-Lands-Element-PDF. Accessed March 5, 2026.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
13. ***NOISE–Would the project result in:***				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

SUMMARY:

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?

Less Than Significant Impact. A significant impact would occur if construction activities would result in generation of a substantial temporary increase in ambient noise levels which would result in annoyance or sleep disturbance of nearby sensitive receptors. According to Policy HS-P14.6 of the General Plan Health and Safety Element, County projects should follow best practices to minimize short-term impacts on existing residents from construction noise. In addition, according to General Plan Policy HSP-14.7, construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods.

While the County does not establish substantial temporary noise level increase thresholds for construction activities, this analysis uses the noise limits established by the Federal Transportation Administration (FTA) to identify the potential for impacts due to substantial temporary construction noise. The FTA identifies construction noise limits in the Transit Noise and Vibration Impact Assessment Manual. During daytime hours, a significant temporary increase would be an increase in excess of the average daily noise levels of 80 A-weighted decibel (dBA) equivalent noise level over an 8-hour time period ($L_{eq(8\text{-}hr)}$) as measured at a receiving residential land use and 85 dBA $L_{eq(8\text{-}hr)}$ as measured at a receiving commercial land use.

Short-term Construction Impacts

Construction is anticipated to last approximately 100 days. Construction is completed in phases, each of which has its own mix of equipment and, consequently, its own noise characteristics.

These various sequential phases would change the character of the noise generated on the project site and, therefore, the noise levels surrounding the project site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of equipment use allow construction-related noise ranges to be categorized by work phase. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 or 4 minutes at lower power settings. Impact equipment, such as impact pile drivers, are not planned to be used during construction of this proposed project.

The construction phases associated with implementation of the proposed project include demolition, site preparation, grading, building (of structures) and paving. The demolition, grading and building (of structures) phases are likely to be the phases which would generate the highest noise levels because the noisiest construction equipment is earthmoving equipment, concrete saws, loader/backhoes and rigs. Equipment associated with the proposed project would include excavating machinery and compacting equipment, such as bulldozers, draglines, backhoes, front loaders, roller compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 or 4 minutes at lower power settings.

Construction of the proposed project is expected to require the use of a variety of equipment; the loudest pieces of equipment (a grader) generate maximum reference noise levels of 85 dBA L_{max} at 50 feet.

The closest noise-sensitive receptor to the proposed project site is the residential single-family home adjacent to the project site's eastern boundary. The closest noise-sensitive receptor would be located approximately 50 feet from the acoustic center of construction activity where multiple pieces of heavy construction equipment would potentially operate at the project site. At this distance, worst-case construction noise levels would attenuate to 82 dBA L_{eq} at the façade of the nearest sensitive receptor. The reasonable worst-case calculated 8-hour noise level would be 74 dBA $L_{eq(8\text{-}hr)}$, as measured at this nearest sensitive receptor. However, these reasonable worst-case construction noise levels would occur only periodically throughout the day as construction equipment operates along the nearest project boundaries. Furthermore, terrain and intervening structures block the line of sight and would eliminate potential noise impacts to this nearest sensitive receptor. These noise levels would not be expected to exceed existing daytime ambient noise levels as measured at this nearest sensitive receptor.

The proposed project would comply with the County's limitations on construction activities to the hours of the day that are not noise-sensitive for adjacent land uses to provide relative quiet during the more sensitive evening and early morning periods. Additionally, these calculated conservative worst-case construction noise levels would not exceed the FTA's threshold of 80 dBA $L_{eq(8\text{-}hr)}$ as measured at the nearest residential receptors. Therefore, the proposed project's construction activities would not result in noise impacts that could result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the proposed project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Therefore, temporary construction noise impacts would be less than significant.

Operational/Stationary Source Noise Impacts

Less Than Significant Impact. A significant impact would occur if the proposed project would result in a substantial increase in ambient noise levels compared with those that would exist without the proposed project. The proposed project involves improvements to the existing San Pablo Dam Road and does not include construction of any permanent mobile or stationary noise source. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels from operational sources in the project vicinity and the impact would be less than significant.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact. A significant impact would occur if the proposed project would generate groundborne vibration or groundborne noise levels in excess of established standards. The County has not adopted criteria for groundborne vibration impacts. Therefore, for purposes of this analysis, the FTA vibration impact criteria are utilized. The FTA has established industry-accepted standards for vibration impact criteria and impact assessment. These guidelines are published in its Transit Noise and Vibration Impact Assessment Manual.

Of the variety of equipment that would be used during construction, an excavator would produce the greatest groundborne vibration levels nearest the project boundaries. Impact equipment such as pile drivers are not expected to be used during construction of the proposed project. An excavator would be the largest piece of heavy construction equipment to operate nearest off-site structures. An excavator can produce groundborne vibration levels ranging up to 0.051 inch per second (in/sec) peak particle velocity (PPV) at 25 feet from the operating equipment.

The nearest off-site structure is located approximately 50 feet directly northeast from the nearest construction footprint where large vibratory rollers could potentially operate. At this distance, groundborne vibration levels would range up to 0.018 in/sec PPV from operation of the types of equipment that would produce the highest vibration levels. This is well below the FTA's construction vibration damage criteria of 0.2 in/sec PPV for this type of structure, a building of nonengineered timber and masonry construction. As a result, construction of the proposed project would not expose nearby buildings to groundborne vibration levels in excess of their applicable FTA damage criteria, and this impact would be less than significant.

Operational Vibration Impacts

Implementation of the proposed project would not include any permanent sources that would expose persons in the project vicinity to groundborne vibration levels that could be perceptible without instruments at any receiving property line. In addition, there are no existing significant permanent sources of groundborne vibration in the project vicinity to which the proposed project would be exposed. Therefore, project operational groundborne vibration level impacts would be less than significant.

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

No Impact: The project site is not located within 2 miles of a public airport or private airstrip, nor is it located within an area covered by the County's Airport Land Use Compatibility Plan. The nearest airport facility is the Buchanan Field Airport, approximately 12.3 miles northeast of the project site. Thus, the proposed project would not expose people residing or working in the project area to excessive noise levels from either Buchanan Field or a private airstrip, and there is no impact.

Sources of Information

Contra Costa County. 2024. 2045 General Plan, Chapter 9: Health and Safety Element. November 5. Website: https://www.contracosta.ca.gov/DocumentCenter/View/84950/Chapter-9---Health-and-Safety-Element-PDF. Accessed August 8, 2025.

Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September. Website: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed August 8, 2025.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
14. *POPULATION AND HOUSING–Would the project:*				
a) Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

SUMMARY:

a) Would the project induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?

No Impact. The proposed project repair involves the stabilization of an existing embankment, repair of a damaged roadway section, and replacement of a culvert failure on the north side of San Pablo Dam Road. Additional work items include temporary traffic control, erosion control, repairing approximately 200 feet of the roadway, restriping, and replacing approximately 170 feet of guardrail. The proposed project is not of the scope or scale to induce substantial unplanned population growth. On-site employees during the construction phase is expected to come from the surrounding area. No residential uses are proposed that would induce unplanned population growth either directly or indirectly. Therefore, no impact would occur.

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

No Impact. The project site is not developed with residential uses. The proposed project is adjacent to residential neighborhoods in all directions. Construction is anticipated to occur in summer or fall of 2026 and take approximately 100 working days to complete. All construction-related materials would be removed after construction activities are complete. A minimum of one lane in each direction would be open during construction and emergency vehicles will have access at all times. As a repair project, there would be no impact to surrounding residential development as no demolition housing is necessary. Therefore, project implementation would not necessitate the construction of replacement housing. No impact would occur.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
15. ***PUBLIC SERVICES–Would the project*** *result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:*				
a) Fire Protection?	☐	☐	☐	☒
b) Police Protection?	☐	☐	☐	☒
c) Schools?	☐	☐	☐	☒
d) Parks?	☐	☐	☐	☒
e) Other public facilities?	☐	☐	☐	☒

SUMMARY:

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

a) *Fire Protection?*

No Impact. The CCCFPD provides fire protection, rescue, and emergency medical services to unincorporated areas of the County, including the project area. Station 63 located at 5201 Valley View Road is 0.4 mile northeast of the project site. The proposed project would not increase the residential population of El Sobrante. Furthermore, the proposed project is limited to repairs of existing storm drainage infrastructure and would not be of the scope or scale to result in increased demand for fire protection services. The proposed project would be required to comply with all applicable codes, ordinances, and regulations regarding fire prevention and suppression measures, fire hydrants and sprinkler systems, emergency access, and other related fire safety requirements. As such, no impact would occur.

b) *Police Protection?*

No Impact. The Conta Costa County Office of the Sheriff provides police services to unincorporated areas of the County, including the El Sobrante community. The proposed project would not increase the residential population of the County and would not require police protection at any time. Therefore, no impact would occur.

c) *Schools?*

No Impact. The proposed project would not include development of new housing. Employees during construction of the project are expected to come from Conta Costa County and would not cause indirect increases in K-12 enrollment. The proposed project would not create a need for new or expanded school facilities. No impact would occur.

d) *Parks?*

No Impact. The proposed project would not include development of new housing and, therefore, would not directly increase the demand for parks. As a repair, the proposed project will not generate visitors nor on-site employees once operational. As a result, the proposed project would not create a need for new or expanded park facilities. No impact would occur.

e) Other public facilities?

No Impact. There are several public facilities within El Sobrante, such as multiple library branches, sports facilities, and community centers. The proposed project does not include a residential land use component and no public facilities are located within a 0.50-mile radius of the project site. As a result, the proposed project would not create a need for new or expanded public facilities. No impacts would occur.

Sources of Information

Contra Costa County. 2045 General Plan, Chapter 10: Growth Management Element. Website: https://www.contracosta.ca.gov/DocumentCenter/View/84951/Chapter-10---Growth-Management-Element-PDF. Accessed March 4, 2026.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
16. *RECREATION–Would the project:*				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒

SUMMARY:

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

No Impact. The proposed project is in a developed area with existing neighborhoods, regional parks, and other recreational facilities. However, the proposed project does not involve the construction of new residential units and therefore would not generate new residents that could increase the demand for recreational facilities. Therefore, the proposed project would not result in the physical deterioration of recreational facilities, and there would be no impact.

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

No Impact. The proposed project does not include recreational facilities or involve the construction of new residential units and therefore would not generate new residents that could increase the demand for and use of nearby parks or recreational facilities. Therefore, construction or expansion of recreational facilities would not be required. No impact would occur.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
17. *TRANSPORTATION–Would the project:*				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

SUMMARY:

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

Less Than Significant Impact: The project site is located on an approximate 480-foot segment of San Pablo Dam Road being a four-lane arterial roadway that provides connection from State Route (SR) 24 in Orinda to I-80 in San Pablo, California. The far-right westbound lane of the segment is partially closed from an embankment failure in early 2023. The proposed project would involve the excavation and rehabilitation of a segment of the westbound lanes on San Pablo Dam Road that is primarily used for vehicular and bicycle travel. The proposed project could obstruct portions of the public right-of-way through the repair of the underground existing culvert system and segment of the roadway, which could conflict with a program, plan, ordinance, or policy of the circulation system for roadway and bicycle facilities. However, the proposed project would not introduce any new structures or land uses to the project area that would conflict with applicable policies regarding the circulation system of San Pablo Dam Road. Rather, the proposed project would restore the far-right westbound lane through repaving, restriping, and installing a guardrail. Since the construction phase of the proposed project would not introduce any new land uses and would rehabilitate existing infrastructure on and along the roadway, the proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system. Therefore, the proposed project would have a less than significant impact on circulation system policy confliction.

b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3(b)?

Less Than Significant Impact. CEQA Guidelines Section 15064.3(b) requires projects to evaluate transportation impacts through analyzing VMT, the amount and distance of automobile travel attributable to different types of land use projects. Under CEQA Guidelines Section 15064.3(b), the Lead Agency has the authority to choose an appropriate methodology to evaluate a project's VMT impact. As such, Contra Costa County established a screening criterion within the Contra Costa County Transportation Analysis Guidelines to determine whether a proposed project would be required to prepare a detailed VMT analysis; any project that meets the screening criteria is presumed to have a less than significant VMT impact. Under the Contra

Costa County Transportation Analysis Guidelines, public facilities projects, defined to include public utilities, meet the screening criteria. Additionally, as the proposed project would repair existing roadway infrastructure and would not introduce uses that would increase vehicle trips (e.g., residential or employment-generating uses) or expand the roadway in a manner that could increase capacity, the proposed project would meet the screening threshold for projects generating fewer than 110 daily vehicle trips. Since the proposed project meets the screening criteria established by Contra Costa County, the proposed project would have a less than significant impact with regards to VMT.

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

Less Than Significant Impact: A segment of San Pablo Dam Road transects the project site consisting of a four-lane arterial roadway and private driveways along the north and south sections. Temporary staging areas for construction of the proposed project could increase roadway hazards for vehicular traffic. However, the proposed project would be required to install safeguards intended to protect the traveling public while minimizing traffic interference and would repair the north segment of the roadway damaged from the embankment failure, which includes repaving and the installation of a guardrail, restoring travel within the far-right westbound lane. All temporary staging areas would be removed and cleared once repairs are completed restoring the public right-of-way to match similar conditions prior to the embankment failure in 2023. Since the proposed project would repair the far-right westbound lane to restore travel along San Pablo Dam Road, the proposed project would not substantially increase roadway hazards. Therefore, the proposed project would have a less than significant impact pertaining to roadway hazards.

d) *Would the project result in inadequate emergency access?*

Less Than Significant Impact: The proposed project would partially involve the repair of the far-right westbound lane on a segment of San Pablo Dam Road, along with stabilizing an embankment failure and repairing an existing culvert system. As previously discussed, the proposed project would temporarily implement three staging areas with the first impeding the right northbound lane at the entrance of La Honda Road, a second along the far-right westbound lane, and a third smaller staging area on the far-right eastbound lane directly east of a private driveway. As such, temporary construction activities could impede emergency access for the entrance of La Honda Road and private driveways along San Pablo Dam Road. However, the proposed project would comply with the 2022 California Fire Code on construction fire safety requirements through the preparation of a written site safety plan that requires maintaining fire department vehicle access roads and conducting daily fire inspections to ensure adequate clearance is sustained for fire apparatus access. The repair of San Pablo Dam Road would be subject to fire apparatus access road requirements under the 2022 California Fire Code regarding width, loading, and grade standards. Furthermore, the proposed project does not involve the establishment of any new infrastructure or structures within the public right-of-way that could result in inadequate emergency access and all temporary staging areas would be cleared. Since the proposed project would adhere to the 2022 California Fire Code on construction fire safety standards pertaining to site access, would repair a segment of San Pablo Dam Road following fire apparatus access road requirements, and would not introduce any new structures or infrastructure within the public right-of-way, the proposed project would not result in inadequate

emergency access. Therefore, the proposed project would have a less than significant impact on emergency access.

Sources of Information

California Office of Planning and Research. 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA. December. Website: http://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf. Accessed March 3, 2026.

Contra Costa County Conservation and Development Department and Public Works Department. 2020. Transportation Analysis Guidelines. June 23. Website: https://www.contracosta.ca.gov/DocumentCenter/View/69374/FINAL-CCC-Transportation-Analysis-Guidelines-v2-12-15-20?bidId=. Accessed March 3, 2026.

Contra Costa County. 2024. 2045 General Plan, Chapter 5: Transportation Element. Website: https://www.contracosta.ca.gov/DocumentCenter/View/84945/Chapter-5---Transportation-Element-PDF. Accessed March 3, 2026.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
18. ***TRIBAL CULTURAL RESOURCES–Would the project*** *cause a substantial adverse change in the significance of a Tribal Cultural Resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:*				
a) 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)?	☐	☒	☐	☐
b) 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?	☐	☒	☐	☐

SUMMARY:

Would the project cause a substantial adverse change in the significance of a Tribal Cultural Resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:

a) 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)?

Less Than Significant with Mitigation Incorporated: Cogstone Resource Management conducted a review of the CRHR, local registers of historic resources, a records search conducted at the NWIC, and a pedestrian survey failed to identify any listed TCRs that may be adversely affected by the proposed project. However, on July 29, 2024, the Native American Heritage Commission (NAHC) Sacred Lands File records search produced positive results for TCRs within the APE. In compliance with Section 106 consultation requirements, and to ensure that all Native American knowledge and concerns over potential TCRs that may be affected by the proposed project are addressed, a letter containing project information and requesting any additional information was prepared by Cogstone Resource Management and sent to each Tribal representative via United States Postal Service (USPS) certified mail on August 11, 2025, containing information pertaining to the proposed APE. Additional attempts at contact were made by email or phone on May 30, 2025. Four replies from Tribal representatives were received.

A reply from the Amah Mutsun Tribal Band of Mission Indians was received on May 6, 2025, requesting a meeting with Caltrans. On May 9, 2025, a reply was received from the Confederate Villages of Lisjan Nation requesting consultation with the Lead Agency, in addition to copies of records search results and any technical report prepared for the proposed project. A reply from the Muwekma Ohlone Tribe of the San Francisco Bay Area was received on May 14, 2025, requesting consultation with the Lead Agency and copies of records search results and any technical report prepared for the proposed project. On May 6, 2025, a reply from The Ohlone Indian Tribe was received requesting a copy of the NAHC results and Tribal contact list.

Nevertheless, no eligible or potentially eligible TCRs will adversely be affected by the proposed project. Should any undiscovered TCRs be encountered during project construction, implementation of MM CUL-1 and MM CUL-2 would reduce potential impacts to a less than significant level.

b) 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?

Less Than Significant with Mitigation Incorporated: TCRs are: (1) sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are listed, or determined to be eligible for listing, in the California Register or local register of historical resources as defined in Public Resources Code Section 5020.1(k); or, (2) a resource determined by the lead CEQA agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Public Resources Code Section 5024.1(c). For a cultural landscape to be considered a TCR, it must be geographically defined in terms of the size and scope of the landscape (PRC § 21074[b]). Also, a historical resource, as defined in Public Resources Code Section 21084.1; unique archaeological resource, as defined in Public Resources Code Section 21083.2(g); or non-unique archaeological resource, as defined in Public Resources Code Section 21083.2(h), may also be a TCR. Assembly Bill (AB) 52 formally added the category of "Tribal Cultural Resources" to CEQA and extends the consultation and confidentiality requirements to all projects, rather than just projects subject to Senate Bill (SB) 18.

The Confederated Villages of Lisjan Nation (CVLN) and the Wilton Rancheria (WR) Tribe have submitted a general request letter to be notified of projects within Contra Costa County under AB 52. On May 15, 2025, an offer to consult was sent to the AB 52 contact designated in the general request letters. The record of correspondence (all via email) and meeting dates are described below. WR notified the County on May 15, 2025, that they did not have any comments or wish to open consultation. On May 16, 2025, CVLN requested records search results and cultural resources information. One consultation meeting occurred between the County and CVLN on July 23, 2025. At the meeting, the likelihood of buried resources and avoidance, mitigation, and monitoring measures were discussed. On September 25, 2025, the mitigation measures were agreed upon and are written in Section 5. Therefore, implementation of MM CUL-1, MM CUL-2, and MM CUL-3 would reduce impacts to less than significant.

Implementation of the following mitigation measure would bring potential project-related impacts on TCRs to less than significant:

MM TCR-1 **Native American Monitoring:** Prior to ground-disturbing activities, the County in consultation with the Confederated Villages of Lisjan Nation (CVLN), shall establish an Environmentally Sensitive Area (ESA) where ground disturbance would occur with potential to impact Tribal Cultural Resources (TCRs). CVLN Tribal Monitor(s) shall be retained to monitor ground-disturbing activities within the ESA. CVLN Monitor(s) shall have the authority to halt and redirect work should any archaeological or TCRs be identified during monitoring. If archaeological or TCRs are encountered during ground-disturbing activities, work within 100 feet of the find must halt and the find must be evaluated for listing in the California Register of

Historical Resources (CRHR) and National Register of Historic Places (NRHP). Monitoring may be reduced or halted at the discretion of the CVLN monitor, in consultation with the Lead Agency, as warranted by conditions, such as encountering bedrock, sediments being excavated are fill, negative findings during the first 50 percent of the entire area of ground disturbance, etc. If monitoring is reduced to spot checking, spot checking shall occur when ground-disturbing activities move to a new location within the project site and when ground disturbance will extend to depths not previously reached (unless those depths are within bedrock).

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
19. *UTILITIES AND SERVICE SYSTEMS–Would the project:*				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
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?	☐	☐	☒	☐
e) Comply with federal, State, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

SUMMARY:

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?

Less Than Significant Impact. The proposed project will stabilize the embankment, repair the damaged section of the roadway, and replace a culvert failure on the north side of San Pablo Dam Road. Additional work items include temporary traffic control, erosion control, repairing approximately 200 feet of the roadway, restriping, and replacing approximately 170 feet of guardrail. The proposed use is consistent with the General Plan land use designation and zoning for the project site. The General Plan Environmental Impact Report (General Plan EIR) concluded that with the implementation of existing regulations and adopted General Plan policies and actions, any physical impacts resulting from construction of utilities and service systems to serve increased demands at buildout of the General Plan would be less than significant.

The proposed project would not require the construction of new or expanded water lines upstream of the project. In addition, the proposed project would not result in the construction of new or expanded water supply facilities beyond what was assumed in the General Plan EIR. For these reasons, the proposed project would have a less than significant environmental effect on existing

water supply and conveyance facilities. The proposed project would not require the construction of new or expanded sewer lines downstream of the project. The proposed project would not result in the construction or expansion of existing wastewater treatment facilities beyond what was assumed in the General Plan EIR. For these reasons, the proposed project would have a less than significant environmental effect on existing wastewater treatment facilities.

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

Less Than Significant Impact: The East Bay Municipal Utility District supplies water service to the project site. During construction, water would be required primarily for dust suppression and would also be used for soil compaction. Construction water volumes would be minimal and would not require new or expanded water supplies or entitlements. Furthermore, the proposed project is not considered a "Water Demand Project" under CEQA Guidelines Section 15155. Therefore, it does not require a project-level Water Supply Assessment (WSA).

The proposed project would not increase water demand relative to existing conditions and would remain consistent with what is anticipated in the General Plan. The jack and bore aspect of the project serves to help restore the hydraulic capacity. The existing entitlements for water supplies to El Sobrante are sufficient to continue to meet the needs of Contra Costa during normal, dry, and multiple dry years, in addition to the water demands generated by the proposed project. Therefore, impacts due to insufficient water supplies or inadequate entitlements would be less than significant.

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

No Impact. The East Bay Municipal Utility District maintains and operates the wastewater collection and treatment system of El Sobrante, including the project site. Given that the proposed project is exclusive to infrastructure repair, the proposed project would not include the construction of a new sewer line, and therefore no wastewater generation would occur. Therefore, the proposed project would not result in a determination of inadequate wastewater capacity. No impact would occur.

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?

Less Than Significant Impact: Construction of the proposed project would involve the general construction and excavation of the damaged embankment. When acquiring building, utility, and site permits from the County, the proposed project would be required to comply with the County's Construction and Demolition (C&D) Diversion Program, which ensures that at least 75 percent of the construction debris must be recycled.

During the construction phase of development, the proposed project would be subject to the California Green Building Standards Code (CALGreen) Construction and Demolition Debris Recovery Program administered by the Department of Conservation and Development. The Debris Recovery Program requires that at least 65 percent of construction job site debris (by weight) for most construction types, that would otherwise be sent to landfills, be recycled, reused, or otherwise diverted to appropriate recycling facilities. Thus, although proposed project

construction may temporarily generate solid waste, the administration of the C&D Debris Recovery Program would ensure that the impact of the project-related increase would be less than significant.

After construction, the proposed project will not produce any solid waste and therefore would not cause the City to exceed the capacity of existing landfills that the serve El Sobrante under the General Plan. Therefore, implementation of the proposed project would have a less than significant impact on the solid waste disposal capacity. In addition, the proposed project would not impede the ability of El Sobrante to meet waste diversion requirements or violate other applicable federal, State, and local statutes and regulations related to solid waste. Impacts would be less than significant.

e) Would the project comply with federal, State, and local management and reduction statutes and regulations related to solid waste?

Less Than Significant Impact: The proposed project would generate additional solid waste as compared to existing conditions only during construction. The proposed development would be required to comply with applicable federal, State, and local regulations related to solid waste such as SB 13983, the County's C&D Diversion Program, and the Contra Costa Solid Waste Authority Ordinance (Ord. No. 09-08, § 3, 10-6-09). Therefore, a portion of solid waste would be diverted from landfill through recycling, composting, and other methods in compliance with federal, State, and local management and reduction statutes. Thus, the proposed project would not violate applicable federal, State, and local statutes and regulations related to solid waste, and impacts would be less than significant.

Sources of Information

California Department of Resources Recycling and Recovery (CalRecycle). Construction and Demolition Debris Recycling. Website: https://calrecycle.ca.gov/ConDemo/. Accessed February 24, 2026.

Contra Costa County. 2045 General Plan, Chapter 4: Land Use Element. Website: https://www.contracosta.ca.gov/DocumentCenter/View/84934/Chapter-4---Land-Use-Element-PDF. Accessed February 24, 2026.

Contra Costa County, 2045 General Plan, Chapter 7: Conservation, Open Space, and Working Lands Element. Website: https://www.contracosta.ca.gov/DocumentCenter/View/84948/Chapter-7--Conservation-Open-Space-and-Working-Lands-Element-PDF. Accessed February 24, 2026.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
20. *WILDFIRE–**If located in or near State Responsibility Areas or lands classified as Very High Fire Hazard Severity Zones,* ***would the project:***				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
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?	☐	☐	☒	☐
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?	☐	☐	☒	☐
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?	☐	☐	☒	☐

SUMMARY*:*

If located in or near State Responsibility Areas or lands classified as Very High Fire Hazard Severity Zones, would the project:

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

Less Than Significant Impact. The project site is in a Very High Fire Hazard Severity Zone (VHFHSZ) within an LRA, where CCCFPD provides fire suppression services and the Contra Costa County 2024 Hazards Mitigation Plan governs emergency procedures. Construction will create three temporary staging areas along La Honda Road and San Pablo Dam Road, keeping at least one lane open in each direction, which could affect emergency response and evacuation. However, compliance with Chapter 1002 – Encroachments of the County ordinance, and installing safeguards to direct traffic, will minimize interference. The project also meets the 2022 California Fire Code for road access and fire apparatus standards. CCCFPD Station 69, located 1.2 miles away, can maintain a response time well below the 4-minute threshold. With these measures in place, the proposed project would not significantly impact emergency response or evacuation plans. Impacts would be less than significant.

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?

Less Than Significant Impact. The project site lies in a VHFHSZ with dense woodland and steep terrain near San Pablo Dam Road, an area prone to strong Diablo winds that historically contribute to severe wildfires. While construction activities may expose workers to wildfire risks due to fuel loads and wind events, adherence to the 2022 California Fire Code and California

Code of Regulations Title 8, Section 5141.1, ensures safety through site plans, fire prevention practices, and air quality monitoring. As no new occupied structures would be built, compliance with regulations would prevent increased wildfire risk and minimize hazards to workers, resulting in less than significant impacts.

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?*

Less Than Significant Impact. The project site is in a VHFHSZ with risks from natural vegetation, steep topography, and strong winds. The proposed project involves installing and maintaining roadway, culvert systems, and erosion control infrastructure, which could increase wildfire risk during construction. However, compliance with the 2022 California Fire Code mandates written safety plans, proper storage of combustible materials, fire suppression resources on-site, and daily inspections by a safety director. No fuel breaks, emergency water sources, or power lines are required. While geogrid materials used may be flammable, they would be buried, and permanent infrastructure would be constructed from nonflammable materials. Adhering to fire code requirements ensures no increased wildfire risk due to the project; overall, it would have less than significant impact on wildfire risk.

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?*

Less Than Significant Impact. The project site is located within a very high FHSZ consisting of relatively steep topography with elevations ranging from approximately 155 AMSL to 120 AMSL and will involve excavations, grading, and the removal of 80 trees that would temporarily alter existing drainages and could trigger landslides from post-fire slope instability. However, surface and subsurface conditions on the project site have not been influenced by any wildfire in recent years. Since the project site has not experienced any recent wildfires and would install permanent erosion control infrastructure, the proposed project would not expose people or structures to runoff from post-fire slope instability. Therefore, the proposed project would have a less than significant impact related to post-fire slope instability.

Sources of Information

CAL FIRE. 2025. California Fire Hazard Severity Zone Viewer. Website:https://experience.arcgis.com/experience/5065c998b4b0462f9ec3c6c226c610a9. Accessed March 4, 2026.

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
21. *MANDATORY FINDINGS OF SIGNIFICANCE*				
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?	☐	☒	☐	☐
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.)	☐	☒	☐	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

SUMMARY:

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?

Less Than Significant Impact With Mitigation Incorporated. The proposed project has been evaluated for its potential to substantially degrade the quality of the environment, reduce the habitat of fish or wildlife species, threaten plant or animal communities, reduce the number or restrict the range of rare or endangered species, or eliminate important examples of California history or prehistory throughout this IS/MND. Key findings are summarized herein.

While the project site is within a region known to support special-status plant species, many of these plants require habitats that do not currently occur within the BSA. Further, the level of disturbance and abundance of non-native vegetation, specifically the dense ground cover of Canary ivy, generally precludes the growth of most native vegetation. Therefore, as discussed above in Section 4, the proposed project would not result in impacts to the number or restrict the range of a rare or endangered plant species.

Three special-status wildlife species were determined to have low potential to occur on the project site. However, with implementation of the mitigation measures identified in Section 4 (Biological Resources), including species-specific avoidance and minimization measures for CRLF, NWPT, and SFDFW (MM BIO-1a, MM BIO-1b, and MM BIO-1c) and migratory bird protection (MM BIO-1d), impacts to biological resources would be reduced to less than significant.

Potential impacts to cultural and TCRs would be reduced to less than significant with implementation of MM TCR-1 (Native American Monitoring), MM CUL-1 (Unanticipated Discovery of Cultural Resources), and MM CUL-2 (Impact to Previously Undiscovered Human Remains), which require work stoppage, evaluation, and appropriate treatment in the event of a discovery, as well as consultation with the CVLN.

Paleontological resources are protected through MM GEO-1, which requires immediate work stoppage and evaluation by a qualified Paleontologist if unique paleontological materials are uncovered.

Based on the discussion provided above, compliance with required guidelines and statutes and implementation of the mitigation measures, the proposed project would not 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. Therefore, impacts would be less than significant following compliance with applicable laws and regulations and incorporation of MM BIO-1a through MM BIO-1d, MM TCR-1 through MM CUL-2, and MM GEO-2.

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.)*

Less Than Significant With Mitigation Incorporated. The analysis in this IS/MND includes a review of the proposed project's potential impacts regarding air quality, biological resources, cultural resources, parks and recreation facilities, noise, and transportation, among other environmental issue areas. As presented throughout this IS/MND, the proposed project's cumulative impacts would either be less than significant with mitigation incorporated, less than significant, or there would be no impacts.

Construction-related impacts (e.g., air quality, noise, GHG emissions, traffic) are temporary and localized. As discussed throughout this IS/MND, construction-related impacts related to noise, GHG, and transportation would be less than significant. Further, with implementation of MM AQ-1 (Bay Area Air District Basic Construction BMPs), air quality impacts would similarly be less than significant.

At this time, the only known project in the vicinity that may overlap in schedule is another County storm damage repair project, the San Pablo Dam Road Storm Drain and Pavement Repair Project located approximately 3.5 miles southeast of this project site. However, the proposed project is currently anticipated to go into construction in 2027, while the San Pablo Dam Road Storm Drain and Pavement Repair Project would go into construction in 2026. Because of the distance from

this project site and the fact that through traffic would be maintained during construction for both projects, even if there is some overlap in project schedules, cumulative impacts to traffic would be less than significant.

As discussed throughout this IS/MND, the proposed project's cumulative impacts would be less than significant. No additional mitigation measures would be required to reduce cumulative impacts. Therefore, the proposed project would not result in a cumulatively considerable impact.

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

Less Than Significant With Mitigation Incorporated. Based on the discussion provided in the Project Description and the analysis throughout this IS/MND, the proposed project would not cause substantial adverse effects on human beings, either directly or indirectly, because the proposed project's potential impacts would either be less than significant (without mitigation) or any significant impacts would be mitigated to a less than significant level. Therefore, for the reasons set forth in this IS/MND including, without limitation, the implementation of MM AQ-1, the proposed project would not result in substantial adverse effects on human beings. Impacts would be less than significant with mitigation incorporated.

REFERENCES

In the process of preparing the Initial Study Checklist and conduction of the evaluation, the above cited references were consulted. Reference materials are available for review by contacting Christina Kelleher, Contra Costa County Department of Public Works, by email at christina.kelleher@pw.cccounty.us or by phone at (925) 812-7386.

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MITIGATION MONITORING REPORTING PLAN

The following Mitigation Measures will be implemented according to Section 15097 of the CEQA guidelines. Contra Costa County Public Works Department (PWD) is responsible for ensuring these measures are implemented by PWD staff and by Contractors working on behalf of PWD.

Mitigation, Avoidance, and Minimization Measures

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
3. AIR QUALITY					
AIR-1: Proposed project construction will generate fugitive dust.	**MITIGATION MEASURE AIR-1**: Implement Bay Area Air District Basic Construction Best Management Practices				
	1) All exposed surfaces (e.g., parking areas, staging areas, graded areas, and unpaved access roads) shall be watered two times per day. 2) All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3) All visible mud or dirt track-out 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. 4) All vehicle speeds on unpaved roads shall be limited to 15 mph. 5) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. 6) Idling times shall be minimized either by shutting equipment off when not in use 7) Or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. 8) All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a	During construction.	Construction Contractor.	Contra Costa County Public Works Department (PWD).	

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	certified mechanic and determined to be running in proper condition prior to operation. 9) Post a publicly visible sign with the telephone number and contact information for the designated on-site construction manager available to receive and respond to dust complaints. This person shall report all complaints to Contra Costa County and take immediate corrective action as soon as practicable but not more than 48 hours after the complaint is received. The Bay Area Air District phone number shall also be visible to ensure compliance with applicable regulations.				
4. BIOLOGICAL RESOURCES					
BIO-1a: Proposed project construction may impact the California Red-legged Frog.	**MITIGATION MEASURE BIO-1a:** California Red-legged Frog Mitigation				
	Implementation of the following measures would ensure avoidance of impacts on California red-legged frog (CRLF): **Work Restriction:** To the greatest extent practicable, project activities shall be restricted to the period between April 15 and October 15, when CRLF are the least active. If project activities are proposed outside of the work restriction period, consultation with the California Department of Fish and Wildlife (CDFW)/United States Fish and Wildlife Service (USFWS) shall be required to ensure appropriate avoidance and/or minimization measures are incorporated. **Worker Environmental Awareness Program:** Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program (WEAP) for all construction personnel. At a minimum, the training shall include a description of the CRLF and its habitat; the regulatory protections afforded for these species; the general measures that are being implemented	Prior to and during grading and construction work activities.	Construction Contractor, PWD Environmental Services Division-supplied Biologist.	PWD Environmental Services Division.	

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	to conserve them as they relate to the proposed project, and the boundaries within which the project may be accomplished. **Pre-Construction Survey:** A qualified Biologist shall survey the Biological Study Area (BSA) no more than 5 days before the onset of work activities and present survey results to the County, for submittal to CDFW. If any life stage of the CRLF is detected, construction activities shall not be allowed to commence until consultation with USFWS has occurred. **Exclusion Fencing or Temporary Silt Fencing:** Prior to project work activities, wildlife exclusion fencing shall be installed around the perimeter of the development footprint in a manner that will prevent California red-legged frog (CRLF) from entering the project impact areas. A qualified Biologist shall be present during the installation of the wildlife exclusion fencing. The barrier fencing shall be removed within 72 hours of completion of work. The location and design of the fence shall be approved by a qualified Biologist, and the qualified Biologist shall also be present on-site to monitor installation until the exclusion fence is complete. At a minimum, the exclusion fencing shall be at least 3 feet high and the lower 6 inches of the fence shall be buried in the ground to prevent animals from crawling under. The remaining 2.5 feet shall be left above ground to serve as a barrier for animals moving on the ground surface. Fencing shall be installed and maintained in good condition during all construction activities and shall be inspected and maintained daily until the completion of project construction. **Revegetation:** Areas disturbed by the project shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by activities associated				

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	with the project unless CDFW, USFWS, and the project applicant determine that it is not feasible or practical.				
BIO-1b: Proposed project construction may impact the Northwestern Pond Turtle.	**MITIGATION MEASURE BIO-1b:** Northwestern Pond Turtle Mitigation				
	Implementation of the following measures would ensure avoidance of impacts on northwestern pond turtle (NWPT): **Worker Environmental Awareness Program:** Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program (WEAP) for all construction personnel. At a minimum, the training will include a description of the NWPT and its habitat, the regulatory protections afforded for these species; the general measures that are being implemented to conserve them as they relate to the proposed project,, and the boundaries within which the project may be accomplished. **Pre-construction Survey:** A qualified Biologist shall survey the Biological Study Area (BSA) no more than 5 days before the onset of work activities and present survey results to the County, for submittal to the California Department of Fish and Wildlife (CDFW). If any life stage of the NWPT is detected, construction activities shall not be allowed to commence until consultation with the CDFW and the United States Fish and Wildlife Service (USFWS) has occurred. **Exclusion Fencing or Temporary Silt Fencing:** Prior to project work activities, wildlife exclusion fencing shall be installed around the perimeter of the development footprint in a manner that will prevent northwestern pond turtle (NWPT) from entering the project impact areas. A qualified Biologist shall be present during the installation of the wildlife exclusion fencing. The barrier fencing shall be removed within 72 hours of completion of work. The location and design of the fence shall be approved by a	Prior to and during grading and construction work activities.	Construction Contractor, PWD Environmental Services Division-supplied Biologist.	PWD Environmental Services Division.	

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	qualified Biologist, and the qualified Biologist shall also be present on-site to monitor installation until the exclusion fence is complete. At a minimum, the exclusion fencing shall be at least 3 feet high and the lower 6 inches of the fence shall be buried in the ground to prevent animals from crawling under. The remaining 2.5 feet shall be left above ground to serve as a barrier for animals moving on the ground surface. Fencing shall be installed and maintained in good condition during all construction activities and shall be inspected and maintained daily until the completion of project construction. **Revegetation:** Areas disturbed by the project shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by activities associated with the project unless the CDFW, USFWS, and the project applicant determine that it is not feasible or practical.				
BIO-1c: Proposed project construction may impact the San Francisco Dusky-footed Woodrat.	**MITIGATION MEASURE BIO-1c:** San Francisco Dusky-footed Woodrat Mitigation				
	Implementation of the following measures would ensure avoidance of impacts on San Francisco Dusky-footed Woodrat (SFDFW): **Worker Environmental Awareness Program:** Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program (WEAP) for all construction personnel. At a minimum, the training will include a description of the SFDFW and its habitat, ; the regulatory protections afforded for these species; the general measures that are being implemented to conserve them as they relate to the proposed project, and the boundaries within which the project may be accomplished.	Prior to and during grading and construction work activities.	Construction contractor, PWD Environmental Services Division-supplied Biologist.	PWD Environmental Services Division.	

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	Pre-construction Survey: A qualified Biologist shall survey the Biological Study Area (BSA) no more than 5 days before the onset of work activities and present survey results to the County, for submittal to the California Department of Fish and Wildlife (CDFW). If any life stage or nest of the SFDFW is detected, construction activities shall not be allowed to commence until consultation with CDFW and the United States Fish and Wildlife Service (USFWS) has occurred. **Exclusion Fencing or Temporary Silt Fencing:** Prior to project work activities, wildlife exclusion fencing shall be installed around the perimeter of the development footprint in a manner that will prevent San Francisco Dusky-footed Woodrat (SFDFW) from entering the project impact areas. A qualified Biologist shall be present during the installation of the wildlife exclusion fencing. The barrier fencing shall be removed within 72 hours of completion of work. The location and design of the fence shall be approved by a qualified Biologist, and the qualified Biologist shall also be present on-site to monitor installation until the exclusion fence is complete. At a minimum, the exclusion fencing shall be at least 3 feet high and the lower 6 inches of the fence shall be buried in the ground to prevent animals from crawling under. The remaining 2.5 feet shall be left above ground to serve as a barrier for animals moving on the ground surface. Fencing shall be installed and maintained in good condition during all construction activities and shall be inspected and maintained daily until the completion of project construction. **Revegetation:** Areas disturbed by the project shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by activities associated				

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	with the project unless the CDFW, USFWS, and the project applicant determine that it is not feasible or practical.				
BIO-1d: Proposed project construction may impact migratory birds.	**MITIGATION MEASURE BIO-1d:** Migratory Bird Mitigation				
	Implementation of the following measures would ensure avoidance of impacts on Migratory Birds: **Avoidance of Nesting Season:** To the extent practicable, vegetation and/or tree removal shall be scheduled to avoid the avian nesting season. The nesting season typically runs from February 1 through August 31. **Pre-Construction Surveys for Active Nests:** For any construction during the nesting season (February 1 to August 31), pre-construction nesting bird surveys shall be conducted no more than 7 days prior to the start of ground or vegetation disturbance (including tree removal) and survey results presented to the County, for submittal to the California Department of Fish and Wildlife (CDFW). **Buffer zone for Active Nests:** If an active nest is located during pre-construction surveys, a qualified Biologist, in consultation with the CDFW, shall determine an appropriately sized avoidance buffer based on the species and anticipated disturbance level. The CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species, a 500-foot no-disturbance buffer around active nests of smaller raptors such as accipiters (Accipiter sp.), a 1,000-foot no-disturbance buffer around active nests of large raptors such as buteos (Bueto sp.), and up to a 1-mile no-disturbance buffer around active nests of bald eagle (Haliaeetus leucocephalus) and golden eagles (Aquila chrysaetos) if visible from the project site. A qualified Biologist shall delineate the avoidance buffer using Environmentally Sensitive Area fencing, pin flags, and/or yellow caution tape. The	Prior to and during grading and construction work activities.	Construction Contractor, PWD Construction Management Firm, PWD Environmental Services Division-supplied Biologist.	PWD Environmental Services Division.	

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	buffer zone shall be maintained around the active nest site(s) until qualified Biologist has determined that the nesting attempt is complete. No construction activities or construction foot traffic is allowed to occur within the avoidance buffer(s). In consultation with CDFW, the qualified Biologist shall monitor the active nest during the subject construction activities and modify the protection zone accordingly to prevent project-related nest disturbance, until the young have fledged, or nests fail due to other natural causes.				
BIO-2: Proposed project construction will result in the removal of trees.	**MITIGATION MEASURE BIO-2:** Compliance with Arborist Report Tree Preservation Measures				
	Trees proposed for preservation shall be protected in accordance with the Tree Preservation Measures outlined in the project-specific arborist report. The County, Contractor, and all site personnel must adhere to these Tree Preservation Measures throughout all phases of construction, including grading, trenching, and material storage. Preservation measures include, but are not limited to protective fencing, root zone safeguards, and other specified actions that shall be installed and/or maintained by qualified personnel to prevent construction-related damage to preserved trees on-site.	During all phases of construction.	Construction Contractor, PWD Construction Management firm, PWD Environmental Services Division.	PWD Environmental Services Division.	
5. CULTURAL RESOURCES					
CUL-1: Proposed project construction could impact unanticipated cultural resources during ground-disturbing activities.	**MITIGATION MEASURE CUL-1:** Unanticipated Discovery of Cultural Resources				
	• Contractor shall be notified of the possibility of encountering historic or archaeological materials during ground-disturbing activities. A standard inadvertent discovery clause will be included in every construction contract to inform Contractors of requirements during construction.	Notification prior to construction permits. WEAP training prior to any grading or construction work activities; and	Construction Contractor, PWD Environmental Services Division supplied Archaeologist, PWD	PWD Environmental Services Division.	

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	• Prior to the initiation of construction activities, a qualified Archaeologist shall provide Worker Environmental Awareness Program (WEAP) training to construction personnel with an overview of applicable laws, project mitigation measures, and procedures to be followed with regard to historical, archaeological, and Tribal resources that may be encountered over the course of the project. • Procedures for discovery include: - If potential archaeological or Tribal cultural materials are encountered during construction, the Contractor shall cease all ground-disturbing activities within a 100-foot radius of the find. The Contractor shall immediately notify the District Resident Engineer or their designated representative to request a qualified Archaeologist and Confederated Villages of Lisjan Nation (CVLN) representative to assess the nature and significance of the find. The Archaeologist shall stake the area of discovery, placing stakes no more than 10 feet apart, forming a circle having a radius of no less than 100 feet from the point of discovery. - If the finding(s) is not determined to be potentially significant, work may resume. - If the finding(s) is determined to be potentially significant, the Archaeologist in consultation with the Tribal representative shall develop a mitigation plan, which shall be implemented by the entity in accordance with State guidelines and in consultation with the consulting Tribe. The mitigation plan shall include avoidance of the resource or, if avoidance of the resource is not feasible, the plan shall outline appropriate treatment of the resource in	continuously thereafter as additional workers are mobilized or join the project.	Construction Management firm.		

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	coordination with the consulting Tribe and, if applicable, a qualified archeologist. Examples of appropriate mitigation for the Tribal Cultural Resources (TCRs) include, but are not limited to, protecting the cultural character and integrity of the resources, protecting traditional use of the resources, protecting the confidentiality of the resources, or heritage recovery. Preservation in place (i.e., avoidance) is typically the preferred manner of treatment of Tribal resources and cultural items. No photography of resources is permitted. - Any previously undiscovered resources found during construction within the Project Site shall be recorded on appropriate California Department of Parks and Recreation (DPR) 523 forms and shall be submitted to Contra Costa County Department of Conservation and Development, the Northwest Information Center (NWIC), and the California Office of Historic Preservation (OHP), as required.				
CUL-2: Proposed project construction could impact undiscovered human remains.	**MITIGATION MEASURE CUL-2:** Impact to Previously Undiscovered Human Remains				
	• In the event of the accidental discovery or recognition of any human remains, there shall be no further excavation or disturbance within 100 feet of the remains until the Contra Costa County Coroner is contacted to determine whether the remains are Native American and if an investigation of the cause of death is required. At the same time, an Archaeologist shall be contacted to assess the situation. • If the Coroner determines the remains to be Native American, the Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours of this	During construction.	Construction Contractor, PWD Environmental Services Division supplied Archaeologist, PWD Construction Management firm.	PWD Environmental Services Division.	

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	identification. The NAHC shall identify a Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated funerary objects. • If the Confederated Villages of Lisjan Nation (CVLN) is designated as the MLD, the Tribe shall make every effort to recommend keeping ancestral remains and funerary objects in situ and protected. If removal of burials is necessary, Tribal representatives shall work with the qualified Archaeologist to ensure that excavation and documentation are treated carefully, ethically, and respectfully. No photography, testing, or scientific study, destructive or non-destructive, shall be conducted on ancestral human remains. All bone, if not identifiable as human or animal, shall be treated as human remains and the appropriate protocols followed. The Archaeologist shall prepare a report of all activities, including documenting methods and results as well as recommendations for the treatment of the human remains and any associated archaeological materials. The report shall be submitted to the District, the Northwest Information Center (NWIC), and the Tribe. • Tribal representatives shall rebury the Native American human remains and associated funerary objects with appropriate dignity either: (1) in accordance with the recommendations of the MLD if available; or (2) in the project vicinity at a location decided upon between the CVLN representative and the County, where the reburial would be accessible to Tribal members in perpetuity and would not be subject to further disturbance. The discovery is to be documented on California Department of Parks and Recreation (DPR) 523 forms and otherwise				

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	kept confidential and secure to prevent any further disturbance.				
7. GEOLOGY AND SOILS					
GEO-1: Ground disturbance from the proposed project has the potential to disturb previously unknown paleontological resources.	**MITIGATION MEASURE GEO-1:** Paleontological Resource Discovery				
	Should unique paleontological materials be uncovered during grading, trenching, or other on-site excavation(s), the County shall be immediately notified, and all earthwork within 100 feet of the materials shall be stopped immediately until a qualified Paleontologist is contacted and retained to evaluate the significance of the find. If the find is not significant, work may resume. If the find is potentially significant, the Paleontologist, in coordination with the County, would implement appropriate sampling, salvaging, identification, and reporting procedures consistent with California Public Resources Code 30244.	During grading and construction.	Construction Contractor, PWD Construction Management firm, PWD Environmental Services Division –supplied Paleontologist.	PWD Environmental Services Division.	
9. TRIBAL CULTURAL RESOURCES					
TCR-1: Ground disturbance from the proposed project may lead to a discovery of tribal cultural resources.	**MITIGATION MEASURE TCR-1:** Native American Monitoring				
	Prior to ground disturbing activities, the County in consultation with the Confederated Villages of Lisjan Nation (CVLN), shall establish an Environmentally Sensitive Area (ESA) where ground disturbance would occur with potential to impact Tribal Cultural Resources. CVLN Tribal monitor(s) shall be retained to monitor ground disturbing activities within the ESA. CVLN monitor(s) will have the authority to halt and redirect work should any archaeological or tribal cultural resources be identified during monitoring. If archaeological or Tribal cultural resources are encountered during ground disturbing activities, work within 100 feet of the find must halt and the find must be evaluated for listing in the CRHR and NRHP. Monitoring may be reduced or	Prior to ground disturbing activities.	CVLN Tribal monitor(s).	PWD Environmental Services Division.	

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	halted at the discretion of the CVLN monitor, in consultation with the lead agency, as warranted by conditions such as encountering bedrock, sediments being excavated are fill, negative findings during the first 50 percent of the entire area of ground disturbance, etc. If monitoring is reduced to spot checking, spot checking shall occur when ground disturbing activities move to a new location within the project site and when ground disturbance will extend to depths not previously reached (unless those depths are within bedrock).				

Appendix A:
Air Quality, Greenhouse Gas Emissions, and Energy Supporting Information

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#4 San Pablo Dam Road - Storm Drain and Slide Repair Project v2 Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	#4 San Pablo Dam Road - Storm Drain and Slide Repair Project v2
Construction Start Date	4/5/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.60000
Precipitation (days)	18.0000
Location	37.98056145458244, -122.27561539052053
County	Contra Costa
City	Pinole
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1577
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.39

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Other Non-Asphalt Surfaces	1.62000	Acre	1.62000	0.00000	0.00000	0.00000	—	Acreage derived from project description / APN and represents the total area of disturbance

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.75218	1.42342	13.2608	15.1356	0.02847	0.55002	3.08054	3.63057	0.50690	1.41914	1.92605	—	3,399.89	3,399.89	0.16470	0.15911	1.96378	3,453.38
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.30265	0.24998	2.23070	2.62263	0.00491	0.08205	0.21664	0.29869	0.07555	0.09537	0.17092	—	521.735	521.735	0.02276	0.01362	0.06919	526.432
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.05523	0.04562	0.40710	0.47863	0.00090	0.01497	0.03954	0.05451	0.01379	0.01740	0.03119	—	86.3793	86.3793	0.00377	0.00225	0.01146	87.1568

2.2. Construction Emissions by Year

2.2.1. Total Construction Emissions by Year, Unmitigated

Includes both onsite and offsite emissions.

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.75218	1.42342	13.2608	15.1356	0.02847	0.55002	3.08054	3.63057	0.50690	1.41914	1.92605	—	3,399.89	3,399.89	0.16470	0.15911	1.96378	3,453.38
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.30265	0.24998	2.23070	2.62263	0.00491	0.08205	0.21664	0.29869	0.07555	0.09537	0.17092	—	521.735	521.735	0.02276	0.01362	0.06919	526.432
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.05523	0.04562	0.40710	0.47863	0.00090	0.01497	0.03954	0.05451	0.01379	0.01740	0.03119	—	86.3793	86.3793	0.00377	0.00225	0.01146	87.1568

2.2.2. Onsite 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.63491	1.37378	12.4325	14.4354	0.02393	0.53897	2.76551	3.30448	0.49585	1.33615	1.83200	—	2,493.82	2,493.82	0.10116	0.02023	0.00000	2,502.37
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.29273	0.24482	2.14943	2.54601	0.00450	0.08125	0.18960	0.27085	0.07475	0.08837	0.16312	—	450.344	450.344	0.01827	0.00365	0.00000	451.889
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.05342	0.04468	0.39227	0.46465	0.00082	0.01483	0.03460	0.04943	0.01364	0.01613	0.02977	—	74.5596	74.5596	0.00302	0.00060	0.00000	74.8154

2.2.3. Offsite 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.11727	0.04964	1.07949	0.88800	0.00580	0.01105	0.31503	0.32609	0.01105	0.08299	0.09405	—	944.430	944.430	0.06510	0.13919	1.96378	989.499
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.00992	0.00516	0.08127	0.07662	0.00042	0.00081	0.02703	0.02784	0.00081	0.00699	0.00780	—	71.3917	71.3917	0.00449	0.00996	0.06919	74.5425
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.00181	0.00094	0.01483	0.01398	0.00008	0.00015	0.00493	0.00508	0.00015	0.00128	0.00142	—	11.8197	11.8197	0.00074	0.00165	0.01146	12.3414

3. Construction Emissions Details

3.1. Demolition (2027)

3.1.1. Onsite - 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
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.60361	1.34471	12.4325	14.4354	0.02393	0.47032	—	0.47032	0.43270	—	0.43270	—	2,493.82	2,493.82	0.10116	0.02023	—	2,502.37
Demolition	—	—	—	—	—	—	0.32945	0.32945	—	0.04989	0.04989	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04393	0.03684	0.34062	0.39549	0.00066	0.01289	—	0.01289	0.01185	—	0.01185	—	68.3237	68.3237	0.00277	0.00055	—	68.5582
Demolition	—	—	—	—	—	—	0.00903	0.00903	—	0.00137	0.00137	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00802	0.00672	0.06216	0.07218	0.00012	0.00235	—	0.00235	0.00216	—	0.00216	—	11.3118	11.3118	0.00046	0.00009	—	11.3506
Demolition	—	—	—	—	—	—	0.00165	0.00165	—	0.00025	0.00025	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.2. Offsite - 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
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04227	0.03822	0.02651	0.45928	0.00000	0.00000	0.10333	0.10333	0.00000	0.02422	0.02422	—	106.015	106.015	0.00193	0.00405	0.36056	107.631
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.03862	0.00882	0.48973	0.24090	0.00269	0.00511	0.10753	0.11265	0.00511	0.02944	0.03456	—	397.802	397.802	0.02941	0.06291	0.77529	418.060
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00109	0.00097	0.00084	0.01035	0.00000	0.00000	0.00280	0.00280	0.00000	0.00066	0.00066	—	2.68656	2.68656	0.00006	0.00011	0.00427	2.72541
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00105	0.00024	0.01389	0.00662	0.00007	0.00014	0.00292	0.00306	0.00014	0.00080	0.00094	—	10.9006	10.9006	0.00081	0.00172	0.00919	11.4435
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00020	0.00018	0.00015	0.00189	0.00000	0.00000	0.00051	0.00051	0.00000	0.00012	0.00012	—	0.44479	0.44479	0.00001	0.00002	0.00071	0.45122
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00019	0.00004	0.00253	0.00121	0.00001	0.00003	0.00053	0.00056	0.00003	0.00015	0.00017	—	1.80471	1.80471	0.00013	0.00029	0.00152	1.89460

3.2. Site Preparation (2027)

3.2.1. Onsite - 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
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.41617	1.18998	10.4379	11.5743	0.01907	0.47275	—	0.47275	0.43493	—	0.43493	—	2,065.36	2,065.36	0.08378	0.01676	—	2,072.45
Dust From Material Movement	—	—	—	—	—	—	2.44278	2.44278	—	1.17148	1.17148	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.03880	0.03260	0.28597	0.31710	0.00052	0.01295	—	0.01295	0.01192	—	0.01192	—	56.5853	56.5853	0.00230	0.00046	—	56.7795
Dust From Material Movement	—	—	—	—	—	—	0.06693	0.06693	—	0.03210	0.03210	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00708	0.00595	0.05219	0.05787	0.00010	0.00236	—	0.00236	0.00217	—	0.00217	—	9.36835	9.36835	0.00038	0.00008	—	9.40050
Dust From Material Movement	—	—	—	—	—	—	0.01221	0.01221	—	0.00586	0.00586	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.2. Offsite - 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
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02536	0.02293	0.01591	0.27557	0.00000	0.00000	0.06200	0.06200	0.00000	0.01453	0.01453	—	63.6091	63.6091	0.00116	0.00243	0.21633	64.5786
Vendor	0.01171	0.00417	0.16191	0.07862	0.00093	0.00185	0.03523	0.03708	0.00185	0.00973	0.01159	—	129.883	129.883	0.00732	0.01940	0.28203	136.130
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00065	0.00058	0.00051	0.00621	0.00000	0.00000	0.00168	0.00168	0.00000	0.00039	0.00039	—	1.61193	1.61193	0.00004	0.00007	0.00256	1.63525
Vendor	0.00031	0.00011	0.00456	0.00218	0.00003	0.00005	0.00096	0.00101	0.00005	0.00026	0.00032	—	3.55937	3.55937	0.00020	0.00053	0.00333	3.72612
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00012	0.00011	0.00009	0.00113	0.00000	0.00000	0.00031	0.00031	0.00000	0.00007	0.00007	—	0.26687	0.26687	0.00001	0.00001	0.00042	0.27073
Vendor	0.00006	0.00002	0.00083	0.00040	< 0.000005	0.00001	0.00017	0.00018	0.00001	0.00005	0.00006	—	0.58929	0.58929	0.00003	0.00009	0.00055	0.61690
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3. Grading (2027)

3.3.1. Onsite - 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
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.63491	1.37378	12.1813	13.8677	0.02267	0.53897	—	0.53897	0.49585	—	0.49585	—	2,455.46	2,455.46	0.09960	0.01992	—	2,463.88
Dust From Material Movement	—	—	—	—	—	—	2.76551	2.76551	—	1.33615	1.33615	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.06719	0.05646	0.50060	0.56990	0.00093	0.02215	—	0.02215	0.02038	—	0.02038	—	100.909	100.909	0.00409	0.00082	—	101.255
Dust From Material Movement	—	—	—	—	—	—	0.11365	0.11365	—	0.05491	0.05491	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01226	0.01030	0.09136	0.10401	0.00017	0.00404	—	0.00404	0.00372	—	0.00372	—	16.7067	16.7067	0.00068	0.00014	—	16.7640
Dust From Material Movement	—	—	—	—	—	—	0.02074	0.02074	—	0.01002	0.01002	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3.2. Offsite - 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
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03382	0.03058	0.02121	0.36742	0.00000	0.00000	0.08266	0.08266	0.00000	0.01938	0.01938	—	84.8121	84.8121	0.00154	0.00324	0.28844	86.1049
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.08345	0.01907	1.05828	0.52057	0.00580	0.01105	0.23237	0.24342	0.01105	0.06362	0.07467	—	859.618	859.618	0.06355	0.13595	1.67534	903.394
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00131	0.00117	0.00101	0.01243	0.00000	0.00000	0.00336	0.00336	0.00000	0.00079	0.00079	—	3.22387	3.22387	0.00007	0.00013	0.00512	3.27049
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00341	0.00077	0.04501	0.02147	0.00024	0.00045	0.00947	0.00992	0.00045	0.00259	0.00305	—	35.3328	35.3328	0.00261	0.00559	0.02978	37.0928
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00024	0.00021	0.00019	0.00227	0.00000	0.00000	0.00061	0.00061	0.00000	0.00014	0.00014	—	0.53375	0.53375	0.00001	0.00002	0.00085	0.54147
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00062	0.00014	0.00821	0.00392	0.00004	0.00008	0.00173	0.00181	0.00008	0.00047	0.00056	—	5.84975	5.84975	0.00043	0.00092	0.00493	6.14113

3.4. Building Construction (2027)

3.4.1. Onsite - 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
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.16707	0.97105	8.25338	9.90715	0.01942	0.26132	—	0.26132	0.24041	—	0.24041	—	1,800.91	1,800.91	0.07305	0.01461	—	1,807.09
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12790	0.10642	0.90448	1.08572	0.00213	0.02864	—	0.02864	0.02635	—	0.02635	—	197.360	197.360	0.00801	0.00160	—	198.038
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02334	0.01942	0.16507	0.19814	0.00039	0.00523	—	0.00523	0.00481	—	0.00481	—	32.6752	32.6752	0.00133	0.00027	—	32.7874
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4.2. Offsite - 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
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00937	0.00333	0.12953	0.06289	0.00074	0.00148	0.02818	0.02967	0.00148	0.00779	0.00927	—	103.907	103.907	0.00586	0.01552	0.22563	108.904
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00101	0.00035	0.01460	0.00699	0.00008	0.00016	0.00306	0.00322	0.00016	0.00085	0.00101	—	11.3900	11.3900	0.00064	0.00170	0.01067	11.9236
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Vendor	0.00018	0.00006	0.00266	0.00128	0.00001	0.00003	0.00056	0.00059	0.00003	0.00015	0.00018	—	1.88574	1.88574	0.00011	0.00028	0.00177	1.97408
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.5. Paving (2027)

3.5.1. Onsite - 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
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54404	0.45646	4.29849	6.48965	0.00940	0.16865	—	0.16865	0.15516	—	0.15516	—	991.534	991.534	0.04022	0.00804	—	994.937
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01491	0.01251	0.11777	0.17780	0.00026	0.00462	—	0.00462	0.00425	—	0.00425	—	27.1653	27.1653	0.00110	0.00022	—	27.2585
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00272	0.00228	0.02149	0.03245	0.00005	0.00084	—	0.00084	0.00078	—	0.00078	—	4.49753	4.49753	0.00018	0.00004	—	4.51296
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.5.2. Offsite - 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
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04227	0.03822	0.02651	0.45928	0.00000	0.00000	0.10333	0.10333	0.00000	0.02422	0.02422	—	106.015	106.015	0.00193	0.00405	0.36056	107.631
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00109	0.00097	0.00084	0.01035	0.00000	0.00000	0.00280	0.00280	0.00000	0.00066	0.00066	—	2.68656	2.68656	0.00006	0.00011	0.00427	2.72541
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00020	0.00018	0.00015	0.00189	0.00000	0.00000	0.00051	0.00051	0.00000	0.00012	0.00012	—	0.44479	0.44479	0.00001	0.00002	0.00071	0.45122
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	4/5/2027	4/16/2027	5.00000	10.00000	5,400 sf of asphalt removal (0.12 acres) calculated as 230 tons. Equipment needs assumed as excavators (breaking/removing asphalt), loader/backhoe (tree removal and loading debris), and dump truck (off haul of asphalt and other debris/waste).
Site Preparation	Site Preparation	4/19/2027	4/30/2027	5.00000	10.00000	Vegetation clearing (80 trees), minor grading. Added 5 one way vendor trips per day to account for tree removal off haul (4 one way trips per day) and asphalt for repair of the San Pablo Dam Road (1 one way trip per day). Construction equipment needed/assumptions include bulldozer, grader and backhoe/loader.
Grading	Grading	5/3/2027	5/21/2027	5.00000	15.0000	Excavation up to 50 feet, 1,500 cy of export. Construction equipment needed/assumptions include excavator (deep trenching and wall excavation), loader (for soil export), dump truck (soil export), and dozer (shaping and material movement).

Building Construction	Building Construction	5/24/2027	7/16/2027	5.00000	40.0000	Stitch pile wall, culvert, manholes (infrastructure installation). Added 4 one way vendor trips for the concrete work associated with the cast-in-drilled-hole concrete piles, the stitch pile wall and the concrete pipe reinforcement. Equipment needed/assumptions : crane (cast-in-drilled-hole piles), excavator (trenching and culvert replacemenT), loader/backhoe (manhole and pipe installation support), crane (positioning heavy pipe sections) concrete trucks for placing concrete into drilled shafts. Adjusted all equipment quantities and worker trips by a factor of 1.4 to reflect a shorter, compressed construction duration (based on applicant-provided information) vs. CalEEMod defaults
Paving	Paving	7/19/2027	7/30/2027	5.00000	10.00000	Roadway repair, restriping, guardrail replacement (approximately 170 feet). Construction equipment needed/assumptions include use of pavers (asphalt placement), rollers (compaction of new surface), striping truck/equiment, and loader/backhoe (final grading/clearing)

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
Demolition	Concrete/Industrial Saws	Diesel	Average	1.000000	8.00000	33.0000	0.73000
Demolition	Rubber Tired Dozers	Diesel	Average	1.000000	8.00000	367.000	0.40000
Demolition	Tractors/Loaders/Backhoes	Diesel	Average	3.00000	8.00000	84.0000	0.37000
Site Preparation	Graders	Diesel	Average	1.000000	8.00000	148.000	0.41000
Site Preparation	Rubber Tired Dozers	Diesel	Average	1.000000	7.00000	367.000	0.40000
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.000000	8.00000	84.0000	0.37000
Grading	Graders	Diesel	Average	1.000000	8.00000	148.000	0.41000
Grading	Rubber Tired Dozers	Diesel	Average	1.000000	8.00000	367.000	0.40000
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00000	7.00000	84.0000	0.37000
Building Construction	Cranes	Diesel	Average	1.000000	6.00000	367.000	0.29000
Building Construction	Forklifts	Diesel	Average	1.000000	6.00000	82.0000	0.20000
Building Construction	Generator Sets	Diesel	Average	1.000000	8.00000	14.0000	0.74000
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.000000	6.00000	84.0000	0.37000
Building Construction	Welders	Diesel	Average	3.00000	8.00000	46.0000	0.45000
Paving	Cement and Mortar Mixers	Diesel	Average	1.000000	6.00000	10.00000	0.56000
Paving	Pavers	Diesel	Average	1.000000	6.00000	81.0000	0.42000
Paving	Paving Equipment	Diesel	Average	1.000000	8.00000	89.0000	0.36000
Paving	Rollers	Diesel	Average	1.000000	7.00000	36.0000	0.38000
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.000000	8.00000	84.0000	0.37000

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	Worker	12.5000	11.7000	LDA,LDT1,LDT2
Demolition	Vendor	—	8.40000	HHDT,MHDT
Demolition	Hauling	5.80000	20.0000	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	Worker	7.50000	11.7000	LDA,LDT1,LDT2
Site Preparation	Vendor	5.00000	8.40000	HHDT,MHDT
Site Preparation	Hauling	0.00000	20.0000	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	Worker	10.00000	11.7000	LDA,LDT1,LDT2
Grading	Vendor	—	8.40000	HHDT,MHDT
Grading	Hauling	12.5333	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	0.00000	11.7000	LDA,LDT1,LDT2
Building Construction	Vendor	4.00000	8.40000	HHDT,MHDT
Building Construction	Hauling	0.00000	20.0000	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	12.5000	11.7000	LDA,LDT1,LDT2
Paving	Vendor	—	8.40000	HHDT,MHDT
Paving	Hauling	0.00000	20.0000	HHDT
Paving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%

5.5. Architectural Coatings

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)
Demolition	0.00000	0.00000	0.00000	230.000	0.00000
Site Preparation	0.00000	0.00000	9.37500	0.00000	0.00000
Grading	0.00000	1,500.00	15.0000	0.00000	0.00000

5.6.2. Construction Earthmoving Control Strategies

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

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00000	203.983	0.03300	0.00400

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Construction: Construction Phases	Adjusted construction schedule to reflect 5 working days (Monday-Friday), and compressed to 100 days to reflect applicant-provided information. Removed architectural coatings phase as it is not applicable.
Construction: Trips and VMT	Site prep phase - Added 5 one way vendor trips per day to account for tree removal off haul (4 one way trips per day) and asphalt for repair of the San Pablo Dam Road (1 one way trip per day). Building construction phase - Added 4 one way vendor trips for the concrete work associated with the cast-in-drilled-hole concrete piles, the stitch pile wall and the concrete pipe reinforcement.

8.4. Construction

8.4.1. Construction Phases

Phase Type	Phase Name	Model Parameter	Default Value	New Value
Demolition	Demolition	End Date	5/3/2027	4/16/2027
Demolition	Demolition	Work Days per Phase	20.0000	10.00000
Demolition	Demolition	Description	—	5,400 sf of asphalt removal (0.12 acres) calculated as 230 tons. Equipment needs assumed as excavators (breaking/removing asphalt), loader/backhoe (tree removal and loading debris), and dump truck (off haul of asphalt and other debris/waste).
Site Preparation	Site Preparation	Start Date	5/4/2027	4/19/2027
Site Preparation	Site Preparation	End Date	5/6/2027	4/30/2027
Site Preparation	Site Preparation	Work Days per Phase	2.00000	10.00000
Site Preparation	Site Preparation	Description	—	Vegetation clearing (80 trees), minor grading. Added 5 one way vendor trips per day to account for tree removal off haul (4 one way trips per day) and asphalt for repair of the San Pablo Dam Road (1 one way trip per day). Construction equipment needed/assumptions include bulldozer, grader and backhoe/loader.
Grading	Grading	Start Date	5/7/2027	5/3/2027
Grading	Grading	End Date	5/12/2027	5/21/2027
Grading	Grading	Work Days per Phase	4.00000	15.0000

Grading	Grading	Description	—	Excavation up to 50 feet, 1,500 cy of export. Construction equipment needed/assumptions include excavator (deep trenching and wall excavation), loader (for soil export), dump truck (soil export), and dozer (shaping and material movement).
Building Construction	Building Construction	Start Date	5/13/2027	5/24/2027
Building Construction	Building Construction	End Date	2/17/2028	7/16/2027
Building Construction	Building Construction	Work Days per Phase	200.000	40.0000
Building Construction	Building Construction	Description	—	Stitch pile wall, culvert, manholes (infrastructure installation). Added 4 one way vendor trips for the concrete work associated with the cast-in-drilled-hole concrete piles, the stitch pile wall and the concrete pipe reinforcement. Equipment needed/assumptions : crane (cast-in-drilled-hole piles), excavator (trenching and culvert replacemenT), loader/backhoe (manhole and pipe installation support), crane (positioning heavy pipe sections) concrete trucks for placing concrete into drilled shafts. Adjusted all equipment quantities and worker trips by a factor of 1.4 to reflect a shorter, compressed construction duration (based on applicant-provided information) vs. CalEEMod defaults
Paving	Paving	Start Date	2/18/2028	7/19/2027
Paving	Paving	End Date	3/3/2028	7/30/2027
Paving	Paving	Description	—	Roadway repair, restriping, guardrail replacement (approximately 170 feet). Construction equipment needed/assumptions include use of pavers (asphalt placement), rollers (compaction of new surface), striping truck/equiment, and loader/backhoe (final grading/clearing)

8.4.6. Trips and VMT

Phase Name	Trip Type	Model Parameter	Default Value	New Value
Building Construction	Vendor	One-Way Trips per Day	0.00000	4.00000

Appendix B:
Biological Resources Supporting Information

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B-1: National Environmental Study (Minimal Impacts)

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San Pablo Dam Road-La Honda Road Storm Drain and Slide Repair
Draft Natural Environment Study (Minimal Impacts)

San Pablo Dam Road and La Honda Road
Contra Costa County, California
District 4
ER15J9(182)
May 13, 2025
Updated July 21, 2025
STATE OF CALIFORNIA
Department of Transportation
Contra Costa County Public Works Department

Prepared By: _____ Date: July 21, 2025

Robert Carroll, Senior Biologist
714.206.9473
FirstCarbon Solutions, Inc.
2999 Oak Road, Suite 290, Walnut Creek, CA 94597

Prepared By: _____ Date: _____

Shravan Sundaram, Environmental Analyst
925.313.2022
Environmental Services Division
Contra Costa County Public Works Department

Approved By: _____ Date: _____

Keevan Harding, District Biologist
510.622.5912
Office of Local Assistance
District 4

Approved By: _____ Date: _____

Tom Holstein, Environmental Branch Chief
510.286.6371
Office of Local Assistance
District 4

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List of Acronyms and Abbreviations

BSA	Biological Study Area
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CNPS	California Native Plant Society
CNDDB	California Natural Diversity Database
CRLF	California red-legged frog
CWA	Clean Water Act
County	Contra Costa County Public Works Department
EFH	Essential Fish Habitat
EO	Executive Order
EPA	United States Environmental Protection Agency
FC	Federal Candidate
FE	Federal Endangered
FCS	FirstCarbon Solutions
FP	Fully Protected
FT	Federal Threatened
GPS	Global Positioning System
I-80	Interstate 80
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NWPT	Northwestern pond turtle
OHWM	ordinary high water mark
RCP	reinforced concrete pipe
RSP	rock slope protection
RWQCB	Regional Water Quality Control Board
SE	State Endangered
SFDFW	San Francisco dusky-footed woodrat

SSC	Species of Special Concern
ST	State Threatened
State Water Board	California State Water Resources Control Board
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

1. Introduction

FirstCarbon Solutions (FCS) conducted a background review and reconnaissance-level field survey for the San Pablo Dam Road-La Honda Road Storm Drain and Slide Repair Project (proposed project) in May 2024. Project history, project description, and other project-specific information are further described in Sections 1.1 and 1.2 below.

Project Effects on Sensitive Biotic Habitats

Two biotic habitats were identified within the approximate 1.62-acre Biological Study Area (BSA): developed (0.88 acre) and disturbed riparian woodland (0.74 acre). The proposed project would temporarily impact 0.78 acre of developed land and 0.48 acre of disturbed riparian woodland and would permanently impact 0.20 acre of disturbed riparian woodland. Potential staging would occur within 0.10 acre of developed land and 0.06 acre of disturbed riparian woodland.

Special-status Plant Species

Many special-status plant species are known to occur in the greater region of the BSA. However, many of these plants are associated with habitat types that do not currently occur within the BSA. Additionally, other plants analyzed occur at elevations outside of the range of elevations present on the BSA or occur on specific soil substrates that are not present within the BSA (see Table 2 for further details). While there are special-status plants known to occur locally in mesic and riparian woodland, the level of disturbance and abundance of non-native vegetation, specifically the dense ground cover of Canary ivy (*Hedera canariensis*), generally precludes the growth of most native vegetation. Therefore, all special-status plants are determined to be absent from the BSA and no effect on any of these species would result from project implementation.

Special-status Wildlife Species

Species Without Potential to Occur in the BSA

As presented in Table 2, there are several federal and/or State special-status wildlife species that occur within the greater region but do not occur within the BSA because the BSA lacks suitable habitat and/or is outside the species' range. These include, but are not limited to, the California tiger salamander (*Ambystoma californiense*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), San Pablo song sparrow (*Melospiza melodia samuelis*), California Ridgway's rail (*Rallus obsoletus obsoletus*), San Pablo vole (*Microtus californicus sanpabloensis*), salt-marsh harvest mouse (*Reithrodontomys raviventris*), salt-marsh wandering shrew (*Sorex vagrans halicoetes*),foothill yellow-legged frog (*Rana boylii)*, tricolored blackbird (*Agelaius tricolor)*, California black rail (*Laterallus jamaicensis coturniculus*), California Ridgway's rail (*Rallus obsoletus obsoletus*), green sturgeon (*Acipenser medirostris*), tidewater goby (*Eucyclogobius newberryi*), delta smelt (*Hypomesus transpacificus*), and longfin smelt (*Spirinchus thaleichthys*).

Species with Potential to Occur in the BSA

The BSA supports potentially suitable habitat for migratory bird species protected under the Migratory Bird Treaty Act (MBTA).

The BSA contains riparian woodland and is adjacent to an urbanized reach of San Pablo Creek, providing marginally suitable habitat for three species: California red-legged frog (CRLF; *Rana draytonii*), which was recorded 1.7 miles upstream of the BSA at the junction of San Pablo Creek and San Pablo Reservoir in 2008; San Francisco dusky-footed woodrat (SFDFW; *Neotoma fuscipes annectens*), which was recorded approximately 2.5 miles from the BSA along Pinole Creek in 2015 and 2017; and northwestern pond turtle (NWPT; *Actinemys marmorata*) which was recorded approximately 2.5 miles from the BSA along Pinole Creek in 1994, 1996, 2012, and 2017 and 2 miles downstream from the BSA within the San Pablo Reservoir in 1992. However, due to the disturbed nature of the BSA, the dense residential developments present adjacent to San Pablo Creek, and the lack of recorded occurrences within the upper and urbanized reaches of San Pablo Creek it is unlikely that these three these species would occur.

Out of an abundance of caution, avoidance measures would be carried out by the proposed project to ensure that no significant impact to CRLF, SFDFW, or NWPT would occur. Therefore, the proposed project is not likely to adversely affect CRLF, SFDFW, or NWPT.

Permits and Consultation

The proposed project may affect, but is not likely to adversely affect, the CRLF, NWPT, or any other federally listed species, and thus formal consultation should not be necessary under the federal Endangered Species Act. NWPT is currently a candidate species/proposed threatened and therefore does not require a Section 7 determination in this document since Caltrans is unable to consult on NWPT or conference on the species at the moment.

1.1 Project History

1.1.1 Project Purpose and Need

The project site is located along San Pablo Dam Road, approximately 200 feet southeast of La Honda Road, in unincorporated El Sobrante, California. The winter storms of February and March of 2023 caused an embankment slide along San Pablo Dam Road which included a portion of the westbound lane. The northernmost westbound lane is currently closed due to the storm damage. The proposed project is needed to reestablish the westbound lane and prevent damage to the remaining open traffic lanes. San Pablo Dam Road is a route for commuters heading from the El Sobrante area to Interstate 80 (I-80) and provides an important connection during the daily commute.

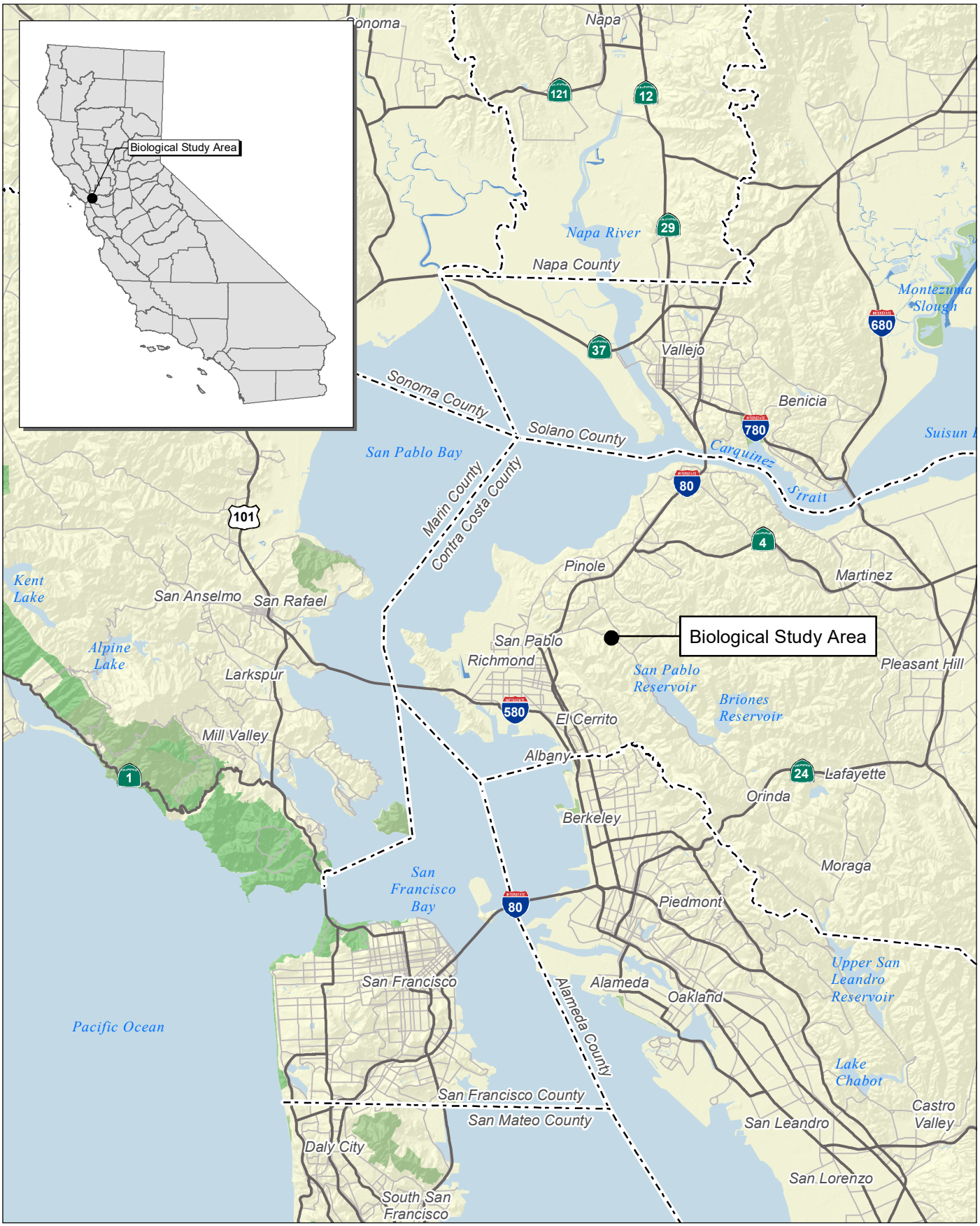
The proposed project will stabilize the embankment, repair the damaged section of the roadway, and replace a culvert failure on the north side of San Pablo Dam Road.

1.2 Project Description

In order to support and rebuild the damaged portion of the roadway, the proposed project would install an approximately 150-foot-long stitch pile wall parallel to the north side of the roadway. The wall would consist of cast-in-drilled-hole concrete piles spaced up to 6 feet apart and tied together with a cast-in-place reinforced concrete cap beam. The wall will be located approximately 50 feet north of San Pablo Dam Road, toward the middle of the embankment, on an existing bank bench between the roadway and San Pablo Creek. Excavation of the damaged embankment between the wall and roadway would be necessary at an anticipated maximum depth of 24 feet. The portion of the embankment between the wall and San Pablo Dam Road would be regraded and geogrid reinforcement would be added to provide a 2:1 maximum slope. The geogrid reinforcement would provide necessary long-term stability to the slope. The geogrid is a type of geosynthetic material used to provide stabilization and reinforcement to soils. The geogrid would be buried (unexposed) underneath the backfill materials. The piles for the stitch pile wall would be set via drilling. No pile driving would occur during the proposed project. The anticipated excavation depth is 50 feet for the piles. Minimal grading in front of the wall is anticipated to be required, minimizing impacts of the project closer to San Pablo Creek. The embankment downhill of the proposed stitch pile wall would not be addressed. The existing 18-inch culvert outfall located within the slide area would be relocated outside of the slide area, just to the west of the proposed wall. The intact portion of the culvert under the road would be lined with a cured-in-place pipe liner. The downstream portion of the 18-inch culvert severed by the slide would be removed. Two manholes and approximately 75 feet of reinforced concrete pipe (RCP) would be installed to deliver stormwater to the new outfall location. A concrete flared end section and rock slope protection (RSP) would be installed at the outfall. RSP will terminate at the existing bench in the upper portion of the embankment above the ordinary high water mark (OHWM). Additional work items would include temporary traffic control, erosion control, repairing approximately 200 feet of the roadway, re-striping, and replacing approximately 170 feet of guardrail. The proposed project would not require any work within San Pablo Creek, including below the OHWM, and no dewatering of the creek would occur.

Drainage patterns would be restored to previous conditions. Approximately 80 trees are anticipated to be removed as part of this project. At minimum, one lane of traffic in each direction would be open during construction. Construction is anticipated to occur in summer or fall of 2026 and to take approximately 100 working days to complete.

All construction-related materials would be removed after construction activities are complete. The temporarily disturbed areas and staging areas would be cleaned up, hydroseeded, and revegetated with appropriate native species, as necessary. Permanent erosion control, including soil stabilization measures such as hydroseeding would be applied to all temporarily affected project areas to minimize erosion after construction.



Source: Census 2000 Data, The California Spatial Information Library (CaSIL).

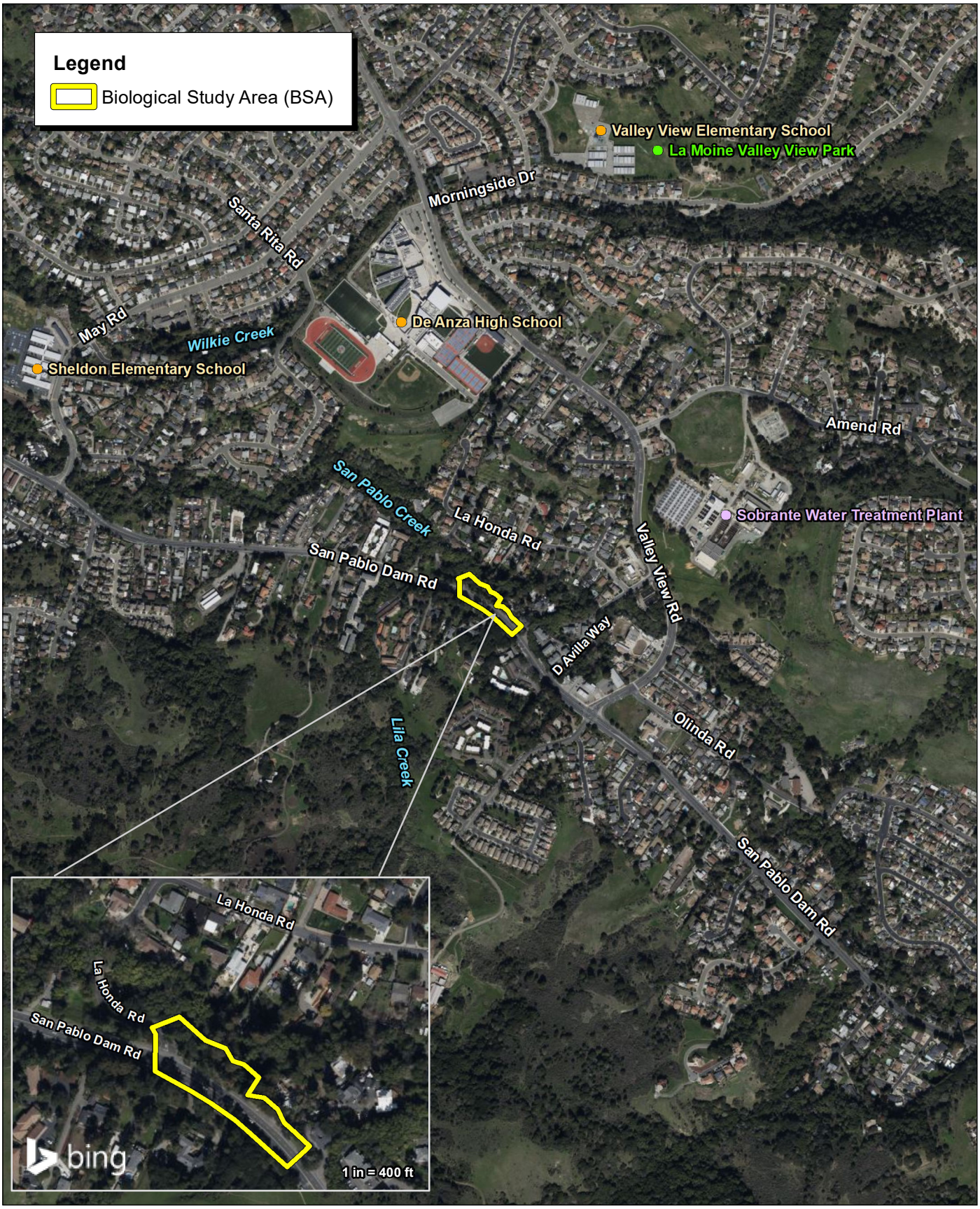
FIRSTCARBON SOLUTIONS™

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Figure 1
Regional Location Map

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CONTRA COSTA COUNTY
SAN PABLO DAM ROAD–LA HONDA ROAD STORM DRAIN AND EROSION REPAIR PROJECT
NATURAL ENVIRONMENTAL STUDY, MINIMAL IMPACT (NES-MI)



Source: Bing Aerial Imagery. Contra Costa County Public Works Department

FIRSTCARBON SOLUTIONS™

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Feet

Figure 2
Local Vicinity Map

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CONTRA COSTA COUNTY
SAN PABLO DAM ROAD–LA HONDA ROAD STORM DRAIN AND EROSION REPAIR PROJECT
NATURAL ENVIRONMENTAL STUDY, MINIMAL IMPACT (NES-MI)

2. Study Methods

Prior to conducting the reconnaissance-level field survey, FCS Senior Biologist Robert Carroll (Appendix A, Biologist Qualifications) compiled a list of threatened, endangered, and otherwise special-status species previously recorded within the BSA and vicinity based on a search of the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) database (Appendix B, IPAC Database Query), the California Natural Diversity Database (CNDDB) database (Appendix C, CNDDB Database Query), and the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California (Appendix D, CNPS Database Query) for the *Richmond, California* USGS 7.5-minute Topographic Quadrangle Map and the eight surrounding quadrangles. The CNDDB Biogeographic Information and Observation System (BIOS 6) was used to determine the distance between the known occurrences of special-status species and the BSA. The BSA is located outside of the National Marine Fisheries Service (NMFS) jurisdiction, and, therefore, an NMFS-specific species list is not included within this report.

The remaining eight USGS 7.5-minute topographic quadrangle maps included the following:

- Petaluma Point
- Mare Island
- Benicia
- San Quentin
- Briones Valley
- San Francisco North
- Oakland West
- Oakland East

2.1.1 Field Reviews

FCS conducted a general reconnaissance-level field survey of the BSA on May 28, 2024.

2.1.2 Survey Methods

FCS walked the BSA and noted the Global Positioning System (GPS) locations of potential biological resources using the ArcGIS Field Maps mobile application. The objective of the survey was not to extensively search for every species occurring within the BSA but to ascertain general site conditions and identify whether existing vegetation communities provide suitable habitat for special-status plant or wildlife species. Special-status and other biological resources identified during the literature review were ground-truthed during the field survey for mapping accuracy. Special attention was paid to sensitive habitats and areas potentially supporting special-status floral and faunal species.

2.2 Personnel and Survey Dates

The reconnaissance-level field survey of the BSA occurred on May 28, 2024. The survey was conducted by FCS Senior Biologist, Robert Carroll.

2.3 Regulatory Requirements

2.3.1 Federal Endangered Species Act

USFWS has jurisdiction over species listed as threatened or endangered under the federal Endangered Species Act of 1973. Section 9 of Endangered Species Act protects listed species from "take," which is broadly defined as actions taken to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." The Endangered Species Act protects threatened and endangered plants and animals and their critical habitat. Candidate species are those proposed for listing; these species are usually treated by resource agencies as if they were actually listed during the environmental review process.

Project Applicability: The only two federally listed animal species with a reasonable expectation to occur near the BSA are CRLF and NWPT. Both species are not expected to be present within the BSA during project construction due to the low quality of suitable habitat. Nevertheless, avoidance and minimization measures, such as seasonal work restrictions, a Worker Environmental Awareness Program, a pre-construction survey, installation of exclusion fencing around the impact area prior to construction, and revegetation of the work area, would avoid any potential take of the CRLF and NWPT. The proposed project **may affect but is not likely to adversely affect** the CRLF and NWPT, and formal consultation for these species should not be necessary.

2.3.2 Clean Water Act and Porter-Cologne Water Quality Control Act

The United States Army Corps of Engineers (USACE) administers Section 404 of the federal Clean Water Act (CWA), which regulates the discharge of dredge and fill material into waters of the United States.

As of the preparation of this report in April 2025, the final "Revised Definition of Waters of the United States" rule was published in the Federal Register on January 18, 2023, and took effect on March 20, 2023. Moreover, the United States Environmental Protection Agency (EPA) and USACE (hereafter known as the agencies) are in receipt of the U.S. Supreme Court's May 25, 2023, decision in the case of *Sackett v. Environmental Protection Agency*. On August 29, 2023, the agencies issued a final implementing rule to amend the definition of waters of the U.S. to conform with the *Sackett* ruling.

The term "waters of the United States" is defined in USACE regulations at 33 Code of Federal Regulations Part 328.3(a) as:

1. Waters which are:

    a. Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
    b. The territorial seas; or
    c. Interstate waters;

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

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

4. Wetlands adjacent to the following waters:

    a. Waters identified in paragraph (a)(1) of this section; or
    b. Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

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

The following are not “waters of the United States”:

1. Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the CWA;

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

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

4. Artificially irrigated areas that would revert to dry land if the irrigation ceased;

5. Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;

6. Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

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

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

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the EPA and/or USACE.

"Wetland" refers to areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and seasonal wetlands. Wetlands are considered jurisdictional if they fall under one of the categories of waters of the United States defined above. The USACE jurisdiction typically extends up to the ordinary high water mark (OHWM).

In general, a USACE permit must be obtained before placing fill in wetlands or other waters of the United States. The type of permit depends on the impacted acreage, the purpose of the proposed fill, and other factors.

The Reginal Water Quality Control Board (RWQCB) regulates actions that would involve "discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State" (Water Code § 13260(a)), pursuant to provisions of the Porter-Cologne Water Quality Act and under Section 401 of the CWA. "Waters of the State" are defined as "any surface water or groundwater, including saline waters, within the boundaries of the State" (Water Code § 13050(e)). In 2019, the California State Water Resources Control Board published the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State to guide wetland waters of the State determinations and the permitting process.

As stated in Section 401 of the CWA, "any applicant for a federal permit for activities that involve a discharge to waters of the State, shall provide the federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act." Therefore, before the USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 Water Quality Certification from the RWQCB.

Additionally, the RWQCB administers the federal National Pollutant Discharge Elimination System (NPDES) program. Established through the CWA, the NPDES program controls and regulates pollutants entering water bodies from point and nonpoint discharges. The RWQCB issues NPDES permits for discharges to water bodies, including those related to construction activity (e.g., Construction General Permit).

Project Applicability: The BSA contains a culvert in need of repair that conveys flows into San Pablo Creek to the north of the BSA that will be modified as part of the proposed project. San Pablo Creek is a perennial feature that flows into the San Pablo Reservoir. The San Pablo River is likely a Water of the United States and State. However, project-related impacts to repair the culvert would occur outside of both the OHWM and the top of bank of San Pablo Creek and therefore no impacts to Waters of the United States or State are proposed.

2.3.3 Federal Migratory Bird Treaty Act

The MBTA implements international treaties between the United States and other nations devised to protect migratory birds, their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping unless expressly authorized in the law and regulations or otherwise by permit. All migratory birds and their nests are protected from take and other impacts under the MBTA (16 United States Code [USC] § 703, *et seq*.).

Project Applicability: All native bird species potentially occurring within the BSA are covered under the MBTA. Species observed during the reconnaissance-level field survey that have the potential to nest within or within disturbance distance of the BSA include oak titmouse (*Baeolophus inornatus*), Anna's hummingbird (*Calypte anna*), chestnut backed chickadee (*Poecile rufescens*), bushtit (*Psaltriparus minimus*), yellow-rumped warbler (*Setophaga coronata*), lesser goldfinch (*Spinus psaltria*), Bewick's wren (*Thryomanes bewickii*), and others. These avian species are protected by the MBTA.

2.3.4 Bald Eagle and Golden Eagle Protection Act

The golden eagle (*Aquila chrysaetos*) and bald eagle (*Haliaeetus leucocephalusare*) are afforded additional protection under the Eagle Protection Act, amended in 1973 (16 USC § 669, *et seq.*) and the Bald and Golden Eagle Protection Act (16 USC §§ 668–668d).

Project Applicability: As presented in Table 2 below, the BSA does not contain suitable habitat to support either the golden or bald eagle. The nearest recorded occurrence of the golden eagle is approximately 9.5 miles south of the BSA, associated with the Robert Sibley Volcanic Regional Preserve. However, this species was last observed in 1993 and has not been documented in this location since. The nearest recorded occurrence of the bald eagle is approximately 3 miles south of the BSA, associated with the San Pablo Reservoir. However, this species was last observed in 2006 and has not been documented in this location since.

2.3.5 Executive Order 13751–Invasive Species

On February 3, 1999, Executive Order 13112 was signed requiring federal agencies to combat the introduction or spread of invasive species. This Executive Order was then amended to Executive Order 13751 as of December 2016. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health."

Under the Executive Order, federal agencies cannot authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless all reasonable measures to minimize risk of harm have been analyzed and considered.

Project Applicability: The BSA currently supports a common mix of non-native and invasive vegetation such as wild oat (*Avena fatua*), black mustard (*Brassica nigra*), Chilean brome (*Bromus catharticus var. elatus*), bull thistle (*Cirsium vulgare*), rattail sixweeks grass (*Festuca myuros*), little robin (*Geranium purpureum*), Canary ivy (*Hedera canariensis*), foxtail barley (*Hordeum murinum*), sweet pea (*Lathyrus latifolius*), glossy privet (*Ligustrum lucidum*), bur medic (*Medicago polymorpha*), Common plantain (*Plantago major*), annual bluegrass (*Poa annua*), common groundsel (*Senecio vulgaris*), field hedge parsley (*Torilis arvensis*), spring vetch (*Vicia sativa*), and greater periwinkle (*Vinca major*). The proposed project is not expected to result in a substantial increase of invasive species due to the abundance of non-native and invasive species already present within the BSA. However, a minimal amount of grading would occur within the understory of the disturbed riparian woodland habitat adjacent to San Pablo Creek, which could impact downstream vegetation. As such, all areas disturbed by grading, construction ingress and egress, and vegetation removal would be required to be seeded with a native seed mixture. The native seed mixture would assist in increasing the amount of native understory vegetation and mitigating any potential erosion.

2.3.6 California Endangered Species Act

The State of California enacted the California Endangered Species Act (CESA) in 1984. CESA pertains to State-listed endangered and threatened species. CESA requires lead agencies to consult with the California Department of Fish and Wildlife (CDFW) when preparing California Environmental Quality Act (CEQA) documents to ensure that lead agency actions do not jeopardize the continued existence of a listed species or result in the destruction or adverse modification of habitat essential to the continued existence of those species if there are reasonable and prudent alternatives available (Fish and Game Code [FGC] § 2080). CESA directs agencies to consult with the CDFW on projects or actions that could affect listed species, directs the CDFW to determine whether jeopardy would occur, and allows the CDFW to identify “reasonable and prudent alternatives” to the project consistent with conserving the species. CESA allows the CDFW to authorize exceptions to the State’s prohibition against take of a listed

species if the take of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA (FGC § 2081).

Project Applicability: No State-listed species have a reasonable expectation to occur within the BSA due to the lack of suitable habitat. Table 2 below provides additional details regarding State-listed species and summarizes habitat requirements that are absent from the BSA.

2.3.7 California Fish and Game Code

Under CESA, the CDFW has the responsibility for maintaining a list of endangered and threatened species (FGC § 2070). Fish and Game Code Sections 2050 through 2098 outline the protection provided to California's rare, endangered, and threatened species. Fish and Game Code Section 2080 prohibits the taking of plants and animals listed under the CESA. Fish and Game Code Section 2081 establishes an incidental take permit program for State-listed species. The CDFW maintains a list of "candidate species" which it formally notices as being under review for addition to the list of endangered or threatened species.

In addition, the Native Plant Protection Act of 1977 (NPPA) (FGC § 1900, *et seq*.) prohibits the taking, possessing, or sale within the State of any plants with a State designation of rare, threatened, or endangered (as defined by the CDFW). An exception to this prohibition in the NPPA allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify the CDFW and give the agency at least 10 days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed. Fish and Game Code Section 1913 exempts from take prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right-of-way." Project impacts to these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the project.

In addition to formal listing under the Endangered Species Act and CESA, some species receive additional consideration by the CDFW and local lead agencies during the CEQA process. Species that may be considered for review are those listed as a "Species of Special Concern." The CDFW maintains lists of Species of Special Concern that serve as species "watch lists." Species with this status may have limited distributions or limited populations, and/or the extent of their habitats has been reduced substantially, such that their populations may be threatened. Thus, their populations are monitored and they may receive special attention during environmental review. While they do not have statutory protection, they may be considered rare under CEQA and specific protection measures may be warranted. In addition to Species of Special Concern, the CDFW Special Animals List identifies animals that are tracked by the CNDDB and may be potentially vulnerable but warrant no federal interest and no legal protection.

Sensitive species that would qualify for listing but are not currently listed are afforded protection under CEQA. CEQA Guidelines Section 15065 (Mandatory Findings of Significance) requires that a substantial reduction in numbers of a rare or endangered species be considered a significant effect. CEQA Guidelines Section 15380 (Rare or Endangered Species) provides for the assessment of unlisted species as rare or endangered under CEQA if the species can be shown to meet the criteria for listing. Unlisted plant species on the CNPS List ranked 1A, 1B, and 2 would typically require evaluation under CEQA.

Fish and Game Code Sections 3500 to 5500 outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. The CDFW cannot issue permits or licenses that authorize the take of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock.

Under Fish and Game Code Section 3503.5, it is unlawful to take, possess, or destroy any birds in the orders of Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. To comply with the requirements of CESA, an agency reviewing a project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present in the project Study Area and determine whether the project will have a potentially significant impact on such species. In addition, the CDFW encourages informal consultation on any project that may impact a candidate species.

Project-related impacts to species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of CESA. Take of protected species incidental to otherwise lawful management activities may be authorized under Fish and Game Code Section 206.591. Authorization from the CDFW would be in the form of an Incidental Take Permit.

Fish and Game Code Section 1602 requires any entity to notify the CDFW before beginning any activity that “may substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake” or “deposit debris, waste, or other materials that could pass into any river, stream, or lake.” “River, stream, or lake” includes waters that are episodic and perennial and ephemeral streams, desert washes, and watercourses with a subsurface flow. A Lake or Streambed Alteration Agreement will be required if the CDFW determines that project activities may substantially adversely affect fish or wildlife resources through alterations to a covered body of water. CDFW jurisdiction typically extends to the edge or “drip line” of the riparian habitat or top of bank.

Project Applicability: The BSA does not contain an aquatic feature with a defined bed, channel, or bank of any river, stream, or lake. However, the BSA does contain riparian vegetation associated with San Pablo Creek that is regulated under Fish and Game Code Section 1602. The project applicant would be required to consult with CDFW

under the Lake and Streambed Alteration Program for proposed impacts to riparian vegetation.

The remaining sections of California Fish and Game Code outlined above affords protection for most native avian, mammal, and other wildlife species within or within disturbance distance of the BSA.

2.3.8 Contra Costa County Tree Protection and Preservation Ordinance

Trees are protected under Chapter 816-6 of the Ordinance Code. According to the Contra Costa County Tree Ordinance, a "protected tree" is defined as the following:

(1) On all properties within the unincorporated area of the county:

(A) Where the tree to be cut down, destroyed or trimmed by topping is adjacent to or part of a riparian, foothill woodland or oak savanna area, or part of a stand of four or more trees, measures twenty inches or larger in circumference (approximately 6.5 inches in diameter) as measured four and one-half feet from ground level, and is included in the following list of indigenous trees: Bigleaf Maple (*Acer macrophyllum*), Box Elder (*Acer negundo)*, California Buckeye *(Aesculus californica)*, White Alder *(Alnus Rhombifolia)*, Madrone (*Arbutus menziesii*), Toyon (*Heteromeles arbutifolia)*, California Black Walnut (*Juglans Hindsii)*, California Juniper (*Juniperus californica)*,Tanoak (*Lithocarpus densiflora*), Knobcone Pine (*Pinus attenuate)*, Digger Pine (*Pinus sabiniana*), California Sycamore (*Platanus Racemosa*), Fremont Cottonwood (*Populus fremontii*), Black Cottonwood (*Populus trichocarpa*), Coast Live Oak (*Quercus agrifolia*), Canyon Live Oak (*Quercus chrysolepis*), Blue Oak (*Quercus douglasii*), California Black Oak (*Quercus kelloggii*), Valley Oak (*Quercus lobata*), Interior Live Oak (*Quercus wislizenii*), Yellow Willow (*Salix lasiandra*), Red Willow (*Salix laevigata)*, Arroyo Willow (*Salix lasiolepis*), Coast Red Elderberry (*Sambucus callicarpa*), Coast Redwood (*Sequoia sempervirens*), California Bay (*Umbellularia californica*);

(B) Any tree shown to be preserved on an approved tentative map, development or site plan or required to be retained as a condition of approval;

(C) Any tree required to be planted as a replacement for an unlawfully removed tree.

(2) On any of the properties specified in subsection (3) of this section:

(A) Any tree measuring twenty inches or larger in circumference (approximately six and one-half inches diameter), measured four and one-half feet from ground level including the oak trees listed above;

(B) Any multistemmed tree with the sum of the circumferences measuring forty inches or larger, measured four and one-half feet from ground level;

C) And any significant grouping of trees, including groves of four or more trees.

(3) Specified properties referred to in subsection (2) of this section includes:

(A) Any developed property within any commercial, professional office or industrial district;

(B) Any undeveloped property within any district;

(C) Any area designated on the general plan for recreational purposes or open space;

(D) Any area designated in the county general plan open space element as visually significant riparian or ridge line vegetation and where the tree is adjacent to or part of a riparian, foothill woodland or oak savanna area. (Ords. 94-59, 94-22).

Any person proposing to trench, grade, or fill within the dripline of any protected tree or to cut down, destroy, trim by topping, or remove any protected tree shall apply to the department for a tree permit not less than 10 days prior to the proposed tree removal or tree alterations. Persons who would be eligible to apply for three or more individual tree permits under provisions of this chapter may apply for a collective tree permit for the site. (Ords. 94-59, 94-22).

If the reasons for alteration or removal relate to the health of the tree or if grading, trenching or filling is proposed under the dripline of an existing tree, or the review is of a collective tree permit and the director determines that more technical expertise is necessary to make the decision, a report prepared by an arborist may be required, to be paid for by the applicant. (Ords. 94-59, 94-22).

Project Applicability: The proposed project would minimize impacts to trees. Additionally, the County Tree Protection Ordinance does not apply to capital improvement projects and is not applicable to the proposed project.

2.4 Agency Coordination and Professional Contacts

Contra Costa County Public Works Department (County) conducted a field survey in tandem with Caltrans on January 22, 2024. The County subsequently received their signed Preliminary Environmental Study letter on March 5, 2024.

2.5 Limitations That May Influence Results

No limitations or constraints of significance were present during the biological survey and thus no limitations or constraints are expected to influence the results or substantially alter the findings.

3. Results: Environmental Setting

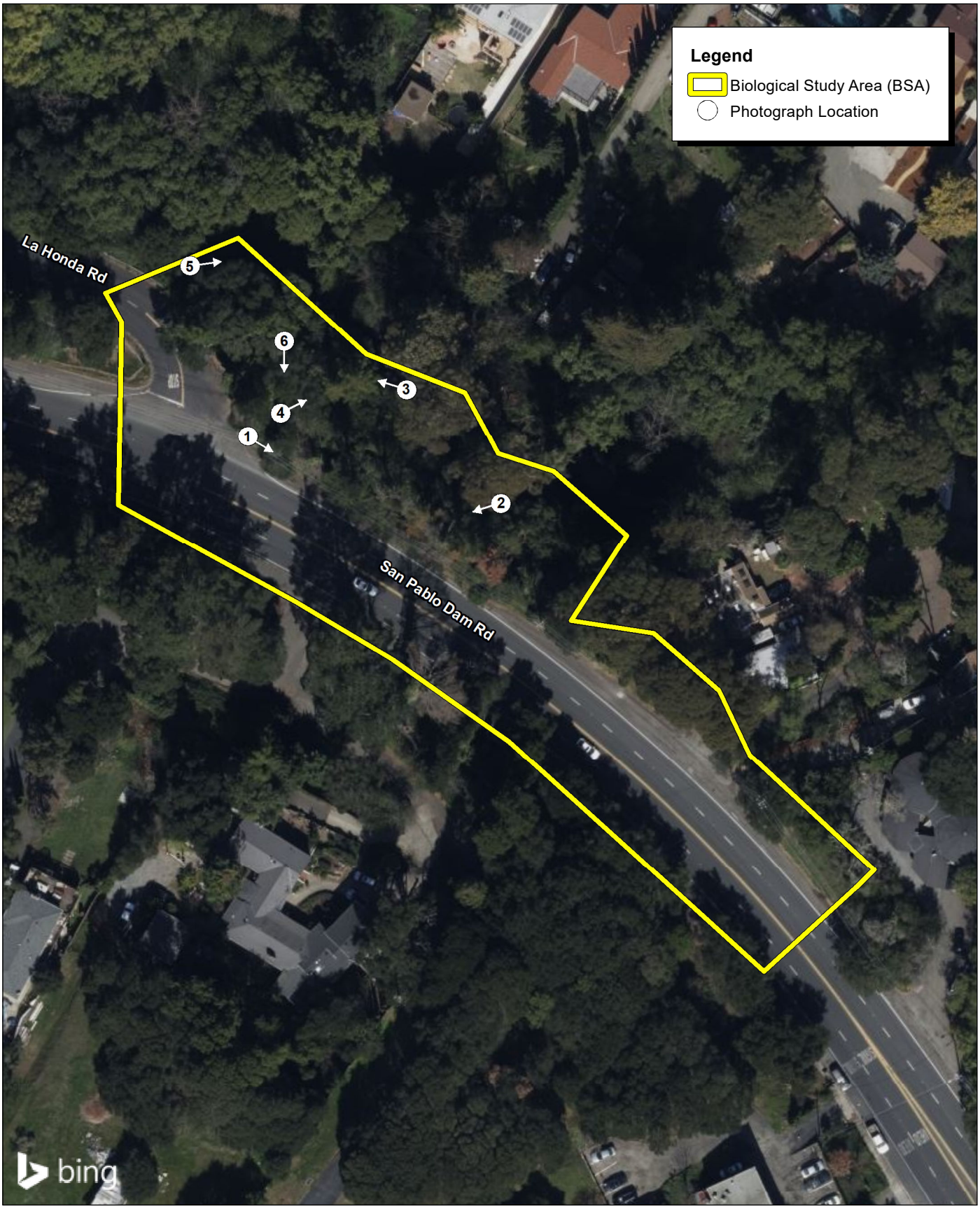
3.1 Description of the Existing Physical and Biological Conditions

The City of El Sobrante is due north of the San Pablo Reservoir that is dominated by residential development with fragmented areas of riparian woodland surrounding San Pablo Creek. Other than residential development and riparian woodland, surrounding dominant vegetation communities include oak woodland and annual grassland. San Pablo Dam Road extends from California Highway 24 in the City of Orinda to the south and moves north through El Sobrante before terminating at San Pablo Road in the City of San Pablo. La Honda Road is a short residential street in El Sobrante that begins at San Pablo Dam Road and terminates at D Avilla Way. The BSA is located within the greater 27,640-acre San Pablo Creek Watershed.

3.1.1 Study Area

The BSA is located within the *Richmond, California* USGS 7.5-minute Topographic Quadrangle Map (Figure 1 - Regional Location Map and Figure 2 - Local Vicinity Map). A photo location map of the BSA is depicted in Figure 3. The 1.62-acre BSA includes all potential areas expected to be permanently or temporarily impacted by the proposed project, as well as some adjacent areas for potential equipment staging (Figure 4 - Land Cover Types and Figure 5 - Impact Map).

The BSA is located in the central northwestern portion of Contra Costa County, north of the San Pablo Reservoir and south/southeast of I-80. The BSA begins at the north intersection of San Pablo Dam Road and La Honda Road and continues southeast down San Pablo Dam Road approximately 200 feet to where the embankment failure is located (Appendix E, Site Photographs).



Source: Bing Aerial Imagery. Contra Costa County Public Works Department

FIRSTCARBON SOLUTIONS™

80 40 0 80 Feet

Figure 3
Photograph Location Map



Source: Bing Aerial Imagery. Contra Costa County Public Works Department

FIRSTCARBON SOLUTIONS™

80 40 0 80 Feet

Figure 4
Vegetation and Land Cover Types



Source: Bing Aerial Imagery. Contra Costa County Public Works Department

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80 40 0 80 Feet

Figure 5
Impact Map

3.1.2 Physical Conditions

The BSA is located on eastern side of the San Pablo Ridge and north of San Pablo Reservoir along San Pablo Dam Road. The elevation within the BSA ranges from approximately 425 to 510 feet above mean sea level (Google Earth 2024). Soils within the BSA are composed of Conejo clay loam, 0 to 2 percent slopes (United States Department of Agriculture [USDA] 2024). San Pablo Creek is located approximately 100 feet north of the BSA. The majority of the soils within the BSA have been significantly altered from their natural state because of grading for the construction of San Pablo Dam Road and adjacent residential developments. Urbanization began in this area going back to the late 1960s.

3.1.3 Biological Conditions

FCS mapped all biotic habitats within the BSA onto an aerial photograph during the field survey (Figure 3). Two biotic habitats were identified within the 1.62-acre BSA: developed and disturbed riparian woodland. Table 1, below, provides the approximate acreage of each biotic habitat within the BSA. For a comprehensive list of wildlife and plant species observed, see Appendix F, Species Compendium.

Table 1: Biotic Habitat Acreages in the BSA

Biotic Habitat/Land Use	Total Area (acres)
Developed	0.88
Disturbed Riparian Woodland	0.74
Total Area	1.62

3.1.3.1 Developed

Vegetation: The majority of the BSA consists of the developed San Pablo Dam Road, which occupies the southwest half of the BSA. Developed land is land that has been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported. Vegetation observed within this area was limited to roadside weeds emerging out of cracks in the ground.

Wildlife: Developed areas provide little habitat value for most wildlife species. While bridges may support various bird and bats, no bridges are present within the BSA as this area is composed entirely of a two-lane roadway.

3.1.3.2 Disturbed Riparian Woodland

Vegetation: The northeast half of the BSA is comprised of disturbed riparian woodland associated with San Pablo Creek. This northeastern facing community is situated on moderate to steep slopes and supports woody vegetation, including coast redwood,

bigleaf maple, California bay, coast live oak, California buckeye, glossy privet, and others. This community is best classified as 68.100.00 *Sequoia sempervirens* Alliance, specifically the 86.100.14 *Sequoia sempervirens – Acer macrophyllum – Umbellularia californica* Association, which is listed as S3 on the CDFW California Natural Communities List (2023).

Wildlife: The disturbed riparian woodland habitat within the BSA provides habitat for many songbird species, while the lack of adjacent foraging habitat limits the potential for nesting raptors. No active nests were observed during the field survey; however, numerous bird species were observed within this area of the BSA, including Anna's hummingbird, Bewick's wren, bushtit, chestnut-backed chickadee, lesser goldfinch, oak titmouse, yellow-rumped warbler, and others. Urban adapted mammals, such as Virgina opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), or raccoon (*Procyon lotor)*, may also utilize this area.

3.1.4 Habitat Connectivity

The BSA itself provides minimal habitat connectivity for local wildlife as the majority of the BSA constitutes either a developed two-lane road or disturbed riparian woodland surrounding the road. The BSA is mapped as having limited connectivity by CDFW.

3.2 Regional Species and Habitats and Natural Communities of Concern

No special-status species were observed within the BSA during the field survey. The special-status species table (Table 2 below) lists 99 special-status plant species and 50 special-status wildlife species that have been recorded in the *Richmond, California* USGS 7.5-minute Topographic Quadrangle Map and the eight surrounding quadrangles by CNDDB, CNPS, and IPAC. Of the 99 special-status plants, 22 are either a federally or State-listed species. Of the 50 special-status wildlife species, 29 are either a federally or State-listed species. For a comprehensive list of special-status species and their potential to occur within the BSA, please see Table 2.

Habitats may be considered to be sensitive if they are limited in distribution, provide habitat for a sensitive species in the region, or are regulated by federal, State, or local law. Six California Sensitive Natural Communities were identified by the CNDDB to occur in at least one of the nine USGS 7.5-minute quadrangles that contain or surround the BSA. None of these six habitats were found to be within or closely associated with the BSA. However, as mentioned in Section 3.1.3.2 above, the disturbed riparian woodland habitat is best classified as 68.100.00 *Sequoia sempervirens* Alliance, specifically the 86.100.14 *Sequoia sempervirens – Acer macrophyllum – Umbellularia californica* Association.

There is no critical habitat as defined by the USFWS for any listed species located within the BSA.

Table 2: Special-status Species Potentially Occurring or Known to Occur in the BSA

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
Plants						
Napa false indigo	*Amorpha californica var. napensis*	1B.2	Perennial deciduous shrub found in broadleafed upland forest, chaparral, and cismontane woodland. Typically found in openings. Elevation: 30–2,000 m. Blooming Period: April–July	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside of species range on Calflora.
bent-flowered fiddleneck	*Amsinckia lunaris*	1B.2	Annual herb found in cismontane woodland, coastal bluff scrub, and valley and foothill grassland. Elevation: 3–795 m. Blooming Period: March–June	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. Multiple recent occurrences ~5 miles southeast of BSA, all further up in the hills.
California androsace	*Androsace elongata ssp. acuta*	4.2	Annual herb found in chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland. Elevation: 150–1,305 m. Blooming Period: March–June	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is mostly below species elevation range. One recent occurrence within 10 miles of BSA.
Robbins' broomrape	*Aphyllon robbinsii*	1B.1	Achlorophyllous annual herb found in coastal bluff scrub. Typically found on bluffs, cliffs, landslides, or shell mounds; possibly on sand dunes. Grows in rocky, sandy soils. Obligate parasite of *Eriophyllum staechadifolium*.	A	N/A	BSA does not contain coastal scrub. BSA is 30 meters above species elevation range and is outside species range on Calflora.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			Elevation: 0–100 m. Blooming Period: April-July			
coast rockcress	*Arabis blepharophylla*	4.3	Perennial herb found in broadleafed upland forest, coastal bluff scrub, coastal prairie, and coastal scrub. Grows in rocky soils. Elevation: 3–1,100 m. Blooming Period: February–May	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
Franciscan manzanita	*Arctostaphylos franciscana*	FE, 1B.1	Perennial evergreen shrub found in coastal scrub. Grows in serpentine soils. Elevation: 30–300 m. Blooming Period: February–April	A	No Effect	BSA does not contain coastal scrub. BSA is outside species range on Calflora.
Presidio manzanita	*Arctostaphylos montana ssp. ravenii*	FE, SE, 1B.1	Perennial evergreen shrub found in chaparral, coastal prairie, and coastal scrub. Typically found on serpentine outcrops. Grows in serpentine soils. Elevation: 20–215 m. Blooming Period: February–March	A	No Effect	BSA does not contain chaparral, coastal prairie, or coastal scrub. BSA is outside species range on Calflora.
pallid manzanita	*Arctostaphylos pallida*	FT, SE, 1B.1	Perennial evergreen shrub found in broadleafed upland forest, chaparral, cismontane woodland, closed-cone coniferous forest, and coastal scrub. Typically found on siliceous shale. Grows in sometimes gravelly, sometimes sandy soils. Elevation: 180–465 m. Blooming Period: December–March	A	No Effect	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is 25 meters below species elevation range. Four recent occurrences within 5 miles of BSA. No critical habitat has been designated for this species.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
marsh sandwort	*Arenaria paludicola*	FE, SE, 1B.1	Perennial stoloniferous herb found in brackish and freshwater marshes and swamps. Typically found in openings. Grows in sandy soils. Elevation: 3–170 m. Blooming Period: May–August	A	No Effect	BSA does not contain marshes or swamps. BSA is outside species range on Calflora.
Carlotta Hall's lace fern	*Aspidotis carlotta-halliae*	4.2	Perennial rhizomatous herb found in chaparral and cismontane woodland. Grows in usually serpentine soils. Elevation: 100–1,400 m. Blooming Period: January-December	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
ocean bluff milk-vetch	*Astragalus nuttallii var. nuttallii*	4.3	Perennial herb found in coastal bluff scrub and coastal dunes. Elevation: 3–120 m. Blooming Period: January-November	A	N/A	BSA does not contain coastal scrub or dunes. BSA is 10 meters above species elevation range and is outside species range on Calflora.
alkali milk-vetch	*Astragalus tener var. tener*	1B.2	Annual herb found in playas, valley and foothill grassland, and vernal pools. Grows in alkaline, adobe clay soils. Elevation: 0–170 m. Blooming Period: March–June	A	N/A	BSA does not contain playas, grassland, or vernal pools. BSA is outside species range on Calflora.
big tarplant	*Blepharizonia plumosa*	1B.1	Annual herb found in valley and foothill grassland. Grows in usually clay soils. Elevation: 30–505 m. Blooming Period: July–October	A	N/A	BSA does not contain grassland. BSA is outside species range on Calflora.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
serpentine reed grass	*Calamagrostis ophitidis*	4.3	Perennial herb found in chaparral, lower montane coniferous forest, meadows and seeps, and valley and foothill grassland. Typically found in openings, often on north-facing slopes. Grows in rocky, serpentine soils. Elevation: 90–1,065 m. Blooming Period: April–July	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
Mt. Diablo fairy-lantern	*Calochortus pulchellus*	1B.2	Perennial bulbiferous herb found in chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland. Elevation: 30–915 m. Blooming Period: April–June	HP/SA	N/A	BSA contains disturbed riparian woodland that is unlikely to provide suitable habitat for this species. Five recent occurrences within 10 miles of BSA.
Tiburon mariposa-lily	*Calochortus tiburonensis*	FT, ST, 1B.1	Perennial bulbiferous herb found in valley and foothill grassland. Grows in serpentine soils. Elevation: 50–150 m. Blooming Period: March–June	A	No Effect	BSA does not contain grassland. BSA is mostly above species elevation range and is outside species range on Calflora.
Oakland star-tulip	*Calochortus umbellatus*	4.2	Perennial bulbiferous herb found in broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland. Grows in often serpentine soils. Elevation: 100–700 m. Blooming Period: March–May	HP/SA	N/A	BSA contains disturbed riparian woodland that is unlikely to provide suitable habitat for this species. Five recent occurrences within 5 miles of BSA.
coastal bluff morning-glory	*Calystegia purpurata ssp. saxicola*	1B.2	Perennial herb found in coastal bluff scrub, coastal dunes, coastal scrub, and North Coast coniferous forest. Elevation: 0–165 m.	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			Blooming Period: (March) April–September			BSA is outside species range on Calflora.
bristly sedge	*Carex comosa*	2B.1	Perennial rhizomatous herb found in coastal prairie, marshes and swamps, and valley and foothill grassland. Typically found on lake margins. Elevation: -5–1,010 m. Blooming Period: May–September	A	N/A	BSA does not contain coastal prairie, marshes, swamps, or grassland. BSA is outside species range on Calflora.
northern meadow sedge	*Carex praticola*	2B.2	Perennial herb found in meadows and seeps. Grows in mesic soils. Elevation: 0–3,200 m. Blooming Period: May–July	A	N/A	BSA does not contain meadows or seeps. BSA is outside species range on Calflora.
Tiburon paintbrush	*Castilleja affinis var. neglecta*	FE, ST, 1B.2	Hemiparasitic perennial herb found in valley and foothill grassland. Grows in serpentine soils. Elevation: 60–400 m. Blooming Period: April–June	A	No Effect	BSA does not contain grassland. BSA is outside species range on Calflora.
johnny-nip	*Castilleja ambigua var. ambigua*	4.2	Hemiparasitic annual herb found in coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, and vernal pools. Typically found on margins. Elevation: 0–435 m. Blooming Period: March–August	A	N/A	BSA does not contain coastal scrub, coastal prairie, marshes, swamps, grassland, or vernal pools. Three occurrences within 5 miles of project site, all along coastline.
Congdon's tarplant	*Centromadia parryi ssp. congdonii*	1B.1	Annual herb found in valley and foothill grassland. Grows in alkaline soils. Elevation: 0–245 m. Blooming Period: (April) May–October (November)	A	N/A	BSA does not contain grassland. BSA is outside species range on Calflora.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
Point Reyes salty bird's-beak	*Chloropyron maritimum ssp. palustre*	1B.2	Hemiparasitic annual herb found in coastal salt marshes and swamps. Elevation: 0–115 m. Blooming Period: June–October	A	N/A	BSA does not contain marshes or swamps. BSA is 15 meters above species elevation range and is outside species range on Calflora.
soft salty bird's-beak	*Chloropyron molle ssp. molle*	FE, CR, 1B.2	Hemiparasitic annual herb found in coastal salt marshes and swamps. Elevation: 0–5 m. Blooming Period: June–November	A	No Effect	BSA does not contain marshes or swamps. BSA is 125 meters above species elevation range. Three occurrences within 5 miles of project site, all along coastline.
San Francisco Bay spineflower	*Chorizanthe cuspidata var. cuspidata*	1B.2	Annual herb found in coastal bluff scrub, coastal dunes, coastal prairie, and coastal scrub. Grows in sandy soils. Elevation: 2–550 m. Blooming Period: April–July (August)	A	N/A	BSA does not contain coastal scrub, coastal dunes, or coastal prairie. BSA is outside species range on Calflora.
robust spineflower	*Chorizanthe robusta var. robusta*	FE, 1B.1	Annual herb found in maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub. Typically found in openings. Grows in sometimes gravelly, sometimes sandy soils. Elevation: 3–300 m. Blooming Period: April–September	A	No Effect	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
Saltmarsh water-hemlock	*Cicuta maculata var. bolanderi*	2B.1	Perennial herb found in freshwater, brackish, or coastal marshes and swamps. Elevation: 0–200 m. Blooming Period: July–September	A	N/A	BSA does not contain marshes or swamps. BSA is outside species range on Calflora.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
Franciscan thistle	*Cirsium andrewsii*	1B.2	Perennial herb found in broadleafed upland forest, coastal bluff scrub, coastal prairie, and coastal scrub. Grows in mesic, sometimes serpentine soils. Elevation: 0–295 m. Blooming Period: March–July	HP/SA	N/A	BSA contains disturbed riparian woodland that is unlikely to provide suitable habitat for this species. Two recent occurrences within 5 miles of BSA.
Mt. Tamalpais thistle	*Cirsium hydrophilum var. vaseyi*	1B.2	Perennial herb found in broadleafed upland forest, chaparral, and meadows and seeps. Typically found in seeps. Grows in serpentine soils. Elevation: 180–620 m. Blooming Period: May–August	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is 25 meters below species elevation range and is outside species range on Calflora.
Santa Clara red ribbons	*Clarkia concinna ssp. automixa*	4.3	Annual herb found in chaparral and cismontane woodland. Elevation: 90–1,500 m. Blooming Period: (April) May–June (July)	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
Presidio clarkia	*Clarkia franciscana*	FE, SE, 1B.1	Annual herb found in coastal scrub and valley and foothill grassland. Grows in serpentine soils. Elevation: 20–335 m. Blooming Period: May–July	A	No Effect	BSA does not contain coastal scrub or grassland. BSA is outside species range on Calflora.
round-headed collinsia	*Collinsia corymbosa*	1B.2	Annual herb found in coastal dunes. Elevation: 0–30 m. Blooming Period: April–June	A	N/A	BSA does not contain coastal dunes. BSA is 100 meters above species elevation range and is

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
						outside species range on Calflora.
San Francisco collinsia	*Collinsia multicolor*	1B.2	Annual herb found in closed-cone coniferous forest and coastal scrub. Grows in sometimes serpentine soils. Elevation: 10–275 m. Blooming Period: (February) March–May	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
serpentine collomia	*Collomia diversifolia*	4.3	Annual herb found in chaparral and cismontane woodland. Grows in sometimes gravelly, sometimes rocky, sometimes serpentine soils. Elevation: 200–600 m. Blooming Period: May–June	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is 45 meters below species elevation range and is outside species range on Calflora.
western leatherwood	*Dirca occidentalis*	1B.2	Perennial deciduous shrub found in broadleafed upland forest, chaparral, cismontane woodland, closed-cone coniferous forest, North Coast coniferous forest, riparian forest, and riparian woodland. Grows in mesic soils. Elevation: 20–640 m. Blooming Period: January–March (April)	HP/SA	N/A	BSA contains disturbed riparian woodland that is unlikely to provide suitable habitat for this species. Six recent occurrences within 5 miles of BSA.
marsh horsetail	*Equisetum palustre*	3	Perennial rhizomatous herb found in marshes and swamps. Elevation: 45–1,000 m. Blooming Period: UNKNOWN	A	N/A	BSA does not contain marshes or swamps. BSA is outside species range on Calflora.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
Tiburon buckwheat	*Eriogonum luteolum var. caninum*	1B.2	Annual herb found in chaparral, cismontane woodland, coastal prairie, and valley and foothill grassland. Grows in gravelly, sandy, serpentine soils. Elevation: 0–700 m. Blooming Period: May–September	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
Jepson's coyote-thistle	*Eryngium jepsonii*	1B.2	Perennial herb found in valley and foothill grassland and vernal pools. Grows in clay soils. Elevation: 3–305 m. Blooming Period: April–August	A	N/A	BSA does not contain grassland or vernal pools. One recent occurrence within 5 miles of BSA.
San Francisco wallflower	*Erysimum franciscanum*	4.2	Perennial herb found in chaparral, coastal dunes, coastal scrub, and valley and foothill grassland. Sometimes found on roadsides. Grows in often granitic, often serpentine soils. Elevation: 0–550 m. Blooming Period: March–June	A	N/A	BSA does not contain chaparral, coastal dunes, coastal scrub, or grassland. BSA is outside species range on Calflora.
cut-leaved monkeyflower	*Erythranthe laciniata*	4.3	Annual herb found in chaparral, lower montane coniferous forest, and upper montane coniferous forest. Grows in granitic, mesic soils. Elevation: 490–2,650 m. Blooming Period: April–July	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is 335 meters below species elevation range and is outside species range on Calflora.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
bare monkeyflower	*Erythranthe nudata*	4.3	Annual herb found in chaparral and cismontane woodland. Typically found near seeps. Grows in serpentine soils. Elevation: 200–700 m. Blooming Period: May–June	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is 45 meters below species elevation range and is outside species range on Calflora.
San Joaquin spearscale	*Extriplex joaquinana*	1B.2	Annual herb found in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland. Grows in alkaline soils. Elevation: 0–835 m. Blooming Period: April–October	A	N/A	BSA does not contain chenopod scrub, meadows, seeps, playas, or grassland. BSA is outside species range on Calflora.
minute pocket moss	*Fissidens pauperculus*	1B.2	Moss found in North Coast coniferous forest. Grows in damp coastal soil. Elevation: 10–1,025 m. Blooming Period: N/A	HP/SA	N/A	BSA contains disturbed riparian woodland that is unlikely to provide suitable habitat for this species. One historical occurrence within 5 miles of project site.
fragrant fritillary	*Fritillaria liliacea*	1B.2	Perennial bulbiferous herb found in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland. Grows in often serpentine soils. Elevation: 3–410 m. Blooming Period: February–April	HP/SA	N/A	BSA contains disturbed riparian woodland that is unlikely to provide suitable habitat for this species. Two recent occurrences within 5 miles of BSA.
blue coast gilia	*Gilia capitata ssp. chamissonis*	1B.1	Annual herb found in coastal dunes and coastal scrub. Elevation: 2–200 m.	A	N/A	BSA does not contain coastal dunes or coastal scrub. BSA is outside species range on Calflora.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			Blooming Period: April–July			
dark-eyed gilia	*Gilia millefoliata*	1B.2	Annual herb found in coastal dunes. Elevation: 1–60 m. Blooming Period: April–July	A	N/A	BSA does not contain coastal dunes. BSA is 70 meters above species elevation range.
San Francisco gumplant	*Grindelia hirsutula var. maritima*	3.2	Perennial herb found in coastal bluff scrub, coastal scrub, and valley and foothill grassland. Grows in sometimes sandy, sometimes serpentine soils. Elevation: 15–400 m. Blooming Period: June–September	A	N/A	BSA does not contain coastal scrub or grassland. BSA is outside species range on Calflora.
Mt. Diablo helianthella	*Helianthella castanea*	1B.2	Perennial herb found in broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. Often found in partial shade. Grows in azonal, usually rocky soils. Elevation: 45–1,300 m. Blooming Period: March–June	HP/SA	N/A	BSA contains disturbed riparian woodland that is unlikely to provide suitable habitat for this species. Five recent occurrences within 5 miles of BSA.
congested-headed hayfield tarplant	*Hemizonia congesta ssp. congesta*	1B.2	Annual herb found in valley and foothill grassland. Sometimes found along roadsides. Elevation: 5–560 m. Blooming Period: April–November	A	N/A	BSA does not contain grassland. BSA is outside species range on Calflora.
hogwallow starfish	*Hesperevax caulescens*	4.2	Annual herb found in valley and foothill grassland and shallow vernal pools. Grows in sometimes alkaline, clay, mesic soils. Elevation: 0–505 m. Blooming Period: March–June	A	N/A	BSA does not contain grassland or vernal pools. One historical occurrence within 5 miles of project site.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
Marin western flax	*Hesperolinon congestum*	FT, ST, 1B.1	Annual herb found in chaparral and valley and foothill grassland. Grows in serpentine soils. Elevation: 5–400 m. Blooming Period: April–July	A	No Effect	BSA does not contain chaparral or grassland. BSA is outside species range on Calflora.
water star-grass	*Heteranthera dubia*	2B.2	Perennial aquatic herb found in marshes and swamps. Typically found in slightly eutrophic (pH >=7) still or slow-moving water. Grows in alkaline soils. Elevation: 15–1,510 m. Blooming Period: July–October	A	N/A	BSA does not contain marshes or swamps. BSA is outside species range on Calflora.
Loma Prieta hoita	*Hoita strobilina*	1B.1	Perennial herb found in chaparral, cismontane woodland, and riparian woodland. Grows in mesic, usually serpentine soils. Elevation: 30–975 m. Blooming Period: May–July (August–October)	HP/SA	N/A	BSA contains disturbed riparian woodland that is unlikely to provide suitable habitat for this species. BSA is outside species range on Calflora.
Santa Cruz tarplant	*Holocarpha macradenia*	FT, SE, 1B.1	Annual herb found in coastal prairie, coastal scrub, and valley and foothill grassland. Grows in often clay or sandy soils. Elevation: 10–275 m. Blooming Period: June–October	A	No Effect	BSA does not contain coastal prairie, coastal scrub, or grassland. Four recent occurrences within 5 miles of BSA. BSA does not overlap with final critical habitat for this species.
Kellogg's horkelia	*Horkelia cuneata var. sericea*	1B.1	Perennial herb found in maritime chaparral, closed-cone coniferous forest, coastal dunes, and coastal scrub. Typically found in	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			openings. Grows in sometimes gravelly, sometimes sandy soils. Elevation: 5–430 m. Blooming Period: April–September			BSA is outside species range on Calflora.
harlequin lotus	*Hosackia gracilis*	4.2	Perennial rhizomatous herb found in broadleafed upland forest, cismontane woodland, closed-cone coniferous forest, coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, meadows and seeps, North Coast coniferous forest, and valley and foothill grassland. Typically found on roadsides and in wetlands. Elevation: 0–700 m. Blooming Period: March–July	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
island tube lichen	*Hypogymnia schizidiata*	1B.3	Foliose lichen found in chaparral and closed-cone coniferous forest. Grows on bark of hardwoods and conifers. Elevation: 255–545 m. Blooming Period: N/A	A	N/A	BSA contains disturbed riparian woodland that is unlikely to provide suitable habitat for this species. BSA is outside species range on Calflora.
coast iris	*Iris longipetala*	4.2	Perennial rhizomatous herb found in coastal prairie, lower montane coniferous forest, and meadows and seeps. Grows in mesic soils. Elevation: 0–600 m. Blooming Period: March–May (June)	HP/SA	N/A	BSA contains disturbed riparian woodland that is unlikely to provide suitable habitat for this species. Two recent occurrences within 5 miles of BSA.
Carquinez goldenbush	*Isocoma arguta*	1B.1	Perennial shrub found in valley and foothill grassland. Grows in alkaline soils. Elevation: 1–50 m. Blooming Period: August–December	A	N/A	BSA does not contain grassland. BSA is 80 meters above species elevation range and is

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
						outside species range on Calflora.
Contra Costa goldfields	*Lasthenia conjugens*	FE, 1B.1	Annual herb found in cismontane woodland, playas, valley and foothill grassland, and vernal pools. Grows in alkaline, mesic soils. Elevation: 0–470 m. Blooming Period: March–June	A	No Effect	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
Delta tule pea	*Lathyrus jepsonii var. jepsonii*	1B.2	Perennial herb found in freshwater and brackish marshes and swamps. Elevation: 0–5 m. Blooming Period: May–July (August–September)	A	N/A	BSA does not contain marshes or swamps. BSA is 125 meters above species elevation range. Two recent occurrences within 10 miles of BSA.
beach layia	*Layia carnosa*	FT, SE, 1B.1	Annual herb found in coastal dunes and coastal scrub. Grows in sandy soils. Elevation: 0–60 m. Blooming Period: March–July	A	No Effect	BSA does not contain coastal dunes or coastal scrub. BSA is 70 meters above species elevation range and is outside species range on Calflora.
bristly leptosiphon	*Leptosiphon aureus*	4.2	Annual herb found in chaparral, cismontane woodland, coastal prairie, and valley and foothill grassland. Elevation: 55–1,500 m. Blooming Period: April–July	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
large-flowered leptosiphon	*Leptosiphon grandiflorus*	4.2	Annual herb found in cismontane woodland, closed-cone coniferous forest, coastal bluff scrub, coastal dunes, coastal prairie, coastal	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. No

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			scrub, and valley and foothill grassland. Grows in usually sandy soils. Elevation: 5–1,220 m. Blooming Period: April–August			recent occurrences within 10 miles of BSA.
broad-lobed leptosiphon	*Leptosiphon latisectus*	4.3	Annual herb found in broadleafed upland forest and cismontane woodland. Elevation: 170–1,500 m. Blooming Period: April–June	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is 15 meters below species elevation range and is outside species range on Calflora.
rose leptosiphon	*Leptosiphon rosaceus*	1B.1	Annual herb found in coastal bluff scrub. Elevation: 0–140 m. Blooming Period: April–July	A	N/A	BSA does not contain coastal scrub. BSA is outside species range on Calflora.
San Francisco lessingia	*Lessingia germanorum*	FE, SE, 1B.1	Annual herb found in coastal scrub. Typically found on remnant dunes. Elevation: 3–155 m. Blooming Period: (June) July–November	A	No Effect	BSA does not contain coastal scrub. BSA is outside species range on Calflora.
woolly-headed lessingia	*Lessingia hololeuca*	3	Annual herb found in broadleafed upland forest, coastal scrub, lower montane coniferous forest, and valley and foothill grassland. Grows in clay, serpentine soils. Elevation: 15–305 m. Blooming Period: June–October	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. One historical occurrence within 10 miles of BSA.
Mason's lilaeopsis	*Lilaeopsis masonii*	CR, 1B.1	Perennial rhizomatous herb found in brackish and freshwater marshes and swamps and riparian scrub.	A	N/A	BSA does not contain marshes, swamps, or riparian scrub. BSA is 120 meters above species

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			Elevation: 0–10 m. Blooming Period: April–November			elevation range and is outside species range on Calflora.
White fairypoppy	*Meconella oregana*	1B.1	Annual herb found in coastal prairie and coastal scrub. Elevation: 60–640 m. Blooming Period: March–April	A	N/A	BSA does not contain coastal prairie or coastal scrub. Three recent occurrences within 10 miles of BSA.
Mt. Diablo cottonweed	*Micropus amphibolus*	3.2	Annual herb found in broadleafed upland forest, chaparral, cismontane woodland, and valley and foothill grassland. Grows in rocky soils. Elevation: 45–825 m. Blooming Period: March–May	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. One recent occurrence within 5 miles of BSA.
marsh microseris	*Microseris paludosa*	1B.2	Perennial herb found in cismontane woodland, closed-cone coniferous forest, coastal scrub, and valley and foothill grassland. Elevation: 3–610 m. Blooming Period: April–June (July)	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
San Antonio Hills monardella	*Monardella antonina ssp. antonina*	3	Perennial rhizomatous herb found in chaparral and cismontane woodland. Elevation: 320–1,000 m. Blooming Period: June–August	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is 165 meters below species elevation range.
woodland woollythreads	*Monolopia gracilens*	1B.2	Annual herb found in broadleafed upland forest, chaparral, cismontane woodland, North Coast coniferous forest, and valley and	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			foothill grassland. Typically found in openings. Grows in serpentine soils. Elevation: 100–1,200 m. Blooming Period: (February) March–July			BSA is outside species range on Calflora.
white-rayed pentachaeta	*Pentachaeta bellidiflora*	FE, SE, 1B.1	Annual herb found in cismontane woodland and valley and foothill grassland. Grows in often serpentine soils. Elevation: 35–620 m. Blooming Period: March–May	A	No Effect	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
Michael's rein orchid	*Piperia michaelii*	4.2	Perennial herb found in chaparral, cismontane woodland, closed-cone coniferous forest, coastal bluff scrub, coastal scrub, and lower montane coniferous forest. Elevation: 3–915 m. Blooming Period: April–August	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. No recent occurrences within 10 miles of BSA.
Choris' popcornflower	*Plagiobothrys chorisianus var. chorisianus*	1B.2	Annual herb found in chaparral, coastal prairie, and coastal scrub. Grows in mesic soils. Elevation: 3–705 m. Blooming Period: March–June	A	N/A	BSA does not contain chaparral, coastal prairie, or coastal scrub. BSA is outside species range on Calflora.
San Francisco popcornflower	*Plagiobothrys diffusus*	SE, 1B.1	Annual herb found in coastal prairie and valley and foothill grassland. Elevation: 45–360 m. Blooming Period: March–June	A	N/A	BSA does not contain coastal prairie or grassland. BSA is outside species range on Calflora.
hairless popcornflower	*Plagiobothrys glaber*	1A	Annual herb found in coastal salt marshes and swamps and meadows and seeps. Grows in alkaline soils. Elevation: 5–180 m.	A	N/A	BSA does not contain marshes, swamps, meadows, or seeps. BSA

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			Blooming Period: March–May			is outside species range on Calflora.
North Coast semaphore grass	*Pleuropogon hooverianus*	ST, 1B.1	Perennial rhizomatous herb found in broadleafed upland forest, meadows and seeps, and North Coast coniferous forest. Typically found in openings. Grows in mesic soils. Elevation: 10–1,160 m. Blooming Period: April–June	A	N/A	BSA contains disturbed riparian woodland that is unlikely to provide suitable habitat for this species. BSA is outside species range on Calflora.
Oregon polemonium	*Polemonium carneum*	2B.2	Perennial herb found in coastal prairie, coastal scrub, and lower montane coniferous forest. Elevation: 0–1,830 m. Blooming Period: April–September	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
Marin knotweed	*Polygonum marinense*	3.1	Annual herb found in brackish and coastal salt marshes and swamps. Elevation: 0–10 m. Blooming Period: (April) May–August (October)	A	N/A	BSA does not contain marshes or swamps. BSA is 120 meters above species elevation range and is outside species range on Calflora.
Lobb's aquatic buttercup	*Ranunculus lobbii*	4.2	Aquatic annual herb found in cismontane woodland, North Coast coniferous forest, valley and foothill grassland, and vernal pools. Grows in mesic soils. Elevation: 15–470 m. Blooming Period: February–May	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. One recent occurrence within 5 miles of BSA.
adobe sanicle	*Sanicula maritima*	CR, 1B.1	Perennial herb found in chaparral, coastal prairie, meadows and seeps, and valley and	A	N/A	BSA does not contain chaparral, coastal prairie, meadows, seeps, or

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			foothill grassland. Grows in clay, serpentine soils. Elevation: 15–240 m. Blooming Period: February–May			grassland. BSA is outside species range on Calflora.
chaparral ragwort	*Senecio aphanactis*	1B.2	Annual herb found in chaparral, cismontane woodland, and coastal scrub. Grows in sometimes alkaline soils. Elevation: 15–1,020 m. Blooming Period: January–April (May)	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.
San Francisco campion	*Silene verecunda ssp. verecunda*	1B.2	Perennial herb found in chaparral, coastal bluff scrub, coastal prairie, coastal scrub, and valley and foothill grassland. Grows in sandy soils. Elevation: 30–645 m. Blooming Period: (February) March–July (August)	A	N/A	BSA does not contain chaparral, coastal scrub, coastal prairie, or grassland. BSA is outside species range on Calflora.
long-styled sand-spurrey	*Spergularia macrotheca var. longistyla*	1B.2	Perennial herb found in marshes and swamps and meadows and seeps. Grows in alkaline soils. Elevation: 0–225 m. Blooming Period: February–May	A	N/A	BSA does not contain marshes, swamps, meadows, or seeps. BSA is outside species range on Calflora.
Santa Cruz microseris	*Stebbinsoseris decipiens*	1B.2	Annual herb found in broadleafed upland forest, chaparral, closed-cone coniferous forest, coastal prairie, coastal scrub, and valley and foothill grassland. Typically found in openings. Grows in sometimes serpentine soils. Elevation: 10–750 m. Blooming Period: April–May	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is outside species range on Calflora.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
most beautiful jewelflower	*Streptanthus albidus ssp. peramoenus*	1B.2	Annual herb found in chaparral, cismontane woodland, and valley and foothill grassland. Grows in serpentine soils. Elevation: 90–1040 m. Blooming Period: (March) April–September (October)	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. One historical occurrence within 5 miles of BSA.
Tiburon jewelflower	*Streptanthus glandulosus ssp. niger*	FE, SE, 1B.1	Annual herb found in valley and foothill grassland. Grows in serpentine soils. Elevation: 30–150 m. Blooming Period: May–June	A	No Effect	BSA does not contain grassland. BSA is outside species range on Calflora.
northern slender pondweed	*Stuckenia filiformis ssp. alpina*	2B.2	Aquatic perennial rhizomatous herb found in shallow freshwater marshes and swamps. Elevation: 5–2,325 m. Blooming Period: May–July	A	N/A	BSA does not contain marshes or swamps. One recent occurrence within 10 miles of BSA.
California seablite	*Suaeda californica*	FE, 1B.1	Perennial evergreen shrub found in coastal salt marshes and swamps. Elevation: 0–15 m. Blooming Period: July–October	A	No Effect	BSA does not contain marshes or swamps. BSA is 115 meters above species elevation range and is outside species range on Calflora.
Suisun Marsh aster	*Symphyotrichum lentum*	1B.2	Perennial rhizomatous herb found in brackish and freshwater marshes and swamps. Elevation: 0–15 m. Blooming Period: (April) May–November	A	N/A	BSA does not contain marshes or swamps. BSA is 115 meters above species elevation range and is outside species range on Calflora.
two-fork clover	*Trifolium amoenum*	FE, 1B.1	Annual herb found in coastal bluff scrub and valley and foothill grassland. Grows in sometimes serpentine soils.	A	No Effect	BSA does not contain coastal scrub or grassland.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			Elevation: 5–415 m. Blooming Period: April–June			BSA is outside species range on Calflora.
saline clover	*Trifolium hydrophilum*	1B.2	Annual herb found in marshes and swamps, valley and foothill grassland, and vernal pools. Grows in alkaline, mesic soils. Elevation: 0–335 m. Blooming Period: April–June	A	N/A	BSA does not contain marshes, swamps, grassland, or vernal pools. BSA is outside species range on Calflora.
San Francisco owl's-clover	*Triphysaria floribunda*	1B.2	Annual herb found in coastal prairie, coastal scrub, and valley and foothill grassland. Grows in usually serpentine soils. Elevation: 1–160 m. Blooming Period: April–June	A	N/A	BSA does not contain coastal prairie, coastal scrub, or grassland. BSA is outside species range on Calflora.
coastal triquetrella	*Triquetrella californica*	1B.2	Moss found in coastal bluff scrub and coastal scrub. Grows in soil. Elevation: 10–1,175 m. Blooming Period: N/A	A	N/A	BSA does not contain coastal scrub. BSA is outside species range on Calflora.
oval-leaved viburnum	*Viburnum ellipticum*	2B.3	Perennial deciduous shrub found in chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 215–1,400 m. Blooming Period: May–June	A	N/A	BSA contains disturbed riparian woodland that would not provide suitable habitat for this species. BSA is 60 meters below species elevation range. One recent occurrence within 10 miles of BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
Invertebrates						
Crotch's bumble bee	*Bombus crotchii*	SC	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschscholzia*, and *Eriogonum*.	A	N/A	BSA does not contain food plant genera or coastal habitat. One occurrence recorded in Berkeley in 2015, ~6 miles south of BSA.
western bumble bee	*Bombus occidentalis*	SC	Nesting sites found in rodent burrows in a variety of habitats including forest, woodland, meadow, grassland, and shrubland communities. Overwintering sites found most often in shaded areas near trees, in banks without dense vegetation, in clearings, or in bare patches within short grass.	A	N/A	BSA does not contain rodent borrows or clearings. Multiple historical occurrences recorded within 10 miles of BSA; however, none have been recorded since 1992.
monarch - California overwintering population	*Danaus plexippus plexippus pop. 1*	FC	Roosts located in wind protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	A	No Effect	BSA does not contain groves of eucalyptus, Monterey pine, or cypress. All occurrences recorded nearby are along the bay. BSA does not overlap with proposed critical habitat for this species.
Bay checkerspot butterfly	*Euphydryas editha bayensis*	FT	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. *Plantago erecta* is the primary host plant; *Orthocarpus densiflorus* and *O. purpurscens* are the secondary host plants.	A	No Effect	BSA does not contain grassland or any host plant species. No occurrences recorded within 10 miles of BSA.
Mission blue butterfly	*Icaricia icarioides missionensis*	FE	Inhabits grasslands of the San Francisco peninsula. Three larval host plants: *Lupinus*	A	No Effect	BSA does not contain grassland or any host plant

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			albifrons, *L. variicolor*, and *L. formosus*, of which *L. albifrons* is favored.			species. No occurrences recorded within 10 miles of BSA.
callippe silverspot butterfly	*Speyeria callippe callippe*	FE	Restricted to the northern coastal scrub of the San Francisco Peninsula. Hostplant is *Viola pedunculata*. Most adults found on east-facing slopes; males congregate on hilltops in search of females.	A	No Effect	BSA does not contain coastal scrub or host plant species. No occurrences recorded within 10 miles of BSA.
Fish						
green sturgeon - southern DPS	*Acipenser medirostris pop. 1*	FT, SSC	Spawning occurs primarily in cool (11–15°C) sections of mainstem rivers in deep pools (8–9 meters) with substrate containing small to medium sized sand, gravel, cobble, or boulder.	A	No Effect	BSA does not contain rivers or streams. Species restricted to San Francisco Bay estuary and tributaries.
tidewater goby	*Eucyclogobius newberryi*	FE, SSC	Found in brackish water habitat, typically in shallow lagoons and lower stream reaches. They need fairly still but not stagnant water and high oxygen levels.	A	No Effect	BSA does not contain brackish lagoons or streams. No extant occurrences within 10 miles of BSA. BSA does not overlap with final critical habitat for this species.
Delta smelt	*Hypomesus transpacificus*	FT, SE	Found in Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt. Most often at salinities < 2ppt.	A	No Effect	BSA does not contain saline rivers or streams. Occurrences restricted to deep areas of San Francisco Bay.
Sacramento splittail	*Pogonichthys macrolepidotus*	SSC	Found in slow moving river sections and dead end sloughs. Requires flooded	A	N/A	BSA does not contain rivers, streams, or sloughs.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			vegetation for spawning and foraging for young.			No occurrences within 10 miles of BSA.
longfin smelt - San Francisco Bay-Delta DPS	*Spirinchus thaleichthys pop. 2*	FE, ST	Spawns in lower freshwater reaches of Sacramento and San Joaquin Rivers. First year in Suisun Bay; later San Francisco Bay or Gulf of the Farallones. Occurs in salinities ranging from pure freshwater to pure saltwater; typically salinities ranging from 14–28 parts per thousand (ppt). Generally occupies water temperatures from 61–68°F, with spawning occurring in water temperatures from 41-58°F.	A	No Effect	BSA does not contain rivers or streams. Species restricted to San Francisco Bay estuary and tributaries.
eulachon	*Thaleichthys pacificus*	FT, SSC	Spawn in lower reaches of coastal rivers with moderate water velocities and bottom of pea-sized gravel, sand, and woody debris.	A	No Effect	BSA does not contain rivers or streams. One occurrence recorded in San Francisco Bay.
Amphibians						
California tiger salamander – central DPS	*Ambystoma californiense pop. 1*	FT, ST	Lives in vacant or mammal-occupied burrows throughout most of the year; in grassland, savanna, or open woodland habitats. Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	A	No Effect	BSA does not contain burrows, grassland, savannah, or open woodland. No occurrences within 10 miles of BSA.
California giant salamander	*Dicamptodon ensatus*	SSC	Found in wet coastal forests near streams and seeps. Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	A	N/A	BSA contains disturbed riparian woodland but does not contain mesic coastal forest, streams, seeps, lakes, or ponds. No

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
						occurrences within 10 miles of BSA.
foothill yellow-legged frog - central coast DPS	*Rana boylii pop. 4*	FT, SE	Found in partly shaded shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying and at least 15 weeks to attain metamorphosis.	A	No Effect	BSA does not contain streams. One extant occurrence recorded in 1997 ~10 miles south of BSA. BSA does not overlap with proposed critical habitat for this species.
California red-legged frog	*Rana draytonii*	FT, SSC	Found in lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11–20 weeks of permanent water for larval development. Must have access to estivation habitat.	HP/SA	Not likely to Adversely Effect	BSA contains disturbed riparian woodland and is adjacent to San Pablo Creek but does not contain lowlands or foothills. One occurrence recorded in 2008 1.7 miles southeast of BSA, just within dispersal distance for this species. No recorded occurrences of this species within the upper urbanized reaches of San Pablo Creek. BSA does not overlap with final critical habitat for this species.
Birds						
tricolored blackbird	*Agelaius tricolor*	ST, SSC MBTA	Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	A	N/A	BSA does not contain open water or dense emergent vegetation for nesting. No occurrences

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
						recorded within 10 miles of BSA.
golden eagle	*Aquila chrysaetos*	FP, SSC MBTA	Found in rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	A	N/A	BSA does not contain foothill grasslands, mountain areas, sage-juniper flats, deserts, or canyons. One occurrence recorded in 1993 ~9.5 miles south of BSA.
short-eared owl	*Asio flammeus*	SSC MBTA	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	A	N/A	BSA does not contain swamps lands, meadows, or irrigated fields. One occurrence recorded in 1986 in coastal marshland ~5.5 miles west of BSA.
burrowing owl	*Athene cunicularia*	SC, SSC MBTA	Found in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	A	N/A	BSA does not contain burrows, grassland, desert, or scrubland. One occurrence recorded in 2004 in coastal area ~4 miles southwest of BSA.
western snowy plover	*Charadrius nivosus nivosus*	FT, SSC MBTA	Found in sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly, or friable soils for nesting.	A	No Effect	BSA does not contain beaches, levees, or lake shores. No occurrences within 10 miles of BSA. BSA does not overlap with final critical habitat for this species.
northern harrier	*Circus hudsonius*	SSC MBTA	Found in coastal salt and freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas.	A	N/A	BSA does not contain marsh, grassland, or shrubland. Two

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.			occurrences recorded within 10 miles of BSA, both in San Francisco Bay marshland.
yellow-billed cuckoo	*Coccyzus americanus*	FT, SE MBTA	Found in riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	A	No Effect	BSA contains disturbed riparian woodland. No occurrences within 10 miles of BSA. BSA does not overlap with final critical habitat for this species.
yellow rail	*Coturnicops noveboracensis*	SSC MBTA	Found in freshwater marshlands, meadows, and seeps.	A	N/A	BSA does not contain marshland, meadows, or seeps. One occurrence recorded in 1863 ~9 miles northeast of BSA.
white-tailed kite	*Elanus leucurus*	FP MBTA	Found in rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Uses open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	A	N/A	BSA does not contain foothills, marshes, grasslands, meadows, or deciduous woodland. Three occurrences within 10 miles of BSA, all along San Francisco Bay.
saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	SSC MBTA	Found in freshwater and saltwater marshes in the San Francisco Bay region. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	A	N/A	BSA does not contain marshes or willows. Two occurrences within 10 miles of BSA, all along San Francisco Bay.
bald eagle	*Haliaeetus leucocephalus*	SE, FP MBTA	Found along ocean shores, lake margins, and rivers for nesting and wintering. Nests in large, old-growth, or dominant live tree with	A	N/A	BSA does not contain ocean shores, lake margins, or wide rivers.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			open branches, especially ponderosa pine, typically within 1 mile of water. Roosts communally in winter.			One occurrence recorded in 2006 ~3 miles southeast of BSA, on the margins of San Pablo Reservoir.
California black rail	*Laterallus jamaicensis coturniculus*	ST, FP MBTA	Found in freshwater marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	A	N/A	BSA does not contain marshes or meadows. Multiple occurrences within 10 miles of BSA, all along San Francisco Bay.
Suisun song sparrow	*Melospiza melodia maxillaris*	SSC MBTA	Found in brackish-water marshes surrounding Suisun Bay. Inhabits cattails, tules and other sedges, and Salicornia; also known to frequent tangles bordering sloughs.	A	N/A	BSA does not contain marshes. No occurrences within 10 miles of BSA.
Alameda song sparrow	*Melospiza melodia pusillula*	SSC MBTA	Found in salt marshes bordering south arm of San Francisco Bay. Inhabits *Salicornia* marshes; nests low in *Grindelia* bushes (high enough to escape high tides) and in *Salicornia*.	A	N/A	BSA does not contain marshes or plant species. Multiple occurrences within 10 miles of BSA, all along San Francisco Bay.
San Pablo song sparrow	*Melospiza melodia samuelis*	SSC MBTA	Found in salt marshes along the north side of San Francisco and San Pablo bays. Inhabits tidal sloughs in the *Salicornia* marshes; nests in *Grindelia* bordering slough channels.	A	N/A	While there are multiple occurrences within 5 miles of the BSA, the BSA does not contain marshes habitat with *Salicornia* or *Grindelia*.
California Ridgway's rail	*Rallus obsoletus obsoletus*	FE, SE, FP MBTA	Found in salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds	A	No Effect	While there are multiple occurrences within 5 miles of the BSA, the BSA does not contain tidal slough,

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
			away from cover on invertebrates from mud-bottomed sloughs.			salt water, or brackish marsh habitat.
bank swallow	*Riparia riparia*	ST MBTA	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, or ocean to dig nesting hole.	A	N/A	BSA does not contain lowland habitats, vertical banks, cliffs, or sandy soils. No occurrences within 10 miles of BSA.
California least tern	*Sternula antillarum browni*	FE, SE, FP MBTA	Nests along the coast. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	A	No Effect	BSA does not contain beaches, flats, or landfills, and paved active roadways would not provide suitable habitat for this species. No occurrences within 10 miles of BSA. No critical habitat has been designated for this species.
yellow-headed blackbird	*Xanthocephalus xanthocephalus*	SSC MBTA	Nests in freshwater emergent wetlands with dense vegetation and deep water. Often along borders of lakes or ponds. Nests only where large insects such as Odonata are abundant, nesting timed with maximum emergence of aquatic insects.	A	N/A	BSA does not contain wetlands, lakes, or ponds. One occurrence recorded in 1899 ~3 miles northwest of BSA along San Francisco Bay.
Reptiles						
northwestern pond turtle	*Actinemys marmorata*	FC, SSC	Nests in ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation. Requires upland habitat for basking.	HP/SA	Not likely to Adversely Effect	BSA does not contain ponds, marshes, rivers, streams, irrigation ditches, or uplands basking areas that would provide suitable habitat for this species.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
						However, multiple occurrences within 5 miles of BSA, all associated with riparian areas. No critical habitat has been designated for this species.
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT, ST	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna, and woodland habitats. Mostly south-facing slopes and ravines, with rock outcrops, deep crevices, or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.	A	No Effect	BSA does not contain nor is it adjacent to chaparral or scrub. Many occurrences recorded within 5 miles of BSA, all south within mountains areas. BSA does not overlap with critical habitat for this species.
Mammals						
pallid bat	*Antrozous pallidus*	SSC	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	A	N/A	BSA does not contain desert, grassland, shrubland, or open dry woodland or forest. Three occurrences within 5 miles of BSA, all recorded in the 1930s–1940s.
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC	Found throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	A	N/A	BSA contains disturbed riparian woodland surrounded by residential development that would not provide suitable habitat for this species. One occurrence recorded in 1938 ~6.5 miles south of

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
						BSA, but now marked as possibly extirpated.
southern sea otter	*Enhydra lutris nereis*	FT, FP	Found in nearshore marine environments. Needs canopies of giant kelp and bull kelp for rafting and feeding. Prefers rocky substrates with abundant invertebrates.	A	No Effect	BSA does not contain marine environments. No occurrences within 10 miles of BSA.
western red bat	*Lasiurus frantzii*	SSC	Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging. Roosts primarily in trees, 2–40 feet above ground, from sea level up through mixed conifer forests.	A	N/A	BSA does not contain habitat edges or mosaics that would provide suitable habitat for this species. No occurrences within 10 miles of BSA.
San Pablo vole	*Microtus californicus sanpabloensis*	SSC	Found in saltmarshes of San Pablo Creek and on the south shore of San Pablo Bay. Constructs burrow in soft soil. Feeds on grasses, sedges and herbs. Forms a network of runways leading from the burrow.	A	N/A	BSA does not contain salt marshes. Multiple occurrences within 5 miles of BSA, all along San Pablo Bay.
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	SSC	Found in forest habitats of moderate canopy and moderate to dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves and other material. May be limited by availability of nest-building materials.	HP/SA	N/A	BSA contains disturbed riparian woodland that may provide marginally suitable habitat for this species. Two occurrences recorded ~2.5 miles east of project site along Pinole Creek in 2015 and 2017. No recorded occurrences within San Pablo Creek.
big free-tailed bat	*Nyctinomops macrotis*	SSC	Found in low-lying arid areas. Requires high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	A	N/A	BSA does not contain low lying arid areas, cliffs, or rocky outcrops. Two occurrences within 10

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
						miles of BSA, the most recent in 1979.
salt-marsh harvest mouse	*Reithrodontomys raviventris*	FE, SE, FP	Found in saline emergent wetlands. Pickleweed is primary habitat, but may occur in other marsh vegetation types and in adjacent upland areas. Does not burrow; builds loosely organized nests. Requires higher areas for flood escape.	A	No Effect	BSA does not contain wetlands or plant species. Three occurrences within 5 miles of BSA, all along the San Pablo Bay. No critical habitat has been designated for this species.
Alameda Island mole	*Scapanus latimanus parvus*	SSC	Only known from Alameda Island. Found in a variety of habitats, especially annual and perennial grasslands. Prefers moist, friable soils. Avoids flooded soils.	A	N/A	BSA is not on Alameda Island and does not contain grassland. No occurrences within 10 miles of BSA.
Suisun shrew	*Sorex ornatus sinuosus*	SSC	Found in tidal marshes. Requires dense low-lying cover and driftweed and other litter above the mean hightide line for nesting and foraging.	A	N/A	BSA does not contain tidal marshes. No occurrences recorded in the East Bay Area.
salt-marsh wandering shrew	*Sorex vagrans halicoetes*	SSC	Found in medium high salt marshes, 6–8 feet above sea level where abundant driftwood is scattered among *Salicornia*.	A	N/A	BSA does not contain salt marshes. Two occurrences within 5 miles of BSA, both along the San Pablo Bay.
American badger	*Taxidea taxus*	SSC	Found in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	A	N/A	BSA does not contain dry open areas with friable soils. One occurrence recorded in 1925 ~8 miles south of BSA but no recent occurrences within 10 miles.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent[1]	Effect Determination	Rationale
Point Reyes jumping mouse	*Zapus trinotatus orarius*	SSC	Found in bunch grass marshes on the uplands of Point Reyes. Also present in coastal scrub, grassland, and meadows. Eats mainly grass seeds with some insects and fruit taken. Builds grassy nests on ground under vegetation, burrows in winter.	A	N/A	BSA does not contain grass marshes. No occurrences within 10 miles of BSA.

Status: Federal Endangered (FE); Federal Threatened (FT); Federal Candidate (FC); State Endangered (SE); State Threatened (ST); Fully Protected (FP); State Species of Special Concern (SSC).
CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere
CRPR Rank 2: Plants rare, threatened, or endangered in California but more common elsewhere
CRPR Rank 3: Plants about which information is needed- a review list
CRPR Rank 4: Plants of limited distribution- a watch list
.1 = seriously endangered in California
.2 = fairly endangered in California
.3 = not very endangered in California

Prescence/absence: [1]Absent [A] - no habitat present or site is outside the species range. Habitat Present/Species Absent [HP/SA] – site conditions consistent with suitable habitat but for other reasons (e.g., habitat quality), the species is not expected to occur. Habitat Present [HP] – habitat is, or may be, present. Critical Habitat [CH] - project footprint is located within a designated critical habitat unit.

Effects determinations are provided only for federally listed species (N/A = Not Applicable).

4. Results: Biological Resources, Discussion of Impacts, and Mitigation

4.1 Habitats and Natural Communities of Special Concern

A query of Sensitive Natural Communities in RareFind 5 (California Natural Diversity Database [CNDDB] 2024) was performed for the *Richmond, California* USGS 7.5-minute Topographic Quadrangle Map and all eight surrounding quadrangles. The CNDDB identified the following six sensitive habitats as occurring in the general project region: coastal brackish marsh, coastal terrace prairie, northern coastal salt marsh, northern maritime chaparral, serpentine bunchgrass grassland, and valley needlegrass grassland. The BSA does not have suitable soil substrates or microclimatic regimes for any of these sensitive habitats, however all riparian woodlands are considered sensitive natural communities. The 86.100.14 *Sequoia sempervirens – Acer macrophyllum – Umbellularia californica* Association specifically is listed as S3 on the CDFW California Natural Communities List (2023) and is expected to be impacted during project construction.

As outlined in Section 3.2, there is no critical habitat as defined by the USFWS for any listed species located within the BSA.

A summary of project-related impacts are included in Figure 4 and within Table 3.

Table 3: Impact Table

Biotic Habitat/Land Use	Total Area (ac)	Perm Impacts	Temp Impacts	Potential Staging
Developed	0.88	0.00	0.78	0.10
Disturbed Riparian Woodland	0.74	0.20	0.48	0.06
Total Area	1.62	0.20	1.26	0.16

4.1.1 Discussion of Disturbed Riparian Woodland

4.1.1.1 Survey Results

The northeastern half of the BSA consists of disturbed riparian woodland. This community is situated on moderate to steep slopes surrounding San Pablo Creek and supports woody vegetation including coast redwood, California bay, coast live oak, and others. Understory vegetation was dominated by Canary ivy, with few scattered forbs in bare areas. This community corresponds to the 68.100.00 Sequoia sempervirens Alliance, specifically the 86.100.14 *Sequoia sempervirens – Acer macrophyllum – Umbellularia californica* Association, which is listed as S3 on the CDFW California Natural Communities List (2023). The small area of disturbed riparian woodland within

the BSA provides habitat for many songbird species, while the lack of adjacent foraging habitat limits the potential for nesting raptors. No active nests were observed during the field survey; however, numerous bird species were observed within this area of the BSA.

4.1.1.2 Project Impacts

The proposed project would permanently impact 0.20-acre and temporarily impact 0.48-acre of disturbed riparian woodland (Figure 4). Permanent impacts would include the stitch pile wall, geogrid reinforced embankment, rock slope protection, the portion of the culvert that is relocated, and the guardrail with minor vegetation control. Geogrid reinforcement will help provide long-term stability to the slope. The type of geogrid that will be specified in the contract documents will be able to be cut after its installation to allow for tree replanting on the embankment. Temporary impacts would include temporary grading, usage of the staging area, and pavement reconstruction. Additionally, approximately 80 trees are identified to be in direct conflict with project activities and would need to be removed. These trees are a mix of non-native species such as privet and eucalyptus and native species such as oaks, buckeyes, and bays. See Appendix F–Species Compendium for a detailed plant species list.

There is suitable nesting habitat within the disturbed riparian woodland, specifically in the form of trees. Numerous trees would need to be removed to support the culvert replacement. Temporary impacts due to construction noise and vibration disturbance have potential to occur. While there is potential for birds to nest within the BSA during the nesting season, implementation of the measures described in Section 4.3.3.3 below would result in less than significant impacts to the disturbed riparian woodland and potential avian species utilizing this area for nesting. Additionally, as stated in Section 2.3.8, the Contra Costa County Tree Protection Ordinance is not applicable to the proposed project and, as such, no tree replacement measures are prescribed.

Additionally, impacts undertaken to construct the proposed project may result in adverse effects to water quality. The State Water Resources Control Board has adopted the statewide Construction General Permit that would apply to all stormwater discharges associated with construction activity. The Construction General Permit requires all dischargers where construction activities disturbs greater than 1 acre of land to: (1) Develop a Stormwater Pollution and Prevention Program which specifies best management practices that will prevent all construction pollutants from contacting stormwater in order to keep all erosional runoff from moving off site into downstream receiving waters. (2) Eliminate or reduce non-stormwater dischargers to storm sewer systems and other waters. Achieve a quantitatively-defined pollutant-specific discharge standard, and conduct monitoring based on the project's projected risk level. (3) Perform inspections of all best management practices.

Implementation of avoidance, minimization, and coordination with the California State Water Resources Control Board (State Water Board) under the Construction General Permit as outlined above and CDFW under the Lake and Streambed Alteration Agreement Program as outlined below would reduce any potential impacts to the

riparian woodland, its associated corridor, and water quality to less than significant level.

4.2 Special-status Plant Species

Plants are considered to be of special concern based on (1) federal, State, or local laws regulating their development; (2) limited distributions; and/or (3) the presence of habitat required by the special-status plants occurring on-site. No special-status plant species or their habitats were found within the project impact area or the greater BSA, as articulated in Table 2. No impacts to special-status plant species would be expected to occur.

4.3 Special-status Animal Species

Animals are considered to be of special concern based on (1) federal, State, or local laws regulating their development; (2) limited distributions; and/or (3) the habitat requirements of special-status animals occurring on-site. No special-status animal species were found within the project impact area or the greater BSA. However, CRLF, SFDFW, and NWPT have been previously recorded within the vicinity of the BSA and in habitats similar to those present on the BSA. While these species are unlikely to utilize the BSA for the reasons outlined in Table 2, these species require additional discussion and are therefore analyzed in further detail in Sections 4.3.1–4.3.3 below.

4.3.1 Discussion California Red-legged frog

CRLF is listed under the federal Endangered Species Act as threatened and is a California SSC. This species is found in lowlands and foothills in or near permanent sources of water with deep pooling features and dense, shrubby, or emergent riparian vegetation. CRLF require 11–20 weeks of permanent water for larval development and must have access to aestivation habitat. CRLF have been reported to disperse up to 1.7 miles from breeding habitat following the onset of fall/winter rainfall (Fellers and Kleeman 2007).

4.3.1.1 Survey Results

CRLF was not observed during the reconnaissance-level field survey. The BSA contains riparian woodland and is adjacent to but outside of the OHWM and top of bank associated with San Pablo Creek, which has a recent occurrence of CRLF recorded downstream.

4.3.1.2 Project Impacts

The BSA does not provide breeding habitat for CRLF due to the lack of suitable aquatic habitat, however riparian woodland is present adjacent to San Pablo Creek. Given the recorded occurrence of CRLF approximately 1.7 miles downstream from the BSA, there is a potential for CRLF to utilize the areas in and around the BSA for upland dispersal

habitat after the onset of fall/winter rains. However, implementation of the measures described below would ensure that take of CRLF is avoided.

4.3.1.3 Avoidance and Minimization Efforts/Compensatory Mitigation

Implementation of the following measures would ensure avoidance of impacts on CRLF:

- **Work Restriction**: Project activities shall be restricted to the period between April 15 and October 15, when CRLF are the least active.

- **Worker Environmental Awareness Program**: Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program for all construction personnel. At a minimum, the training shall include a description of the CRLF and its habitat, the specific measures being implemented to conserve the CRLF for the current project, and the boundaries within which the project may be accomplished.

- **Pre-Construction Survey:** A qualified Biologist shall survey the BSA no more than 5 days before the onset of work activities. If any life stage of the CRLF is detected, construction activities shall not be allowed to commence until consultation with USFWS has occurred.

- **Exclusion Fencing or Temporary Silt Fencing:** Barrier fencing and/or temporary silt fencing shall be installed around the worksite to prevent CRLF from entering the work area and to protect water quality from sediment runoff. A qualified Biologist shall be present during the installation of exclusion fencing. Barrier fencing shall be removed within 72 hours of completion of work**.**

- **Revegetation**: Areas scheduled for grading and/or vegetation shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by activities associated with the project unless the USFWS and the project applicant determine that it is not feasible or practical.

4.3.2 Discussion of San Francisco Dusky-footed Woodrat

SFDFW is listed as a California SSC and is found in forest habitats of moderate canopy and moderate to dense understory, possibly preferring chaparral and redwood habitats.

4.3.2.1 Survey Results

This species was not observed during the reconnaissance-level field survey. The BSA contains riparian woodland with coast redwood and a dense understory.

4.3.2.2 Project Impacts

The BSA provides potential suitable habitat in the form of disturbed riparian woodland with coast redwood and a dense understory. Given the recorded occurrence of SWDFW approximately 2.5 miles from the BSA in similar habitats, there is a potential for SFDFW to disperse through the BSA in search of areas of more suitable habitat. Implementation of the measures described below would ensure that take of SFDFW is avoided.

4.3.2.3 Avoidance and Minimization Efforts/Compensatory Mitigation

Implementation of the following measures would ensure avoidance of impacts on SFDFW:

- **Worker Environmental Awareness Program**: Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program for all construction personnel. At a minimum, the training will include a description of the SFDFW and its habitat, the specific measures that are being implemented to conserve the SFDFW for the current project, and the boundaries within which the project may be accomplished.

- **Pre-construction Survey:** A qualified Biologist shall survey the BSA no more than 5 days before the onset of work activities. If any life stage of the SFDFW is detected, construction activities shall not be allowed to commence until consultation with CDFW has occurred.

- **Exclusion Fencing or Temporary Silt Fencing:** Barrier fencing and/or temporary silt fencing shall be installed around the worksite to prevent SFDFW from entering the work area and to protect water quality from sediment runoff. A qualified Biologist shall be present during the installation of exclusion fencing. Barrier fencing shall be removed within 72 hours of completion of work**.**

- **Revegetation**: Areas scheduled for grading and/or vegetation shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by activities associated with the proposed project unless the CDFW and the project applicant determine that it is not feasible or practical.

4.3.3 Discussion of Northwestern Pond Turtle

NWPT is proposed as threatened under the federal Endangered Species Act and is a California SSC. This species nests in ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation. Requires upland habitat for basking.

4.3.3.1 Survey Results

This species was not observed during the reconnaissance-level field survey. The BSA contains riparian woodland with coast redwood and a dense understory.

4.3.3.2 Project Impacts

The BSA provides potential suitable habitat in the form of disturbed riparian woodland with coast redwood and a dense understory. Given the recorded occurrence of NWPT approximately 2.5 miles from the BSA along Pinole Creek in 1994, 1996, 2012, and 2017 and 2 miles downstream from the BSA within the San Pablo Reservoir in 1992, there is a potential for NWPT to disperse through the BSA in search of areas of more suitable habitat. Implementation of the measures described below would ensure that take of NWPT is avoided.

4.3.3.3 Avoidance and Minimization Efforts/Compensatory Mitigation

Implementation of the following measures would ensure avoidance of impacts on NWPT:

- **Worker Environmental Awareness Program**: Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program for all construction personnel. At a minimum, the training will include a description of the NWPT and its habitat, the specific measures that are being implemented to conserve the NWPT for the current project, and the boundaries within which the project may be accomplished.

- **Pre-construction Survey:** A qualified Biologist shall survey the BSA no more than 5 days before the onset of work activities. If any life stage of the NWPT is detected, construction activities shall not be allowed to commence until consultation with CDFW and the USFWS has occurred.

- **Exclusion Fencing or Temporary Silt Fencing:** Barrier fencing and/or temporary silt fencing shall be installed around the worksite to prevent SFDFW from entering the work area and to protect water quality from sediment runoff. A qualified Biologist shall be present during the installation of exclusion fencing. Barrier fencing shall be removed within 72 hours of completion of work**.**

- **Revegetation**: Areas scheduled for grading and/or vegetation shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by activities associated with the proposed project unless the CDFW, the USFWS, and the project applicant determine that it is not feasible or practical.

4.3.4 Discussion of Migratory Birds

As described in Section 2.1.3 and 2.1.6 above, the MBTA and the California Fish and Game Code protect migratory birds, including their eggs, nests, and young. The majority of migratory birds that have the potential to nest within the BSA are not special-status species and are regionally common. Nonetheless, the proposed project would implement measures to avoid and minimize effects on active nests of migratory birds to comply with the MBTA and California Fish and Game Code.

4.3.4.1 Survey Results

Several avian species covered under the MBTA and California Fish and Game Code have the potential to nest within or adjacent to the BSA. Avian species seen during the reconnaissance-level field survey include Anna's hummingbird, Bewick's wren, bushtit, chestnut-backed chickadee, lesser goldfinch, oak titmouse, and yellow-rumped warbler. No active nests were observed during the reconnaissance-level field survey.

4.3.4.2 Project Impacts

There is suitable nesting habitat within the BSA, specifically in the form of trees. Trees would be removed to support the culvert replacement and temporary impacts due to construction noise and vibration disturbance have potential to occur. While there is potential for birds to nest within the BSA during the nesting season, implementation of the measures described below would ensure that impacts would be less than significant.

4.3.4.3 Avoidance and Minimization Efforts/Compensatory Mitigation

Implementation of the following measures would ensure avoidance of impacts on migratory birds:

- **Avoidance of Nesting Season**: To the extent practicable, vegetation and/or tree removal shall be scheduled to avoid the avian nesting season. The nesting season typically runs from February 1 through August 31.

- **Pre-Construction Surveys for Active Nests**: If the proposed project requires vegetation and/or tree removal to be removed during the nesting season (February 1 to August 31), pre-construction nesting bird surveys shall be conducted no more than 5 days prior to the start of ground or vegetation disturbance (including tree removal).

- **Buffer zone for Active Nests**: If an active nest is located during pre-construction surveys, a qualified Biologist shall determine an appropriately sized avoidance buffer based on the species and anticipated disturbance level. (CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors.) A qualified Biologist shall delineate the avoidance buffer

using Environmentally Sensitive Area fencing, pin flags, and/or yellow caution tape. The buffer zone shall be maintained around the active nest site(s) until the young have fledged and are foraging independently, as confirmed by a qualified Biologist. No construction activities or construction foot traffic is allowed to occur within the avoidance buffer(s). In consultation with CDFW, the qualified Biologist shall monitor the active nest during the subject construction activities and modify the protection zone accordingly to prevent project-related nest disturbance, until the young have fledged.

5. Conclusions and Regulatory Determinations

5.1 Federal Endangered Species Act Consultation Summary

While multiple federally-listed species have been recorded within the vicinity of the BSA, only two could reasonably be expected to occur in the BSA due to the presence of potentially suitable habitat: the CRLF and NWPT. Measures to avoid, minimize, and compensate for impacts on this species are described in Section 4.3.1.3 and 4.3.3.3 above. The project **may affect but is not likely to adversely affect** the CRLF or NWPT and formal consultation for these species should not be necessary.

5.2 California Endangered Species Act Summary

While multiple State-listed species have been recorded within the vicinity of the BSA, none are reasonably be expected to occur in the BSA due to the lack of potentially suitable habitat.

5.3 Essential Fish Habitat Consultation Summary

No Essential Fish Habitat (EFH) exists within the BSA, because no fish species subject to any fisheries management plans are present. Therefore, consultation with NMFS concerning EFH is not warranted.

5.4 Wetlands and Other Waters Coordination Summary

The BSA contains a culvert that conveys flows into San Pablo Creek. San Pablo Creek is located approximately 100 feet outside of the BRA. No evidence of hydrology or hydrophytic vegetation was observed during the reconnaissance-level field survey. The BSA does not contain any wetlands and therefore there will be no permanent loss of wetlands as a result of the proposed project.

5.5 Invasive Species

Many regionally common invasive plant species were observed within the BSA (Appendix F). As outlined in Section 2.1.4 above, a minimal amount of grading would occur within the understory of the disturbed riparian woodland habitat adjacent to San Pablo Creek and San Pablo Dam Road. As such, the proposed project would implement avoidance and minimization measures to prevent the further spread or introduction of

invasive vegetation. As such, the proposed project is not expected to result in an increase in invasive vegetation within the BSA.

5.6 Migratory Bird Treaty Act Summary

The proposed project has the potential to impact the nests of birds protected under the MBTA. Measures to avoid, minimize, and compensate for impacts to nests protected under the MBTA are outlined in Section 4.3.3.3 above.

6. References

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7. Appendices

- Appendix A–Biologist Qualifications
- Appendix B–IPAC Database Query
- Appendix C–CNDDB Database Query
- Appendix D–CNPS Database Query
- Appendix E–Site Photographs
- Appendix F–Species Compendium

Appendix A - Biologist Qualifications

FIRSTCARBON SOLUTIONS™

ROBERT CARROLL—BIOLOGIST II

OVERVIEW

- More than 10 years of experience

Education

- Bachelor of Science, Fisheries Science, Concentration in Water Resources, Cum Laude, Oregon State University, Corvallis, OR, 2016
- Bachelor of Arts, Marketing, College of Business Administration, Marquette University, Milwaukee, WI, 2007

Licenses and Certifications

- Fairy Shrimp Identification Certification, 2017
- Wetland Delineation Certification, 2018

Awards

- Milt Guymon Endowment Scholar, 2015
- Gerald L. Fisher Aquaculture and Hatchery Management Scholarship, 2015

Professional Affiliations and Volunteer Work

- Orange County Coastkeeper Beach Cleanup Team, 2013
- Member, Marquette University Diversity Club, 2003–2005

Robert Carroll has more than 10 years of experience in environmental analysis, biological resources, and regulatory permitting. While working at the Oregon Department of Fish and Wildlife (ODFW), Mr. Carroll conducted spawning surveys of adult salmonids in numerous streams throughout the Willamette Valley. His experience at the ODFW also included spawning and rearing techniques at various ODFW run fish hatcheries for the dispersal of steelhead in lakes and rivers throughout the Corvallis watershed. Mr. Carroll also contributed to ODFW's preliminary study to document fish diversity throughout the Little Muddy Creek. As a Biologist and Regulatory Specialist, Mr. Carroll's expertise includes multi-agency regulatory permitting and compliance (NEPA, CEQA, and California and federal Endangered Species Acts), natural resource assessments, special-status flora and fauna species surveys, construction compliance monitoring, and wildlife habitat assessments. Mr. Carroll has extensive experience managing wetland delineation projects and performing regulatory permitting pursuant to the jurisdiction of the California Department of Fish and Wildlife (CDFW), the Regional Water Quality Control Board (RWQCB), the US Army Corps of Engineers (USACE), and other local and regional agencies and organizations. He is well versed in the Clean Water Act (CWA) Sections 404 and 401 permitting and the CDFW Code 1602 permitting.

ROBERT CARROLL—BIOLOGIST II

RELATED EXPERIENCE AND CLIENT SUMMARY

Dogtown Road Bridges Replacement Projects (San Domingo Creek, French Gulch, and Indian Creek) Caltrans NEPA/CEQA Documentation and Permitting, Calaveras County, CA

FCS assisted Calaveras County with Caltrans NEPA/CEQA documentation and the completion of regulatory permit applications for the replacement of three structurally deficient bridges and associated improvements to Dogtown Road. FCS coordinated the required air, noise, hazardous materials, biological, cultural, water quality, floodplain, land use, and traffic studies for local agency compliance with Federal Highway Administration (FHWA) funding administered through the California Department of Transportation (Caltrans) District 10. FCS also prepared an IS/MND pursuant to CEQA and a NEPA Categorical Exclusion, as well as coordinated the permitting through the USACE, Central Valley RWQCB, and CDFW. As a Staff Biologist for the project, Mr. Carroll assisted in preparing the required regulatory permit application packages for the three bridge replacements. These packages included a CWA Section 404 Nationwide Permit (NWP), CWA Section 401 Water Quality Certification, and a Section 1602 Streambed Alteration Agreement (SAA).

Turlock Project Warehouse Consistency Checklist and Technical Studies, City of Turlock, CA

FCS prepared a Consistency Checklist and Technical Studies for an e-commerce facility in the City of Turlock, California. Seefried Industrial Properties (project applicant) proposed to develop the Project Hornet e-commerce facility and related improvements on approximately 72.90 acres located within the 2,611-acre Westside Industrial Specific Plan (WISP) area. The WISP EIR was certified on November 14, 2006. General Plan EIR and General Plan were subsequently adopted on September 25, 2012. FCS prepared the Consistency Checklist to evaluate whether the previous environmental analysis in the certified WISP EIR and General Plan EIR adequately addressed the potential environmental effects of the proposed project or if supplemental or subsequent environmental review is warranted pursuant to the requirements of CEQA. In support of the Consistency Checklist, FCS prepared analysis for air quality/GHG emissions, energy, biological resources, cultural resources, and noise. The Consistency Checklist was approved on July 13, 2020, and the project was completed constructed in 2021. Mr. Carroll conducted Swainson's hawk (*Buteo swainsoni*) protocol-level surveys, nesting detection surveys, and active bird nest status determination surveys, for a total of more than 100 survey hours. Over the course of the project, 16 active bird nests were detected and monitored. Mr. Carroll assisted in the determination of protection buffers and coordination with the project team regarding compliance with bird nests protection measures.

CenterPoint Properties Logistics Warehouse Project EIR, Contra Costa County, CA

FCS prepared an EIR for the CenterPoint Properties Project located at 560 Brookside Drive in unincorporated Contra Costa County, near the Richmond city limits. The applicant (CenterPoint) is proposing to develop three warehouse buildings totaling 555,000 square feet on the 31.48-acre project site. Historically, the site was used as cut flower nurseries and farmland to grow row crops since the late 1920s. The Contra Costa County General Plan designates the site as Light Industry (LI) and Heavy Industry (HI) and the site is located within the Planned Unit District (P-1) Zoning District. Areas of concern included air quality and GHG emissions, biological resources, cultural resources, noise, and traffic. As the Staff Biologist, Mr. Carroll conducted the field survey, peer reviewed the applicant's supporting studies, and wrote the Biological Resources section of the EIR.

ROBERT CARROLL—BIOLOGIST II

Scannell Properties Logistics Warehouse Project EIR, Contra Costa County, CA

FCS prepared the EIR for the Scannell Properties Project in unincorporated Contra Costa County, in the North Richmond area. The applicant (Scannell Properties) proposes to build two warehouse fulfillment buildings totaling approximately 325,000 square feet on the 29.4-acre project site. The Contra Costa County General Plan designates the site as Heavy Industry (HI) and the site is located within the North Richmond P-1 Zoning District. The North Richmond community is disproportionately impacted by air pollution. As a result, the project included construction best management practices, vehicle electrification and a transition to zero-emission fleet, and a Transportation Demand Management Plan to reduce emissions and improve air quality. Other areas of concern included GHG emissions, biological resources, cultural resources, and transportation. The Final EIR was unanimously approved by the County Planning Commission in September 2021. As the Staff Biologist, Mr. Carroll conducted the field survey, peer reviewed the applicant's supporting studies, and wrote the Biological Resources section of the EIR.

Oak Road Townhouse Condominiums Project EIR and Peer Review of Technical Studies, Contra Costa County, CA

FCS prepared an EIR and peer reviewed technical studies for a proposed subdivision. The applicant (SummerHill Homes) is constructing 125 townhouse condominium units located in nineteen 3-story buildings and associated improvements on a 5.94-acre site in unincorporated Contra Costa County, adjacent to the City of Walnut Creek. The eight existing parcels are currently zoned Low- and Medium-density Single-family Residential (R-15), Medium- and High-density Multiple-family Residential (M-17), and High-density Multiple-family Residential (M-29). The project includes rezoning all eight parcels to Planned Unit District (P-1), a vesting tentative map to subdivide the parcels into 125 residential lots, and approval of a preliminary and final development plan. The Board of Supervisors approved the project on March 1, 2022. Mr. Carroll peer reviewed the applicant's BRA, provided comments to make the assessment CEQA-compliant, and used the applicant's analysis to author the Biological Resources section of the EIR.

John Muir Parkway Extension Project IS/MND and Permitting for NEPA Clearance, City of Brentwood, CA

FCS prepared an IS/MND in 2007 to clear the relocation of Concord Avenue as John Muir Parkway extension. In 2010, FCS assisted the City of Brentwood by facilitating Contra Costa Transportation Authority's recognition of federal funding that was earmarked in the 2007 Omnibus Transportation Act for the relocation. Once funding was programmed in the regional Transportation Improvement Program, FCS prepared a Preliminary Environmental Study (PES) package through the Caltrans Office of Local Assistance to access the federal funding for the project. A second PES package was prepared and submitted in 2014, including a Natural Environment Study, Wetland Delineation, Cultural Resources Area of Potential Effect Map, Historical Property Survey Report, Archaeological Survey Report, Hazardous Materials Memorandum, and Categorical Exclusion Checklist and Form. Mr. Carroll assisted the City in obtaining necessary updates to biological permits, including CWA Sections 404 and 401 permits and an SAA. Mr. Carroll also provided construction monitoring and Workers Environmental Awareness Training and helped obtain all necessary biological permits.

ROBERT CARROLL—BIOLOGIST II

Silvergate Apartment Development Project Biological Pre-construction Survey, City of Brentwood, CA

Mr. Carroll assisted in the preparation of the Planning Survey Report (PSR) Application in relation to compliance with the East Contra Costa County Habitat Conservation Plan (HCP).

Cypress Self-storage Project Biological Assessment, City of Oakley, CA

FCS prepared a biological assessment for the Cypress Self-storage Project, which proposes to construct a Self-storage Facility and leasing office with related sales and rental facilities. The storage facility would consist of two 3-story buildings totaling up to 139,408 square feet plus a 1,024-square-foot office building with five parking stalls. FCS's biologists conducted pre-construction surveys for Swainson's hawk, golden eagle (*Aquila chrysaetos*), western BUOW, and Townsend's big-eared bat (*Corynorhinus townsendii*), as well as species protected by the Migratory Bird Treaty Act (MBTA) (16 USC 707) and the California Fish and Game Code (FGC) (Section 3503). Mr. Carroll prepared the East Contra Costa County HCP and Natural Conservation Community Plan Application Form Planning Survey Report.

Blue Wave Car Wash Project IS/MND, City of Pittsburg, CA

Mr. Carroll prepared the biological resources section of the IS/MND completed the PSR Application in relation to compliance with the East Contra Costa County HCP.

Liberty Subdivision II Project Substantial Conformance Memorandum Services, City of Pittsburg, CA

Mr. Carroll prepared the PSR Application in relation to compliance with the East Contra Costa County HCP. Additionally, Mr. Carroll contributed the Conformance Evaluation required under CEQA.

Oak Park Properties Specific Plan EIR and Permitting, City of Pleasant Hill, CA

FCS prepared an EIR for a 15-acre plan area which includes a new public library, housing, and athletic fields. The plan area is located entirely within the City of Pleasant Hill on land owned by Contra Costa County and the Mount Diablo Unified School District. The project also included necessary infrastructure improvements such as roadway widening, lane configuration improvements, and signal upgrades; new curb and gutter, sidewalks, and ADA facilities; and drainage, utilities (including a possible sewer line removal), lighting, and landscape improvements throughout the plan area. FCS worked with the property sponsors and stakeholders to clearly define the project. FCS also identified mitigation and prepared all regulatory permit applications, including a 404 permit from the USACE, Streambed Alteration Agreement with the CDFW, and 401 water quality certification from the RWQCB. Mr. Carroll prepared the Biological Impact Analysis for the EIR, jurisdictional delineation, and California red-legged frog (CRLF) (*Rana draytonii*) habitat assessment, with appropriate levels of analysis for the both programmatic- and project-level components. Additionally, Mr. Carroll prepared the required regulatory permits from the USACE, RWQCB, and CDFW.

CarMax Project Biological Construction Monitoring and Memorandum, City of Pleasant Hill, CA

Mr. Carroll confirmed the presence of one active red-shouldered hawk (*Buteo lineatus*) nest on the project site during construction activities. Subsequently, Mr. Carroll assisted in the determination of protection buffers and coordination with the project team regarding compliance with bird nests protection measures.

ROBERT CARROLL—BIOLOGIST II

Powerplant Agricultural Development Project Focused EIR and MND, City of Richmond, CA

FCS prepared an IS/MND for the 11-acre project in the City of Richmond. The applicant proposed to develop 180,900 square feet of agricultural development in several phases for the purposes of marijuana cultivation. The project would include 40 greenhouses and common buildings that would stand up to 35 feet above finished grade. Vehicular access would be taken from driveways on Freethy Boulevard and a guard house would be located at the driveway on the north side of Freethy Boulevard. FCS prepared an Air Quality/GHG Emissions Analysis and Noise Impact Analysis for inclusion in the IS/MND. In addition, there would also be a Traffic Impact Study and peer review of applicant-provided technical studies. As the Staff Biologist, Mr. Carroll prepared the Biological Impact Analysis for the IS/MND, with appropriate levels of analysis for project-level components.

Marina Way Residential Project Wetland Delineation, City of Richmond, CA

FCS prepared a Wetland Delineation for the Marina Way Residential Project. The property is located south of the intersection of Marina Way South and Hall Avenue, near the southern terminus of Marina Way in the City of Richmond. FCS delineated potential jurisdictional wetlands on the project site in accordance with methodologies within the USACE Wetland Delineation Manual and Arid West Regional Supplement. Mr. Carroll prepared the Wetland Delineation.

Silva Dairy Site Industrial Project BUOW Pre-construction Survey, City of Tracy, CA

Mr. Carroll conducted pre-construction surveys for BUOW and other nesting birds for this project. The surveys were conducted for compliance with the San Joaquin County Multiple Species HCP.

Highway 1/North Main Street—Spindrift Way IS/MND and Technical Studies, City of Half Moon Bay, CA

The segment of Highway 1 between North Main Street and Spindrift Way carries approximately 30,000 vehicles per day (based on Caltrans 2015 traffic counts) and is the most traveled portion of the Cabrillo Highway between Pacifica and Santa Cruz. Between North Main Street and Grand Boulevard, the roadway is a four-lane divided highway. Between Grand Boulevard and Spindrift Way, Highway 1 consists of a two-lane undivided roadway. A Class I bicycle/pedestrian trail exists along the west shoulder. In 2009, the City of Half Moon Bay adopted the Highway 1 Traffic Safety and Congestion Mitigation Plan to improve roadway and intersection operations along the Highway 1 corridor within Half Moon Bay. The improvements contemplated by the plan would be funded by the County's Measure A program. FCS prepared an IS/MND to evaluate the proposed safety improvements and visual enhancements along the Highway 1 corridor between North Main Street and Spindrift Way. Mr. Carroll assisted in the preparation of the BRA and Jurisdictional Delineation for the project.

Fire Station 77 Replacement IS/MND, Menlo Park Fire Protection District, City of Menlo Park, CA

FCS prepared an IS/MND for a project that proposed to replace Fire Station 77 in the City of Menlo Park with a new 14,000-square-foot, 2-story fire station. To provide maximum planning flexibility to the Menlo Park Fire Protection District, the IS/MND evaluated three parking lot options along Terminal Avenue and an array of residential property acquisition options. FCS also prepared the Hazardous Material section, including recommendations for mitigation for the project. Preparation of this section of the IS/MND involved the review of various environmental databases for any current and/or historic

records of releases to the environment. As the Project Biologist, Mr. Carroll conducted field work and assisted in a bat habitat assessment, which outlined methodology, findings, and necessary measures to avoid or otherwise minimize impacts to sensitive bat species.

Mariner's Cove Wetland Fill Project Biologist and Biological Monitoring Services, City of Vallejo, CA

FCS provided biological monitoring services to the City of Vallejo's Public Works Department for the Mariner's Cove Wetland Fill Project. The goal was to fill former tidal marsh areas that are now cut off from natural tidal influence. However, the area supports pickleweed (*Salicornia pacifica*) habitat, which is potentially suitable for the federal and State endangered salt marsh harvest mouse (SMHM) (*Reithrodontomys raviventris*). For the vegetation removal process, FCS provided biological monitoring services, including review of permit documents, coordination with the contractor, coordination with CDFW, monitoring on-site during vegetation removal, and reporting according to permit conditions. This project required biological monitors to be approved in advance by the CDFW for this specific species and habitat. FCS acquired CDFW approval within one day and was able to provide a pool of five approved biological monitors. Mr. Carroll was a CDFW-approved Monitor for the project. Mr. Carroll prepared and conducted a Workers Environmental Awareness Program (WEAP) for construction personnel prior to the start of vegetation removal. He also distributed an SMHM factsheet handout to all personnel as required per the City's SAA. Additionally, Mr. Carroll surveyed and monitored for protected species for all work done within 300 feet of tidal or pickleweed habitats.

Cotati Reverb Hotel and Amphitheater Project IS/MND and Technical Studies, City of Cotati, CA

FCS prepared an IS/MND and associated technical studies for the Cotati Reverb Hotel and Amphitheater Project, which proposed to demolish an existing park-and-ride surface parking area and paved surfaces and construct a hotel and amphitheater near the US 101/SR 116 interchange in the City of Cotati, California. FCS also delineated potential jurisdictional wetlands on the project site in accordance with methodologies within the USACE Wetland Delineation Manual and Arid West Regional Supplement. Mr. Carroll prepared the Wetland Delineation and the IS/MND. Additionally, Mr. Carroll obtained regulatory permits from the USACE and RWQCB.

110 Dry Creek Regulatory Permitting Project, City of Healdsburg, CA

FCS provided environmental planning, biological resources, and regulatory permitting services in support of the Healdsburg Suites Multi-use Project. FCS initially completed CEQA compliance work and prepared associated technical studies, including a BRA and jurisdictional delineation. CEQA compliance was achieved with the City of Healdsburg, and the entitlement process was successfully completed. Mr. Carroll was a Staff Biologist for the project and helped author the BRA and IS/MND and obtain a Section 1602 SAA from CDFW. Additionally, Mr. Carroll was the Lead Monitor during construction for span bridge over Foss Creek.

Conservation Center for Wildlife Care Project Environmental and Regulatory Permitting Services, Lawrence Ellison Foundation, Santa Clara County, CA

FCS provided technical studies (cultural resources, biological resources, air quality, and noise) in support of the Lawrence Ellison Foundation (LEF) original application submittal in 2013, and reviewed provided comments on the County's 2014 EIR on behalf of LEF. Following the unanimous approval of the project, FCS provided biological, regulatory, project management, and entitlement processing services to

support the proposed Conservation Center for Wildlife Care Project in Santa Clara County. LEF proposes to construct five buildings (Public Wildlife Intake Building/Pond Ecology Station, Wildlife Medical Facility and Education Building, Imperiled Species Breeding Facility, and two cottages) in the western portion of the project site and 50 wildlife enclosures scattered throughout the site. Mr. Carroll assisted in the compilation and submission of regulatory permits, provided a Worker's Environmental Awareness Training, and conducted multiple pre-construction surveys for nesting birds and roosting bats to ensure all biological mitigation measures were satisfied for CEQA compliance.

Other Relevant FCS Experience

- Project Lefty Biological Clearance Survey Report, City of Bakersfield, CA
- 1509 El Camino Real Project Regulatory Permitting and Engineering Design, City of Burlingame, CA
- 384 Fairgrounds Drive Self-storage Project Wetlands Assessment, City of Vallejo, CA
- 124 and 128 Brown Street Biological Resources Due Diligence Memorandum, Solano County, CA
- Cherry Creek Village Apartments Technical Studies, City of Cloverdale, CA
- Walnut Avenue Residential Project Indirect Source Review and Biological Surveys, City of Patterson, CA
- 2755 El Camino Real Apartment Project Nesting Bird Survey and Avoidance, City of Palo Alto, CA
- Mill Creek Project Biological Resources Regulatory Permitting, Town of Windsor, CA
- Washington Street Sewer Trunk Line Biological Services, City of Calistoga, CA
- Foundry Foodhall Technical Studies, City of Walnut Creek, CA
- Volpone-Silver Gate Condominium Community Project BUOW and Nesting Birds Pre-construction Survey, City of Brentwood, CA
- Jackson Family Winery The Inn Project Wetland Assessment, City of Napa, CA
- Lassen Road Residential Development Project IS/MND, City of Livermore, CA
- Devlin Road Construction and Demolition Debris Facility Initial Study/Addendum and Technical Studies, Napa County, CA
- General Plan Redesignation and Zoning Ordinance EIR Amendment, City of Napa, CA
- Mission and Mattox Project Addendum, City of Hayward, CA
- Richmond Country Club Residential Project IS/MND, Technical Studies, and Bay Trail Connection, City of Richmond, CA
- Quarry Residential Project Nesting Bird Survey, City of Richmond, CA
- Napa Vault Storage Biological and Regulatory Permitting Services, City of Napa, CA

Appendix B - IPAC Database Query

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: 03/20/2025 20:39:29 UTC
Project Code: 2025-0072154
Project Name: 2648.0010 San Pablo Dam Road-La Honda Road Storm Drain and Erosion Repair

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

To Whom It May Concern:

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

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

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

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

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

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

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

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

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2025-0072154

Project Name: 2648.0010 San Pablo Dam Road-La Honda Road Storm Drain and Erosion Repair

Project Type: Road Repair

Project Description: Design/Construction hired BSK Associates to provide geotechnical preliminary site reconnaissance and recommendations. Based on BSK's preliminary recommendations, the project will most likely install a solder pile wall parallel to the roadway in order support and rebuild the damaged portion of the roadway. The slide mass downhill of the retaining wall would not be addressed. We are still in the planning stages of this project, and it is unclear how we will address the damaged 18" culvert at this time. Drainage to the 18" culvert will likely need to be redirected either to another existing outfall or a new outfall at a different location. It may be possible to re-establish the 18" culvert at this current location, but it would be difficult since it would be in an active slide area. The project will likely include, excavation, structural backfill, culvert removal, culvert installation, removal and replacement of concrete lined ditch, removal of vegetation and trees, construction of soldier pile retaining wall, placing aggregate base and HMA, striping and guardrail installation.

The alternative to a retaining wall is to repair the entire slide area as was done 50 years ago at this location. However, this would require significantly more excavation and removal of significantly more vegetation and trees on the embankment/creek bank than a retaining wall project. Such a project would also likely directly impact the creek near the flowline as the slide extends to the bottom of the embankment. We anticipate this type of repair would be more expensive due to the large project footprint and have greater environmental impacts that would require additional studies and mitigation. Therefore, we are moving forward with the retaining wall alternative at this time.

Design/construction will provide additional details to Environmental Services as they become available.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.962410649999995,-122.28618576187884,14z



Counties: Contra Costa County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 13 threatened, endangered, or candidate species on this species list.

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

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

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

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

MAMMALS

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

BIRDS

NAME	STATUS
California Least Tern *Sternula antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
California Ridgway"s Rail *Rallus obsoletus obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

REPTILES

NAME	STATUS
Alameda Whipsnake (=striped Racer) *Masticophis lateralis euryxanthus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5524	Threatened
Northwestern Pond Turtle *Actinemys marmorata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

AMPHIBIANS

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
Foothill Yellow-legged Frog *Rana boylii* Population: Central Coast Distinct Population Segment (Central Coast DPS)	Threatened

NAME	STATUS

There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/5133

FISHES

NAME	STATUS
Tidewater Goby *Eucyclogobius newberryi*	Endangered

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/57

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Proposed Threatened

There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/9743

FLOWERING PLANTS

NAME	STATUS
Pallid Manzanita *Arctostaphylos pallida*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/8292

Santa Cruz Tarplant *Holocarpha macradenia*	Threatened

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/6832

CRITICAL HABITATS

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

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

IPAC USER CONTACT INFORMATION

Agency:	Private Entity
Name:	Juliet Simpson
Address:	2999 Oak Road
Address Line 2:	Suite 250
City:	Walnut Creek
State:	CA
Zip:	94597
Email	jsimpson@fcs-intl.com
Phone:	8888265814

Appendix C - CNDDB Database Query

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Richmond (3712283) OR Oakland East (3712272) OR Briones Valley (3712282) OR Benicia (3812212) OR Oakland West (3712273) OR Mare Island (3812213) OR Petaluma Point (3812214) OR San Francisco North (3712274) OR San Quentin (3712284))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Acipenser medirostris pop. 1 green sturgeon - southern DPS	AFCAA01031	Threatened	None	G2T1	S1	SSC
Actinemys marmorata northwestern pond turtle	ARAAD02031	Proposed Threatened	None	G2	SNR	SSC
Adela oplerella Opler's longhorn moth	IILEE0G040	None	None	G2	S2	
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Amorpha californica var. napensis Napa false indigo	PDFAB08012	None	None	G4T2	S2	1B.2
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aphyllon robbinsii Robbins' broomrape	PDORO040Q0	None	None	G1	S1	1B.1
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G1	S1	SSC
Arctostaphylos franciscana Franciscan manzanita	PDERI040J3	Endangered	None	GHC	S1	1B.1
Arctostaphylos montana ssp. ravenii Presidio manzanita	PDERI040J2	Endangered	Endangered	G3T1	S1	1B.1
Arctostaphylos pallida pallid manzanita	PDERI04110	Threatened	Endangered	G1	S1	1B.1
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Arenaria paludicola marsh sandwort	PDCAR040L0	Endangered	Endangered	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Asio flammeus short-eared owl	ABNSB13040	None	None	G5	S2	SSC
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	Candidate Endangered	G4	S2	SSC
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G1G2	S1S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G2G3	S1S2	
Bombus crotchii Crotch's bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
Bombus occidentalis western bumble bee	IIHYM24252	None	Candidate Endangered	G3	S1	
Bombus pensylvanicus American bumble bee	IIHYM24260	None	None	G3G4	S2	
Branta hutchinsii leucopareia cackling (=Aleutian Canada) goose	ABNJB05035	Delisted	None	G5T3	S3	WL
Calochortus pulchellus Mt. Diablo fairy-lantern	PMLIL0D160	None	None	G2	S2	1B.2
Calochortus tiburonensis Tiburon mariposa-lily	PMLIL0D1C0	Threatened	Threatened	G1	S1	1B.1
Calystegia purpurata ssp. saxicola coastal bluff morning-glory	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Carex comosa bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
Carex praticola northern meadow sedge	PMCYP03B20	None	None	G5	S2	2B.2
Castilleja affinis var. neglecta Tiburon paintbrush	PDSCR0D013	Endangered	Threatened	G4G5T1T2	S1S2	1B.2
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T2	S2	1B.1
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Chloropyron molle ssp. molle soft salty bird's-beak	PDSCR0J0D2	Endangered	Rare	G2T1	S1	1B.2
Chorizanthe cuspidata var. cuspidata San Francisco Bay spineflower	PDPGN04081	None	None	G2T1	S1	1B.2
Chorizanthe robusta var. robusta robust spineflower	PDPGN040Q2	Endangered	None	G2T1	S1	1B.1
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T4T5	S2?	2B.1
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Cirsium andrewsii Franciscan thistle	PDAST2E050	None	None	G3	S3	1B.2
Cirsium hydrophilum var. vaseyi Mt. Tamalpais thistle	PDAST2E1G2	None	None	G2T1	S1	1B.2
Clarkia concinna ssp. automixa Santa Clara red ribbons	PDONA050A1	None	None	G5?T3	S3	4.3
Clarkia franciscana Presidio clarkia	PDONA050H0	Endangered	Endangered	G1	S1	1B.1
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Coastal Terrace Prairie Coastal Terrace Prairie	CTT41100CA	None	None	G2	S2.1	
Collinsia corymbosa round-headed collinsia	PDSCR0H060	None	None	G1	S1	1B.2
Collinsia multicolor San Francisco collinsia	PDSCR0H0B0	None	None	G2	S2	1B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S2	SSC
Danaus plexippus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Proposed Threatened	None	G4T1T2Q	S2	
Dicamptodon ensatus California giant salamander	AAAAH01020	None	None	G2G3	S2S3	SSC
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	AMAFD03061	None	None	G4T1	S2	
Dirca occidentalis western leatherwood	PDTHY03010	None	None	G2	S2	1B.2
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Enhydra lutris nereis southern sea otter	AMAJF09012	Threatened	None	G4T2	S3	FP
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Eriogonum luteolum var. caninum Tiburon buckwheat	PDPGN083S1	None	None	G5T2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Eumetopias jubatus Steller sea lion	AMAJC03010	Delisted	None	G3	S2	
Euphydryas editha bayensis Bay checkerspot butterfly	IILEPK4055	Threatened	None	G4G5T1	S3	
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Gilia capitata ssp. chamissonis blue coast gilia	PDPLM040B3	None	None	G5T2	S2	1B.1
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S2	
Grindelia hirsutula var. maritima San Francisco gumplant	PDAST470D3	None	None	G5T1Q	S1	3.2
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Helminthoglypta nickliniana bridgesi Bridges' coast range shoulderband	IMGASC2362	None	None	G3T1	S1S2	
Hemizonia congesta ssp. congesta congested-headed hayfield tarplant	PDAST4R0W1	None	None	G5T2	S2	1B.2
Hesperolinon congestum Marin western flax	PDLIN01060	Threatened	Threatened	G1	S1	1B.1
Heteranthera dubia water star-grass	PMPON03010	None	None	G5	S2	2B.2
Hoita strobilina Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
Holocarpha macradenia Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Horkelia cuneata var. sericea Kellogg's horkelia	PDROS0W043	None	None	G4T1?	S1?	1B.1
Hydroprogne caspia Caspian tern	ABNNM08020	None	None	G5	S4	
Hypogymnia schizidiata island tube lichen	NLT0032640	None	None	G2G3	S2	1B.3
Hypomesus transpacificus Delta smelt	AFCHB01040	Threatened	Endangered	G1	S1	
Icaricia icarioides missionensis Mission blue butterfly	IILEPG801A	Endangered	None	G5T2	S2	
Icaricia icarioides pheres Pheres blue butterfly	IILEPG8019	None	None	G5TX	SX	
Isocoma arguta Carquinez goldenbush	PDAST57050	None	None	G1	S1	1B.1
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G3G4	S3S4	
Lasiurus cinereus hoary bat	AMACC05032	None	None	G3G4	S4	
Lasiurus frantzii western red bat	AMACC05080	None	None	G4	S3	SSC
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S2	FP
Lathyrus jepsonii var. jepsonii Delta tule pea	PDFAB250D2	None	None	G5T2	S2	1B.2
Layia carnosa beach layia	PDAST5N010	Threatened	Endangered	G2	S2	1B.1
Leptosiphon rosaceus rose leptosiphon	PDPLM09180	None	None	G1	S1	1B.1
Lessingia germanorum San Francisco lessingia	PDAST5S010	Endangered	Endangered	G1	S1	1B.1
Lichnanthe ursina bumblebee scarab beetle	IICOL67020	None	None	G2	S2	
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
Meconella oregana Oregon meconella	PDPAP0G030	None	None	G2	S2	1B.1
Melospiza melodia maxillaris Suisun song sparrow	ABPBXA301K	None	None	G5T3	S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Melospiza melodia pusillula Alameda song sparrow	ABPBXA301S	None	None	G5T2T3	S2	SSC
Melospiza melodia samuelis San Pablo song sparrow	ABPBXA301W	None	None	G5T2	S2	SSC
Microcina leei Lee's micro-blind harvestman	ILARA47040	None	None	G1	S1	
Microcina tiburona Tiburon micro-blind harvestman	ILARA47060	None	None	G2	S2	
Microseris paludosa marsh microseris	PDAST6E0D0	None	None	G2	S2	1B.2
Microtus californicus sanpabloensis San Pablo vole	AMAFF11034	None	None	G5T1T2	S1S2	SSC
Monolopia gracilens woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
Nannopterum auritum double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	AMAFF08082	None	None	G5T2T3	S2S3	SSC
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Northern Maritime Chaparral Northern Maritime Chaparral	CTT37C10CA	None	None	G1	S1.2	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Nyctinomops macrotis big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pentachaeta bellidiflora white-rayed pentachaeta	PDAST6X030	Endangered	Endangered	G1	S1	1B.1
Plagiobothrys chorisianus var. chorisianus Choris' popcornflower	PDBOR0V061	None	None	G3T1Q	S1	1B.2
Plagiobothrys diffusus San Francisco popcornflower	PDBOR0V080	None	Endangered	G1Q	S1	1B.1
Plagiobothrys glaber hairless popcornflower	PDBOR0V0B0	None	None	GX	SX	1A
Pleuropogon hooverianus North Coast semaphore grass	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	G3	S3	SSC
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Polygonum marinense Marin knotweed	PDPGN0L1C0	None	None	G2Q	S2	3.1
Pomatiopsis californica Pacific walker	IMGASJ9020	None	None	G1	S1	
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05011	Endangered	Endangered	G3T1	S2	FP
Rana boylii pop. 4 foothill yellow-legged frog - central coast DPS	AAABH01054	Threatened	Endangered	G3T2	S2	
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S3	FP
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S3	
Sanicula maritima adobe sanicle	PDAPI1Z0D0	None	Rare	G2	S2	1B.1
Scapanus latimanus insularis Angel Island mole	AMABB02032	None	None	G5T1	S2?	
Scapanus latimanus parvus Alameda Island mole	AMABB02031	None	None	G5T1Q	SH	SSC
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Serpentine Bunchgrass Serpentine Bunchgrass	CTT42130CA	None	None	G2	S2.2	
Silene verecunda ssp. verecunda San Francisco campion	PDCAR0U213	None	None	G5T1	S1	1B.2
Sorex ornatus sinuosus Suisun shrew	AMABA01103	None	None	G5T1T2Q	S1S2	SSC
Sorex vagrans halicoetes salt-marsh wandering shrew	AMABA01071	None	None	G5T1	S1	SSC
Sorex vagrans paludivagus Monterey vagrant shrew	AMABA01072	None	None	G5T1	S2	
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Speyeria callippe callippe callippe silverspot butterfly	IILEPJ6091	Endangered	None	G5T1	S1	
Spirinchus thaleichthys pop. 2 longfin smelt - San Francisco Bay-Delta DPS	AFCHB03040	Endangered	Threatened	G5TNRQ	S1	
Stebbinsoseris decipiens Santa Cruz microseris	PDAST6E050	None	None	G2	S2	1B.2
Sternula antillarum browni California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
Streptanthus glandulosus ssp. niger Tiburon jewelflower	PDBRA2G0T0	Endangered	Endangered	G4T1	S1	1B.1
Stuckenia filiformis ssp. alpina northern slender pondweed	PMPOT03091	None	None	G5T5	S2S3	2B.2
Suaeda californica California seablite	PDCHE0P020	Endangered	None	G1	S1	1B.1
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S1	SSC
Trachusa gummifera San Francisco Bay Area leaf-cutter bee	IIHYM80010	None	None	G1	S1	
Trifolium amoenum two-fork clover	PDFAB40040	Endangered	None	G1	S1	1B.1
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Triphysaria floribunda San Francisco owl's-clover	PDSCR2T010	None	None	G2?	S2?	1B.2
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Vespericola marinensis Marin hesperian	IMGASA4140	None	None	G2	S2	
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3	2B.3
Xanthocephalus xanthocephalus yellow-headed blackbird	ABPBXB3010	None	None	G5	S3	SSC
Zapus trinotatus orarius Point Reyes jumping mouse	AMAFH01031	None	None	G5T2	S2	SSC

Record Count: 162

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Appendix D - CNPS Database Query

CNPS Rare Plant Inventory

Search Results

99 matches found. Click on scientific name for details

Search Criteria: , 9-Quad include [3712272:3712282:3712283:3812212:3712273:3812213:3812214:3712274:3712284]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK
Amorpha californica var. *napensis*	Napa false indigo	Fabaceae	None	None	G4T2	S2	1B.2
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	None	None	G3	S3	1B.2
Androsace elongata ssp. *acuta*	California androsace	Primulaceae	None	None	G5?T3T4	S3S4	4.2
Aphyllon robbinsii	Robbins' broomrape	Orobanchaceae	None	None	G1	S1	1B.1
Arabis blepharophylla	coast rockcress	Brassicaceae	None	None	G4	S4	4.3
Arctostaphylos franciscana	Franciscan manzanita	Ericaceae	FE	None	GHC	S1	1B.1
Arctostaphylos montana ssp. *ravenii*	Presidio manzanita	Ericaceae	FE	CE	G3T1	S1	1B.1
Arctostaphylos pallida	pallid manzanita	Ericaceae	FT	CE	G1	S1	1B.1
Arenaria paludicola	marsh sandwort	Caryophyllaceae	FE	CE	G1	S1	1B.1
Aspidotis carlotta-halliae	Carlotta Hall's lace fern	Pteridaceae	None	None	G3	S3	4.2
Astragalus nuttallii var. *nuttallii*	ocean bluff milk-vetch	Fabaceae	None	None	G4T4	S4	4.3
Astragalus tener var. *tener*	alkali milk-vetch	Fabaceae	None	None	G2T1	S1	1B.2
Blepharizonia plumosa	big tarplant	Asteraceae	None	None	G1G2	S1S2	1B.1
Calamagrostis ophitidis	serpentine reed grass	Poaceae	None	None	G3	S3	4.3
Calochortus pulchellus	Mt. Diablo fairy-lantern	Liliaceae	None	None	G2	S2	1B.2
Calochortus tiburonensis	Tiburon mariposa-lily	Liliaceae	FT	CT	G1	S1	1B.1
Calochortus umbellatus	Oakland star-tulip	Liliaceae	None	None	G3?	S3?	4.2
Calystegia purpurata ssp. *saxicola*	coastal bluff morning-glory	Convolvulaceae	None	None	G4T2T3	S2S3	1B.2
Carex comosa	bristly sedge	Cyperaceae	None	None	G5	S2	2B.1
Carex praticola	northern meadow sedge	Cyperaceae	None	None	G5	S2	2B.2
Castilleja affinis var. *neglecta*	Tiburon paintbrush	Orobanchaceae	FE	CT	G4G5T1T2	S1S2	1B.2
Castilleja ambigua var. *ambigua*	johnny-nip	Orobanchaceae	None	None	G5T4	S3S4	4.2

Centromadia parryi ssp. *congdonii*	Congdon's tarplant	Asteraceae	None	None	G3T2	S2	1B.1
Chloropyron maritimum ssp. *palustre*	Point Reyes salty bird's-beak	Orobanchaceae	None	None	G4?T2	S2	1B.2
Chloropyron molle ssp. *molle*	soft salty bird's-beak	Orobanchaceae	FE	CR	G2T1	S1	1B.2
Chorizanthe cuspidata var. *cuspidata*	San Francisco Bay spineflower	Polygonaceae	None	None	G2T1	S1	1B.2
Chorizanthe robusta var. *robusta*	robust spineflower	Polygonaceae	FE	None	G2T1	S1	1B.1
Cicuta maculata var. *bolanderi*	Bolander's water-hemlock	Apiaceae	None	None	G5T4T5	S2?	2B.1
Cirsium andrewsii	Franciscan thistle	Asteraceae	None	None	G3	S3	1B.2
Cirsium hydrophilum var. *vaseyi*	Mt. Tamalpais thistle	Asteraceae	None	None	G2T1	S1	1B.2
Clarkia concinna ssp. *automixa*	Santa Clara red ribbons	Onagraceae	None	None	G5?T3	S3	4.3
Clarkia franciscana	Presidio clarkia	Onagraceae	FE	CE	G1	S1	1B.1
Collinsia corymbosa	round-headed collinsia	Plantaginaceae	None	None	G1	S1	1B.2
Collinsia multicolor	San Francisco collinsia	Plantaginaceae	None	None	G2	S2	1B.2
Collomia diversifolia	serpentine collomia	Polemoniaceae	None	None	G4	S4	4.3
Dirca occidentalis	western leatherwood	Thymelaeaceae	None	None	G2	S2	1B.2
Equisetum palustre	marsh horsetail	Equisetaceae	None	None	G5	S1S3	3
Eriogonum luteolum var. *caninum*	Tiburon buckwheat	Polygonaceae	None	None	G5T2	S2	1B.2
Eryngium jepsonii	Jepson's coyote-thistle	Apiaceae	None	None	G2	S2	1B.2
Erysimum franciscanum	San Francisco wallflower	Brassicaceae	None	None	G3	S3	4.2
Erythranthe laciniata	cut-leaved monkeyflower	Phrymaceae	None	None	G4	S4	4.3
Erythranthe nudata	bare monkeyflower	Phrymaceae	None	None	G4	S4	4.3
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	None	None	G2	S2	1B.2
Fissidens pauperculus	minute pocket moss	Fissidentaceae	None	None	G3?	S2	1B.2
Fritillaria liliacea	fragrant fritillary	Liliaceae	None	None	G2	S2	1B.2
Gilia capitata ssp. *chamissonis*	blue coast gilia	Polemoniaceae	None	None	G5T2	S2	1B.1
Gilia millefoliata	dark-eyed gilia	Polemoniaceae	None	None	G2	S2	1B.2
Grindelia hirsutula var. *maritima*	San Francisco gumplant	Asteraceae	None	None	G5T1Q	S1	3.2
Helianthella castanea	Diablo helianthella	Asteraceae	None	None	G2	S2	1B.2
Hemizonia congesta ssp. *congesta*	congested-headed hayfield tarplant	Asteraceae	None	None	G5T2	S2	1B.2
Hesperevax caulescens	hogwallow starfish	Asteraceae	None	None	G3	S3	4.2
Hesperolinon congestum	Marin western flax	Linaceae	FT	CT	G1	S1	1B.1
Heteranthera dubia	water star-grass	Pontederiaceae	None	None	G5	S2	2B.2
Hoita strobilina	Loma Prieta hoita	Fabaceae	None	None	G2?	S2?	1B.1

Holocarpha macradenia	Santa Cruz tarplant	Asteraceae	FT	CE	G1	S1	1B.1
Horkelia cuneata var. *sericea*	Kellogg's horkelia	Rosaceae	None	None	G4T1?	S1?	1B.1
Hosackia gracilis	harlequin lotus	Fabaceae	None	None	G3G4	S3	4.2
Hypogymnia schizidiata	island tube lichen	Parmeliaceae	None	None	G2G3	S2	1B.3
Iris longipetala	coast iris	Iridaceae	None	None	G3	S3	4.2
Isocoma arguta	Carquinez goldenbush	Asteraceae	None	None	G1	S1	1B.1
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	FE	None	G1	S1	1B.1
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	Fabaceae	None	None	G5T2	S2	1B.2
Layia carnosa	beach layia	Asteraceae	FT	CE	G2	S2	1B.1
Leptosiphon aureus	bristly leptosiphon	Polemoniaceae	None	None	G4?	S4?	4.2
Leptosiphon grandiflorus	large-flowered leptosiphon	Polemoniaceae	None	None	G3G4	S3S4	4.2
Leptosiphon latisectus	broad-lobed leptosiphon	Polemoniaceae	None	None	G4	S4	4.3
Leptosiphon rosaceus	rose leptosiphon	Polemoniaceae	None	None	G1	S1	1B.1
Lessingia germanorum	San Francisco lessingia	Asteraceae	FE	CE	G1	S1	1B.1
Lessingia hololeuca	woolly-headed lessingia	Asteraceae	None	None	G2G3	S2S3	3
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	None	CR	G2	S2	1B.1
Meconella oregana	Oregon meconella	Papaveraceae	None	None	G2	S2	1B.1
Micropus amphibolus	Mt. Diablo cottonweed	Asteraceae	None	None	G3G4	S3S4	3.2
Microseris paludosa	marsh microseris	Asteraceae	None	None	G2	S2	1B.2
Monardella antonina ssp. *antonina*	San Antonio Hills monardella	Lamiaceae	None	None	G4T1T3Q	S1S3	3
Monolopia gracilens	woodland woollythreads	Asteraceae	None	None	G3	S3	1B.2
Pentachaeta bellidiflora	white-rayed pentachaeta	Asteraceae	FE	CE	G1	S1	1B.1
Piperia michaelii	Michael's rein orchid	Orchidaceae	None	None	G3	S3	4.2
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	Boraginaceae	None	None	G3T1Q	S1	1B.2
Plagiobothrys diffusus	San Francisco popcornflower	Boraginaceae	None	CE	G1Q	S1	1B.1
Plagiobothrys glaber	hairless popcornflower	Boraginaceae	None	None	GX	SX	1A
Pleuropogon hooverianus	North Coast semaphore grass	Poaceae	None	CT	G2	S2	1B.1
Polemonium carneum	Oregon polemonium	Polemoniaceae	None	None	G3G4	S2	2B.2
Polygonum marinense	Marin knotweed	Polygonaceae	None	None	G2Q	S2	3.1
Ranunculus lobbii	Lobb's aquatic buttercup	Ranunculaceae	None	None	G4	S3	4.2
Sanicula maritima	adobe sanicle	Apiaceae	None	CR	G2	S2	1B.1
Senecio aphanactis	chaparral ragwort	Asteraceae	None	None	G3	S2	1B.2

Silene verecunda ssp. *verecunda*	San Francisco campion	Caryophyllaceae	None	None	G5T1	S1	1B.2
Spergularia macrotheca var. *longistyla*	long-styled sand-spurrey	Caryophyllaceae	None	None	G5T2	S2	1B.2
Stebbinsoseris decipiens	Santa Cruz microseris	Asteraceae	None	None	G2	S2	1B.2
Streptanthus albidus ssp. *peramoenus*	most beautiful jewelflower	Brassicaceae	None	None	G2T2	S2	1B.2
Streptanthus glandulosus ssp. *niger*	Tiburon jewelflower	Brassicaceae	FE	CE	G4T1	S1	1B.1
Stuckenia filiformis ssp. *alpina*	northern slender pondweed	Potamogetonaceae	None	None	G5T5	S2S3	2B.2
Suaeda californica	California seablite	Chenopodiaceae	FE	None	G1	S1	1B.1
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	None	None	G2	S2	1B.2
Trifolium amoenum	two-fork clover	Fabaceae	FE	None	G1	S1	1B.1
Trifolium hydrophilum	saline clover	Fabaceae	None	None	G2	S2	1B.2
Triphysaria floribunda	San Francisco owl's-clover	Orobanchaceae	None	None	G2?	S2?	1B.2
Triquetrella californica	coastal triquetrella	Pottiaceae	None	None	G2	S2	1B.2
Viburnum ellipticum	oval-leaved viburnum	Viburnaceae	None	None	G4G5	S3	2B.3

Showing 1 to 99 of 99 entries

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Suggested Citation:
California Native Plant Society, Rare Plant Program. 2025. Rare Plant Inventory (online edition, v9.5.1). Website https://www.rareplants.cnps.org [accessed 4 March 2025].

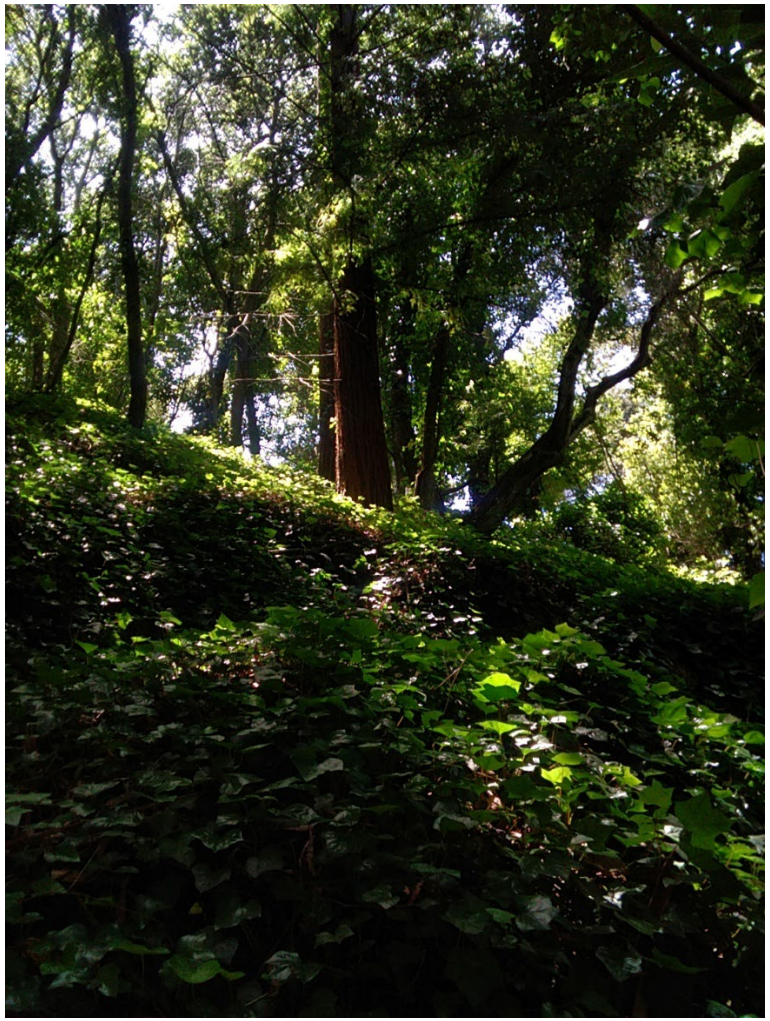
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Appendix E - Site Photographs



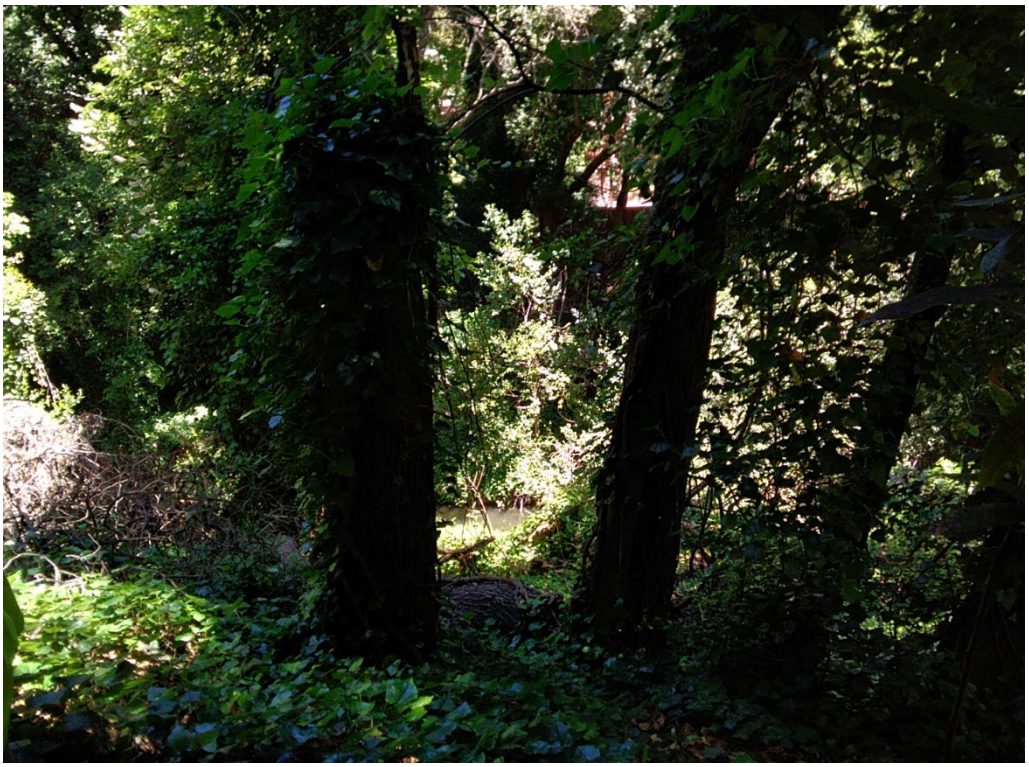
Photograph 1: Northwest area of BSA facing southeast, showing erosion of San Pablo Dam Road.



Photograph 2: San Pablo Creek area facing south, showing disturbed riparian woodland.



Photograph 3: Disturbed riparian woodland on the BSA.



Photograph 4: North edge of BSA facing north, showing San Pablo Creek.



Photograph 5: Conditions of San Pablo Creek, north of the BSA.



Photograph 6: San Pablo Creek area facing south, showing edge of BSA above top of bank.

Appendix F - Species Compendium

Species Compendium

Scientific Name	Common Name	Status
Birds		
Aphelocoma californica	Western scrub jay	Native
Baeolophus inornatus	Oak Titmouse	Native
Corvus brachyrhynchos	American crow	Native
Calypte anna	Anna's hummingbird	Native
Poecile rufescens	Chestnut-backed chickadee	Native
Psaltriparus minimus	Bushtit	Native
Setophaga coronata	Yellow-rumped warbler	Native
Spinus psaltria	Lesser goldfinch	Native
Thryomanes bewickii	Bewick's wren	Native
Plants		
Acer macrophyllum	Bigleaf maple	Native
Aesculus californica	California buckeye	Native
Avena fatua	Wild oat	Cal-IPC: M
Brassica nigra	Black mustard	Cal-IPC: M
Bromus catharticus var. elatus	Chilean brome	Non-native
Cirsium vulgare	Bull thistle	Cal-IPC: M
Claytonia parviflora	Streambank springbeauty	Native
Claytonia perfoliata	Miner's lettuce	Native
Epipactis helleborine	Broadleaf helleborine	Non-native
Eucalyptus sp.	Eucayptus species	Non-native
Festuca myuros	Rattail sixweeks grass	Cal-IPC: M
Galium aparine	Common bedstraw	Native
Geranium purpureum	Little Robin	Cal-IPC: L
Hedera canariensis	Canary ivy	Cal-IPC: H
Hordeum murinum	Foxtail barley	Cal-IPC: M
Lathyrus latifolius	Sweet pea	Non-native
Ligustrum lucidum	Glossy privet	Cal-IPC: L
Marah fabacea	California man-root	Native
Medicago polymorpha	Bur medic	Cal-IPC: L
Plantago major	Common plantain	Non-native
Poa annua	Annual bluegrass	Non-native
Prunus ilicifolia	Hollyleaf cherry	Native

Scientific Name	Common Name	Status
Quercus agrifolia	Coast live oak	Native
Senecio vulgaris	Common groundsel	Non-native
Sequoia sempervirens	Coast redwood	Native
Solanum americanum	American black nightshade	Native
Torilis arvensis	Field hedge parsley	Cal-IPC: M
Umbellularia californica	California bay	Native
Vicia sativa	Spring vetch	Non-native
Vinca major	Greater periwinkle	Cal-IPC: M

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B-2: Arborist Report

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FCS
An ADEC Innovation

San Pablo Dam Road-Storm Drain and Slide Repair Project

Arborist Report

Contra Costa County, California

PREPARED FOR:

Contra Costa County Public Works Department

Environmental Services Division
255 Glacier Drive
Martinez, CA 94553

Contact: Shravan Sundaram, Environmental Services Division

PREPARED BY:

FirstCarbon Solutions

2999 Oak Road, Suite 250
Walnut Creek, CA 94597
925.357.2562

Contact: Hannah Carney, Lead Arboriculturist, ISA Certification ID: WE-15232A

September 24, 2025

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1 - INTRODUCTION

1.1 - Purpose

At the request of Contra Costa County Public Works Department (County), FirstCarbon Solutions (FCS) has prepared the following Arborist Report to provide an assessment of trees located within the site of the proposed San Pablo Dam Road-Storm Drain and Slide Repair Project located 200 feet Southeast of La Honda Road (proposed project). This report includes survey methodology, identification of tree species, tree locations, descriptions of tree conditions or other observations, and recommendations. Updated site plans and grading limits were provided by the County in May 2025.

The Arborist survey and reporting were conducted by FCS Lead Arboriculturist (Arborist), Hannah Carney, who is certified by the International Society of Arboriculture (ISA). Her professional qualifications can be found in Appendix A. The following report is intended to identify all trees within the Biological Study Area (BSA) that could be affected by the proposed project. The report is to be used by the County as a reference for existing tree and site conditions to help satisfy planning requirements.

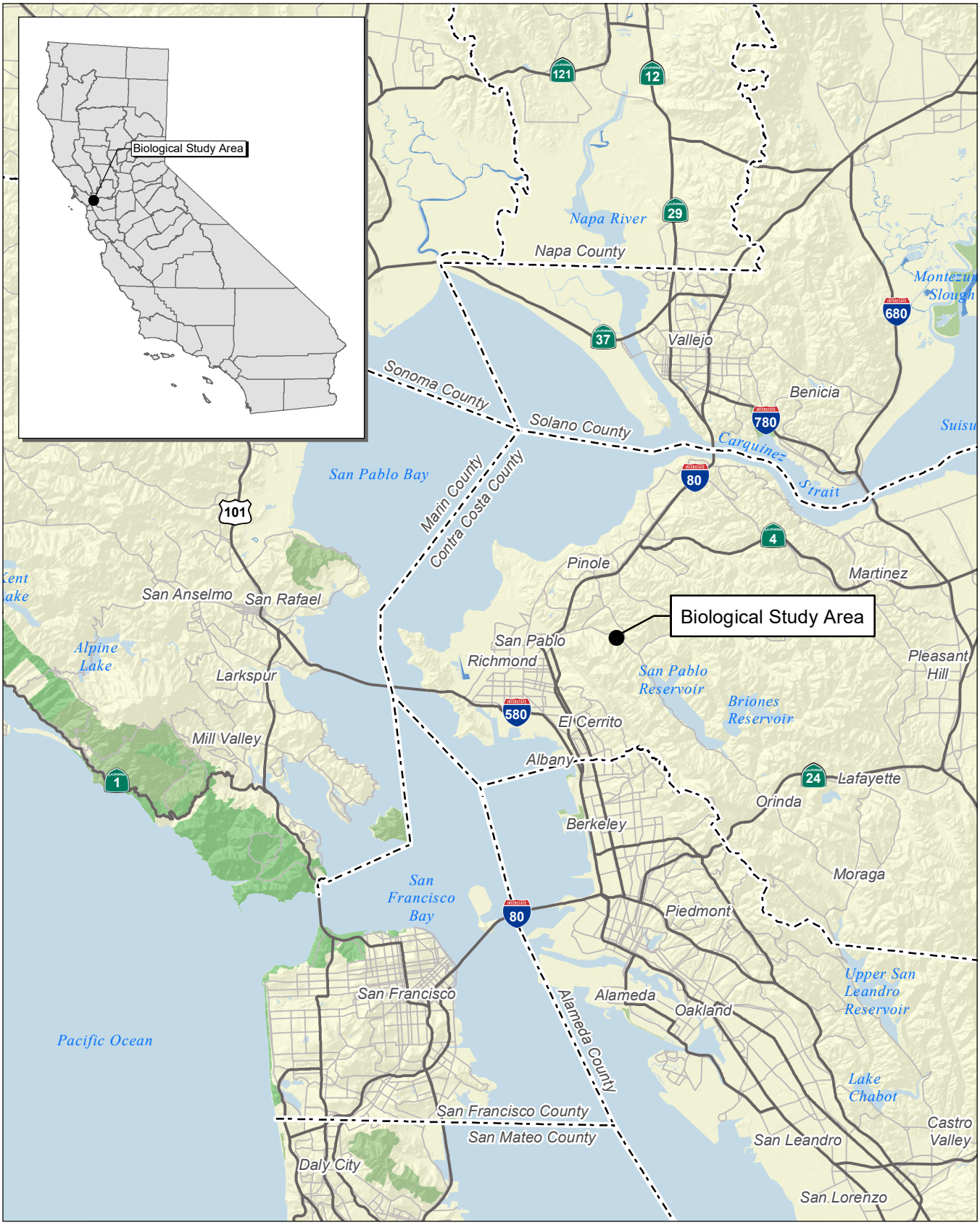
1.2 - Project Location

The 1.62-acre BSA is located along San Pablo Dam Road (200 feet Southeast of La Honda Road), in unincorporated Contra Costa County, California (Figure 1). The BSA consists of one parcel, identified as Assessor's Parcel Number (APN) 433-242-018. The BSA is primarily vacant and contains developed roads (0.88 acre) and riparian woodland (0.74 acre). An urbanized reach of San Pablo Creek runs through the existing riparian woodland, along the northern boundary of the site; however, it is outside the BSA boundary. The BSA boundary begins at the north intersection of San Pablo Dam Road and La Honda Road and continues southeast down San Pablo Dam Road, approximately 200 feet to where the embankment failure is located (Figure 2). The BSA is located within the *Richmond, California* United States Geological Survey (USGS) 7.5-minute Topographic Quadrangle Map.

1.3 - Environmental Setting

The BSA is located within the central northwestern portion of Contra Costa County, north of the San Pablo Reservoir and south/southeast of Interstate 80 (I-80). Land uses surrounding the BSA include single-family residential uses to the north and east, and multi-family residential uses to the south and west. The BSA is bound by San Pablo Creek to the north, San Pablo Dam Road to the south, La Honda Street to the west, and single-family residential developments to the east. The majority of the BSA is located along the San Pablo Dam Road right-of-way, a developed roadway on the southern portion of the site, and a riparian woodland on the northern portion of the BSA.

The BSA consists of a flat, developed roadway, and a riparian woodland, situated on moderate to steep slopes and supports woody vegetation, mainly consisting of coast live oak (*Quercus agrifolia*). The site ranges in elevation from approximately 425 to 510 feet above mean sea level. Soils within the BSA are composed of Conejo clay loam, with 0 to 2 percent slope. San Pablo Creek is located approximately 100 feet north of the BSA. Most of the soils within the BSA have been significantly altered from their natural state because of grading for the construction of San Pablo Dam Road, repair of a previous landslide in this same location, and adjacent residential developments. Urbanization began in this area going back to the late 1960s. Access to the BSA is provided by San Pablo Dam Road and/or La Honda Road, with no designated access points.



Source: Census 2000 Data, The California Spatial Information Library (CaSIL).

5 2.5 0 5 Miles

Figure 1
Regional Location Map

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Source: ESRI World Imagery. Contra Costa County Public Works Department.

1,000 500 0 1,000 Feet

Figure 2
Local Vicinity Map

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1.3.1 - Riparian Woodland

The northeast half of the BSA is comprised of riparian woodland associated with San Pablo Creek, within the surrounding residential development. This northeastern facing community is situated on moderate to steep slopes and supports woody vegetation including coast live oak, coast redwood (*Sequoia sempervirens*), bigleaf maple (*Acer macrophyllum*), California bay (*Umbellularia californica*), glossy privet (*Ligustrum lucidum*), and others.

1.3.2 - Developed

The majority of the BSA consists of the developed San Pablo Dam Road which occupies the southwest half of the site. Developed land is land that has been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported. Vegetation observed within this area was limited to roadside weeds emerging out of cracks in the ground.

1.4 - Project Description

The winter storms of February and March of 2023 caused an embankment slide along San Pablo Dam Road, which included a portion of the westbound lane. The northernmost westbound lane is currently closed due to the storm damage. The project is needed to reestablish the westbound lane and prevent damage to the remaining open traffic lanes. San Pablo Dam Road is a route for commuters heading from the El Sobrante area to I-80 and provides an important connection during the daily commute.

The proposed project would stabilize the embankment, repair the damaged section of the roadway, and replace a culvert failure on the north side of San Pablo Dam Road (Figure 3). In order to support and rebuild the damaged portion of the roadway, the proposed project would install a stitch pile wall 50 feet north of San Pablo Dam Road between the roadway and San Pablo Creek with an approximate length of 150 feet stabilized by cast-in-drilled-hole concrete piles about 50 feet in depth that are spaced six feet apart. The wall would be located approximately 50 feet north of San Pablo Dam Road, toward the middle of the embankment, on an existing bank bench between the roadway and San Pablo Creek. Excavation of the damaged embankment between the wall and roadway would be necessary and is anticipated to a maximum depth of 24 feet. The portion of the embankment between the wall and San Pablo Dam Road would be regraded and reinforced with geogrid to provide a 2:1 maximum slope. The geogrid reinforcement would provide necessary long-term stability to the slope. The geogrid is a type of geosynthetic material used to provide stabilization and reinforcement to soils. The geogrid would be buried underneath the backfill materials. The piles for the stitch pile wall would be set via drilling. No pile driving would occur during project implementation. The anticipated excavation depth would be 50 feet for the piles. Minimal grading in front of the wall is anticipated to be required, minimizing impacts of the project closer to San Pablo Creek. The embankment downhill of the proposed stitch pile wall would not be addressed. The existing 18-inch culvert outfall located within the slide area would be relocated outside of the slide area, just to the west of the proposed wall. The intact portion of the culvert under the road would be lined with a

cured-in-place pipe liner. The downstream portion of the 18-inch culvert severed by the slide would be removed. Two manholes and approximately 75 feet of reinforced concrete pipe (RCP) would be installed to deliver stormwater to the new outfall location. A concrete flared end section and RCP would be installed at the outfall. The RCP would terminate at the existing bench in the upper portion of the embankment above the ordinary high water mark (OHWM). Additional work items include temporary traffic control, erosion control, repairing approximately 200 feet of the roadway, restriping, and replacing approximately 170 feet of guardrail. Drainage patterns would be restored to previous conditions. Approximately 67 trees are anticipated to be removed as part of the proposed project. A minimum of one lane in each direction would be open during construction and emergency vehicles would have access at all times.

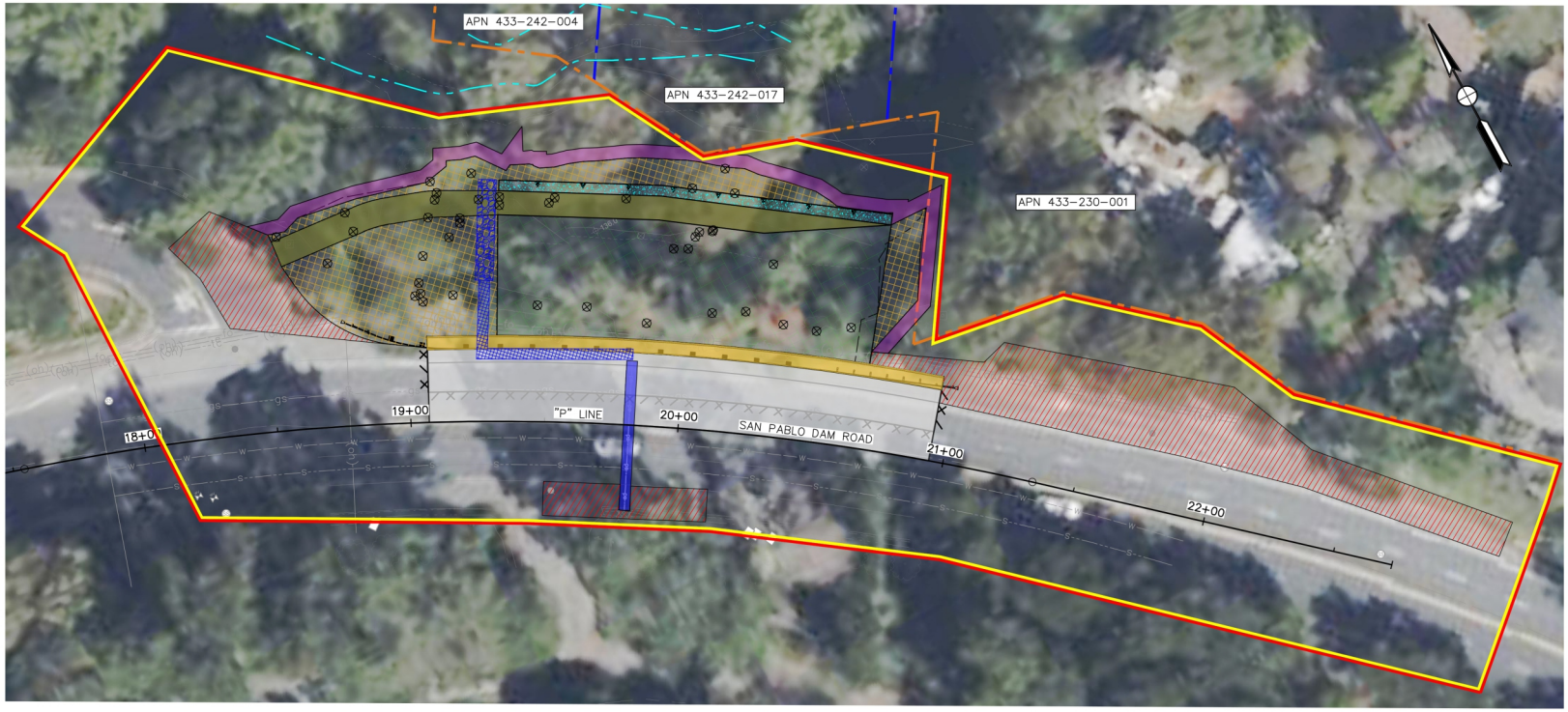
Construction is anticipated to occur in summer or fall of 2026 and take approximately 100 working days to complete. All construction-related materials would be removed after construction activities are complete. The temporarily disturbed areas and staging areas would be cleaned up, hydroseeded, and revegetated with appropriate native species, as necessary. Permanent erosion control, including soil stabilization measures such as hydroseeding would be applied to all temporarily affected project areas to minimize erosion after construction.

IMPACTED AREAS			
SYMBOL	DESCRIPTION	IMPACTED AREA (SQFT/ACRES)	MAX DEPTH IMPACTED
	PAVEMENT REPLACEMENT	5,410 SQFT/0.12 ACRES	2.2'
	RECONSTRUCT SLOPE WITH SUBSURFACE GEOGRID	7,140 SQFT/0.16 ACRES	18.4' (TEMPORARY)
	MISCELLANEOUS GRADING	5,070 SQFT/0.12 ACRES	19.4' (TEMPORARY)
	ACCESS ROAD/BENCH	1,970 SQFT/0.045 ACRES	8.2'
	STITCH PILE WALL	590 SQFT/0.014 ACRES	50.0'
	MINOR CONCRETE	960 SQFT/0.022 ACRES	0.5'
	CLEARING AND GRUBBING	1720 SQFT/0.039 ACRES	0.0'
	ROCK SLOPE PROTECTION	260 SQFT/0.0060 ACRES	2.5'

IMPACTED AREAS (CONTINUED)			
SYMBOL	DESCRIPTION	IMPACTED AREA (SQFT/ACRES)	MAX DEPTH IMPACTED
	SUBSURFACE CULVERT REHABILITATION (EXCAVATION/TRENCHING NOT REQUIRED)	230 SQFT/0.0053 ACRES	0.0'
	SUBSURFACE PROPOSED CULVERT (EXCAVATION/TRENCHING REQUIRED)	340 SQFT/0.0078 ACRES	10.2'
	CONTRACTOR EQUIPMENT STORAGE & ACCESS AREA	7,210 SQFT/0.17 ACRES	0.0'

LEGEND:

- COUNTY R/W
- PARCEL BOUNDARY
- AREA OF DIRECT IMPACT (ADI)
- AREA OF POTENTIAL EFFECT (APE)
- ORDINARY HIGH-WATER MARK (OHWM)
- TREE REMOVAL



SCALE: 1"=20'

0 1 2 3

Source: Consor Civil Engineer, January 22nd, 2025.

Figure 3
Site Plan Map

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2 - REGULATORY FRAMEWORK

2.1 - Regional and Local

2.1.1 - Contra Costa County General Plan

The Contra Costa County encompasses a large geographic area containing diverse species, habitats, open spaces, working lands, and natural and cultural resources. This General Plan, specifically the Conservation, Open Space, and Working Lands Element further described below, promotes conservation, preservation, and enhancement of these critical assets.

Element 7–Conservation, Open Space, and Working Lands Element

COS-P6.1 Preserve natural woodlands and significant trees, particularly mature native species, intact coastal scrub and chaparral, and grasslands, especially those with native grass and wildflower populations.

COS-P6.3 Support protection of native trees, especially oaks, in foothill woodlands and agricultural areas by encouraging voluntary installation of fencing around individuals or clusters of trees to prevent grazing and promoting replanting of native species.

COS-P6.4 Support removal of invasive, non-native trees, shrubs, and grassland weeds, especially those that are ecologically harmful or pose threats to public safety.

2.1.2 - Contra Costa County Tree Protection and Preservation Ordinance

The Contra Costa County Municipal Code (Municipal Code) establishes standards and processes to protect trees of significance, as defined by the County, through discretionary permits. However, the County Tree Protection Ordinance does not apply to capital improvement projects and is not applicable to the proposed project. Therefore, protected trees and associated County guidelines are not further discussed in this report.

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3 - METHODS

3.1 - Tree Assessment

The County provided FCS with a preliminary inventory of evaluated trees, and associated diameter at breast height (DBH) in May 2025, based on the preliminary tree survey conducted by a County consultant in March 2025. It was requested that the FCS (ISA Certified) Arborist verify the preliminary March 2025 tree inventory and measurements, as well as evaluating all tree species that meet the minimum County-protected DBH requirements, size (i.e., height, crown), and condition, within the proposed project grading limits, with a subsequent report containing the assessment findings. FCS Lead Arborist Hannah Carney (ISA Certification ID: WE-15232A) performed a supplemental arborist survey of existing trees within the BSA on July 16, 2025, using the ISA Basic Tree Assessment procedures and additional methodology required by the Municipal Code Chapter 816-6–*Tree Protection and Preservation Ordinance.*[1]

During the July 2025 arborist survey, the FCS Arborist verified the County-provided data, and performed a detailed, ground level visual inspection of each tree that met the minimum DBH (6.5 inches or greater), including estimating tree height and crown width, within the BSA. To assess tree structure, health, and potential longevity, the FCS Arborist walked around each tree to observe site conditions, aboveground roots, trunk, and branches. All evaluated trees were assigned a tree number and/or tree tags for the purpose of identification. Trees that overhang into the BSA may not be tagged but will be numbered. Photos were taken of evaluated trees within the BSA and compiled into a photo appendix (Appendix B).

The FCS Arborist assessed all trees within project grading limits and select trees within 15 feet of the larger 30-foot creek setback, a recommended distance from the existing creek by the County, as a part of the project design.[2] Not all trees within the riparian woodland were assessed or mapped due to their distance from the proposed BSA grading limits and thus their lack of risk of direct and/or indirect impacts from project development. There would be no ground disturbance within the County-required 30-foot creek setback; however, trees within 15 feet of disturbance may have the potential to be impacted within their peripheral root zone(s). Therefore, trees greater than 15 feet from the setback are considered outside the limits of potential critical root zone (CRZ) disturbance and were not evaluated.

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1 International Society of Arboriculture (ISA). 2025. ISA Basic Tree Assessment. Website: https://wwv.isa-arbor.com/education/resources/ISABasicTreeRiskAssessmentForm_Instructions.pdf. Accessed July 18, 2025.

2 Contra Costa County. 2024. Creek Structure Setback Requirements. Website: https://www.contracosta.ca.gov/DocumentCenter/View/41701/Creek-Structure-Setback-Pamphlet_December_2024-PDF?bidId=. Accessed July 30, 2025.

This report includes an analysis of potential project-related impacts on trees based on client-provided site plans. It should be noted that this analysis may require additional evaluation if there is any change in the proposed site plans, including project disturbance limits. All trees evaluated were compiled into a tree inventory, containing tree locations and overall condition. This analysis is based solely on the items outlined above and reflects site and tree conditions at the time of the field survey.

4 - RESULTS

The County provided FCS with a preliminary inventory of evaluated trees, and associated DBH, based on the preliminary tree survey conducted by a County consultant in March 2025. It was requested that the FCS Arborist verify the preliminary March 2025 tree inventory and measurements, as well as evaluating all tree species, size (i.e., height, crown), and condition, with a DBH of 6.5 inches or greater within the proposed project grading limits. The FCS Arborist performed a supplemental arborist survey of existing trees within the BSA on July 16, 2025. The FCS Arborist recorded a total of 81 trees, including 56 native, 18 non-native trees, and seven unknown tree species (Figure 4; photos provided in Appendix B). Of the 81 trees evaluated within the BSA, 14 trees would be preserved and 67 trees were within the proposed grading limits and would be removed.

4.1 - Tree Locations

A total of 81 trees were located and evaluated within the BSA, including 67 trees that were assessed as being within the proposed grading limits and 14 proposed for preservation. Existing trees located within the proposed BSA grading limits would be removed, as shown in Figure 5.[3] Portions of the BSA support a riparian woodland associated with the adjacent creek and would partially be avoided during project development and preserved as a part of the project design. The trees that fall within the 30-foot creek setback and/or outside grading limits would be preserved, and avoiding any potential impacts or encroachment within the CRZ of the established trees. It should be noted that this analysis may require additional evaluation if there is any change in the proposed site plans, including project disturbance limits.

Seven distinct species are represented within the BSA, including 50 coast live oak, 11 glossy privet, two California bay, two coast redwood, two Northern California back walnut (*Juglans hindsii*), two Tasmanian blue gum (*Eucalyptus globulus*), five cherry plum (*Prunus cerasifera*), and seven unknown tree species, as they are unidentifiable due to tree condition. All tree species within the BSA are summarized in Table 1 below.

Table 1: Existing Tree Species within the BSA

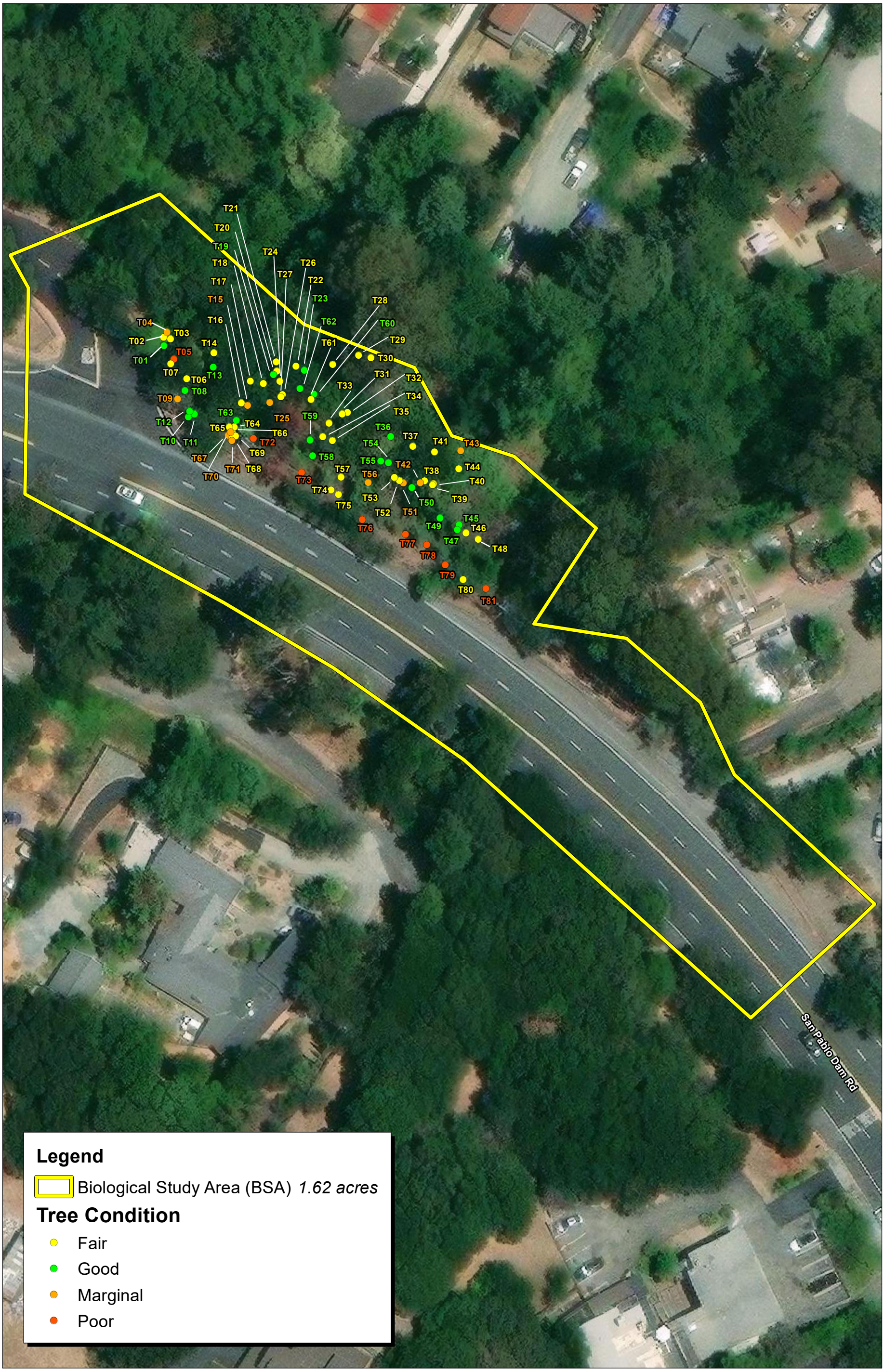
Common Name	Scientific Name	Total Tree Species Individuals	Tree Number(s)
Coast live oak	*Quercus agrifolia*	50	1, 3, 4, 6, 7, 10, 13-18, 20-22, 24-28, 31-41, 43, 44, 50, 56, 57, 60-71, 74, 75

[3] This is based on the project plans provided by the County in May 2025. If the project development footprint changes, additional trees within the site would need to be evaluated.

Common Name	Scientific Name	Total Tree Species Individuals	Tree Number(s)
Glossy privet	*Ligustrum lucidum*	11	11, 12, 42, 46, 48, 49, 51-53, 55, 59
Cherry plum	*Prunus cerasifera*	5	47, 54, 58, 72, 80
California bay	*Umbellularia californica*	2	2, 8
Coast redwood	*Sequoia sempervirens*	2	19, 23
Northern California back walnut	*Juglans hindsii*	2	9, 45
Tasmanian blue gum	*Eucalyptus globulus*	2	29, 30
Unknown	—	7	5, 73, 76-79, 81

4.2 - Tree Assessment

Tree assessment observations and specific recommendations reported by the FCS Arborist are presented in Appendix C, Table 1: *Arborist Evaluation and Recommendations*. Tree numbers presented in Appendix C are based on the sequence of trees evaluated within the BSA, and tree tags used during the field survey performed by FCS on July 16, 2025. Seven trees within the BSA are severely damaged and considered dead, and are therefore recommended for removal. Trees evaluated within the BSA with poor health and vigor would require maintenance to recover, or removal if heavily diseased and/or damaged (see Appendix C).

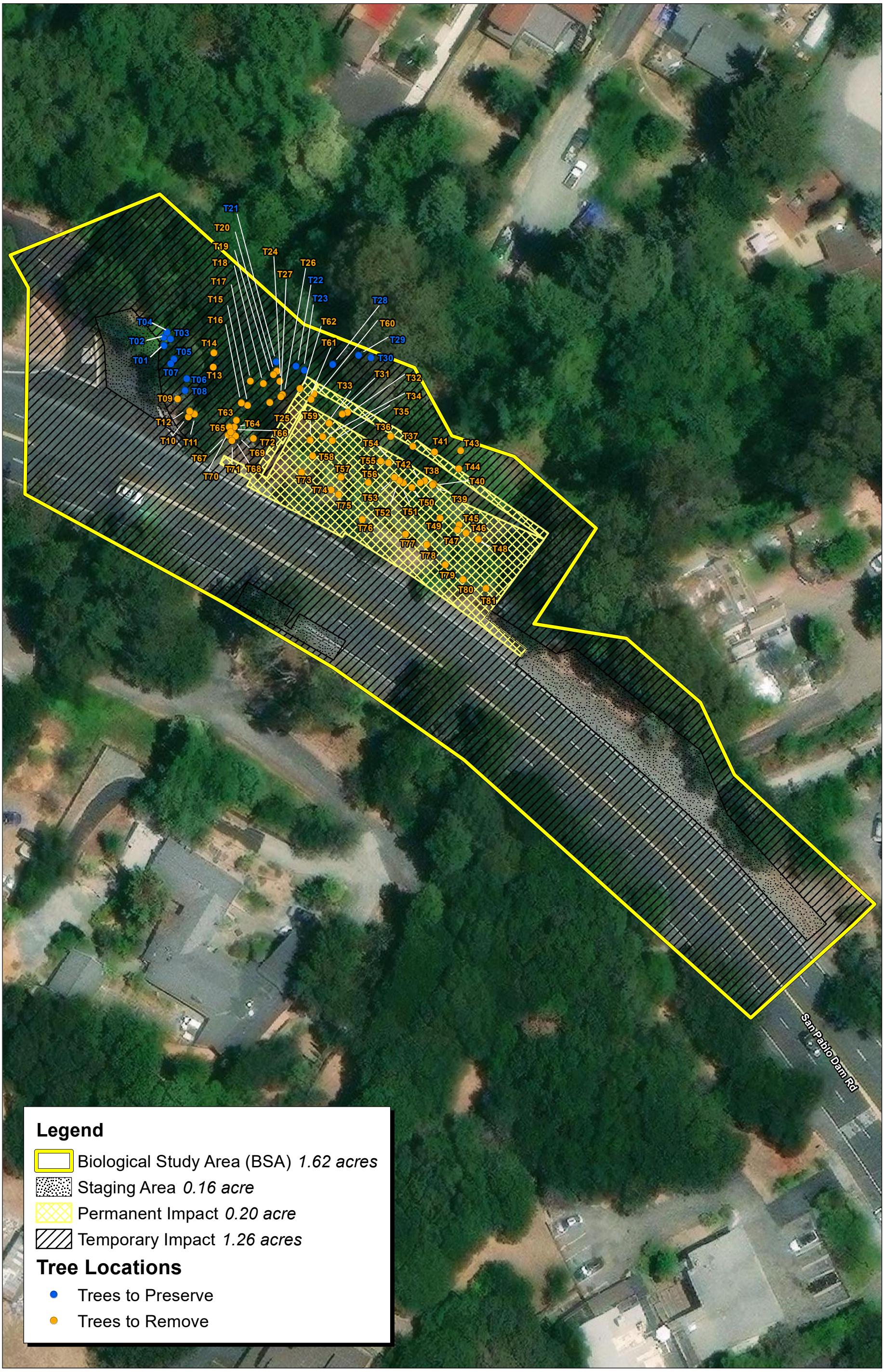


Source: ESRI World Imagery. Contra Costa County Public Works Department.

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Figure 4
Tree Inventory Map

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Source: ESRI World Imagery. Contra Costa County Public Works Department.

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Figure 5
Tree Impact Map

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5 - PROJECT IMPACTS AND RECOMMENDATIONS

The following section discusses potential impacts and recommendations for the proposed project. Impact evaluations and recommendations are based on the field survey conducted on July 16, 2025, during which time all trees within the project development area with the potential to be impacted were evaluated, in addition to select trees with a DBH of 6.5 inches or greater, within 15 feet of the creek setback/avoidance area.

The approximate 1.62-acre BSA contains the following land cover/vegetation community: developed (0.88 acre) and riparian woodland (0.74 acre). The proposed project would temporarily impact 0.78 acre of developed land and 0.48 acre of riparian woodland; permanently impact 0.20 acre of riparian woodland; and potential staging would occur within 0.10 acre of developed land and 0.06 acre of riparian woodland.

The proposed project would remove a total of 67 trees. The remaining 14 trees within the BSA would be avoided and preserved by the proposed project design.

It should be noted that this analysis may require additional evaluation if there is any change in the proposed site plans, including project disturbance limits. Some trees proposed for preservation within the BSA contain dead/broken branches posing a potential safety risk, and are therefore recommended for cleaning/maintenance. Preserved trees recommended for a one-time canopy maintenance are summarized in Table 2 below.

Table 2: Preserved Tree Maintenance Recommendations

Common Name	Scientific Name	Total Tree Species Individuals Recommended for Cleaning/Maintenance	Tree Number(s)
Coast live oak	*Quercus agrifolia*	8	1, 3, 4, 6, 7, 21, 22, 28
California bay	*Umbellularia californica*	2	2, 8
Tasmanian blue gum	*Eucalyptus globulus*	2	29, 30
Coast redwood	*Sequoia sempervirens*	1	23
Unknown	—	1	5

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6 - TREE PRESERVATION MEASURES

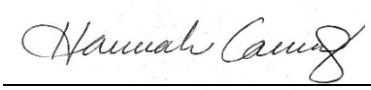
The proposed project is expected to include Tree Protection Zone (TPZ) areas where preserved trees would have an established buffer to protect the CRZ from project development. The following additional tree measures are recommended to minimize impacts to preserved trees:

- No operation of equipment or vehicles, storage of materials, or disposal of waste materials shall occur within the driplines (i.e., TPZ) of preserved trees. Site clearing/stripping shall be limited to areas outside preserved tree driplines wherever possible and as shallow as possible where necessary within driplines.
- Temporary protective fencing shall be installed to restrict construction activity beyond the driplines of preserved trees (i.e., TPZ). Temporary protective fencing shall be placed at the driplines of trees or as shown on the improvement plans (in some cases, grading or other operations must occur within the driplines), and fencing shall be placed as far as possible from the trunks at the limit of required access. At minimum, it is recommended that a 1-foot buffer be provided for every 1-inch trunk DBH (i.e., a tree with a DBH of 6.5 inches has a 6.5-foot TPZ, minimum).
- Any pruning shall be the minimum necessary to achieve hazard reduction and public safety, construction clearance, and/or to improve tree health. All pruning shall be done according to ISA and/or American National Standards Institute (ANSI) standards, by qualified personnel.
- Pruning for construction access and personnel safety shall include: the removal of dead branches or stems 2 inches in diameter and larger (unless noted otherwise) and broken, weakly-attached or crossing branches. Stubs of broken branches shall be recut if deemed hazardous.
- Pruning for construction or vehicular clearance shall be the minimum necessary for the safe operation of equipment and construction activities. Branches shall be cut back to appropriately sized laterals or the parent stem. No stubs, broken ends, flush cuts, or wounds on trunks or branches are acceptable.
- At the completion of construction activities, there may be areas around preserved trees that require treatment to ensure future tree health.
- In areas where roots are encountered and backfill will be placed, roots should be left exposed as short a time as possible to avoid drying out.
- Areas where soil has become compacted shall be loosened.

- In disturbed areas, a 4 to 6-inch-deep layer of arbor mulch (chipped fresh bark, foliage, and wood) shall be placed within preserved tree driplines (i.e., the TPZ) to serve as a permanent top dressing.
- Although capital improvement projects are exempt from the local tree ordinance, it is recommended to refer to Municipal Code Chapter 816-6 – *Tree Protection and Preservation Ordinance*, for general construction standards, including recommendations for delineating designated preservation areas, tree protection barriers, root protection, substance control, general preservation guidelines, and maintenance requirements, where applicable.

7 - CERTIFICATION

I hereby certify that the statements furnished above and in the attached Figures present data and information required for this Arborist Report and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: September 24, 2025 Signed: 

Hannah Carney, Lead Arboriculturist
(ISA Certification ID: WE-15232A)
FirstCarbon Solutions
2999 Oak Road, Suite 250
Walnut Creek, CA 94597
925.357.2562

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Appendix A:

Professional Qualifications

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FIRSTCARBON SOLUTIONS™

HANNAH CARNEY, MAGD—BIOLOGICAL MANAGER/ARBORIST

Education

- Master of Agricultural Education, California Polytechnic State University, San Luis Obispo, CA, 2019
- Single Subject Credential Program, Agriculture Education, California Polytechnic State University, San Luis Obispo, CA, 2019
- Bachelor of Science, Dairy Science, Animal Husbandry and Education Concentration, Minor in Agricultural Education, California Polytechnic State University, San Luis Obispo, CA, 2018

Certifications

- International Society of Arboriculture Certified Arborist, Credential ID WE-15232A, 2024–2027

Hannah Carney, MAGD, has more than 8 years of professional experience in providing environmental education, sustainability, and compliance solutions services. She specializes in arboriculture, and is experienced in preparing regulatory permitting documentation in accordance with Sections 401 and 404 of the CWA and Section 1602 of the CDFW. She also conducts research, field monitoring, special-status surveys, literature reviews, and technical writing. In addition, Mrs. Carney is well versed in CEQA and NEPA documentation, including the preparation of EIRs and IS/MNDs. Mrs. Carney is also knowledgeable in project management tasks and client coordination.

RELATED EXPERIENCE AND CLIENT SUMMARY

- Napa Zinfandel Estate Subdivision 51-Lot Single-Family Residential IS/MND for City of Napa 2020
- Saratoga Vineyards Project Biological Due Diligence Report for Ferris Development Group 2024
- Villages at the Quarry Project Consistency Checklist and Technical Studies for City of Pleasanton 2023
- FSRE Industrial Project EIR, Contra Costa County , CA
- San Jose Dry Creek Road Cul-de-sac and Residential Project Class 32 Exemption and Technical Studies for S&S Estate Development 2023
- Menifee Golden Meadows Property Regulatory Permitting for Richland Communities 2023
- Marin County Tidal Marsh Restoration/Mitigation Bank Project Economic Feasibility Study for Novato Industrial Park 2023
- Riverside County Horsethief-De Palma Project Regulatory Permitting Services for SAM-Residential 2023
- Salado Creek Maintenance Project CDFW Regulatory Permit Application for City of Patterson 2023
- Masson Estates Residential Project EIR
- Mitchell Townhomes Project EIR and Technical Studies for City of Walnut Creek 2024
- Sonoma County Airport Village Housing Development EIR and Technical Studies for Gallaher Community Housing, Inc. 2024
- Apple Valley Warehouse Project Biological Resources Assessment and Regulatory Permits for Watson Land Company 2023
- South San Francisco 101 Utah Avenue Residential Project Consistency Checklist and Technical Studies for Hertz Realty Inc 2024
- South San Francisco 170 & 180 S. Spruce Avenue Residential Project Class 32 Exemption for Spruce Master LLC 2024

The International Society of Arboriculture

Hereby Announces That

Hannah Mae Carney

Has Earned the Credential

ISA Certified Arborist ®

By successfully meeting ISA Certified Arborist certification requirements through demonstrated attainment of relevant competencies as supported by the ISA Credentialing Council

Caitlyn Pollihan
CEO & Executive Director

8 March 2024	30 June 2027	WE-15232A
Issue Date	Expiration Date	Certification Number

ANAB
ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17024
PERSONNEL CERTIFICATION BODY
#0847
ISA Certified Arborist

Appendix B:

Site Photographs

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Photograph 1: Tree 1/ Tag 407. Slight lean/uneven structure.



Photograph 2: Tree 2/Tag 408. Dense ivy thickets growing on trunks, canopy with healthy foliage.



Photograph 3: Tree 3/Tag 456. Dense ivy growing on trunk, foliage and dead growth present on crown.



Photograph 4: Tree 4/Tag 457. Existing trunk breakage, thick ivy growing on trunk, sparse foliage in crown.



Photograph 5: Tree 5/Tag 410. Dead tree stump.



Photograph 6: Tree 6/Tag 409. Trunk has dense ivy. Canopy foliage, but slightly sparse.



Photograph 7: Tree 7/Tag 411. Dense ivy on tree trunk. Sparse foliage present.



Photograph 8: Tree 8/Tag 412. Dense ivy growing on trunk. Dense foliage in canopy.



Photograph 9: Tree 9/Tag 413. Dense ivy growing on trunk. Sparse yellow/green foliage in crown. Dead cavities and branches present.



Photograph 10: Tree 10/Tag 414. Dense ivy growing on trunk. Dense foliage in crown.



Photograph 11: Tree 11/Tag 415. Dense foliage in canopy, dead growth/branches present.



Photograph 12: Tree 12/Tag 416. Dense foliage in canopy. Dense ivy growing on trunk. Dead growth/branches present.



Photograph 13: Tree 13/Tag 417. Dense foliage in crown, some ivy growing on trunk.



Photograph 14: Tree 14/Tag 418. Dense ivy growing on trunk. Slight trunk lean. Sparse foliage in crown.



Photograph 15: Tree 15/Tag 419. Sparse foliage in crown, minimal branching. Dead limbs present.



Photograph 16: Tree 16/Tag 651. Ivy growing on trunk. Slight lean on trunk. Healthy foliage present. Dead branches present.



Photograph 17: Tree 17/Tag 697. Dead branches and sparse canopy present.



Photograph 18: Tree 18/Tag 657. Trunk has slight lean with dead branches. Sparse foliage in canopy.



Photograph 19: Tree 19/Tag 660. Some dead branches, dense foliage in crown.



Photograph 20: Tree 20/Tag 700. Sparse foliage and dead branches in crown. Slight lean/uneven growth on tree. Dense ivy growing on trunk.



Photograph 21: Tree 21/ Tag 421. Tree has lean downslope. Healthy foliage and dead branches present in crown.



Photograph 22: Tree 22/Tag 422. Dense ivy growing on trunk. Tree has slight lean/bend downgrade. Sparse foliage present in crown.



Photograph 23: Tree 23/Tag 423. Dense foliage and broken branches in crown. Some ivy growing on trunk.



Photograph 24: Tree 24/Tag 424. Dense ivy growing on trunk. Tree growing at an angle. Healthy foliage and broken branches in canopy.



Photograph 25: Tree 25/Tag 644. Several broken branches, sparse foliage in crown. Dense ivy growing on trunk.



Photograph 26: Tree 26/Tag 850. Healthy foliage and dead branches present in crown.



Photograph 27: Tree 27/Tag 869. Healthy foliage and broken branches present in canopy. Dense ivy growing on trunk.



Photograph 28: Tree 28/Tag 2. Dense ivy growing on trunk. Sparse healthy foliage present in crown. Broken/dead branches present.



Photograph 29: Tree 29/Tag 462. Dense ivy growing on trunk and canopy. Sparse foliage present in crown.



Photograph 30: Tree 30/Tag 463. Dense ivy growing on trunk and canopy. Sparse foliage present in crown.



Photograph 31: Tree 31/Tag 460. Slight lean/growth of tree downgrade. Dense ivy growing on trunk. Sparse foliage and broken branches present in crown.



Photograph 32: Tree 32/Tag 461. Slight lean of tree downgrade. Dense ivy growing on trunk. Sparse foliage and broken branches present in crown.



Photograph 33: Tree 33/Tag 459. Slight lean of tree downgrade. Dense ivy growing on trunk. Sparse foliage and broken branches present in crown.



Photograph 34: Tree 34/Tag 439. Ivy growing on trunk. Sparse foliage and broken branches present in crown.



Photograph 35: Tree 35/Tag 438. Dense ivy growing on trunk. Sparse foliage and many broken branches present in crown.



Photograph 36: Tree 36/Tag 437. Dense ivy growing on trunk. Healthy foliage and broken branches present in crown.



Photograph 37: Tree 37/Tag 431. Slight lean/growth of tree. Sparse foliage and broken branches present in crown.



Photograph 38: Tree 38/Tag 432. Dense ivy growing on trunk. Sparse foliage and broken branches present in crown.



Photograph 39: Tree 39/Tag 433. Dense ivy growing on trunk. Sparse foliage and broken branches present in crown.



Photograph 40: Tree 40/Tag 436. Dense ivy growing on trunk. Healthy foliage and broken branches present in crown.



Photograph 41: Tree 41/ Tag 435. Dense ivy growing on trunk. Sparse foliage and many broken branches present in crown.



Photograph 42: Tree 42/Tag 440. Lean of tree trunk. Dead branches/damage on trunk. Sparse foliage and broken branches present in crown.



Photograph 43: Tree 43/Tag 484. Main trunk contains dead branches and dense ivy. Small crown with sparse leaves present.



Photograph 44: Tree 44/Tag 485. Dense ivy growing on trunk. Sparse foliage and many broken branches present in crown.



Photograph 45: Tree 45/Tag 498. Healthy foliage and minimal dead branches in canopy. Dense ivy growing on trunk.



Photograph 46: Tree 46/Tag 489. Dense ivy growing on trunk. Healthy foliage and broken branches present in crown.



Photograph 47: Tree 47/Tag 487. Dense foliage, broken branches present in crown.



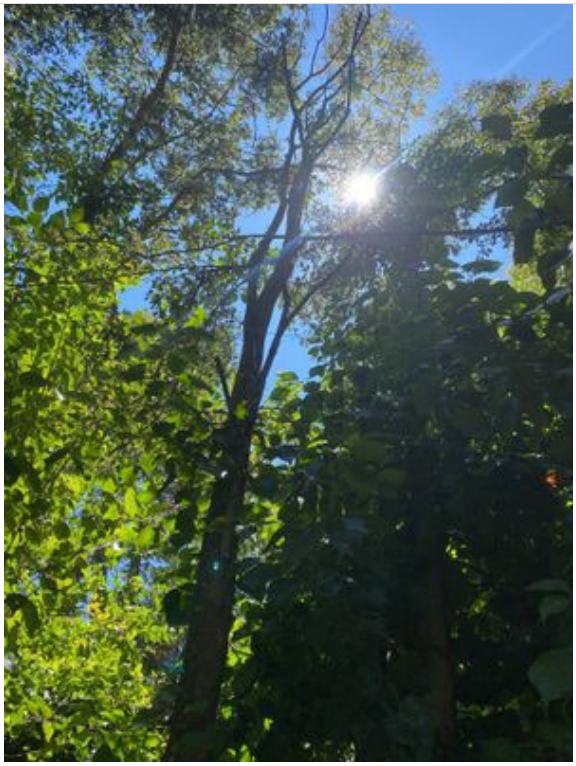
Photograph 48: Tree 48/Tag 488. Dense ivy growing on tree trunk. Healthy foliage and broken branches present in crown.



Photograph 49: Tree 49/Tag 480. Dense healthy foliage and minimal dead branches in canopy.



Photograph 50: Tree 50/Tag 434. Dense healthy foliage and minimal dead branches present in canopy.



Photograph 51: Tree 51/Tag 444. Majority of tree contains dead growth, sparse foliage in crown.



Photograph 52: Tree 52/Tag 443. Tree has slight lean against grade. Healthy foliage and broken branches present. Dense ivy growing on trunk.



Photograph 53: Tree 53/Tag 441. Tree has slight lean against grade. Healthy foliage and broken branches present.



Photograph 54: Tree 54/Tag 442. Healthy foliage and broken branches present.



Photograph 55: Tree 55/Tag 445. Healthy foliage and broken branches present.



Photograph 56: Tree 56/Tag 446. Sparse foliage in crown. Many dead branches.



Photograph 57: Tree 57/Tag 447. Trunk has dense ivy. Dense foliage and broken branches present.



Photograph 58: Tree 58/Tag 448. Dense foliage and minimal broken branches present.



Photograph 59: Tree 59/Tag 449. Dense foliage and minimal dead branches present in canopy.



Photograph 60: Tree 60/Tag 858. Dense foliage and minimal broken branches in canopy.



Photograph 61: Tree 61/ Tag 698. Tree has slight lean and broken limbs. Sparse foliage present in canopy.



Photograph 62: Tree 62/Tag 420. Healthy dense foliage in canopy. Minimal broken branches present. Ivy growing on tree trunk.



Photograph 63: Tree 63/Tag 430. Healthy dense foliage present, some broken branches in canopy.



Photograph 64: Tree 64/Tag 429. Sparse foliage and minor dead growth present in canopy.



Photograph 65: Tree 65/Tag 426. Sparse, foliage with some broken/dead growth present in canopy.



Photograph 66: Tree 66/Tag 427. Sparse, foliage with some broken/dead growth present in canopy.



Photograph 67: Tree 67/Tag 428. Sparse foliage with many broken/dead growth present in canopy.



Photograph 68: Tree 68/Tag 836. Sparse foliage with some broken/dead growth present in canopy.



Photograph 69: Tree 69/Tag 841. Sparse foliage with some broken/dead growth present in canopy.



Photograph 70: Tree 70/Tag 848. Sparse foliage with many broken/dead growth present in canopy.



Photograph 71: Tree 71/Tag 865. Tree growing at a lean. Sparse foliage with many broken/dead growth present in canopy. Dense ivy growing up trunk.



Photograph 72: Tree 72/Tag 851. Tree topped, water sprouts growing out of trunk, dense ivy growing on trunk.



Photograph 73: Tree 73/Tag 425. tree previously topped and dead. Dense ivy growing on trunk.



Photograph 74: Tree 74/Tag 626. Sparse foliage with some broken/dead growth present in canopy.



Photograph 75: Tree 75/Tag 866. Sparse foliage with some broken/dead growth present in canopy.



Photograph 76: Tree 76/Tag 646. Tree topped/dead (unidentifiable). Dense ivy growing up tree trunk.



Photograph 77: Tree 77/Tag 864. Tree topped/dead (unidentifiable). Dense ivy growing up tree trunk.



Photograph 78: Tree 78/Tag 839. Tree topped/dead (unidentifiable). Dense ivy growing up tree trunk.



Photograph 79: Tree 79/Tag 648. Tree topped and dead (unidentifiable). Dense ivy growing on trunk.



Photograph 80: Tree 80/Tag 871. Dense healthy foliage and minimal broken branches in canopy.



Photograph 81: Tree 81/ Tag 856. Tree topped and dead (unidentifiable). Dense ivy growing on trunk.

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Appendix C:

Arborist Evaluation and Recommendations

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Table 1: Arborist Inventory Evaluation and Recommendations

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
1	407	Coast live oak	*Quercus agrifolia*	29	38	22	4Good	3-Fair	Preserve	Slight lean/uneven structure. Cleaning of dead growth and ivy recommended.
2	408	California bay	*Umbellularia californica*	Multi trunk 9/8/7	34	23	3-Fair	3-Fair	Preserve	Dense ivy thickets growing on trunks, canopy contains healthy foliage. Cleaning of dead growth and ivy recommended.
3	456	Coast live oak	*Quercus agrifolia*	16	46	33	3-Fair	3-Fair	Preserve	Dense ivy growing on trunk, healthy foliage and dead growth present on crown. Cleaning of dead growth and ivy recommended.
4	457	Coast live oak	*Quercus agrifolia*	12	18	15	2-Marginal	2-Marginal	Preserve	Existing trunk breakage, thick ivy growing on trunk, sparse foliage in crown. Cleaning of dead growth and ivy recommended.

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
5	410	Unknown	—	22	5	0	1-Poor	1-Poor	Preserve	Tree topped and dead (unidentifiable). Dense ivy growing up tree trunk. Recommended removal.
6	409	Coast live oak	*Quercus agrifolia*	21	58	56	3-Fair	3-Fair	Preserve	Trunk has dense ivy. Canopy has healthy foliage, but slightly sparse. Cleaning of dead growth and ivy recommended.
7	411	Coast live oak	*Quercus agrifolia*	5	19	10	3-Fair	3-Fair	Preserve	Dense ivy on tree trunk. Sparse healthy foliage present. Cleaning of dead growth and ivy recommended.
8	412	California bay	*Umbellularia californica*	Multi trunk 3/4	32	17	4-Good	3-Fair	Preserve	Dense ivy growing on trunk. Dense healthy foliage in canopy. Cleaning of dead growth and ivy recommended.
9	413	Northern California black walnut	*Juglans hindsii*	Multi trunk 18/22	41	26	2-Marginal	2-Marginal	Remove	Dense ivy growing on trunk. Sparse yellow/green foliage in crown. Dead cavities and branches present.

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
10	414	Coast live oak	*Quercus agrifolia*	17	45	28	4-Good	4-Good	Remove	Dense ivy growing on trunk. Dense healthy foliage in crown.
11	415	Glossy privet	*Ligustrum lucidum*	Multi trunk 2/3	55	35	4-Good	3-Fair	Remove	Dense healthy foliage in canopy, dead growth/branches present.
12	416	Glossy privet	*Ligustrum lucidum*	Multi trunk 2/2	36	19	4-Good	3-Fair	Remove	Healthy dense foliage in canopy. Dense ivy growing on trunk. Some dead growth/branches present.
13	417	Coast live oak	*Quercus agrifolia*	9	60	23	4-Good	4-Good	Remove	Dense healthy foliage in crown, some ivy growing on trunk.
14	418	Coast live oak	*Quercus agrifolia*	15	57	24	3-Fair	3-Fair	Remove	Dense ivy growing on trunk. Slight lean to trunk. Sparse foliage in crown.
15	419	Coast live oak	*Quercus agrifolia*	5	45	5	2-Marginal	3-Fair	Remove	Sparse foliage in crown, minimal branching. Dead limbs present.
16	651	Coast live oak	*Quercus agrifolia*	11	46	21	3-Fair	3-Fair	Remove	Ivy growing on trunk with slight lean. Healthy foliage and dead branches present.

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
17	697	Coast live oak	*Quercus agrifolia*	8	47	22	3-Fair	3-Fair	Remove	Dead branches and sparse canopy present.
18	657	Coast live oak	*Quercus agrifolia*	6	39	25	3-Fair	3-Fair	Remove	Trunk has slight lean with dead branches. Sparse foliage in canopy.
19	660	Coast redwood	*Sequoia sempervirens*	13	63	26	4-Good	4-Good	Remove	Some dead branches. Dense healthy foliage in crown.
20	700	Coast live oak	*Quercus agrifolia*	13	53	36	3-Fair	2-Marginal	Remove	Sparse foliage and dead branches in crown. Slight lean/uneven growth on tree. Dense ivy growing on trunk.
21	421	Coast live oak	*Quercus agrifolia*	18	58	46	3-Fair	2-Marginal	Preserve	Tree trunk has lean downslope. Healthy foliage and dead branches present in crown. Cleaning of dead growth and ivy recommended.
22	422	Coast live oak	*Quercus agrifolia*	7	40	26	3-Fair	3-Fair	Preserve	Dense ivy growing on trunk. Tree has slight lean/bend downgrade. Sparse foliage present in crown. Cleaning of dead

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
										growth and ivy recommended.
23	423	Coast redwood	*Sequoia sempervirens*	25	64	28	4-Good	4-Good	Preserve	Dense foliage and broken branches in crown. Some ivy growing up tree trunk. Cleaning of dead growth and ivy recommended.
24	424	Coast live oak	*Quercus agrifolia*	6	39	20	3-Fair	3-Fair	Remove	Dense ivy growing on trunk/ tree growing at an angle. Healthy foliage and broken branches in canopy.
25	644	Coast live oak	*Quercus agrifolia*	8	56	23	2-Marginal	3-Fair	Remove	Several broken branches, sparse foliage in crown. Dense ivy growing on trunk.
26	850	Coast live oak	*Quercus agrifolia*	6	47	20	3-Fair	3-Fair	Remove	Healthy foliage and dead branches present in crown.
27	869	Coast live oak	*Quercus agrifolia*	10	48	20	3-Fair	3-Fair	Remove	Healthy foliage and broken branches present in canopy. Dense ivy growing on trunk.
28	2	Coast live oak	*Quercus agrifolia*	11	47	34	3-Fair	3-Fair	Preserve	Dense ivy growing on tree trunk. Sparse

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
										healthy foliage present in crown. Broken/dead branches present. Cleaning of dead growth and ivy recommended.
29	462	Tasmanian blue gum	*Eucalyptus globulus*	64	65	53	3-Fair	3-Fair	Preserve	Dense ivy growing on trunk and canopy. Healthy sparse foliage present in crown. Cleaning of dead growth and ivy recommended.
30	463	Tasmanian blue gum	*Eucalyptus globulus*	62	68	38	3-Fair	3-Fair	Preserve	Dense ivy growing on trunk and canopy. Healthy sparse foliage present in crown. Cleaning of dead growth and ivy recommended.
31	460	Coast live oak	*Quercus agrifolia*	7	38	19	3-Fair	3-Fair	Remove	Slight lean/growth of tree downgrade. Dense ivy growing on trunk. Sparse healthy foliage and broken branches present in crown.
32	461	Coast live oak	*Quercus agrifolia*	6	22	16	3-Fair	3-Fair	Remove	Slight lean/growth of tree downgrade. Dense ivy growing on trunk. Sparse healthy foliage and

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
										broken branches present in crown.
33	459	Coast live oak	*Quercus agrifolia*	11	37	20	3-Fair	3-Fair	Remove	Slight lean/growth of tree downgrade. Dense ivy growing on trunk. Sparse healthy foliage and broken branches present in crown.
34	439	Coast live oak	*Quercus agrifolia*	14	55	34	3-Fair	3-Fair	Remove	Ivy growing on trunk. Sparse healthy foliage and broken branches present in crown.
35	438	Coast live oak	*Quercus agrifolia*	13	46	29	3-Fair	3-Fair	Remove	Dense ivy growing on trunk. Sparse healthy foliage and many broken branches present in crown.
36	437	Coast live oak	*Quercus agrifolia*	11	42	23	4-Good	3-Fair	Remove	Dense ivy growing on trunk. Healthy foliage and broken branches present in crown.
37	431	Coast live oak	*Quercus agrifolia*	4	22	15	3-Fair	3-Fair	Remove	Slight lean/growth of tree. Sparse healthy foliage and broken branches present in crown.

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
38	432	Coast live oak	*Quercus agrifolia*	4	55	25	3-Fair	3-Fair	Remove	Dense ivy growing on trunk. Sparse healthy foliage and broken branches present in crown.
39	433	Coast live oak	*Quercus agrifolia*	4	48	17	3-Fair	3-Fair	Remove	Dense ivy growing on trunk. Sparse healthy foliage and broken branches present in crown.
40	436	Coast live oak	*Quercus agrifolia*	8	49	23	3-Fair	3-Fair	Remove	Dense ivy growing on trunk. Healthy foliage and broken branches present in crown.
41	435	Coast live oak	*Quercus agrifolia*	13	47	22	3-Fair	3-Fair	Remove	Dense ivy growing on trunk. Sparse healthy foliage and many broken branches present in crown.
42	440	Glossy privet	*Ligustrum lucidum*	9	28	17	2-Marginal	2-Marginal	Remove	Lean of tree trunk. Dead branches/damage on trunk. Sparse healthy foliage and broken branches present in crown.

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
43	484	Coast live oak	*Quercus agrifolia*	9	15	5	2-Marginal	1-Poor	Remove	Main trunk contains dead branches and dense ivy. Small crown with sparse leaves present.
44	485	Coast live oak	*Quercus agrifolia*	9	48	20	3-Fair	3-Fair	Remove	Dense ivy growing on trunk. Sparse healthy foliage and many broken branches present in crown.
45	498	Northern California black walnut	*Juglans hindsii*	6	43	15	4-Good	4-Good	Remove	Healthy foliage and minimal dead branches in canopy. Dense ivy growing on trunk.
46	489	Glossy privet	*Ligustrum lucidum*	5	46	23	3-Fair	3-Fair	Remove	Dense ivy growing on trunk. Healthy foliage and broken branches present in crown.
47	487	Cherry plum	*Prunus cerasifera*	6	53	20	4-Good	3-Fair	Remove	Dense healthy foliage, broken branches present in crown.
48	488	Glossy privet	*Ligustrum lucidum*	6	38	16	3-Fair	3-Fair	Remove	Dense ivy growing on tree trunk. Healthy foliage and broken branches present in crown.

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
49	480	Glossy privet	*Ligustrum lucidum*	5	47	23	4-Good	4-Good	Remove	Dense healthy foliage and minimal dead branches in canopy.
50	434	Coast live oak	*Quercus agrifolia*	6	38	19	4-Good	4-Good	Remove	Dense healthy foliage and minimal dead branches present in canopy.
51	444	Glossy privet	*Ligustrum lucidum*	4	50	8	2-Marginal	2-Marginal	Remove	Majority of tree is dead and sparse foliage in crown.
52	443	Glossy privet	*Ligustrum lucidum*	7	41	16	3-Fair	3-Fair	Remove	Tree has slight lean against grade. Healthy foliage and broken branches present. Dense ivy growing on trunk.
53	441	Glossy privet	*Ligustrum lucidum*	6	38	10	3-Fair	3-Fair	Remove	Tree has slight lean against grade. Healthy foliage and broken branches present.
54	442	Cherry plum	*Prunus cerasifera*	4	35	17	4-Good	4-Good	Remove	Healthy foliage and broken branches present.
55	445	Glossy privet	*Ligustrum lucidum*	4	32	10	4-Good	3-Fair	Remove	Healthy foliage and broken branches present.
56	446	Coast live oak	*Quercus agrifolia*	7	36	15	2-Marginal	3-Fair	Remove	Sparse foliage in crown. Many dead branches.

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
57	447	Coast live oak	*Quercus agrifolia*	7	43	19	3-Fair	3-Fair	Remove	Tree trunk has dense ivy growing. Healthy foliage and broken branches present.
58	448	Cherry plum	*Prunus cerasifera*	4	35	13	4-Good	4-Good	Remove	Dense healthy foliage and minimal broken branches present.
59	449	Glossy privet	*Ligustrum lucidum*	4	25	14	4-Good	4-Good	Remove	Healthy dense foliage and minimal dead branches present in canopy.
60	858	Coast live oak	*Quercus agrifolia*	8	47	21	4-Good	4-Good	Remove	Dense healthy foliage and minimal broken branches in canopy.
61	698	Coast live oak	*Quercus agrifolia*	9	58	25	3-Fair	3-Fair	Remove	Tree has slight lean and broken limbs. Sparse healthy foliage present in canopy.
62	420	Coast live oak	*Quercus agrifolia*	9	43	14	4-Good	4-Good	Remove	Healthy dense foliage in canopy. Minimal broken branches present. Ivy growing on tree trunk.
63	430	Coast live oak	*Quercus agrifolia*	7	40	23	4-Good	4-Good	Remove	Healthy dense foliage present, some broken branches in canopy.

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
64	429	Coast live oak	*Quercus agrifolia*	4	33	17	3-Fair	3-Fair	Remove	Healthy sparse foliage and minor dead growth present in canopy.
65	426	Coast live oak	*Quercus agrifolia*	6	32	17	3-Fair	3-Fair	Remove	Sparse, healthy foliage with some broken/dead growth present in canopy.
66	427	Coast live oak	*Quercus agrifolia*	8	48	18	3-Fair	3-Fair	Remove	Sparse, healthy foliage with some broken/dead growth present in canopy.
67	428	Coast live oak	*Quercus agrifolia*	4	12	6	2-Marginal	3-Fair	Remove	Sparse, healthy foliage with many broken/dead growth present in canopy.
68	836	Coast live oak	*Quercus agrifolia*	10	34	19	3-Fair	3-Fair	Remove	Sparse, healthy foliage with some broken/dead growth present in canopy.
69	841	Coast live oak	*Quercus agrifolia*	7	26	17	3-Fair	3-Fair	Remove	Sparse, healthy foliage with some broken/dead growth present in canopy.
70	848	Coast live oak	*Quercus agrifolia*	6	38	18	2-Marginal	3-Fair	Remove	Sparse, healthy foliage with many broken/dead

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
										growth present in canopy.
71	865	Coast live oak	*Quercus agrifolia*	11	25	15	2-Marginal	3-Fair	Remove	Tree growing at a lean. Sparse, healthy foliage with many broken/dead growth present in canopy. Dense ivy growing up trunk.
72	851	Cherry plum	*Prunus cerasifera*	34	20	5	1-Poor	1-Poor	Remove	Tree topped, water sprouts growing out of trunk, dense ivy growing on trunk.
73	425	Unknown	-	30	20	0	1-Poor	1-Poor	Remove	Tree previously topped and dead (unidentifiable). Dense ivy growing on trunk.
74	626	Coast live oak	*Quercus agrifolia*	9	23	12	3-Fair	3-Fair	Remove	Sparse, healthy foliage with some broken/dead growth present in canopy.
75	866	Coast live oak	*Quercus agrifolia*	11	23	18	3-Fair	3-Fair	Remove	Sparse, healthy foliage with some broken/dead growth present in canopy.

Tree No.	Tag No.	Species	Scientific Name	DBH in Inches/4.5 Feet Above Ground	Tree Height (Feet)	Tree Canopy (Feet)	Condition 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Structure 1=Poor, 2=Marginal, 3=Fair, 4=Good, 5=Excellent	Proposed Preservation or Removal	Comments/Defects/ Recommendations Cleaning–Remove Dead, Dying, Broken, or Diseased Wood
76	646	Unknown	-	40	20	0	1-Poor	1-Poor	Remove	Tree topped and dead (unidentifiable). Dense ivy growing up tree trunk.
77	864	Unknown	-	26	20	0	1-Poor	1-Poor	Remove	Tree topped and dead (unidentifiable). Dense ivy growing up tree trunk.
78	839	Unknown	-	28	20	0	1-Poor	1-Poor	Remove	Tree topped and dead (unidentifiable). Dense ivy growing up tree trunk.
79	648	Unknown	-	18	18	0	1-Poor	1-Poor	Remove	Tree topped and dead at a lean (unidentifiable). Dense ivy growing up tree trunk.
80	871	Cherry plum	*Prunus cerasifera*	8	28	16	3-Fair	3-Fair	Remove	Dense healthy foliage and minimal broken branches in canopy.
81	856	Unknown	-	36	15	0	1-Poor	1-Poor	Remove	Tree topped and dead (unidentifiable). Dense ivy growing up tree trunk.

B-3: Mitigation and Monitoring Plan

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FCS
An ADEC Innovation

San Pablo Dam Road Storm Drain and Slide Repair Project

Mitigation and Monitoring Plan

Contra Costa County, California

PREPARED FOR:

Contra Costa County Public Works Department

Environmental Services Division
255 Glacier Drive
Martinez, CA 94553

Contact: Shravan Sundaram, Environmental Services Division

PREPARED BY:

FirstCarbon Solutions

2999 Oak Road, Suite 250
Walnut Creek, CA 94597
925.357.2562

Contact: Robert Carroll, Senior Biologist
Hannah Carney, Lead Arboriculturist

March 16, 2026

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1 - INTRODUCTION

FirstCarbon Solutions (FCS) has prepared this Mitigation and Monitoring Plan (MMP) to guide implementation of on-site restoration to offset impacts related to the tree removal and construction activities associated with the proposed San Pablo Dam Road Storm Drain and Slide Repair Project (proposed project).

1.1 - Project Site Location

The 1.62-acre project site is located at the intersection of to San Pablo Dam Road and La Honda Road, in unincorporated Contra Costa County, California (Figure 1). The site continues southeast down San Pablo Dam Road, approximately 200 feet to where the embankment failure is located. From a regional perspective, San Pablo Dam Road extends from State Route (SR) 24 in the City of Orinda, in the south, and continues north through El Sobrante before terminating at San Pablo Road in the City of San Pablo. La Honda Road is a short residential street in El Sobrante that begins at San Pablo Dam Road and terminates at D Avila Way. Access to the project site is provided by San Pablo Dam Road and/or La Honda Road, with no designated access points.

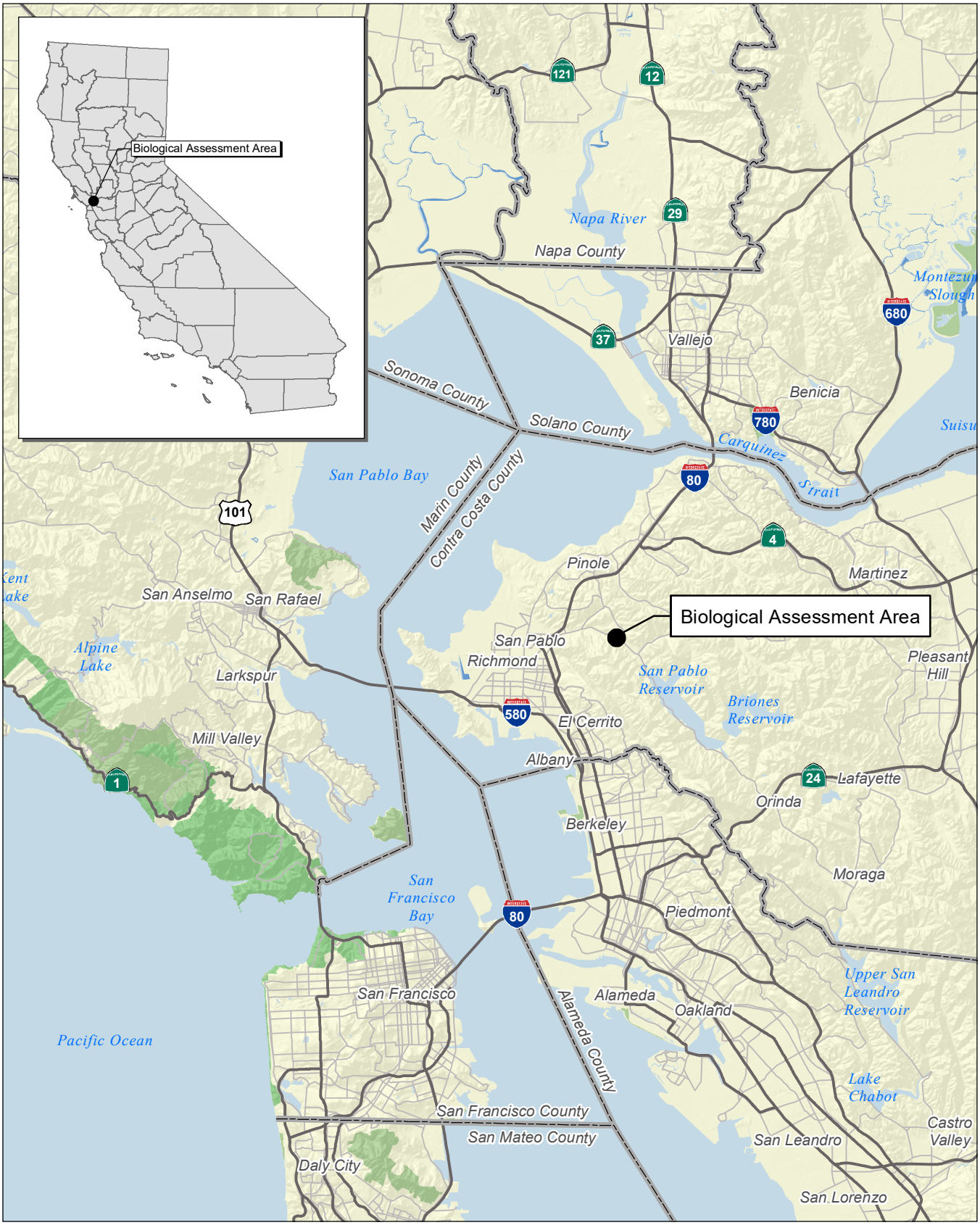
The project site extends along the north side of San Pablo Dam Road, approximately 200 feet southeast of La Honda Road, and is adjacent to an urbanized reach of San Pablo Creek (Figure 2). The project site is within the *Richmond*, California United States Geological Survey (USGS) 7.5-minute Topographic Quadrangle Map, Assessor's Parcel Number (APN) 433-242-018.

1.2 - Existing Conditions

FCS identified all biotic habitats within the project site during the field survey and mapped the communities on a GPS unit. Two biotic habitats were identified within the 1.62-acre that constitute the project site, 0.88 acre is developed and 0.74 acre is disturbed riparian woodland (Figure 3). The County has determined the limits of on-site restoration area within the larger project site to remediate impacts as a result of project development. The project site is surrounded by residential development and riparian woodland, and the adjacent San Pablo Creek. San Pablo Creek is located approximately 25 feet north of the project site. No aquatic features are located within the project site boundaries. The project site is located within the greater 27,640-acre San Pablo Creek Watershed. San Pablo Reservoir is located approximately 2 miles southeast of the project site.

The project site is located on eastern side of the San Pablo Ridge and north of San Pablo Reservoir along San Pablo Dam Road. The elevation within the project site ranges from approximately 425 to 510 feet above mean sea level. Soils within the project site are composed of Conejo clay loam, 0 to 2 percent slopes. The majority of the soils within the project site have been significantly altered from their natural state because of grading for the construction of San Pablo Dam Road and adjacent residential developments. Urbanization began in this area going back to the late 1960s.

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Source: Census Data, The California Spatial Information Library (CaSIL).

5 2.5 0 5 Miles

Figure 1
Regional Location Map

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Source: ESRI World Imagery. Contra Costa County Public Works Department.

1,000 500 0 1,000 Feet

Figure 2
Local Vicinity Map

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Source: ESRI World Imagery. Contra Costa County Public Works Department.

80 40 0 80
Feet

Figure 3
Vegetation and Land Cover Types

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1.3 - Project Impacts

A summary of project-related impacts to existing biotic habitat and land use is included in Figure 4 and within Table 1 below. Project-related impacts to existing trees on-site, within the larger disturbed riparian woodland are depicted in Figure 4.

Table 1: Project Impacts

Biotic Habitat/Land Use	Total Area (acres)	Permanent Impacts (acres)	Temporary Impacts (acres)	Developed Impact Area (acres)	Staging Areas (acres)[1]
Developed	0.88	0.00	0.00	0.15	0.10
Disturbed Riparian Woodland	0.74	0.17	0.17	0.00	0.06
Total Area	**1.62 acres**	**0.17 acre**	**0.17 acre**	**0.15 acre**	**0.16 acre**

Notes:
Acreages (rounded to the nearest hundredth) shown above are based on data presented in the California Department of Transportation (Caltrans)-approved Natural Environment Study Minimal Impacts (NES MI), prepared by FCS in August 2025.
Developed impacts included above for consistency with NES MI, however County will not be mitigating for impacts in "Developed" habitat.
Staging areas proposed only in developed land cover on-site. While some portions are mapped within the on-site riparian woodland, no impacts would occur.
[1] No impacts are associated with the staging areas included above.

1.4 - Mitigation and Monitoring Plan Goals and Objectives

1. The goal of the MMP is to restore and revegetate temporarily and permanently impacted disturbed riparian woodland habitat on-site to achieve no net loss of functions and values. The plan to restore all impacted areas within the disturbed riparian woodland includes applying a native seed mix to vegetated areas temporarily disturbed during construction. The primary objective in the temporarily and permanently impacted areas is to stabilize the soil with native vegetation to prevent erosion during the wet season.
2. Areas impacted will be mitigated by planting approximately 40 trees, at the maximum ecologically feasible quantity, strategically placed within the Biological Assessment Area. The primary objective is to replace a portion of the 63 removed trees and restore the disturbed riparian woodland to pre-project conditions.
3. Monitor revegetated seeded areas, over a 1-year period, within the on-site restoration area to ensure the qualitative and quantitative Success Standards established by regulatory agencies.
4. Monitor revegetated tree planting areas, over a 5-year period, within the on-site restoration area and adjacent land cover to ensure the qualitative and quantitative Success Standards established by regulatory agencies.

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Source: ESRI World Imagery. Contra Costa County Public Works Department.

80 40 0 80
Feet

Figure 4
Vegetation and Land Cover Impact Map

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2 - MITIGATION IMPLEMENTATION

2.1 - Disturbed Riparian Woodland Impact Areas

Project construction would temporarily disturb a total of 0.17-acre and permanently impact 0.17-acre of disturbed riparian woodland within the site (Figure 4). The proposed temporary and permanent impacted areas within the disturbed riparian woodland would be revegetated with a native seed mix after construction is finalized, as a part of the MMP (Figure 5). The seed mix would contain a native mix of known genetic origin whose original stock seed was collected from the greater San Francisco Bay Region unless otherwise agreed upon by the California Department of Fish and Wildlife (CDFW) and/or Regional Water Quality Control Board (RWQCB). Table 2 details the seed mix would be applied on-site:

Table 2: Native Seed Mix Option

Species	Common Name	Application Rate (lbs/acre)
Bromus carinatus	California brome	10 PLS pounds per acre
Elymus glaucus	blue wildrye	8 PLS pounds per acre
Hordeum californicum	California barley	8 PLS pounds per acre
Nassella pulchra	purple needlegrass	5 PLS pounds per acre
Poa secunda	pine bluegrass	4 PLS pounds per acre
Lupinus nanus	sky lupine	3 PLS pounds per acre
Sisyrinchium bellum	blue-eyed grass	3.5 PLS pounds per acre
Asclepias fascicularis	narrowleaf milkweed	10 PLS pounds per acre

Notes:
PLS = Pure Live Seed
PLS is the percentage of seed (i.e., good viable seed) that has the potential to germinate within a measured 1-pound weight of any seed lot.
Application rate based on the 0.34-acres of temporary and permanent impacts to existing vegetation, within the site.

Restoration would be completed in the fall before the start of the rainy season and as soon as possible after project activities are completed. Seeded areas would be covered with broadcast straw, mulch, and/or erosion control blankets.

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Source: ESRI World Imagery. Contra Costa County Public Works Department.

80 40 0 80
Feet

Figure 5
Proposed Restoration Map

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2.2 - Tree Impact Areas

Project implementation would permanently disturb a total of 0.17 acre of disturbed riparian woodland habitat within the site and remove a total of 63 trees (Figure 4).The MMP proposes to revegetate within the designated restoration area on-site with 40, 24-inch box replacement trees planted for enhancement purposes after construction is finalized (Figure 5). It should be noted that these plantings are considered approximate, specific tree locations and spacing will be determined under the coordination and supervision of professionally qualified Restoration Ecologist during the proposed restoration activities, as requested by Contra Costa County (County).

The following tree species provided in Table 3 are native species that provide habitat and are suitable for riparian woodland and annual grasslands. This vegetation would help establish new trees within the designated on-site restoration area and adjacent wild oat-annual brome grassland, enhancing habitat function and improving erosion control compared to its current condition. The County proposes replacing a total of 40 trees on-site. Recommended tree replacement species and planting locations are described in Table 3 below. The specific number of each tree species is not provided to maximize planting flexibility for the County during restoration activities. A combination of the tree species listed should be placed in their respective planting areas (Figure 5). The County will determine the number and exact placement of each species planted.

Table 3: Tree Planting Options

Species	Common Name	Recommended Spacing	Recommended Tree Placement
Populus fremontii	Fremont cottonwood	25-feet minimum	Recommended planting adjacent to creek bank for stabilization
Alnus rhombifolia	White alder	30-foot minimum	Recommended planting adjacent to creek bank for stabilization
Aesculus californica	California buckeye	25-feet minimum	Recommended planting in upper banks and slopes for stabilization
Acer macrophyllum	Big leaf maple	30-foot minimum	Recommended planting in upper banks and slopes for stabilization
Quercus agrifolia	Coast live oak	25-feet minimum	Recommended planting in upland areas
Notes: ANSI Z60.1 standards require a minimum of a 24-inch box (approx. 25-gallon) container for replacement tree plantings.			

2.2.1 - Ecologically Feasible Tree Plantings

The proposed 40 replacement trees to be planted are the maximum ecologically feasible, given the size of the on-site restoration area. Overplanting within the restoration area may lead to potential

ecological risks that stress the larger ecosystem. In contrast to the perceived benefit of planting more trees, an overstocked woodland may likely be less resilient and can suffer from increased competition, disease, and/or fire risks. In an overcrowded woodland, trees must compete intensely for vital resources (i.e., water, sunlight, soil nutrients), which compromises their overall health and vigor. As previously discussed, the proposed quantity of replacement trees are based on species-specific replacement provided by the County. For the purposes of this MMP, the County-proposed tree plantings would be planted to the greatest extent ecologically feasible given the size of the on-site restoration area to ensure long-term success.

2.3 - Restoration and Enhancement Methods

2.3.1 - Site Preparation

All planned restoration areas would be verified to be free of non-native invasive vegetation and other materials that may adversely affect success. Special attention to removal of invasive forbs and grasses would be prioritized due to invasive species' control within the vicinity of the proposed activity. Reduction of these species would lower the threat of invasion and provide higher-quality habitat adjacent to riparian habitats. These invasive species represent a threat to nearby native habitats and would continue to spread without control measures. The treated area would be monitored annually, with additional treatment options dependent on the monitoring results.

2.3.2 - Seeding

Verify that all planned seeded restoration areas are free of non-native invasive vegetation and other material that may adversely affect success. If present, invasive species will be mechanically removed from the vicinity of plantings to encourage survival. Additionally, should herbicide application be necessary to control invasives, only herbicides approved as part of the County Routine Maintenance Program shall be used. The County proposes to abate invasive species through mechanical methods and previously approved herbicides (as described in the Countywide CDFW/RWQCB Routine Maintenance Plan [RMP]). All herbicide application would adhere to all regulations and parameters as stated in the RMP. Where manual and/or mechanical methods are used, disposal of the plant debris shall take place at an appropriate off-site location. After the invasive plants are removed, the soils will be prepared as follows:

- A soil amendment will be lightly tilled into the soil. The soil amendment will be composed of nitrolized organic woodchips or ash with medium pH.
- If feasible, portions of the banks that are to be seeded will be hand-watered to encourage germination of seeds.
- Soils above the top of bank of the creeks will be scarified to a depth of 6 inches in the areas to be seeded. The seedbed area will be weed- and clod-free and raked smooth.

After the amended area has been prepared, native seed mix shall be applied evenly to the exposed disturbed portions of the restoration area. Broadcast seeding using the mix provided in Table 2 above can be done by hand or using mechanical seeding equipment. All seed would be in conformance with the California State Seed Law of the Department of Agriculture and certified weed free.

2.3.3 - Trees

The MMP proposes the planting of 40 replacement trees, with spacing ranging from approximately 25 feet to 30 feet varying on the species, within the designated on-site restoration area. The specific number of each replacement tree species is not provided to maximize planting flexibility for the County during restoration activities. It should be noted that these plantings are considered approximate, specific tree locations and spacing will be determined under the coordination and supervision of a professionally qualified Restoration Ecologist during the proposed restoration activities. This ensures that the proposed plantings within the on-site restoration area meet the qualitative and quantitative Success Standards established by regulatory agencies.

Recommended tree replacement species are provided in Table 2 above, with recommended container size per American Standard for Nursery Stock (ANSI) Z60.1 requirements.[1] Should some tree species be unavailable for purchase, substitutions of the same genus and species but different cultivar origin may be purchased after approval from the certified Arborist. Upon delivery, a professionally qualified Restoration Ecologist may inspect all trees proposed for planting, subject to approval for size, health, quality, etc. Trees must be planted within 14 days of delivery on-site. Approval of any tree during the inspection process does not prevent the planting from later rejection in the event that the tree quality changes or previously existing defects become apparent that were not observed.

The planting hole will be excavated to the depth of the root ball measured, after any root ball modification to correct root problems, and wide enough for working room around the root ball or to the size indicated in the tree planting illustrations (see Urban Tree Foundation: Appendix A, Appendix B, Appendix C, and Appendix D).[2] Generally, the soil area surrounding the root ball shall be loosened at a minimum of 3 times the diameter of the root ball at the surface sloping to 2 times the diameter of the root ball at the depth of the root ball.

Prior to planting, the outer surfaces of all replacement trees in containers/boxes, including the top, sides and bottom of the root ball shall be shaved to remove all circling, descending, and matted roots. Shaving shall be performed using saws, knives, sharp shovels or other suitable equipment that is capable of making clean cuts on the roots. Shaving shall remove a minimum of one inch of root mat or up to 2 inches as required to remove all root segments that are not growing reasonably radial to

[1] University of Florida. 2025. American Standard for Nursery Stock (ANSI) Z60.1. Website: https://hort.ifas.ufl.edu/woody/american-standard.shtml. Accessed November 17, 2025.

[2] Urban Tree Foundation. 2016. Tree Planting Details and Specifications – Planting. Website: https://www.urbantree.org/details_planting.shtml. Accessed November 17, 2025.

the trunk. Should stem tissue bark be exposed from trimming, the exposed portion will be wrapped with a protective white filter fabric, secured with biodegradable tape. Lastly, to prepare the replacement tree for planting, remove all substrate in the root ball (including top, bottom, and around the trunk).

During planting activities, set top outer edge of the root ball at the average elevation of the proposed finish. Set the plant upright in the center of the planting hole. The tree graft, if applicable, shall be visible above the grade. Backfill the space around the root ball with the same planting soil or existing soil that was excavated for the planting space. Do not place soil on top of the root ball. Brace root ball by tamping supplemental planting soil around the lower portion of the root ball to secure in place.

After tree planting is complete, build a 4-inch-high berm of supplemental planting soil around the outside of the root ball to retain water. Tamp the berm to reduce leaking and erosion of the saucer. Mulch will be spread around the critical root zone. Mulch depth shall be 4 inches minimum, leaving space around the trunk. No more than 1-inch of mulch shall be installed on top of the root ball.

2.3.4 - Irrigation

While native plants are adapted to the local weather patterns, it is helpful to provide additional water during the first year, depending on rainfall. However, watering should be kept to the minimum amount needed to keep the container shrubs and seedlings alive and in a relatively vibrant condition. This encourages root growth and adaptation to California's climate, as the intent is to establish self-sustaining native habitat. Because the planting areas along the intermittent creek are relatively accessible, it is recommended that additional water be provided via a garden hose (if temporary irrigation hookups are not available on the project site).

2.3.5 - Timeline

Restoration would occur during the same year as the proposed project. Erosion control seeding would occur as soon as possible after construction activities cease. If feasible, seed would be applied immediately prior to the first rain event (e.g., the fall). Replacement tree plantings will be timed during the fall and winter months, prior to bud break, when weather and soil conditions are suitable for planting. No planting shall take place during extremely hot, dry, windy or freezing weather.

3 - HABITAT MITIGATION SUCCESS STANDARDS

The following section defines Success Standards that need to be met for compensatory mitigation to be considered successful.

3.1 - Quantitative

3.1.1 - Native Seed Quantitative Success Standards

Guidelines have not been provided by CDFW and/or RWQCB to determine the success of restoration within seeded/temporary impacted areas. Therefore, the County proposes restoration of the seeded/temporary impacted areas as a success if this habitat mitigation site retains 80 percent absolute cover and does not contain new invasive plant species rated as “high” by the Cal-IPC at the end of one year. Vegetation cover of invasive species shall not be greater than an absolute value of 10 percent above baseline conditions. Measurement of percent over will not include rock outcrops (i.e., areas where rocks and rock outcrops exceed 80 percent of the cover), where revegetation is not possible. Remediated areas shall be monitored for at least one year after hydroseeding but may extend longer until the success criteria can be met. Monitoring shall occur in either spring or fall.

Year 1

- 40 percent cover in temporary impact areas or noticeable progress toward third year and/or fifth year percent cover requirements.
- Noticeable new growth of seedlings in revegetated target areas.
- Plant species on the California Exotic Pest Plant Council’s List A: Most Invasive and Damaging.
- Wildland Pest Plants will not exceed 5 percent.

Year 2

- 50 percent cover in temporary impact areas or noticeable progress toward third year and/or fifth year percent cover requirements.
- Healthy growth of reseeded plants in revegetated target areas.
- Plant species on the California Exotic Pest Plant Council’s List A: Most Invasive and Damaging.
- Wildland Pest Plants will not exceed 5 percent.

Year 3

- 60 percent cover in temporary impact areas or noticeable progress toward third year and/or fifth year percent cover requirements.
- Resprouting of reseeded plants; some natural spreading/recruitment in target areas.

- Plant species on the California Exotic Pest Plant Council's List A: Most Invasive and Damaging.
- Wildland Pest Plants will not exceed 5 percent.

Year 4

- 70 percent cover in temporary impact areas or noticeable progress toward third year and/or fifth year percent cover requirements.
- Noticeable new growth of reseeded plants in revegetated target areas.
- Plant species on the California Exotic Pest Plant Council's List A: Most Invasive and Damaging.
- Wildland Pest Plants will not exceed 5 percent.

Year 5

- 80 percent cover in temporary impact areas.
- Reseeded plants well established in revegetated target areas.
- Plant species on the California Exotic Pest Plant Council's List A: Most Invasive and Damaging
- Wildland Pest Plants will not exceed 5 percent.

If 80 percent survival is not achieved, dead seedlings will be replaced in kind, under direction of the restoration specialist (or other qualified personnel). After the 1 year of monitoring has ended, an 80 percent cover of the seeded areas must be achieved. Vegetation cover within the seeded area shall consist of no more than 10 percent non-native invasive plant species after 1 year.

3.1.2 - Tree Quantitative Success Standards

Guidelines have not been provided by CDFW and/or RWQCB to determine the success of tree replacement plantings. Therefore, the County proposes restoration of the tree replacement plantings as a success if the survival rate meets 80 percent after the 5-year monitoring period. If 80 percent survival is not achieved after the 5-year monitoring period, any dead trees will be replaced in kind, unless the ecology restoration specialist (or ISA certified Arborist) determines that site conditions are not conducive to the survival of a particular plant species, in which case, an alternate native plant species will be planted.

3.2 - Qualitative

3.2.1 - Native Seed Quantitative Success Standards

The seeded restoration efforts will be considered successful if:

- The restored and enhanced seeded plant communities exhibit evidence of flowering and seedset (i.e., general health).

- The seeded areas are free of pest infestations, non-native invasive plant colonization, and erosion problems.
- The area is also free of trash and construction debris.

3.2.2 - Tree Quantitative Success Standards

The tree replacement restoration efforts will be considered successful if:

- The tree replacement plantings exhibit evidence of growth and flowering.
- The tree planting areas are free of pest and/or disease infestations.
- The area is also free of trash and construction debris.

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4 - ANNUAL MITIGATION MONITORING AND REPORTING

Vegetation within the designated on-site restoration areas would be monitored qualitatively and quantitatively by a professionally qualified ecologist once per year after treatment (between April and June) for a total of 1 year for seeded/temporary impacted areas and 5 years for areas where the planting of trees is proposed, or until success is fully documented.

4.1 - Seeding

Seeded/temporary impacted areas would be monitored for 1 year after planting. Invasive species monitoring would also occur during this time. All seeded plant species present in treated areas, and absolute vegetative cover, will be documented. Quantitative monitoring for percent-survival will be conducted through an annual census, determining the success of the seeded areas. Per County recommendation, percent cover of the seeded areas will be measured by using the point-intercept sampling method developed by the California Native Plant Society (CNPS) and described in A Manual of California Vegetation.[3] If after the first year of seeding there is less than 80 percent survival, additional seeding will be sowed. If supplemental seeing is sowed, then they must be monitored for an additional 1 year to meet the performance standard required by CDFW and RWQCB. The project applicant shall submit an annual monitoring report to the RWQCB and the CDFW 12 months after the start of implementation of this MMP.

Photos will be taken during the single monitoring visit to support the annual monitoring report. This will provide a visual of vegetation growth and success. Results of the annual monitoring visit and recommended remedial measures, if any, will be documented in the project's annual monitoring report. The annual report shall detail, at minimum: monitoring results, success criteria to be met as described in the MMP, and any contingency actions in the event success criteria are not met. The single annual report shall be submitted to CDFW and RWQCB no later than December 31 of the year after project activities are completed for the 1-year monitoring period. For example, if the proposed project is completed in February 2026, restoration would commence in fall (October/November) 2026, with quantitative monitoring to take place between April and June 2027, and the annual report would be submitted to CDFW before December 31, 2027.

[3] Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation (Second ed.). Sacramento, CA: California Native Plant Society.

4.2 - Trees

Tree plantings would be monitored for 5 years after planting. All tree replacements present in the on-site restoration area, and adjacent land cover, will be documented. Quantitative monitoring for percent-survival will be conducted through an annual census. The number of missing, dead, and/or declining trees will be recorded for each tree species installed within the mitigation site. If after the first or second year of tree planting there is less than 80 percent survival, replacement trees will be planted. If supplemental replacement trees are planted, then they must be monitored for an additional 5 years to meet the 5-year performance standard required by CDFW and RWQCB. The project applicant shall submit an annual monitoring report to the RWQCB and the CDFW for 5 years. The first annual report will be submitted 12 months after the start of implementation of this Plan.

Photo-documentation will be conducted from permanent photo-locations established during the first annual monitoring event. Photos will be taken during each monitoring visit, for a total of 5 years, and from the same vantage point and in the same direction every year. This will provide a visual of vegetation growth on the site from tree planting to establishment. Results of the annual monitoring visits and recommended remedial measures, if any, will be documented in an annual letter report to be included in the project's annual monitoring report. Each report shall detail, at minimum: monitoring results, success criteria to be met as described in the MMP, and any contingency actions in the event success criteria are not met. Each report shall be submitted to CDFW and RWQCB no later than December 31 of the year after project activities are completed and the subsequent December 31 of each year thereafter for the 5-year monitoring period. For example, if the proposed project is completed in February 2026, restoration would commence in fall (October/November) 2026, with the first quantitative monitoring to take place between April and June 2027, and the first annual report would be submitted to CDFW before December 31, 2027.

5 - ADAPTIVE MANAGEMENT

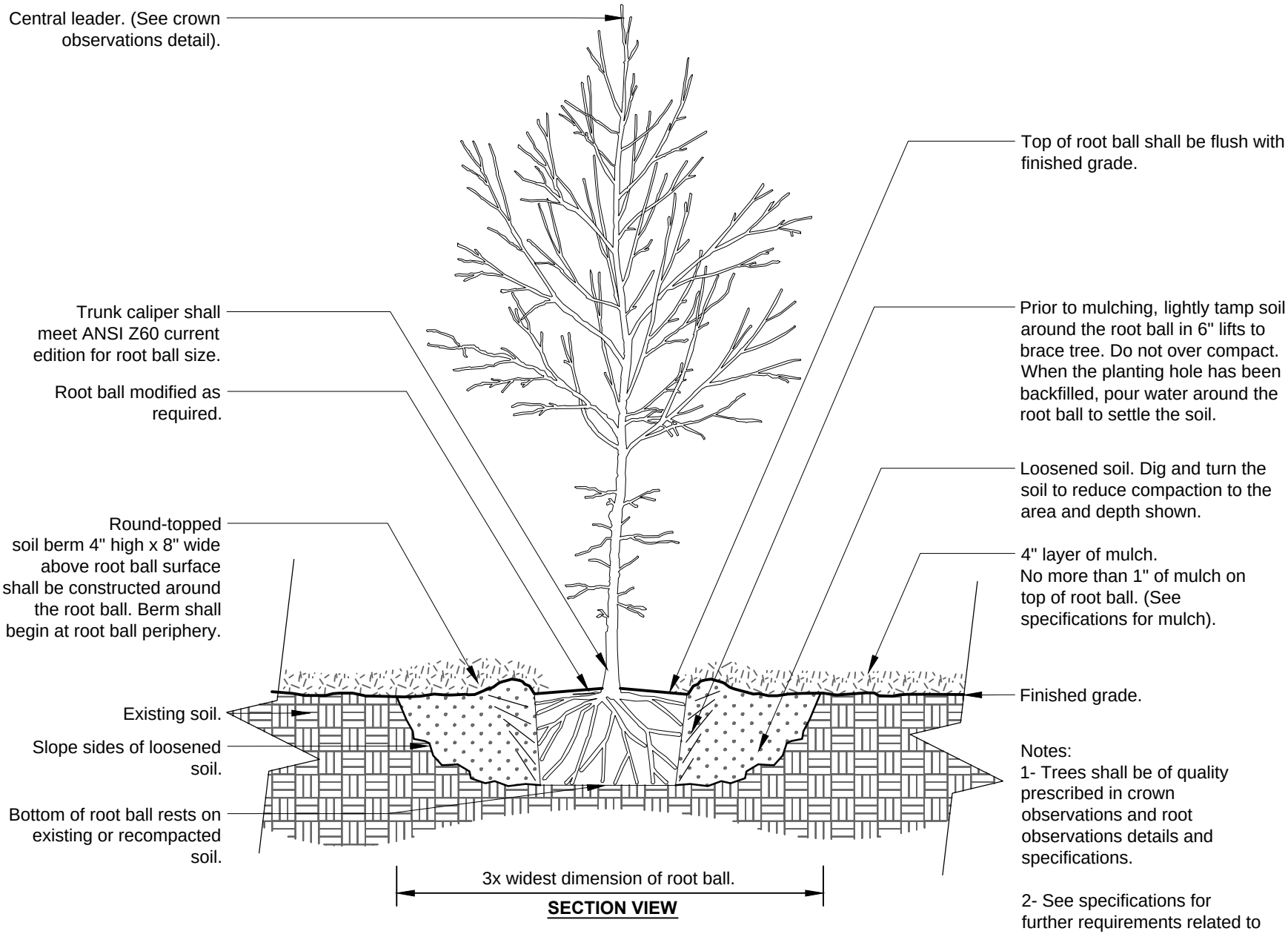
If the habitat mitigation Success Standards for the restoration areas are not achieved, the project restoration specialist or other qualified personnel shall recommend adaptive management methods and remedial measures. Adaptive management and remedial measures, among others, may include increased hand watering of the plants to improve plant establishment or replacing dead trees with tree species that perform better at the site. If restoration is not successful and another tree species must be used, CDFW/RWQCB will be consulted and will approve any adaptive management actions.

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Appendix A:

Tree Planting Single Berm Unmodified Soil

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Notes:
1- Trees shall be of quality prescribed in crown observations and root observations details and specifications.

2- See specifications for further requirements related to this detail.

P-X TREE w/ BERM (EXISTING SOIL NOT MODIFIED)

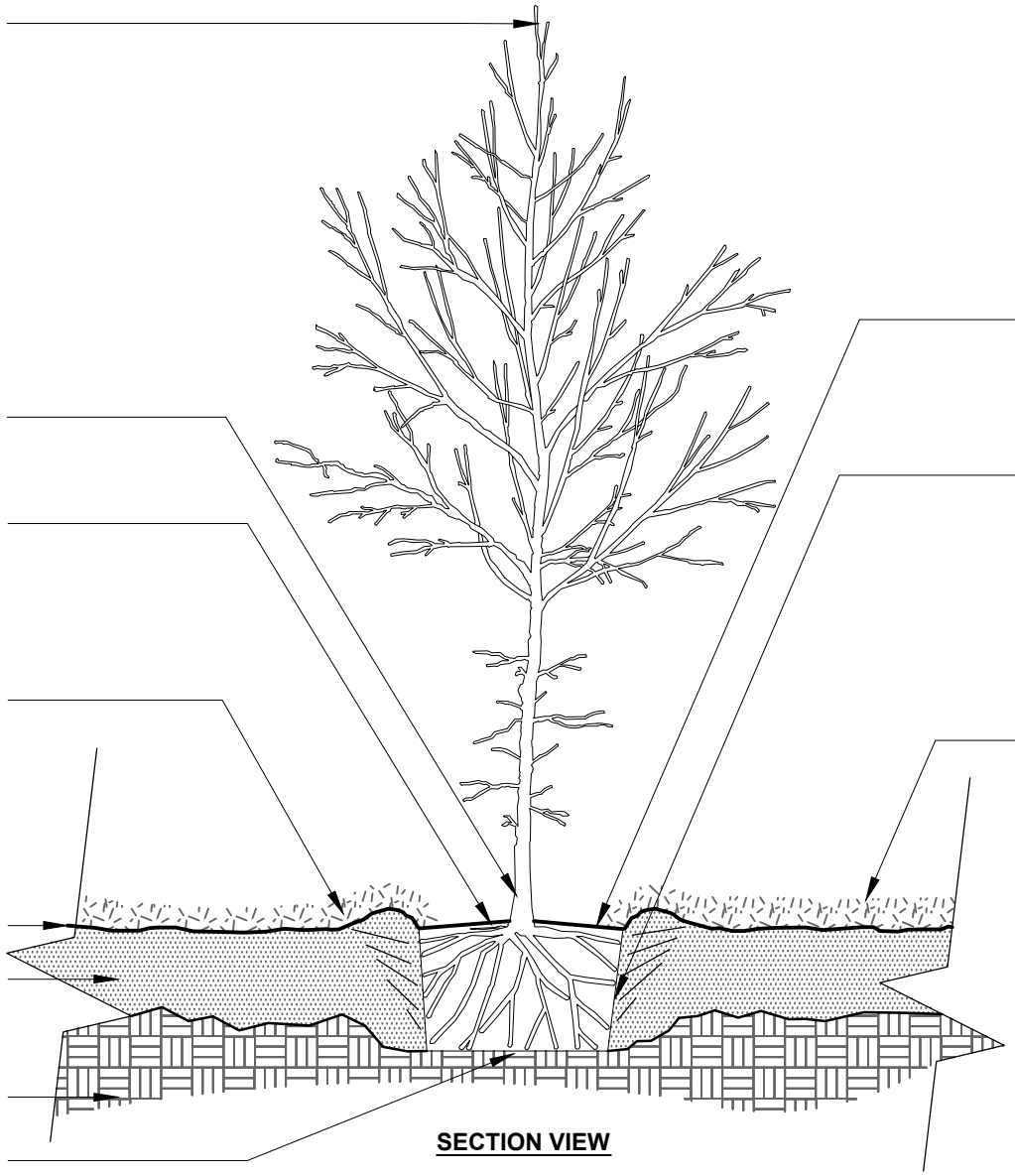
URBAN TREE FOUNDATION © 2014
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Appendix B:

Tree Planting Single Berm Modified Soil

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SECTION VIEW

Notes:
1- Trees shall be of quality prescribed in crown observations and root observations details and specifications.

2- See specifications for further requirements related to this detail.

P-X

TREE w/ BERM (EXISTING SOIL MODIFIED)

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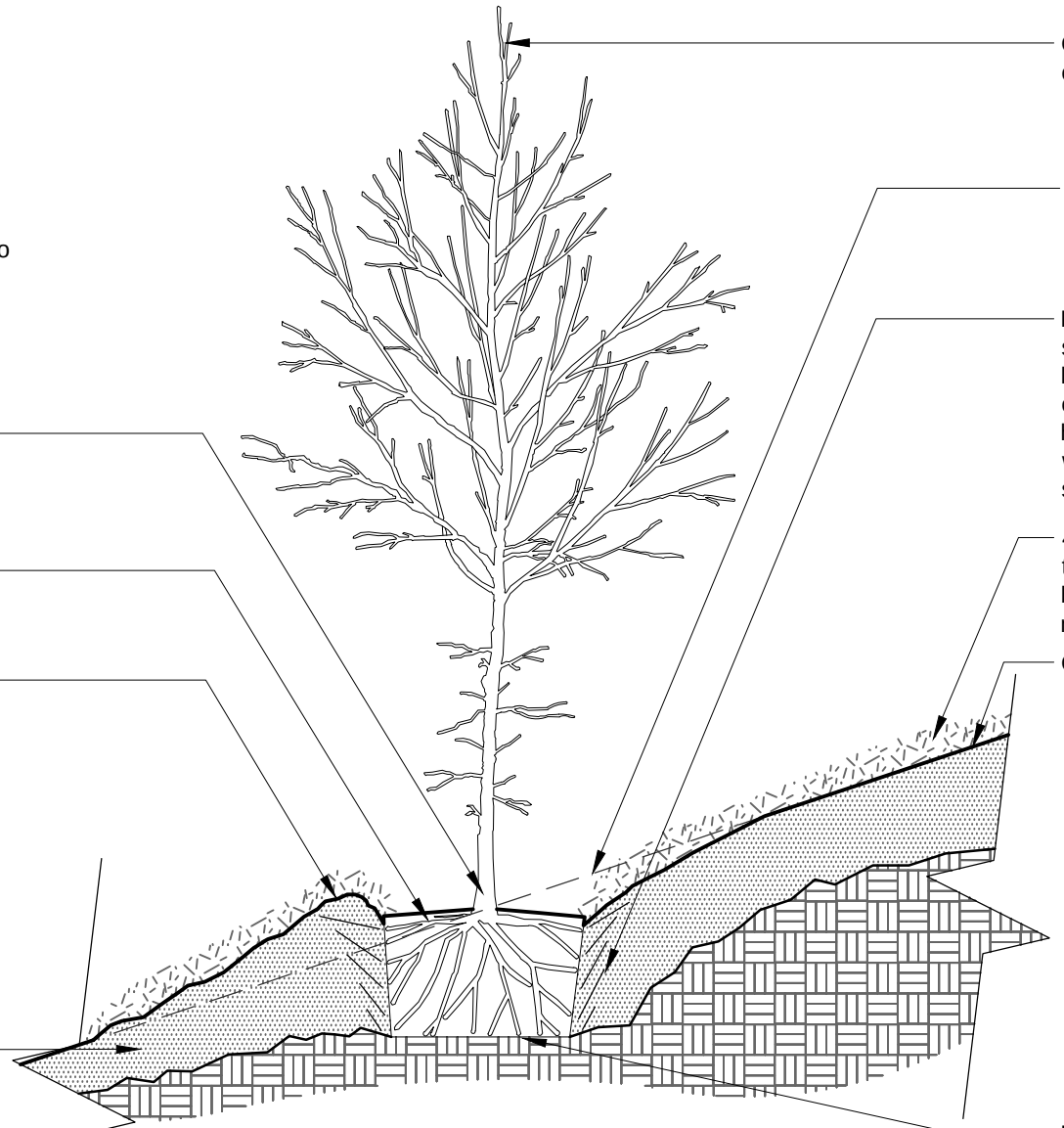
Appendix C:

Tree on Slope Modified Soil

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Notes:
1- Trees shall be of quality prescribed in crown observations and root observations details and specifications.

2- See specifications for further requirements related to this detail.



SECTION VIEW

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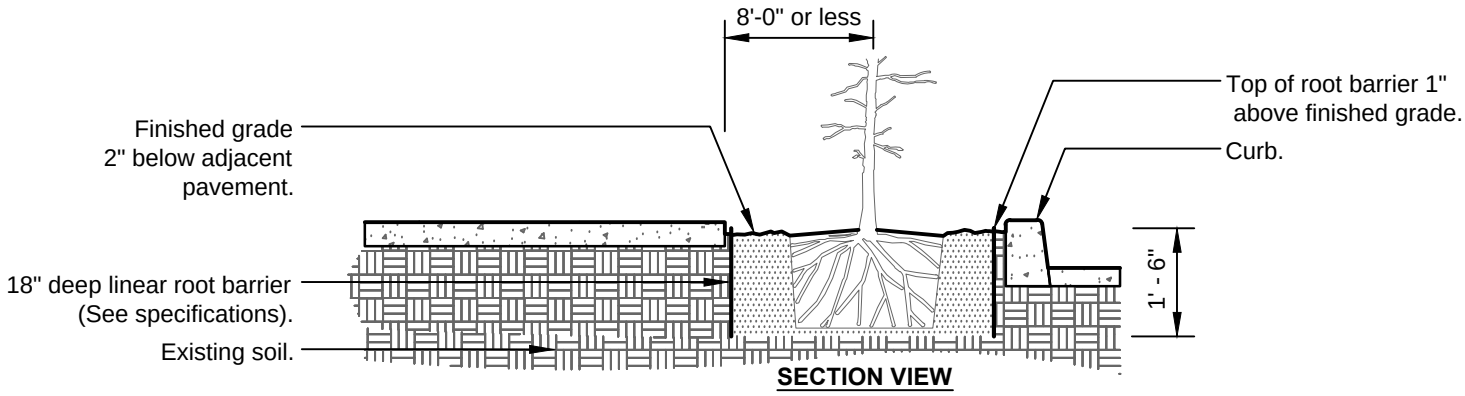
P-X TREE ON SLOPE 5% (20:1) TO 50% (2:1) (EXISTING SOIL MODIFIED)

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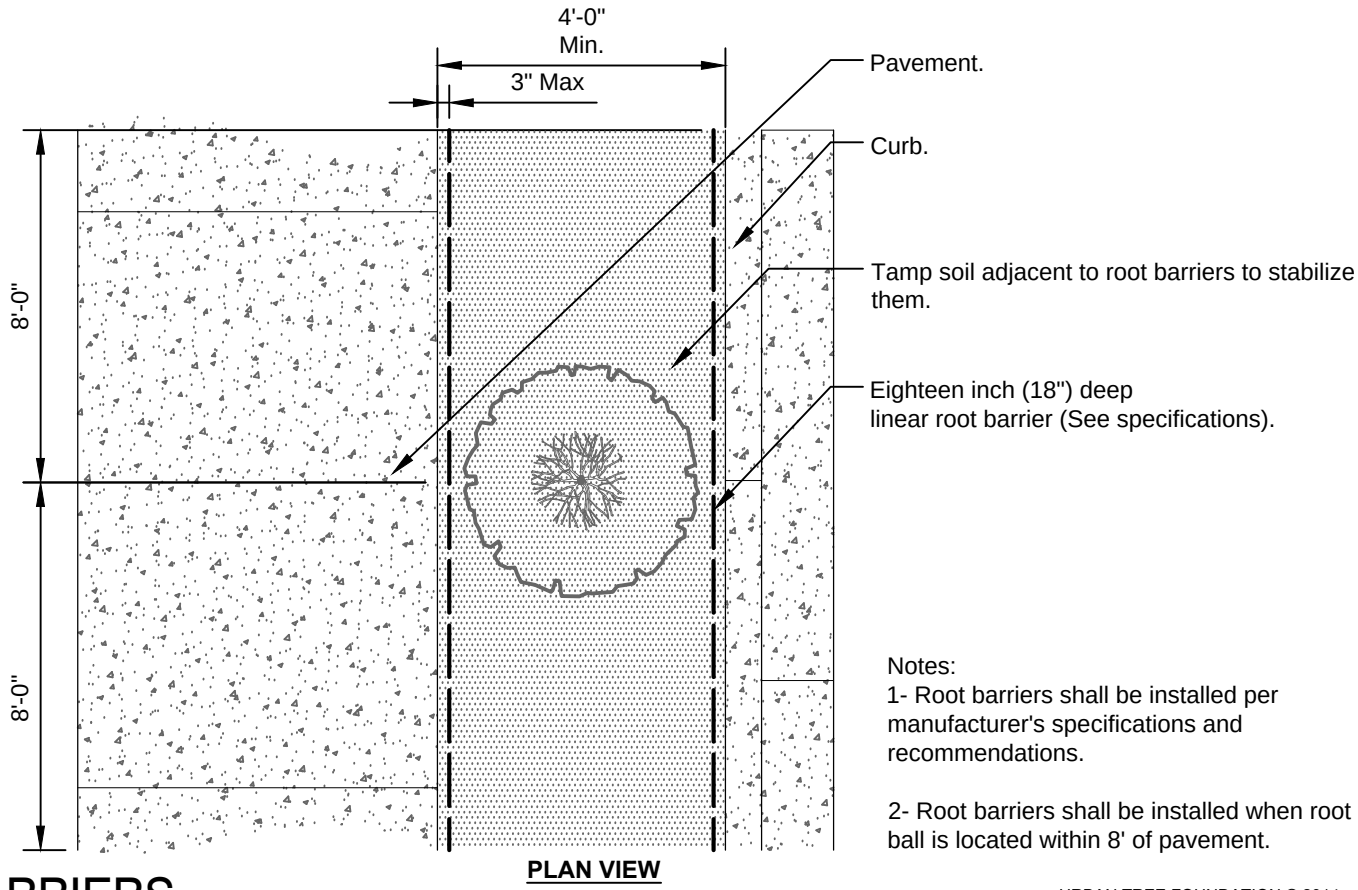
Appendix D:

Tree with Pavement Root Barriers

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SECTION VIEW



PLAN VIEW

Notes:
1- Root barriers shall be installed per manufacturer's specifications and recommendations.

2- Root barriers shall be installed when root ball is located within 8' of pavement.

S-X

ROOT BARRIERS

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Appendix C:
Cultural Resources Supporting Information

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C-1: Historic Property Survey Report and Archeological Survey Report

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HISTORIC PROPERTY SURVEY REPORT

1. UNDERTAKING DESCRIPTION AND LOCATION

District	*County*	*Federal Project. Number. (Prefix, Agency Code, Project No.)*	*Location*
4	CC	15J9 (182)	San Pablo Dam Road, El Sobrante

The studies for this undertaking were carried out in a manner consistent with Caltrans' regulatory responsibilities under Section 106 of the National Historic Preservation Act (36 CFR Part 800) and pursuant to the 2024 *Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, the United States Army Corps of Engineers' Sacramento District, San Francisco District, and Los Angeles District, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act as it Pertains to the Administration of the Federal-Aid Highway Program in California* (Section 106 PA), as well as under Public Resources Code 5024 and pursuant to the 2024 *Memorandum of Understanding Between the California Department of Transportation and the California State Historic Preservation Office Regarding Compliance with Public Resources Code Section 5024 and Governor's Executive Order W-26-92*(5024 MOU) as applicable.

Project Description:

The County of Contra Costa (County), in cooperation with the California Department of Transportation (Caltrans), proposes to repair the embankment and culvert failure on the north side of San Pablo Dam Road, approximately 200 feet southeast of La Honda Road. The winter storms of February and March of 2023 caused an embankment slide along San Pablo Dam Road, which included a portion of the westbound lane. The northernmost westbound lane is currently closed due to the storm damage. The Project is needed to reestablish the westbound lane and prevent damage to the remaining open traffic lanes. San Pablo Dam Road is a route for commuters heading from the El Sobrante area to I-80 and provides an important connection during the daily commute. The project will stabilize the embankment, repair the damaged section of the roadway, and replace a culvert failure on the north side of San Pablo Dam Road.

The full project description is in the Archaeological Survey Report (ASR) for the Project. The Project location map and Project vicinity map are located in Attachment A of this Historic Property Survey Report (HPSR).

2. AREA OF POTENTIAL EFFECTS

In accordance with Section 106 PA Stipulation VIII.A, the Area of Potential Effects (APE) for the Project was established in consultation with Kelli Alahan, Senior Environmental Scientist - Archaeologist, and Teppitak Panmai, Local Assistance Engineer, on [date]. The APE maps are located in Attachment A, Figure 3 of this Historic Property Survey Report (HPSR).

The APE was established as 1.62 acres within Assessor's Parcel Number (APN) 433-242-018. The APE includes the installation of a soldier pile wall parallel to the roadway in order to support and rebuild the damaged portion of the roadway as well as excavation, structural backfill, culvert removal, culvert installation, removal and replacement of a concrete lined ditch, removal of vegetation and trees, placing aggregate base and hot mix asphalt, striping, and guardrail

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installation. The width of the APE ranges from a minimum of 75.79 feet (23.1 meters) to a maximum of 162.07 feet (49.4 meters). The overall length of the APE is 524.61 feet (159.9 meters).

The vertical APE is the maximum depth of any Project-related ground disturbing work. The maximum depth of ground disturbance is anticipated not to exceed 50 feet (15.24 meters) for the pile wall installation.

3. CONSULTING PARTIES / PUBLIC PARTICIPATION

☒ Native American Heritage Commission

- A Sacred Lands File (SLF) search was requested by Cogstone from the Native American Heritage Commission (NAHC) on July 7, 2024. The NAHC responded on July 29, 2024, that the SLF search was completed with positive results.

☒ Native American Tribes, Groups and Individuals

- Consultation letters were sent via electronic mail to the 21 contacts by Caltrans on May 6, 2025 requesting information related to cultural resources or heritage sites within the APE. Additional attempts at contact were made by email or phone on May 30, 2025. To date, four responses have been received and are summarized below. Caltrans will conduct Section 106 consultation with the Federally recognized Guidiville Rancheria of California and provide consultation documentation at a later date. The contact log grouped by Native American tribal affiliation is provided in Appendix C of the ASR.

- **Amah Mutsun Tribal Band of Mission Indians** – Irene Zwierlein, Chairperson
  On May 6, 2025, Lorelei Alli responded to the consultation email with recommendation documents. Contact information was given by Caltrans in order to set up a meeting. On May 7, 2025 an email was sent to follow up on the response with an offer to schedule a meeting between the Tribe and Caltrans. On May 30, 2025, a follow up email was sent by Caltrans. A same day response was issued by the tribe and recommendation documents were again provided. No additional response has been received at this time.

- **Confederated Villages of Lisjan Nation** – Corrina Gould, Chairperson
  On May 9, 2025, a response was received from Lucy Gill, requesting consultation for the Project, as well as the NAHC SLF request results letter, CHRIS records request results, and any cultural resource reports that had been prepared. On May 15, 2025, Caltrans confirmed receipt of the request. On June 17, 2025,

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Caltrans responded to the Tribe by email with a link to view the CHRIS records request results and offered to schedule a consultation meeting once the documents had been reviewed. No additional response has been received at this time.

- **Muwekma Ohlone Tribe of the San Francisco Bay Area** – Charlene Nijmeh, Chairperson
  On May 14, 2025, a response was received from Richard Massiatt, requesting consultation for the Project. On May 19, 2025, an email was forwarded to the Tribe explaining that an incorrect table of known sites was sent with the consultation letter. The correct NWIC information on sites was emailed along with an offer to set up a meeting and provide cultural documents for review once available. On May 30, 2025, a follow up email was sent by Caltrans. No additional response has been received at this time.

- **The Ohlone Indian Tribe** – Andrew Galvan, Chairperson
  On May 6, 2025, a response was received from Andrew Galvan, requesting a copy of the NAHC results letter and contact list. On May 7, 2025, the requested documents were shared by Caltrans. On June 16, 2025, a follow up email was sent by Caltrans. No additional response has been received at this time.

☒ Local Historical Society / Historic Preservation Group

- El Sobrante Historical Society - Three requests for information were sent to the El Sobrante Historical Society on August 28, September 11 and December 9, 2024 via United States Postal Service. A fourth attempt to contact the El Sobrante Historical Society was made on June 3, 2025 via email. On June 5, 2025, a response was received via email from Donal Bastin, President of the El Sobrante Historical Society. Mr. Bastin stated: “After some consideration, it is the general opinion of our organization that the road project be completed as soon as possible. It is our opinion that it is unlikely that any artifacts of cultural significance exist within the proposed work area. That said, as the work site is not far from a local recreational area (La Honda Bowl) that was popular from the late 1800s until 1955, and, while we have no evidence of this, may have been, at some time, a temporary living site for indigenous peoples. It is possible (again, unlikely) that some artifacts (pieces of train track, cooking utensils, stone bowls, etc.) may be turned up. All we ask is that, if anything of interest is found, that we be informed and given a chance to inspect [them.]”

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- Contra Costa Historical Society – A request for information was sent to the Contra Costa Historical Society on June 3, 2025 via United States Postal Service. At this time, no response has been received.

4. SUMMARY OF IDENTIFICATION EFFORTS

☒ National Register of Historic Places (NRHP)
☒ California Register of Historical Resources (CRHR)
☒ National Historic Landmark (NHL)
☒ California Historical Landmarks (CHL)
☒ California Points of Historical Interest
☒ California Historical Resources Information System (CHRIS)
☒ Caltrans Historic Bridge Inventory
☐ Caltrans Cultural Resources Database (CCRD)

☒ Other Sources consulted: United States Geological Survey (USGS) topographic quadrangle maps; United States Department of Agriculture (USDA) aerial photographs; and Bureau of Land Management (BLM) General Land Office Records

Results:

- A California Historical Resources Information System (CHRIS) search was conducted by the Northwest Information Center (NWIC) on July 29, 2024. Results of the record search indicate that 22 previous studies have been completed within the APE while an additional 58 studies have been completed previously within a one-mile radius of the APE.
- No cultural resources have been recorded within the APE.
- Outside of the APE, a total of seven cultural resources have been previously documented within the one-mile search radius from the APE. These consist of three cultural resources within a quarter mile of the APE, and four cultural resources within half to one-mile of the APE. Of the seven cultural resources, five are prehistoric archaeological sites and two are historic built environment resources.
- ICF archaeologist Shelby Caulder completed an intensive pedestrian survey of the entire APE on May 22, 2025. The APE consists of a 1.62-acre partially hardscaped and vegetated area near residential housing. Approximately 0.1 acres of the APE was not surveyed due to access restrictions from prohibitive fencing. Surface visibility was variable, ranging from 75 to 90 percent along San Pablo Dam Road, La Honda Road and associated shoulders; and poor (zero to five percent) in areas north-northeast of San Pablo Dam Road between the road and San Pablo Creek as well as in areas south-southwest of San Pablo Dam Road. Visibility obstructions were due to a dense covering of ivy, various low-lying vegetation, annual grasses,

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and a thick layer of organic duff. In areas with low ground visibility, areas that had exposed soil due to bioturbation, or other means of soil exposure were intensively inspected.

- As a result of the survey, no indications of archaeological sites such as discolored soils, artifacts, or archaeological features were observed in the APE. No archaeological resources were identified during survey.

5. PROPERTIES IDENTIFIED

☒ **No cultural resources are present** within the APE.

6. FINDING FOR THE UNDERTAKING

☒ Caltrans, pursuant to Section 106 PA Stipulation IX.A, has determined a Finding of **No Historic Properties Affected** is appropriate for this undertaking because there are no historic properties within the APE.

7. CEQA CONSIDERATIONS

☒ Not applicable; **Caltrans is not the lead agency under CEQA**.

8. LIST OF ATTACHED DOCUMENTATION

☒ Project Vicinity, Location, and APE Maps

- Attachment A (Figures 1, 2, 3)

☒ Archaeological Survey Report (ASR)

- Attachment B: Alison Bryson-Deveraux, M.A. and Molly Valasik, M.A.; July 15, 2025

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9. HPSR PREPARATION AND CALTRANS APPROVAL

Prepared by: _____
Molly Valasik, M.A., RPA, Principal Investigator Date
Prehistoric Archaeology, Cogstone Resource Management

Reviewed for
Approval by: _____
Kelli Alahan, Senior Environmental Scientist – Archaeologist Date
District 4 Caltrans PQS

Approval by: _____
Tom Holstein, Senior Environmental Planner Date
District 4 EBC

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ATTACHMENT A: MAP EXHIBITS

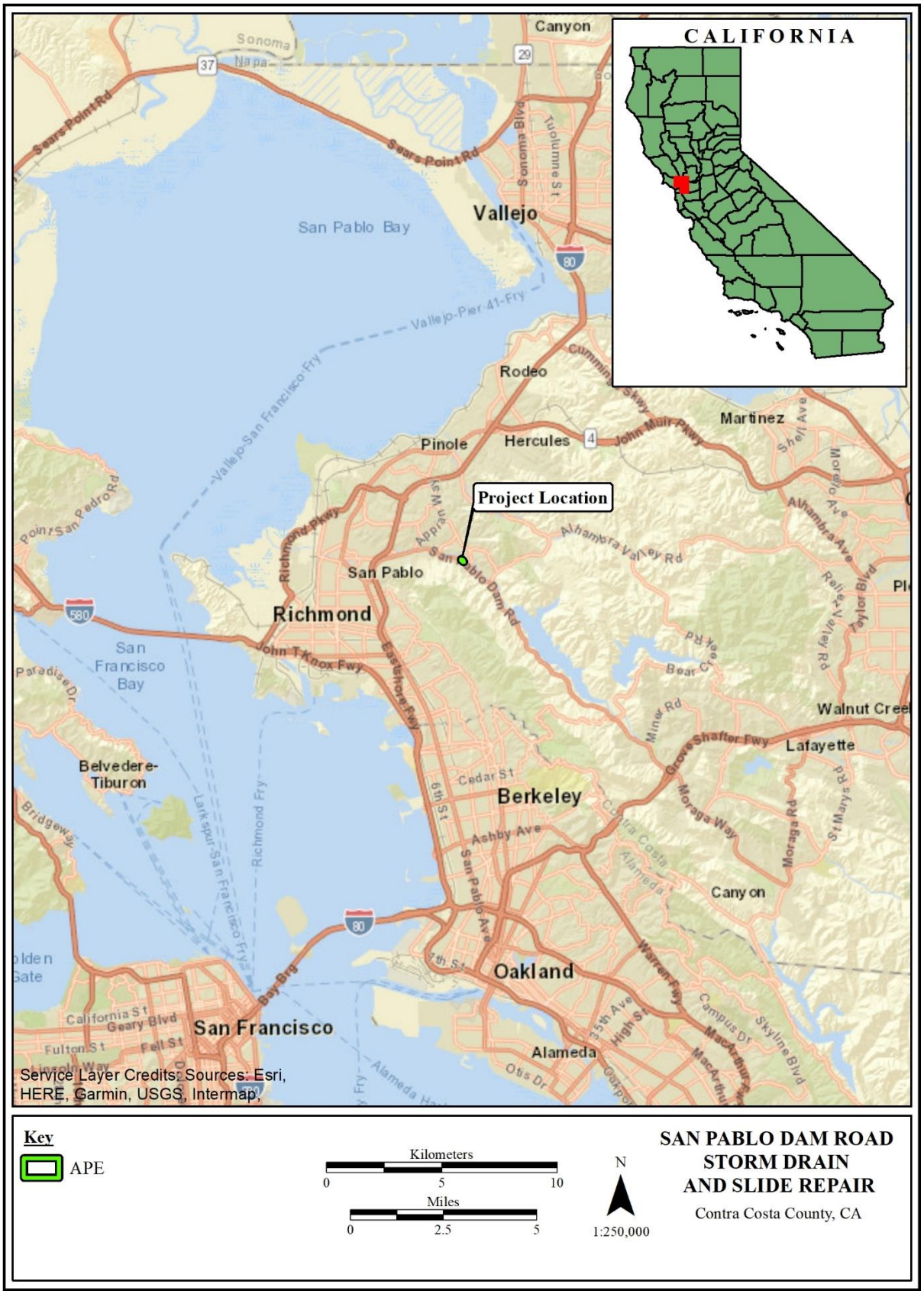


Figure 1. Project Vicinity Map

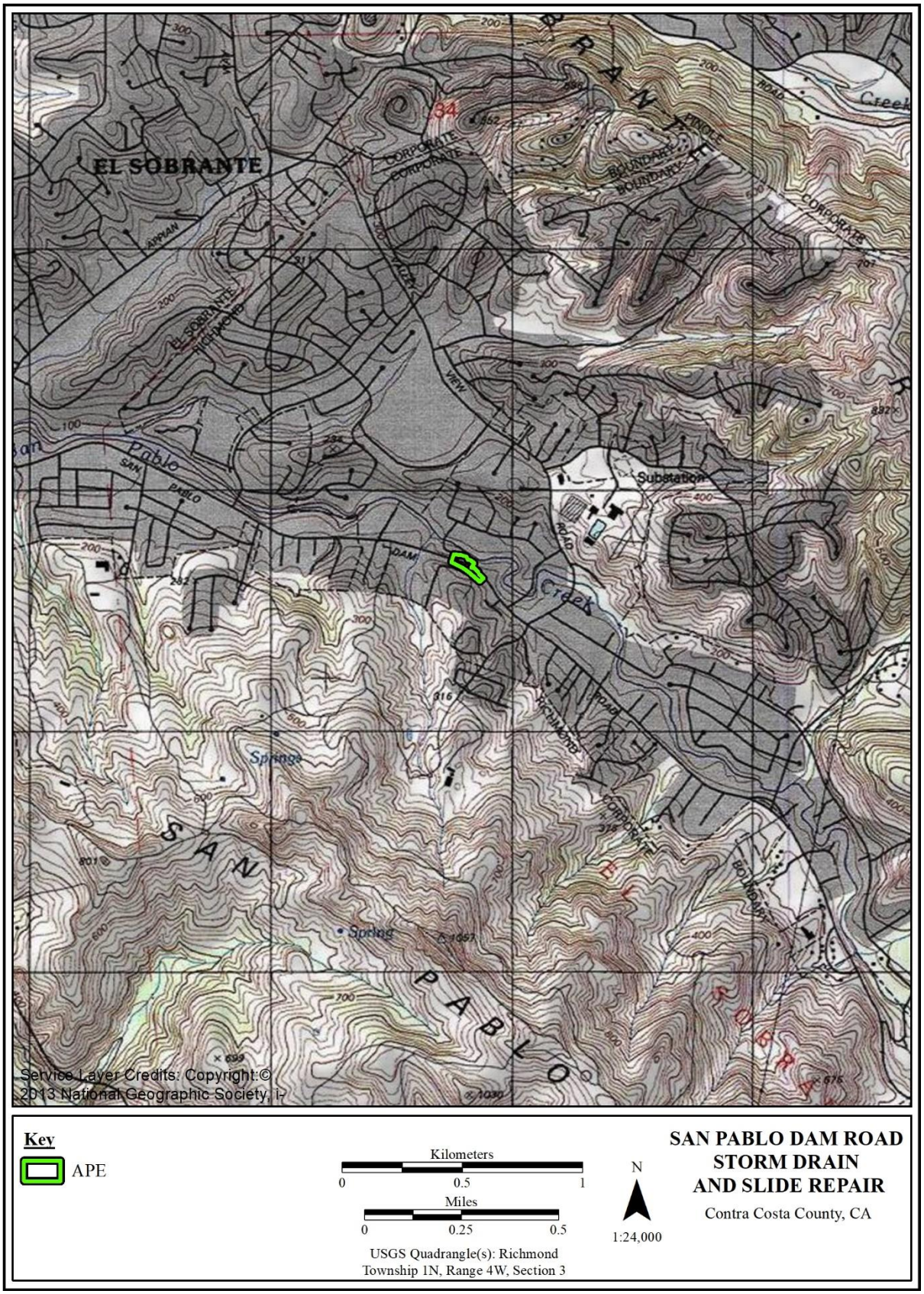


Figure 2. Project Location Map

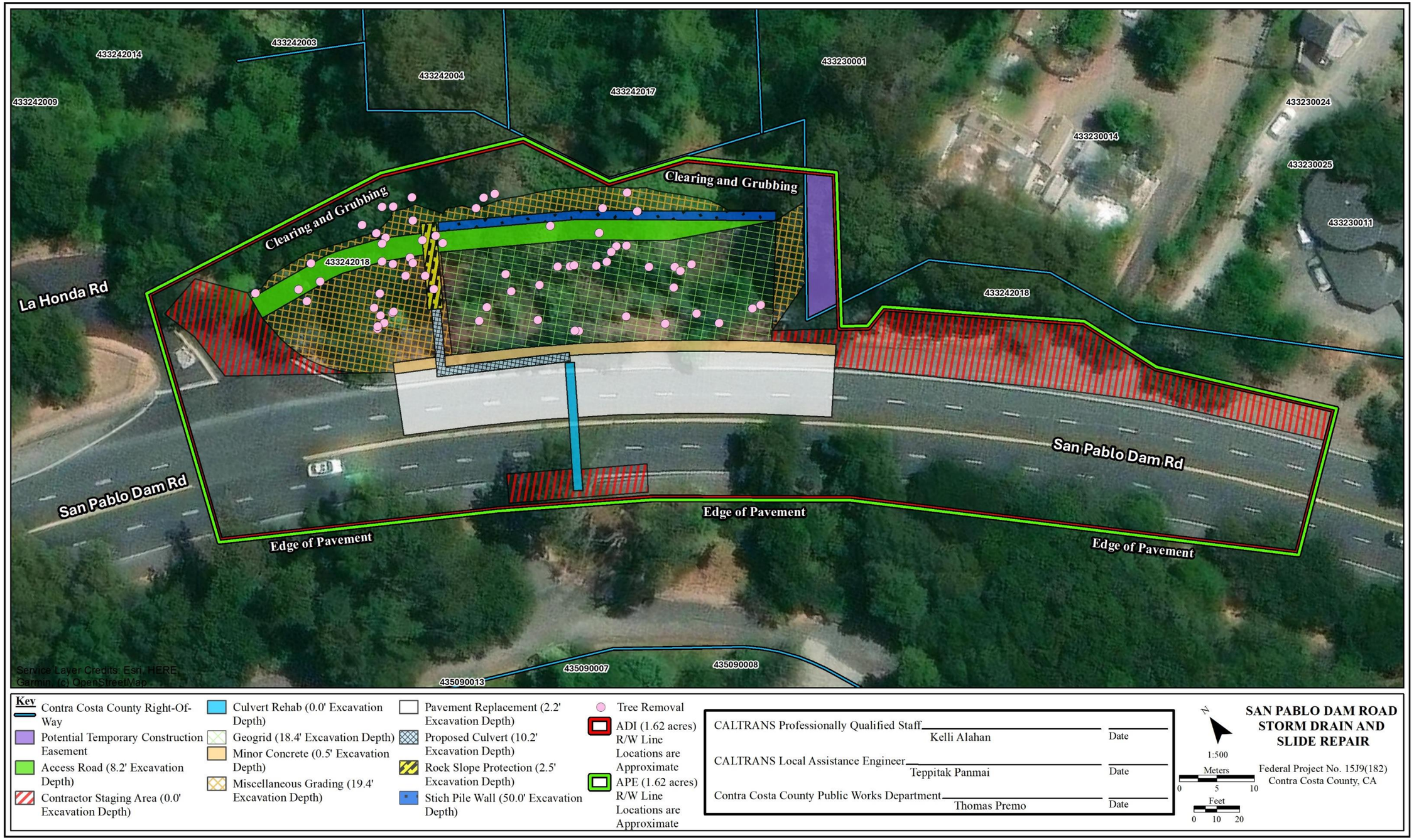


Figure 3. Project APE Map

ATTACHMENT B. ASR

ARCHAEOLOGICAL SURVEY REPORT FOR THE SAN PABLO DAM ROAD STORM DRAIN AND SLIDE REPAIR PROJECT, CONTRA COSTA COUNTY, CALIFORNIA

Federal Project 15J9 (182); County Project 0672-6U6272

Prepared for:
California Department of Transportation – District 4
P.O. Box 23660, Oakland, CA 94620-0660
and
Contra Costa County
255 Glacier Drive, Martinez, CA 94553

Prepared by: _____ _____
Molly Valasik, M.A., RPA Date
Principal Investigator – Prehistoric Archaeology
Cogstone Resource Management
1518 West Taft Ave., Orange, CA 92865

Authors: Alison Bryson-Deveraux, M.A. and Molly Valasik, M.A., RPA

Reviewed by: _____ _____
Kelli Alahan Date
Senior Environmental Scientist - Archaeologist
Caltrans – District 4 – Local Assistance

Approved by: _____ _____
Tom Holstein Date
Senior Environmental Planner
Environmental Support
Caltrans – District 4 – Local Assistance

USGS 7.5-Minute Quadrangle: Richmond 1980

1.62 Acres

Cultural Resources: None.

July 2025

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SUMMARY OF FINDINGS

The County of Contra Costa (County), in cooperation with the California Department of Transportation (Caltrans), proposes to repair the embankment and culvert failure on the north side of San Pablo Dam Road. The San Pablo Dam Road Storm Drain and Slide Repair Project (Project; Federal Project 15J9 (182); County Project 0672-6U6272)) is located along San Pablo Dam Road approximately 200 feet southeast of La Honda Road in the unincorporated community of El Sobrante, California. The proposed Project is needed to repair the embankment and damaged section of roadway, including replacing the existing 18-inch culvert that was sheared off from an embankment slide that impacted a portion of the westbound lane during the winter storms of February and March of 2023.

ICF archaeologist Shelby Caulder completed an intensive pedestrian survey of the entire Area of Potential Effects (APE) on May 22, 2025. The APE consists of a 1.62-acre partially hardscaped and vegetated area near residential housing. No archaeological resources were identified during the survey.

It is Caltrans' policy to avoid cultural resources whenever possible. Further investigations may be needed if the site cannot be avoided by the Project. If buried cultural materials are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find. Additional survey will be required if the Project changes to include areas not previously surveyed.

INTRODUCTION

The County of Contra Costa (County), in cooperation with the California Department of Transportation (Caltrans), proposes to repair the embankment and culvert failure on the north side of San Pablo Dam Road (Figure 1). The San Pablo Dam Road Storm Drain and Slide Repair Project (Project; Federal Project 15J9 (182); County Project 0672-6U6272)) is located along San Pablo Dam Road approximately 200 feet southeast of La Honda Road in the unincorporated community of El Sobrante, California. The Project is needed to repair the embankment and damaged section of roadway, including replacing the existing 18-inch culvert that was sheared off from an embankment slide that impacted a portion of the westbound lane during the winter storms of February and March of 2023.

ICF archaeologist Shelby Caulder completed an intensive pedestrian survey of the entire Area of Potential Effects (APE) on May 22, 2025. The APE consists of a 1.62-acre partially hardscaped and vegetated area near residential housing. Ms. Shelby Caulder holds an B.A. in Anthropology from the University of California, Davis. She has three years of experience in California archaeology. The APE map is in Attachment A, Figure 3 of the Historic Property Survey Report (HPSR). The Study Vicinity Map, Study Location Map, and Survey Coverage Map are Figures 1, 2, and 6 in this report.

PROJECT LOCATION AND DESCRIPTION

The Project is located generally along the north side of San Pablo Dam Road, approximately 200 feet southeast of the intersection with La Honda Road, and approximately 2.25 miles east of I-80 and two miles northwest of San Pablo Dam in the unincorporated community of El Sobrante, California. The Project is located within Section 3 of Township 1 North, and Range 4 West on the United States Geological Survey (USGS), Richmond, California (CA) 7.5-minute quadrangle (Figure 2).

The winter storms of February and March of 2023 caused an embankment slide along San Pablo Dam Road, which included a portion of the westbound lane. The northernmost westbound lane is currently closed due to the storm damage. The Project is needed to reestablish the westbound lane and prevent damage to the remaining open traffic lanes. San Pablo Dam Road is a route for commuters heading from the El Sobrante area to I-80 and provides an important connection during the daily commute.

The Project will stabilize the embankment, repair the damaged section of the roadway, and replace a culvert failure on the north side of San Pablo Dam Road. In order to support and rebuild the damaged portion of the roadway, the Project will install an approximately 150-foot-long stitch pile wall parallel to the north side of the roadway. The wall will consist of cast-in-drilled-hole concrete piles spaced up to 6-feet a150-foot-long together with a cast-in-place

reinforced concrete cap beam. The wall will be located approximately 50 feet north of San Pablo Dam Road, towards the middle of the embankment, on an existing bank bench between the roadway and San Pablo Creek. Excavation of the damaged embankment between the wall and roadway will be necessary and is anticipated to a maximum depth of 24 feet. The portion of the embankment between the wall and San Pablo Dam Road will be regraded and reinforced with geogrid to provide a 2:1 maximum slope. The geogrid reinforcement will provide necessary long-term stability to the slope. The geogrid is a type of geosynthetic material used to provide stabilization and reinforcement to soils. The geogrid will be buried underneath the backfill materials. The piles for the stitch pile wall will be set via drilling. No pile driving will occur during this project. The anticipated excavation depth is 50 feet for the piles. Minimal grading in front of the wall is anticipated to be required, minimizing impacts of the project closer to San Pablo Creek.

The embankment downhill of the proposed stitch pile wall will not be addressed. The existing 18-inch culvert outfall located within the slide area will be relocated outside of the slide area, just to the west of the proposed wall. The intact portion of the culvert under the road will be lined with a cured-in-place pipe liner. The downstream portion of the 18-inch culvert severed by the slide will be removed. Two manholes and approximately 75 feet of reinforced concrete pipe (RCP) will be installed to deliver stormwater to the new outfall location. A concrete flared end section and RSP will be installed at the outfall. RSP will terminate at the existing bench in the upper portion of the embankment above the OHWM. Additional work items include temporary traffic control, erosion control, repairing approximately 200 feet of the roadway, re-striping, and replacing approximately 170 feet of guardrail. Drainage patterns will be restored to previous conditions. Approximately 80 trees are anticipated to be removed as part of this Project. A minimum of one lane in each direction will be open during construction and emergency vehicles will have access at all times.

AREA OF POTENTIAL EFFECTS

The APE is located within Assessor's Parcel Number (APN) 433-242-018 and includes all potential direct and indirect effects to cultural resources that may result from the proposed Project (see Attachment A Figure 3 of the HPSR). The APE was established as 1.62 acres and includes the installation of a soldier pile wall, culvert rehabilitation, ditch improvements, removal of vegetation and trees, and road improvements. The width of the APE ranges from a minimum of 75.79 feet (23.1 meters) to a maximum of 162.07 feet (49.4 meters). The overall length of the APE is 524.61 feet (159.9 meters).

The vertical APE is the maximum depth of any Project-related ground disturbing work. The maximum depth of ground disturbance is anticipated not to exceed 50 feet (15.24 meters) for the pile wall installation.

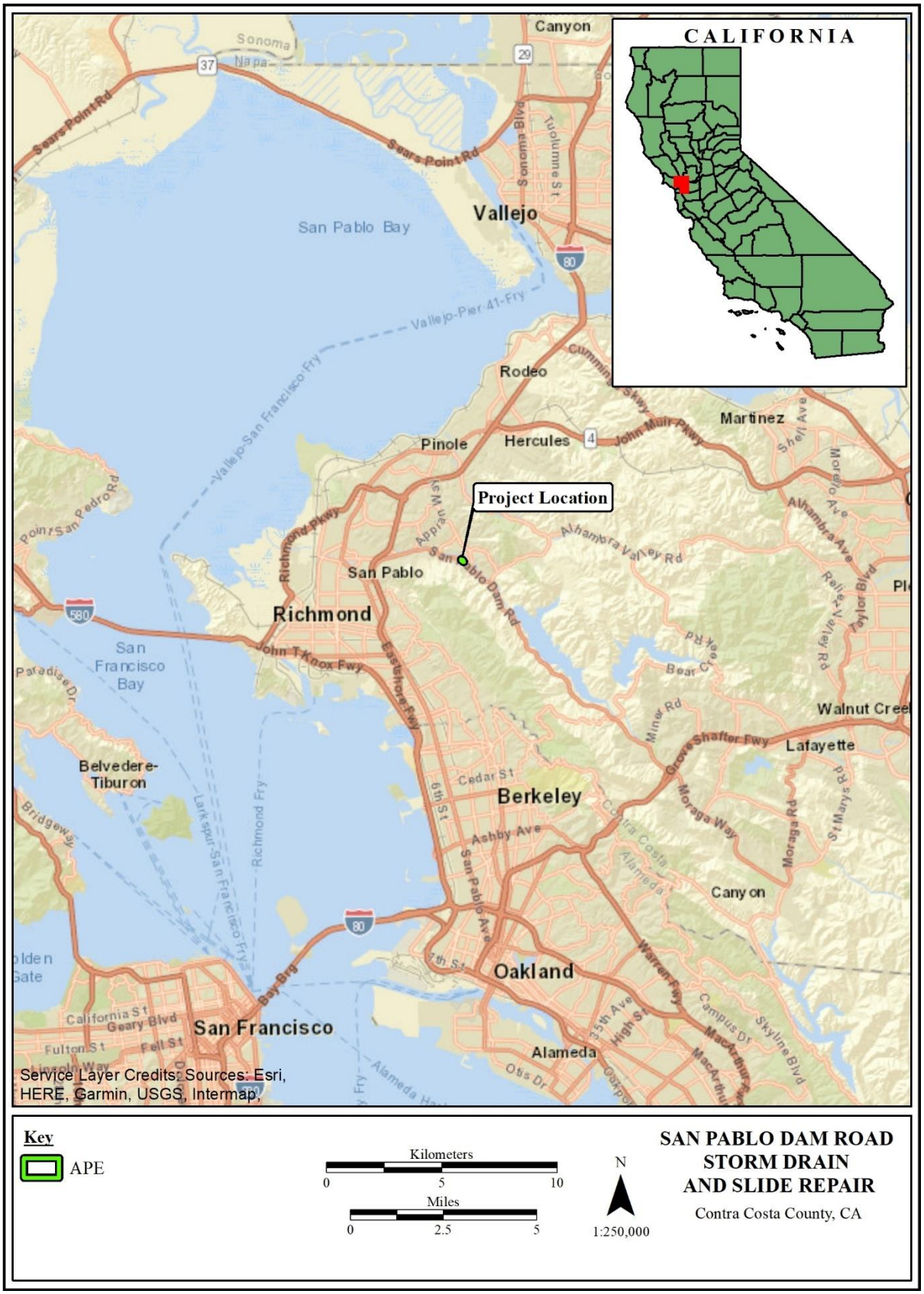


Figure 1. Project vicinity map

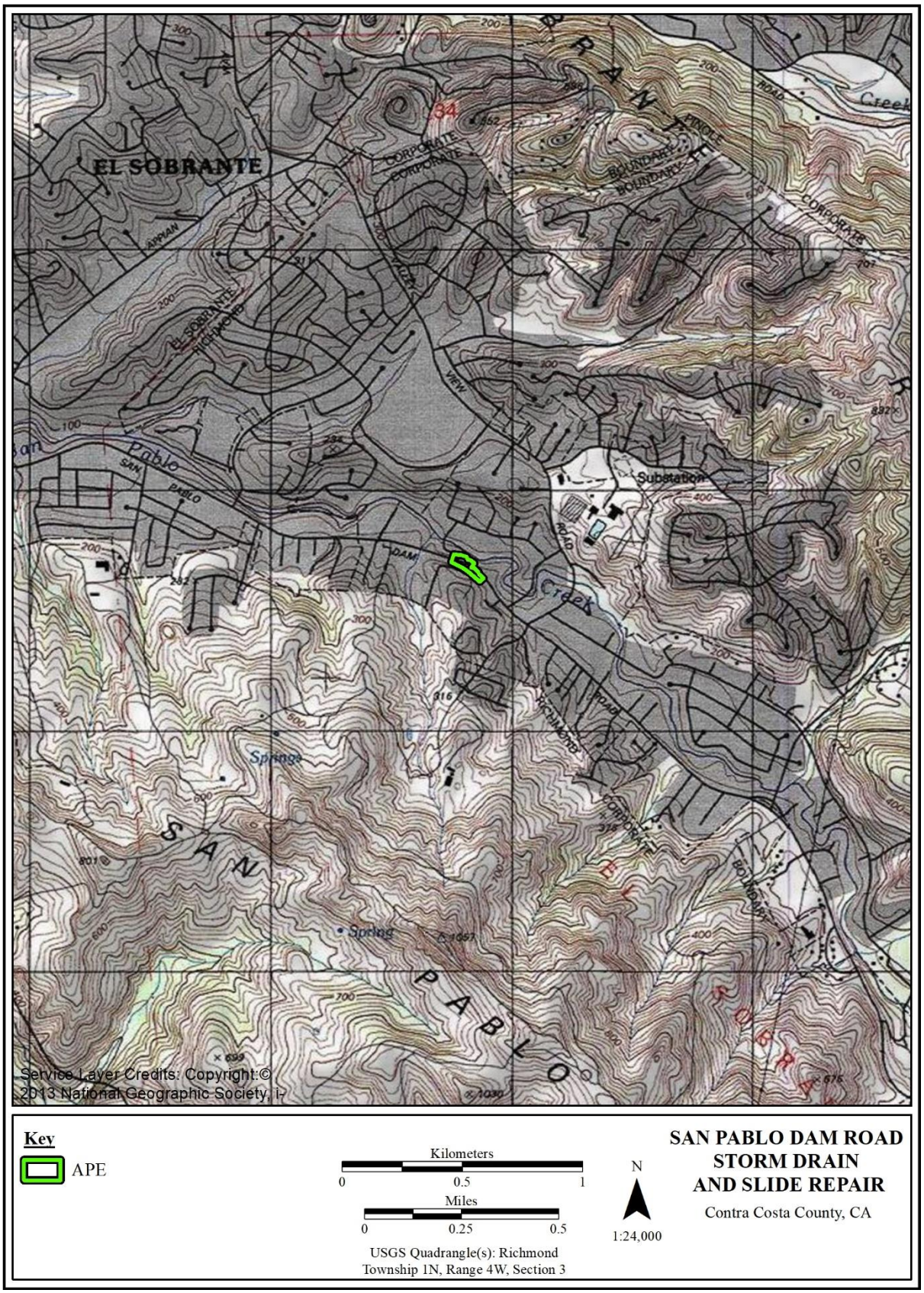


Figure 2. Project location map

SOURCES CONSULTED

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

Cogstone archaeologist Logan Freeberg requested a search of the California Historical Resources Information System (CHRIS) from the Northwest Information Center (NWIC) located at Sonoma State University, which included the entire APE as well as a one-mile radius. The NWIC responded on July 29, 2024 (Records Search File No: 24-0016) that results of the record search indicate that 22 previous studies have been completed within the APE while an additional 58 studies have been completed previously within a one-mile radius (Table A1; Appendix A).

No cultural resources have been previously recorded within the APE. Outside of the APE a total of seven cultural resources have been previously documented within the one-mile search radius from the APE (Table 1). These consist of three cultural resources within a quarter mile of the APE and four cultural resources within half to one-mile from the APE. Of the seven cultural resources, five are prehistoric archaeological sites and two are historic built environment resources.

Table 1. Previously Recorded Cultural Resources within a One-Mile Radius of the APE

Primary No. (P-07)	Trinomial No. (CA-CCO)	Resource Type	Resource Description	Year Recorded	Distance From APE (miles)	NRHP/CRHR Status
000033	14	Prehistoric Archaeological Site	Shell midden and 13 burials with artifacts dating to the Middle Horizon.	1955	0.5 – 1	Unevaluated
000073	131	Prehistoric Archaeological Site	Habitation debris with a hammerstone and red ochre.	1940, 1986	0.5 – 1	Unevaluated
000093	151	Prehistoric Archaeological Site	Habitation debris with one burial and several artifacts.	1949	0.5 – 1	Unevaluated
000379	614	Prehistoric Archaeological Site	Shell artifacts with a poorly developed midden soil.	1990	0.5 – 1	Unevaluated
000473	387	Prehistoric Archaeological Site	Shell midden soil with a sparse lithic scatter.	1978	0 – 0.25	Unevaluated
002909		Historic Built Environment	Historic residence and barn with associated household artifacts.	2007	0 – 0.25	Unevaluated

Primary No. (P-07)	Trinomial No. (CA-CCO)	Resource Type	Resource Description	Year Recorded	Distance From APE (miles)	NRHP/CRHR Status
005033		Historic Built Environment	Sobrante Water Treatment Plant completed in 1964.	2021	0 – 0.25	6Z

ARCHAEOLOGICAL RESOURCES WITHIN A ONE-MILE RADIUS OF THE APE

P-07-000033/CA-CCO-14

This resource is located south of the APE along the west bank of a tributary of San Pablo Creek along the eastern edge of Sherwood Forest Housing Development. It is described as a small occupation site containing thirteen burials with numerous associated grave goods. Additional noted artifacts include Olivella beads, obsidian blades, groundstone, shell ornaments, and a shell midden consisting mainly of mussel and macoma.

P-07-000073/CA-CCO-131

This resource is located north of the APE on the northern bank of San Pablo Creek, south of Sheldon Elementary School. It is described as a black midden containing ochre and a hammerstone.

P-07-000093/CA-CCO-151

This resource is located north of the APE on the northern bank of San Pablo Creek, near Santa Rita Road. It is described as an occupation site containing at least one burial with associated grave goods, gray midden consisting mainly of mussel, charmstones, ornaments with ochre, three pestles, a mortar,

P-07-000379/CA-CCO-379

This resource is located north of the APE, directly north of San Pablo Creek. It is described as sparse shell scatter containing mussel and macoma, with one burnt bone.

P-07-000473/CA-CCO-387

This resource is located less than a quarter mile north of the APE, along the terrace of the north side of San Pablo Creek near La Honda Road within the narrow, protected valley of the creek. The site consists of a large, well-developed midden containing mostly finely crushed shell fragments. Other artifacts include seven chert flakes, a rock with a griding surface, and a possible net sinker fragment.

OTHER SOURCES

In addition to the NWIC records search, a variety of sources were reviewed in July 2024 to obtain information regarding the cultural context of the Project vicinity (Table 2). Sources included the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), Built Environment Resource Directory (BERD), California Historical Landmarks (CHL), and California Points of Historical Interest (CPHI). Specific information

about the APE, obtained from historic-era maps and aerial photographs, is presented in the APE History section.

Table 2. Additional Sources Consulted

Source	Results
National Register of Historic Places (NRHP)	Negative.
Historic USGS Topographic Maps	See Background History Section .
Historic United States Department of Agriculture (USDA) Aerial Photographs	See Background History Section.
California Register of Historical Resources (CRHR)	Negative.
Built Environment Resource Directory (BERD)	Negative.
California Historical Landmarks (CHL)	Negative.
California Points of Historical Interest (CPHI)	Negative; California Nevada Railroad approximately 800 feet to the southwest.
Caltrans Historic Bridge Inventory (2016)	Negative.
Bureau of Land Management (BLM) General Land Office Records	Positive; see Table 3 below.
Local Registers (Historical Societies/Archives)	Negative.

Table 3. Land Patents

Name(s)	Year	Accession Number	Type	T; R; Section
Castro, Juan Jose and Castro, Victor	1851	CACAAA 003699	Grant – Spanish/Mexican	T: 1N; R: 4W, Unsectioned

The community of El Sobrante got its namesake from Rancho El Sobrante, roughly translating to "surplus land," which was located between two existing ranches owned by brothers Juan Jose and Victor Castro. The Castro brothers obtained the land via the land grant from the Mexican government in 1841. By the late 19th century, the brothers had either lost or sold most of their land, but Victor Castro's son, Patricio, continued to ranch for most of his life along 100 acres of land following Castro Ranch Road in El Sobrante (Swackhamer 2016).

HISTORICAL CONSULTATION

A total of three requests for consultation was sent to the El Sobrante Historical Society via United States Postal Service (USPS) on August 28, September 11, and December 9, 2024. Cogstone made a fourth attempt to contact the El Sobrante Historical Society on June 3, 2025 via email. On June 5, 2025, a response was received via email from Donal Bastin, President of the El Sobrante Historical Society. In his response Mr. Bastin stated:

> "After some consideration, it is the general opinion of our organization that the road project be completed as soon as possible. It is our opinion that it is unlikely that any artifacts of cultural significance exist within the proposed work area.
>
> That said, as the work site is not far from a local recreational area (La Honda Bowl) that was popular from the late 1800s until 1955, and, while we have no evidence of this, may

have been, at some time, a temporary living site for indigenous peoples. It is possible (again, unlikely) that some artifacts (pieces of train track, cooking utensils, stone bowls, etc.) may be turned up. All we ask is that, if anything of interest is found, that we be informed and given a chance to inspect [them.]"

A request for information was sent to the Contra Costa Historical Society via email on June 3, 2025. No response has been received to date. A copy of the Historical Society consultation letters are in Appendix B.

NATIVE AMERICAN CONSULTATION

Cogstone submitted a Sacred Lands File (SLF) search request to the Native American Heritage Commission (NAHC) on July 7, 2024. The NAHC responded on July 29, 2024, that the result of the SLF search yielded positive results within the APE. The NAHC recommended that 21 representatives from local Native American tribal organizations be contacted for further information regarding the Project vicinity. A copy of the SLF search request can be found in Appendix C.

Consultation letters were sent via electronic mail to the 21 contacts by Caltrans on May 6, 2025 requesting information related to cultural resources or heritage sites within the APE. Additional attempts at contact were made by email or phone on May 30, 2025. To date, four responses have been received and are summarized below. Caltrans will conduct Section 106 consultation with the Federally recognized Guidiville Rancheria of California and provide consultation documentation at a later date. The contact log grouped by Native American tribal affiliation is provided in Appendix C.

- **Amah Mutsun Tribal Band of Mission Indians** – Irene Zwierlein, Chairperson
  On May 6, 2025, Lorelei Alli responded to the consultation email with recommendation documents. Contact information was given by Caltrans in order to set up a meeting. On May 7, 2025 an email was sent to follow up on the response with an offer to schedule a meeting between the Tribe and Caltrans. On May 30, 2025, a follow up email was sent by Caltrans. A same day response was issued by the tribe and recommendation documents were again provided. No additional response has been received at this time.

- **Confederated Villages of Lisjan Nation** – Corrina Gould, Chairperson
  On May 9, 2025, a response was received from Lucy Gill, requesting consultation for the Project, as well as the NAHC SLF request results letter, CHRIS records request results, and any cultural resource reports that had been prepared. On May 15, 2025, Caltrans confirmed receipt of the request. On June 17, 2025, Caltrans responded to the Tribe by email with a link to view the CHRIS records request results and offered to schedule a

consultation meeting once the documents had been reviewed. No additional response has been received at this time.

- **Muwekma Ohlone Tribe of the San Francisco Bay Area** – Charlene Nijmeh, Chairperson
  On May 14, 2025, a response was received from Richard Massiatt, requesting consultation for the Project. On May 19, 2025, an email was forwarded to the Tribe explaining that an incorrect table of known sites was sent with the consultation letter. The correct NWIC information on sites was emailed along with an offer to set up a meeting and provide cultural documents for review once available. On May 30, 2025, a follow up email was sent by Caltrans. No additional response has been received at this time.

- **The Ohlone Indian Tribe** – Andrew Galvan, Chairperson
  On May 6, 2025, a response was received from Andrew Galvan, requesting a copy of the NAHC results letter and contact list. On May 7, 2025, the requested documents were shared by Caltrans. On June 16, 2025, a follow up email was sent by the Caltrans.. No additional response has been received at this time.

BACKGROUND

ENVIRONMENTAL SETTING

CLIMATE, FLORA/ FAUNA, AND CURRENT LAND USE

The climate near the APE is characterized by long, warm and arid summers and relatively clear, short winters. Over the course of the year, the temperature within the APE generally ranges from 41°F to 78°F and is rarely below 33°F or above 88°F. Average annual rainfall is approximately 4 inches, with the rainy season generally from November through April (WeatherSpark 2025).

Native flora within or near the APE includes species such as Coast melic grass (*melica imperfecta),* Purple needle grass (*Stipa pulchra*), California fescue (*Festuca californica*), Woodland strawberry (*Fragaria vesca*), White alder (*Alnus rhombifolia*), Big leaf maple (*Acer macrophyllum*), California buckeye (*Aesculus californica*), California fuchsia (*Epilobium canum*), Silver bush lupine (*Lupinus albifrons*), California blackberry (*Rubus ursinus*), and Wild rose (*Rosa californica*; TWP 2025).

Native fauna within or near the APE includes species such as Western fence lizard (*Sceloporus occidentalis*), California newt (*Taricha torosa*), Black phoebe (*Sayornis nigricans*) Pipevine swallowtail (*Battus philenor*), Great horned owl (*Bubo virginianus*), White-tailed kite (*Elanus*

leucurus), California red legged frog (*Rana draytonii*), Dusky-footed woodrat (*Neotoma fuscipes*), Black-tailed jackrabbit (*Lepus californicus*), and Mule deer (*Odocoileus hemionus*; iNaturalist 2025).

Current land use in the Project vicinity is mainly urban in character with residential housing and commercial areas. A large portion of the APE has been developed and hardscaped.

GEOARCHAEOLOGICAL SENSITIVITY ANALYSIS

GEOLOGICAL SETTING

The local geology was determined from maps accessed through the USGS National geological map database (accessed June 2025). The Project area is in the Coast Ranges Geomorphic Province. The mountains and valleys of the Coast Ranges trend southeast from the Oregon border 1,000 miles to Santa Barbara County in the south. They are roughly parallel the San Andreas fault in the southern portion of the Province. The northern and southern Coast Ranges are separated by a depression in the San Francisco Bay area where the San Andreas Fault Zone goes into the Pacific Ocean.

The Coast Ranges are predominantly composed of Mesozoic and Cenozoic strata that dip eastward, below the alluvial sediments of the Great Valley (Wagner 2002). These Mesozoic and Cenozoic sediments were deposited in marine environments. These marine sedimentary rocks began to be uplifted approximately 5 million years ago, during the formation of the mountains of the Coast Ranges province (Harden 2004). Simultaneous with the uplift of the Coast Ranges, sediments shed eastward from the rising mountains were deposited into a marine embayment that is now San Francisco Bay. As more sediments were deposited, the floor of the embayment became subaerially exposed and fluvial and terrestrial sediments were deposited. Finally, with the onset of the ice age, global sea levels fell as much of the Earth's water was trapped in continental glaciers. By 20,000 years ago, global sea level was 120 meters lower than at present and the shoreline west of San Francisco was located approximately at the Farallon Islands (Harden 2004).

STRATIGRAPHY

The APE is mapped as Miocene to Pliocene unnamed conglomerate, sandstone, siltstone of the Great Valley Complex in Assemblage 3 (Graymer 2000; Figure 3). These sediments contain Contains abundant clasts of Claremont chert. Although Pleistocene alluvial fan and fluvial deposits are present near to the APE, these deposits will not be impacted during construction.

The APE is adjacent to San Pablo Creek but it is about 20 or 30 feet above the creek bottom. While flash flooding would be possible, it would be rare.

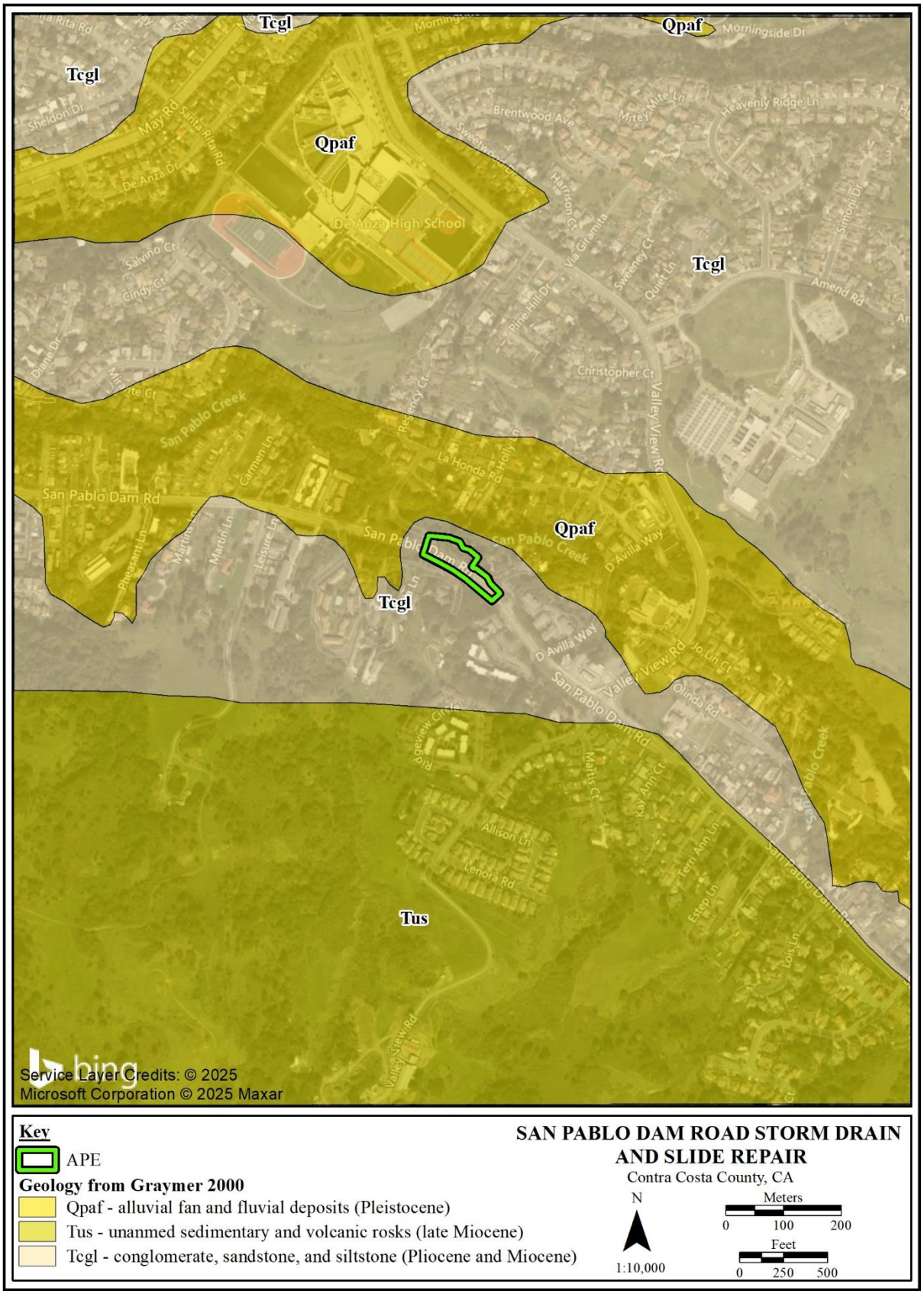


Figure 3. Geology of the APE

GEOARCHAEOLOGICAL METHODS

Soils were determined using the University of California Davis National Resources Conservation Service California Soils Resource Lab (UCD SoilWeb, accessed June 2025) soils maps along with the United States Department of Agriculture National Resources Conservation Service (USDA-NRCS, accessed June 2025) soils descriptions. Soils of the APE were determined using the UCD maps. The APE is mapped entirely as Conejo clay loam, 0 to 2 percent slopes (Table 4).

Subsurface site preservation depends on many factors. Soils and locations were analyzed for grain sizes, slope, and environmental indicators that contribute to the preservation of sites. Primarily sites accumulate where people have the highest probability of living; on lower slope gradients near water sources but in areas that are unlikely to experience regular flooding. Additionally, lower slope gradients decreases erosion and increases deposition assisting in site burial. Both pebbly and coarser grain sizes as well as clay rich soils preserve artifacts poorly. The age of a soil also determines the likelihood of buried archaeological sites and must be assessed as the older soils are less likely to contain sites unless items were intentionally buried in them. Soils likely too old for site preservation have duripans (hardpans), and argillic (clay rich) horizons; while younger soils with a higher potential for preservation are indicated by the lack of a B horizon or the presence of a cambic horizon. Both Holocene alluvial and aeolian units have a higher potential for artifacts as the soils were co-deposited with the local cultural groups.

CLASSIFICATIONS FOR BURIED SITE POTENTIAL ARE AS FOLLOW

Very low: Soils are underlain by deposits that predate human occupation of the region. Soils that include B horizons, especially if they are argillic or silicic (duripan) horizons are also classified as very low. Additionally exposed bedrock, borrow pits, heavily eroded or gullied land, or water bodies have a very low potential. Areas of high erosion, water, borrow pits, rock outcrops, or sediments mapped as Pleistocene or older are classified as having a very low potential.

Low: Soils are underlain by deposits that predate human occupation of the region, high-energy deposits unlikely to contain cultural materials in a primary context, are residual soils (soils weathered in place above bedrock), or include B horizons. Low-potential areas include Inceptisols. These are formed in residual soils weathered directly from bedrock and, thus, have a low potential for buried sites. Areas where soils are weathered from bedrock, dissected alluvial fans, and locations where soils are forming on mountains are classified as having a low potential.

Medium: Soils are underlain by deposits that are most likely terminal Pleistocene or Holocene in age, possibly have intact buried surfaces, or have sediments that are likely to have been deposited in a low-energy environment. Alluvial fans, fan aprons, valley fills, dissected remnants of alluvial fans, floodplains, and drainages are classified as having a medium potential.

High: Soils are underlain by deposits that are most likely terminal Pleistocene or Holocene in age, or sediments represent low-energy deposits, or have a high potential to contain buried intact geomorphic surfaces that could have been used by humans in the past. Alluvial stream terraces and floodplains, terrace escarpments, alluvial fans (fan skirts, fan aprons, and inset fans), and areas with aeolian deposits are classified as having a high potential.

Table 4. Project Soil Descriptions

Map symbol	Primary soil name and slopes; Other soils	Soil Taxonomy/ Basic Description	Diagnostic features	Geology	Buried site potential
CeA	Conejo clay loam, slope 0% to 2%. Conejo is 85% of total volume; unnamed 5%, Botella 5%, aquic Clear Lake 3%, and Garretson 2% soils are also present.	Conejo Soil Series: Order-Mollisol; Suborder-Xeroll; Fine-loamy, mixed, superactive, thermic Pachic Haploxeroll. Conejo soils can have Ap, A, Bw1, and Bw2 horizons.	In general: very deep, well drained clay loam that formed from basic igneous or sedimentary rocks on alluvial fans and stream terraces. Slope 0% to 9%. Acidity: slightly to moderately alkaline. Ap horizon (0 to 13 cm): Dark grey, very dark gray clay loam with medium and coarse subangular blocky and strong medium granular structure. Clay: 27-35%. Rock fragments: 0-2%. Organics: 1.5-6%. Slightly acidic to slightly alkaline. A1, A2 horizons (13 to 76 cm): Very dark grayish brown, very dark brown clay loam with moderate medium subangular blocky structure. 1mm fine iron-manganese nodules common. Clay: 27-35%. Rock fragments: 0-2%. Organics: 1.5-6%. Slightly acidic to slightly alkaline. Bw1, Bw2 horizons (76 to 178 cm): Dark grayish brown, very dark grayish brown, very dark brown, brown, dark yellowish brown clay loam with subangular blocky structure. 1mm fine iron-manganese nodules and medium oxidized iron masses inceasing with depth. Clay: 27-35%. Rock fragments: 0-2%. Slightly acidic to slightly alkaline.	Miocene to Pliocene unnamed conglomerate, sandstone, siltstone of the Great Valley Complex in Assemblage 3	very low

Soil information from UCD SoilWeb and USDA-NRCS (accessed June 2025). Geology from Graymer (2000).

GEOARCHAEOLOGICAL RESULTS

The APE is mapped as Miocene to Pliocene unnamed conglomerate, sandstone, siltstone of the Great Valley Complex in Assemblage 3 deposits adjacent to San Pablo Creek. The APE is 20 to 30 feet above the creek.

Native, undisturbed Conejo clay loam is assigned a very low sensitivity for buried sites due to the age of the underlying formation and the presence of B horizons. While the APE is above the creek bottom, it is still adjacent and may be occasionally flooded.

ETHNOGRAPHY

The Project is within an area historically occupied by the tribelets of the Costanoan linguistic group, who are also known today as the Ohlone (Figure 4). Ohlone territory extended between the Carquinez Strait and San Pablo Bay on the north, southward along the coast beyond Monterey Bay to Carmel Valley, and inland to the coast range. Neighboring groups included the Coast Miwok north across the Carquinez Strait, the Miwok and Northern Valley Yokuts to the east, and the Esselen to the south. Spanish mission records, diaries, and journals provide most of the information about the Ohlone, as little ethnographical research had been conducted in the twentieth century (Kroeber 1925; Levy 1978). The most thorough study, by Milliken (1995), used mission records, and Margolin (1978) reconstructed Native American life in the Bay Area.

Linguistically, the tribelets belong to the Utian, or Miwok-Costanoan language family, part of a hypothesized larger Penutian linguistic stock (Mithun 2001). Eight branches or dialects of Costanoan language, each associated with a geographic location, have been discerned by linguists, although Milliken (1995) suggests the differences reflect the "amalgamation of later Costanoan speakers at the various missions."

Through detailed examination of mission records, marriage patterns, and dialect variation seen in personal names, Milliken (1995) delineated 43 separate political entities (tribelets) in the San Francisco Bay, Santa Cruz, and inland area, with another six or so tribelets in the south Monterey Bay and Carmel Valley region. Descendants of Costanoan speakers prefer to be called by the name of the tribelet from which they are descended, such as Mutsun or Rumsen. When their heritage is mixed or the specifics have been lost over generations, preference is for use of a native term, Ohlone, rather than the European-imposed term Costanoan ("coastal dwellers") (Margolin 1978).

Each of the numerous Ohlone tribelets occupied one or more villages as well as several seasonal camps (Levy 1978). Tribelets were also political units that were structured by similarities in language and ethnicity, each holding claims to a designated portion of territory. Topographic features, such as rivers, watersheds, and ridgelines, defined tribelet territories and the boundaries

were strictly respected. Inland villages were typically situated along a river or stream while coastal villages were situated on high ground away from the shoreline (Levy 1978). Dwellings were domed structures thatched with tule or grass over a pole framework while coastal groups constructed conical houses from redwood. Villages also contained assembly halls, dance plazas, and sweathouses.

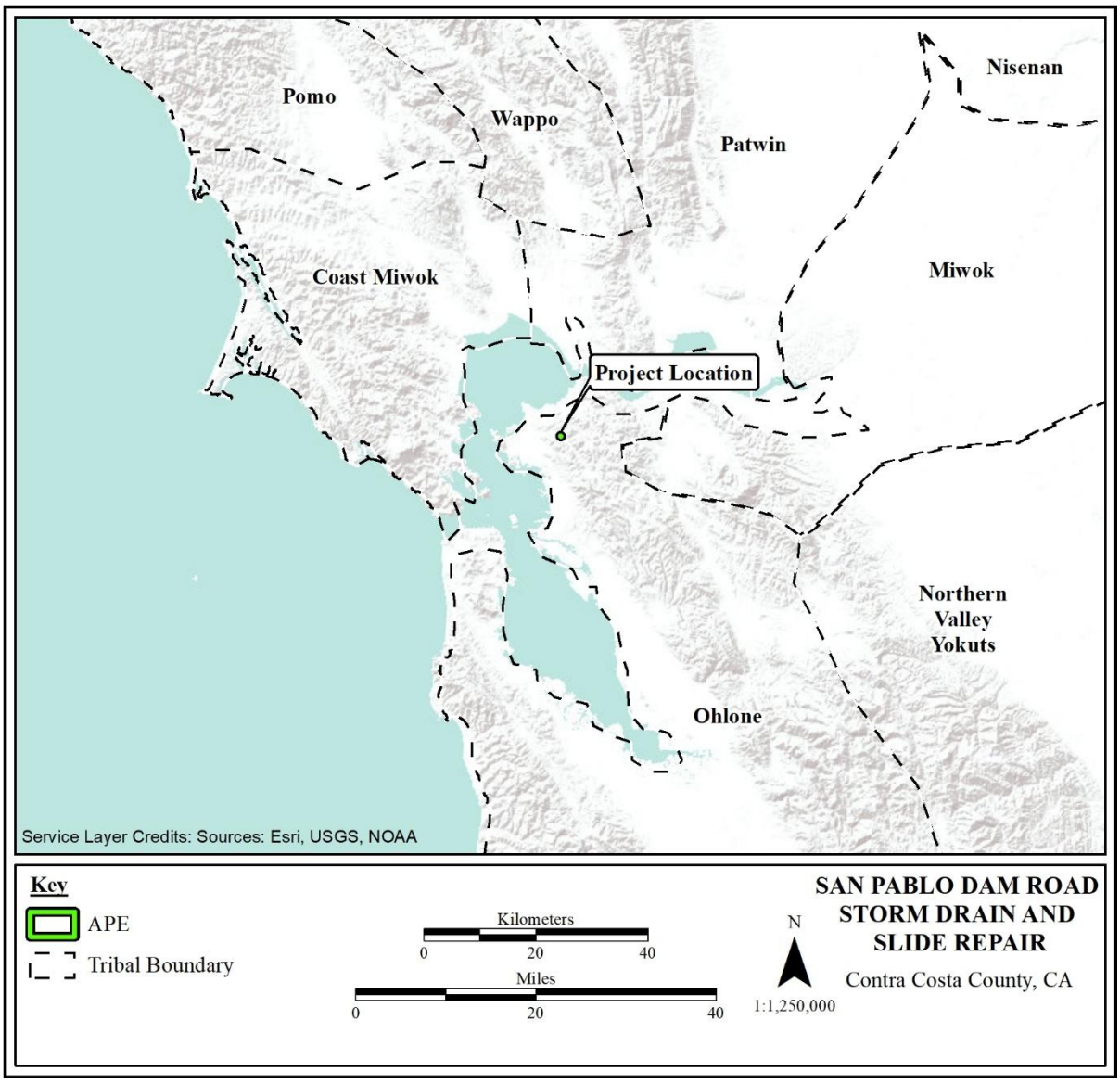


Figure 4. Tribal boundary map

The primary food staple was the acorn, supplemented by a great variety of animal and plant resources. They consumed a variety of nuts, seeds, berries, wild onions, tule roots, and greens. Large and small game included deer, elk, antelope, bear, mountain lion, raccoon, ground squirrels, rabbit, and jackrabbit, plus seals and stranded whales. Migrating waterfowl, pigeons,

quails, and hawks were also part of their diet, along with a variety of anadromous fish (steelhead, salmon, and sturgeon), sharks, sardines, lampreys, mussels, and abalone. Throughout the Bay Area, the large number of shell middens attests to their reliance on marine resources. The Ohlone also practiced annual burning to ensure an abundance of seed-bearing annuals, to increase foraging areas for large game, and to facilitate the gathering of fall-ripened acorns.

A wide array of tools, implements, and enclosures were used by the Ohlone for hunting, gathering and processing natural resources (Levy 1978). Bows and arrows, traps and snares, deer-head disguises, bolas, nets and net sinkers, and enclosures/blinds were employed for hunting land mammals and birds. Tule watercraft was used for transportation and for hunting fish and waterfowl on enclosed bays and marshes. Fire-hardened digging sticks, beaters, and long poles were used for collecting plant resources. Once collected, seeds, roots, and nuts were placed in burden baskets and transported for processing or storage.

The tools used to process food resources included portable stone mortars and pestles, bedrock mortars, hopper mortars, anvils, woven strainers and winnowers, leaching and boiling baskets, woven drying trays, and knives.

Various foods were baked in earthen ovens. There were also shell spoons, basket dippers and mush bowls for serving food, woven water jugs, and woven containers for storing food. Most basketry was twined rather than coiled, woven from willow, rush and tule, and ornamented with *Olivella* shell beads, abalone pendants, quail plumes, and woodpecker scalps.

The Ohlone traded actively with neighboring groups (Davis 1961). Mussels, abalone shells, dried abalone, and salt were traded to the Yokuts, and *Olivella* shells to the Miwok. From the groups to the east, they obtained pine nuts, feather blankets, basketry materials, paints, and obsidian. Historic records also indicate Ohlone triblets engaged in warfare with the Esselen, Salinan, and Northern Valley Yokuts over territorial disputes (Levy 1978).
Traditional Ohlone lifeways were altered drastically beginning in the late 1700s and early 1800s with the establishment of presidios at Monterey and San Francisco by the Spanish military and of seven Franciscan missions within Ohlone territory (Levy 1978). Following the movement by many Ohlone to the missions, large-scale epidemics decimated the mission population and those who had remained in their villages (Milliken 1995). It is estimated that the combined Ohlone population fell from a pre-contact total of 10,000 down to 2,000 by the end of the mission period in 1834 (Levy 1978). During the mission period, the dwindling Ohlone population also intermarried with other interior tribes at the missions, mixing their cultural identities.

PREHISTORIC SETTING

EARLY PERIOD (11,000–2500 B.P.)

Archaeological evidence of human occupation dating earlier than 6,000 years ago is rare within the San Francisco Bay Area. It is likely that sea-level rise and Holocene alluvial deposits, which can reach 33 feet (10 meters) in some locations, buried many prehistoric sites (Meyer 2004; Moratto 1984; Ragir 1972). One of the oldest cultural deposits in the Bay Area is located at the Metcalf Road/US 101 overcrossing at Tulare Hill. The Metcalf site (CA-SCL-178) was discovered approximately 10.5 feet (3.3 meters) below surface at the mouth of Metcalf Creek. Carbon-14 analysis revealed dates as early as ± 11,050 to ± 9475 BP (Meyer and Rosenthal 2007). At CA-SCL-65 in Santa Clara County, two flexed burials were found beneath cairns of millingstones which dated between 7,500 and 7,000 years ago (Fitzgerald 1993).

MIDDLE PERIOD (2500–1000 B.P.)

The Berkeley Pattern is found throughout the Bay region during the Late Holocene. The earliest assemblages attributable to this pattern are coeval with the Windmiller Pattern, including the lower levels of the West Berkeley site (CA-ALA-307) in Alameda County and the University Village site (CA-SMA-77) in San Mateo County. Artifacts typical of the Berkeley Pattern include spire-lopped (Types A1a and A1b) *Olivella* shell beads, bone tubes and beads, bird-bone whistles, quartz crystals, serrated mammal scapulas, and ground bone awls (Fitzgerald 1993). Projectile points are commonly contracting stemmed and lanceolate types, some of which are made from obsidian (Hylkema 2002). Burials are variable flexed and semi-flexed with inconsistent orientation, and an increase in mortuary items has been noted, particularly during the late Middle Period.

Milling implements include large and small boulder or cobble mortars and various types of pestles, suggesting small seeds or acorns formed an important part of the diet. In the South Bay, processing of hard seeds continued to be important throughout this period, as evidenced by the number of milling slabs and handstones in the artifact assemblages from this area (Hylkema 2002).

Other plant resources included beaked hazelnuts, cattail seeds, grass, and soaproot bulbs; the latter were roasted in earth ovens. Faunal analyses indicate the diet during this period was rich and varied, with a variety of small and large mammals, fish, and birds, as well as mussel, oyster, and clam.

LATE PERIOD (1000 B.P. TO HISTORIC CONTACT)

In the Bay Area, the Augustine Pattern follows the “golden age of shell mound communities” of the Berkeley Pattern (Lightfoot and Luby 2002). Several changes in subsistence, foraging, and land use patterns are noted during this period. The pattern is identified by the introduction of bow and arrow technology, the use of harpoons, and tubular tobacco pipes. There is an increase

in the intensity of subsistence exploitation that correlates directly with population growth, and greater emphasis is placed on the procurement and processing of vegetal foods, especially acorns, as evidenced in the increase of milling tools, particularly the mortar and pestle (Moratto 1984). Both coiled and twined basketry were used as domestic and ceremonial items. Population size and the number of settlements increased during this period, although the large shellmound villages of the Berkeley Pattern were apparently no longer favored residential places and many were abandoned (Lightfoot and Luby 2002). The dry conditions during the Medieval Climatic Anomaly (MCA), which produced droughts across the west between about A.D. 650–850 and A.D. 1150–1250 (Jones et al. 1999), may be related to the abandonment of shellmound villages as primary residential locations (Lightfoot and Luby 2002). Settlement strategies were apparently reorganized and focused on a dispersed pattern, with the establishment of both coastal and interior habitation areas, coinciding with the exploitation of seasonally available resources.

Exchange networks, with the use of clamshell disk beads as a form of currency, expanded during this period. Exchange items included magnesite, steatite, *Olivella* beads, and obsidian. Compared to the Middle Period, the use and occurrence of shell beads with burials blossomed (Milliken and Bennyhoff 1993; Milliken et al. 2007). *Haliotis* banjo pendants may represent the introduction and spread of the Kuksu cult, beginning during the transition from the Middle to Late Period in the Bay Area (Hylkema 2002). The magnitude of non-dietary *Olivella* shells in coastal sites during the Late Period, coupled with a concomitant increase of the shells in mortuary contexts throughout central California during this period, attests to the rise of both exchange networks and status differentiation, with coastal peoples supplying the shells to the interior groups.

HISTORICAL SETTING

SPANISH PERIOD (1769-1822)

Exploration between 1529 and 1769 of Alta (upper) California by Spanish expeditions was limited. The spring of 1769 marks the true beginning of Spanish settlement with the establishment by Gaspar de Portolá at San Diego of the first of 21 missions to be built along the California coast by the Spanish and Franciscan Order between 1769 and 1823. In the fall of 1769, Portolá reached San Francisco Bay. Later expeditions by Pedro Fages in 1772 and Juan Bautista De Anza in 1776 explored the land east of San Francisco Bay (Gunsky 1989).

The first expedition into the Sacramento Valley was led by Spanish Lieutenant Gabriel Moraga in 1808. Scouting for new mission locations and searching for runaway Native American neophytes from the coastal missions, they traveled south as far as the Merced River and explored parts of the American, Calaveras, Cosumnes, Feather, Mokelumne, Sacramento, and Stanislaus Rivers to the north. Luis Arguello led the final Spanish expedition into the interior of Alta California in 1817. They traveled up the Sacramento River, past today's City of Sacramento to the mouth of the Feather River, before returning to the coast (Beck and Haase 1974; Gunsky 1989).

MEXICAN PERIOD (1822-1848)

After Mexico gained independence from Spain in 1822, the Mission lands were secularized under the Secularization Act of 1833, but much of the land was transferred to political appointees. A series of large land grants (ranchos) that transferred Mission properties to private ownership were awarded by the various governors of California. Land grants were also awarded in the interior to increase the population away from the coastal areas that were settled during the Spanish Period. Captain John Sutter received the two largest land grants in the Sacramento Valley. In 1839, Sutter founded a trading and agricultural empire called New Helvetia, which was headquartered at Sutter's Fort near the divergence of the Sacramento and American rivers, in Valley Nisenan territory. The Mexican Period also marks the exploration by American fur trappers west of the Sierra Nevada Mountains. Jedediah Smith was the first trapper to enter California; his small party trapped and explored along the Sierra Nevadas in 1826 and then entered the Sacramento Valley in 1827 (Gunsky 1989).

AMERICAN PERIOD (1848-PRESENT)

The Mexican-American War followed on the heels of the Bear Flag Revolt of June 1846 (Ohles 1997). General Andrés Pico and John C. Frémont signed the Articles of Capitulation in December 1847, and with the signing of Treaty of Guadalupe Hidalgo in February 1848, hostilities ended and Mexico relinquished California to the United States. Under the treaty, Mexico ceded the lands of present-day California, New Mexico, and Texas to the United States for $15 million (Fogelson 1993). Within two years following the treaty, California applied for admission as a state. Gold was discovered in 1848 on the American River at Sutter's Mill near Coloma. One year later, nearly 90,000 people had journeyed to the gold fields of California. California became the 31st state in 1850, and three years later the population of the state exceeded 300,000. In 1854, Sacramento became the state capital. Thousands of new settlers and immigrants poured into the state after the transcontinental railroad was completed in 1869, spurring California's economic growth.

COMMUNITY OF EL SOBRANTE

Located in District 1 of Contra Costa County, the unincorporated community of El Sobrante consists of a population of 12,670 residents (Figure 5; Contra Costa Board of Supervisors 2025). A large portion of the community overlaps with the boundaries of the City of Richmond. The origins of El Sobrante are rooted in the Mexican land grant system following Mexico's independence from Spain. As the Mexican government laid claim to Alta California, large tracts of land were divided and granted to loyal government officials and ex-soldiers. During this period of land division, surplus land (*sobrante*) remained between the ranchos of San Pablo, Pinole, San Antonio, Morage, and Valencia. In 1841, brothers Juan Jose Castro and Victor Castro gathered up the sobrante land and applied for ownership to then Governor Alvarado. While the governor initially granted the request, long and costly legal disputes between the neighboring ranchos and the Castro brothers resulted in a delayed confirmation. By the time the claim was officially recognized by the court in 1882 (thirteen years after Juan Jose Castro's

death), much of the original land claim was sold off to pay for legal fees (Bastin 2011).

During the decades of legal dispute regarding the confirmation of the Castro brothers' ownership of El Sobrante Rancho, much of the rancho was divided up into smaller plots. As the rancho was partitioned, newly arrived European immigrants purchased these lots and settled along the San Pablo Creek and its tributaries. By the end of the 19th century major families in these areas included the Abrotts, Amends, Warneckes, Thodes, and O'Neills. The atmosphere of the El Sobrante community was largely rural with the first major change to the area occurring in 1919 as a direct result of the construction of the San Pablo Reservoir which flooded the ranch lands along the San Pablo Creek (Bastin 2011).

The local population remained very low, around 100 residents, until the beginning of World War II when the overall population of California (particularly the Bay Area) exploded. By the 1950s, the local population had grown to 7,000. Despite this massive increase in residential population, there has never been a successful push for incorporation (Bastin 2011).

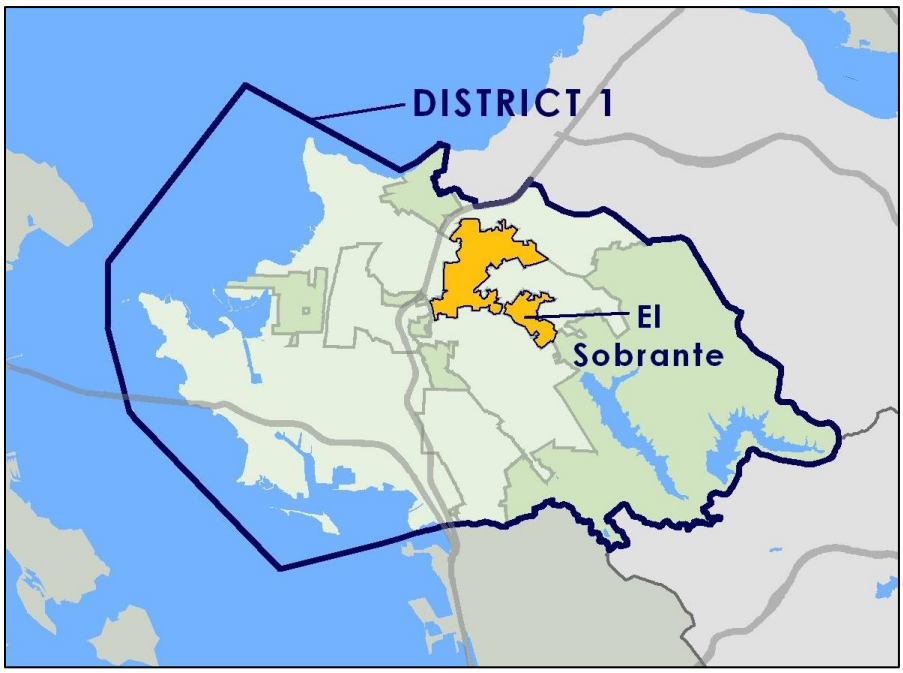


Figure 5. Community boundaries of El Sobrante
Image courtesy of Contra Costa Board of Supervisors 2025.

APE HISTORY

According to the earliest known USGS Topographic map of the APE, in 1895 (*San Francisco*, 1:62,500, 1895) there is no built environment, however, San Pablo Creek is visible traversing near or within the APE. The first depiction of built environment within the APE is found in the 1947 map (*Richmond*, 1:24,000, 1947) where San Pablo Dam Road and a proto-alignment of what would eventually become La Honda Road are seen in their current locations and orientation

within the APE. The 1948 USDA aerial photograph shows San Pablo Dam Road, San Pablo Creek, and dense vegetation (NETROnline 1948). By 1958, La Honda Road is improved and reflects its current alignment (NETROnline 1958). There are no significant alterations to the alignment or setting of the APE from the 1958 aerial photograph in later aerial photographs.

FIELD METHODS

The cultural resources survey stage is important in a Project's environmental assessment phase to verify the exact location of each identified cultural resource, the condition or integrity of the resource, and the proximity of the resource to other areas of cultural resources sensitivity.

ICF archaeologist Shelby Caulder completed an intensive pedestrian survey of the entire APE on May 22, 2025. The APE consists of a 1.62-acre partially hardscaped and vegetated area near residential housing (Figures 6 through 10). Approximately 0.1 acres of the APE was not surveyed due to access restrictions from prohibitive fencing. Surface visibility was variable, ranging from 75 to 90 percent along San Pablo Dam Road, La Honda Road, and associated shoulders; and poor (zero to five percent) in areas north-northeast of San Pablo Dam Road between the road and San Pablo Creek as well as in areas south-southwest of San Pablo Dam Road. Visibility obstructions were due to a dense covering of ivy, various low lying vegetation, annual grasses, and a thick layer of organic duff. In areas with low ground visibility, areas that had exposed soil due to bioturbation, or other means of soil exposure were intensively inspected.

Native soils within the APE consist of Conejo clay loam, a very deep, well-drained soil that formed in alluvium from basic igneous and sedimentary rocks and is generally found on alluvial fans and stream terraces.

As a result of the survey, no indications of archaeological sites such as discolored soils, artifacts, or archaeological features were observed in the APE. No archaeological resources were identified during survey.

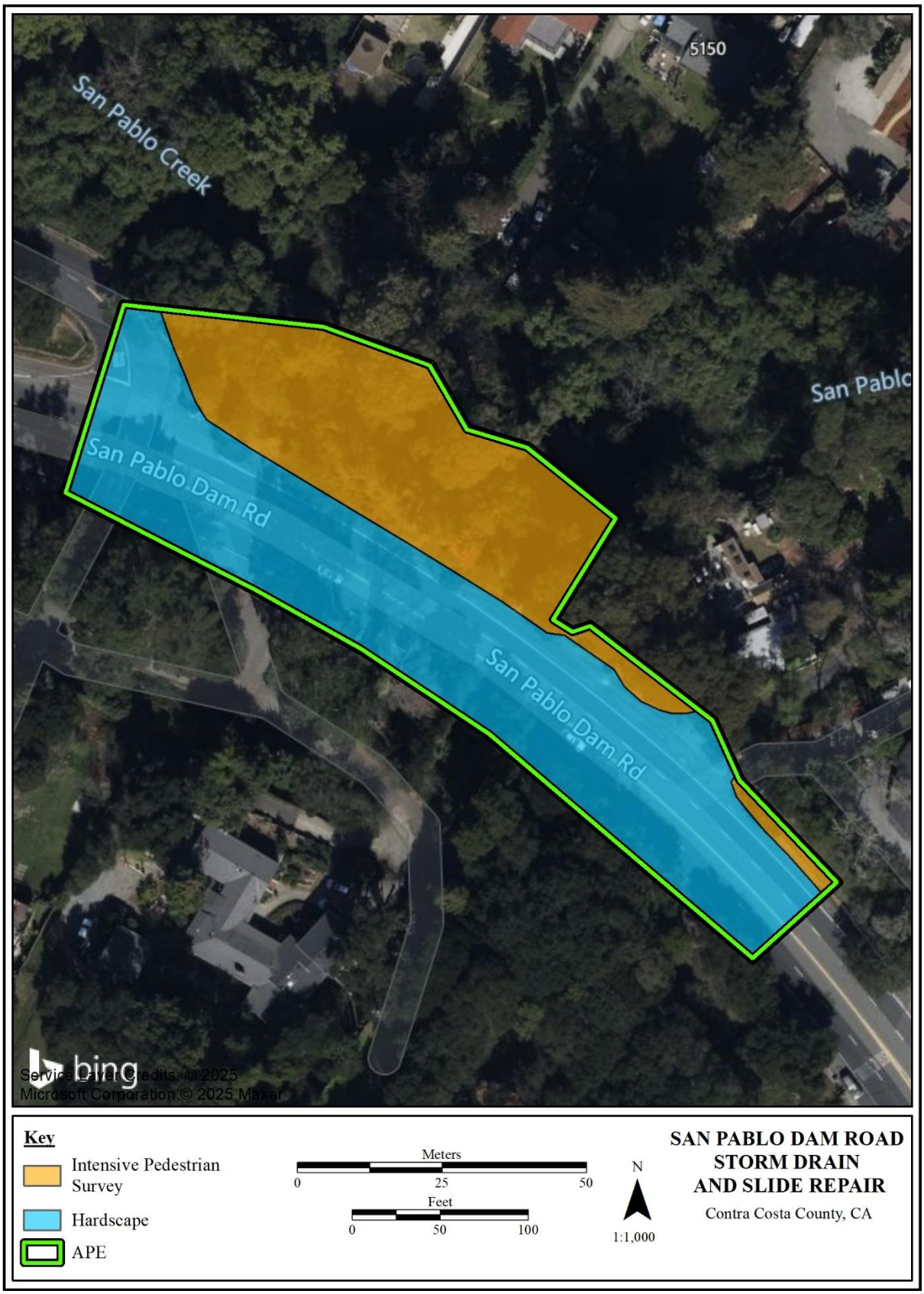


Figure 6. Survey coverage map



Figure 7. Overview of APE along La Honda Road, facing southeast.



Figure 8. Overview of San Pablo Dam Road near slide repair,facing northwest.



Figure 9. Overview of proposed grubbing area, facing southeast.



Figure 10. Overview of APE southwest of San Pablo Dam Road, facing northwest.

STUDY FINDINGS AND CONCLUSIONS

Identification efforts for the Project by Cogstone included a review of the cultural records search completed by the NWIC, a review of existing literature, a review of historic aerial photographs and historic topographic maps, a SLF search, a geoarchaeological sensitivity analysis, and an intensive pedestrian survey.

The cultural records search and pedestrian survey were negative for archaeological resources within the APE and the geoarchaeological results were very low for subsurface archaeological deposits based on a review of the geology and soils. However, the SLF search was positive and the cultural records search identified five pre-contact archaeological sites within the one-mile search radius of the APE all in the vicinity of San Pablo Creek.

UNIDENTIFIED CULTURAL MATERIALS

If previously unidentified cultural materials are unearthed during construction, it is Caltrans' policy that work be halted in that area until a qualified archaeologist can assess the significance of the find. Additional archaeological survey will be needed if project limits are extended beyond the present survey limits.

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APPENDIX A. RECORD SEARCH RESULTS

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM



ALAMEDA	HUMBOLDT	SAN FRANCISCO
COLUSA	LAKE	SAN MATEO
CONTRA COSTA	MARIN	SANTA CLATA
DEL NORTE	MENDOCINO	SANTA CRUZ
	MONTEREY	SOLANO
	NAPA	SONOMA
	SAN BENITO	YOLO

Northwest Information Center
Sonoma State University
1400 Valley House Drive, Suite 210
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://nwic.sonoma.edu

7/29/2024 NWIC File No.: 24-0016

Logan Freeberg
Cogstone Resource Management
1518 W. Taft Ave
Orange, CA 92865

Re: San Pablo Dam Road La Honda

The Northwest Information Center received your record search request for the project area referenced above, located on the Richmond USGS 7.5' quad(s). The following reflects the results of the records search for the project area and a 1.0 mi. radius:

Resources within project area:	None listed
Resources within 1.0 mi. radius:	P-07-000033, P-07-000073, P-07-000093, P-07-000379, P-07-000473, P-07-002909, P-07-005033
Reports within project area:	[17] Please see attached list, page 3
Reports within 1.0 mi. radius:	[49] Please see attached list, page 4

Resource Database Printout (list):		☐ enclosed	☒ not requested	☐ nothing listed
Resource Database Printout (details):		☐ enclosed	☒ not requested	☐ nothing listed
Resource Digital Database Records:		☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (list):		☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (details):		☐ enclosed	☒ not requested	☐ nothing listed
Report Digital Database Records:		☒ enclosed	☐ not requested	☐ nothing listed
Resource Record Copies:		☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	[within]	☒ enclosed	☐ not requested	☐ nothing listed
OHP Built Environment Resources Directory:		☐ enclosed	☒ not requested	☐ nothing listed
Archaeological Determinations of Eligibility:		☐ enclosed	☐ not requested	☒ nothing listed
CA Inventory of Historic Resources (1976):		☐ enclosed	☐ not requested	☒ nothing listed
GLO and/or Rancho Plat Maps:		☐ enclosed	☒ not requested	☐ nothing listed
Historical Maps:		☒ enclosed	☐ not requested	☐ nothing listed

Local Inventories:	☒ enclosed	☐ not requested	☐ nothing listed
Caltrans Bridge Survey:	☐ enclosed	☒ not requested	☐ nothing listed
Ethnographic Information:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Literature:	☐ enclosed	☒ not requested	☐ nothing listed
Shipwreck Inventory:	☐ enclosed	☒ not requested	☐ nothing listed

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Annette Neal

Researcher

Table A1. Previous Cultural Studies within a One-Mile Radius of the APE

Report No. (S-)	Author(s)	Title	Year	Distance (miles) from APE
000595	King, R. F.	A Report on the Status of Generally Available Data Regarding Archaeological, Ethnographic, and Historical Resources Within a Five Mile Wide Corridor Through Portions of Colusa, Yolo, Solano, and Contra Costa Counties, California	1974	Within
000848	Fredrickson, David A.	A Summary of Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical & Archaeological Resources	1976	Within
001978	Aiello, Anthony V.	The Islands of Contra Costa	1960	Within
002458	Ramiller, Neil, Ramiller, Suzanne, Werner, Roger, and Stewart, Suzanne	Overview of Prehistoric Archaeology for the Northwest Region, California Archaeological Sites Survey: Del Norte, Humboldt, Mendocino, Lake, Sonoma, Napa, Marin, Contra Costa, Alameda	1981	Within
002458a	Ramiller, Suzanne	Prehistoric Archaeology Overview Northwest Region; California Archaeological Inventory, Volume I: Humboldt and Del Norte Counties	1982	Within
002458b	Werner, Roger H.	Archaeological Overview of Mendocino and Lake Counties	1982	Within
002458c	Stewart, Suzanne	Prehistoric Archaeology Overview Northwest Region; California Archaeological Inventory, Volume 3: Napa and Sonoma Counties	1982	Within
002458d	Stewart, Suzanne B.	Archaeological Overview of Alameda, Contra Costa, and Marin Counties	1982	Within
002458e	Ramiller, Neil	Environmental Overview of the Northwest Region	1982	Within
009462	Miller, Teresa Ann	Identification and Recording of Prehistoric Petroglyphs in Marin and Related Bay Area Counties	1977	Within
009583	Mayfield, David W.	Ecology of the Pre-Spanish San Francisco Bay Area	1978	Within
009795	Jackson, Thomas Lynn	Late Prehistoric Obsidian Exchange in Central California	1986	Within
015529	Gearhart II, Robert L., Bond, Clell L., Hoyt, Steven D., Cleland, James H., Anderson, James, Snethcamp, Pandora, Wesson, Gary, Neville, Jack, Marcus, Kim York, Andrew and Wilson, Jerry	California, Oregon, and Washington: Archaeological Resource Study	1993	Within
016660	Fentress, Jeffrey B.	Prehistoric Rock Art of Alameda and Contra Costa Counties, California	1992	Within
017835	Suchey, Judy Meyers	Biological Distance of Prehistoric Central California Populations Derived from Non-Metric Traits of the Cranium	1975	Within
018217	Gmoser, Glenn	Cultural Resource Evaluations for the Caltrans District 04 Phase 2 Seismic Retrofit Program, Status Report	1996	Within

Report No. (S-)	Author(s)	Title	Year	Distance (miles) from APE
020395	Gillette, Donna L.	PCNs of the Coast Ranges of California: Religious Expression or the Result of Quarrying?	1998	Within
030204	Gillette, Donna L.	The Distribution and Antiquity of the California Pecked Curvilinear Nucleated (PCN) Rock Art Tradition.	2003	Within
032596	Milliken, Randall, King, Jerome, and Mikkelsen, Patricia	The Central California Ethnographic Community Distribution Model, Version 2.0, with Special Attention to the San Francisco Bay Area, Cultural Resources Inventory of Caltrans District 4 Rural Conventional Highways	2006	Within
033600	Meyer, Jack and Rosenthal, Jeff	Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4	2007	Within
049780	Byrd, Brian F., Whitaker, Adrian R., Mikkelsen, Patricia J., and Rosenthal, Jeffrey S.	San Francisco Bay-Delta Regional Context and Research Design for Native American Archaeological Resources, Caltrans District 4	2017	Within
049780a	Polanco, Julianne	FHWA_2016_0615_001, Caltrans District 4 Archaeological Context	2016	Within
056197		East Bay Municipal Utility District, Sobrante Water Treatment Plant Reliability Improvements Project, Draft Cultural Resource Assessment Report	2022	0 – 0.25
000901	Stillinger, Robert A. and Fredrickson, David A.	An Archaeological Investigation of the Downer Property, Tentative Subdivision 5039, Contra Costa County, California.	1978	0.5 - 1
001329	Banks, Peter M.	An Archaeological Investigation of the Carter Property, La Honda Road, El Sobrante, Contra Costa County, California.	1978	0 – 0.25
001769	Banks, Peter M.	An Archaeological Investigation of the Johnson Properties Mobile Home Park, Richmond, Contra Costa County, California.	1979	0.5 - 1
001850	Porter, Cris D.	Cultural Resource Survey of MS-133-79, a 3/4 Acre Parcel on Castro Ranch Road, Contra Costa County.	1979	0.5 - 1
001927	Archaeological Planning Collaborative	Archaeological Records Search and Field Survey, Proposed Subdivision 5618, El Sobrante, Contra Costa County, California.	1980	0.5 - 1
001932	Jackson, Robert J.	An Archaeological Investigation of the Carriage Hills Proposed Subdivision Property, Contra Costa County, California.	1979	0.5 - 1
001999	Baldrica, Michael J.	An Archaeological Survey of the Kraus Property, Contra Costa County, California.	1980	0.5 - 1
002387	Ramiller, Suzanne Marie	An Archaeological Survey of the Klobas Property, County File No. 3019-80.	1981	0.5 - 1
002518	Porter, Cris D.	An Archaeological Investigation of Development Plan 3005-78, Subdivision 5282, at the Northwest Corner of San Pablo Dam Road and D'Avilla Way, El Sobrante, California	1981	0 – 0.25
002601	Baldrica, Michael	An Archaeological Study of the Miranda Property (MS No.21-81), Contra CostaCounty, California. County, California.	1981	0.25 – 0.5
002658	Baldrica, Michael J.	An Archaeological Survey of the Valley View Road Widening Project, Contra Costa County, California	1981	0 – 0.25

Report No. (S-)	Author(s)	Title	Year	Distance (miles) from APE
002977	Chavez, David	Park Glen Estates (letter report).	1982	0.25 – 0.5
006467	Banks, Peter M.	An Archaeological Reconnaissance of Minor Subdivision 60-83, at La Honda Road and Regency Court, El Sobrante, Contra Costa County, California	1984	0 – 0.25
006895	Gerike, Christian	An Archaeological Study of the Wright Property, El Sobrante, Contra Costa County, California.	1984	0.5 – 1
007131	Banks, Peter	An Archaeological Reconnaissance of the Appian Way Widening Project: Phase II, El Sobrante, Contra Costa County, California.	1985	0.5 – 1
007131a	Banks, Peter	An Archaeological Survey of the Valley View Road Widening Project, Contra Costa County, California	1986	0.5 – 1
007131b		Park Glen Estates (letter report).	1986	0.5 – 1
007131c		An Archaeological Reconnaissance of Minor Subdivision 60-83, at La Honda Road and Regency Court, El Sobrante, Contra Costa County, California	1986	0.5 – 1
007131d	Banks, Peter	An Archaeological Study of the Wright Property, El Sobrante, Contra Costa County, California.	1986	0.5 – 1
007166	Banks, Peter	An Archaeological Reconnaissance of the Appian Way Widening Project: Phase II, El Sobrante, Contra Costa County, California.	1985	0.5 – 1
007900	Baker, Suzanne	An Archaeological Survey of the Valley View Road Widening Project, Contra Costa County, California	1986	0.5 – 1
007988	Orlins, Robert I.	Park Glen Estates (letter report).	1986	0.5 – 1
008224	Holman, Miley Paul, Wiberg, Randy, and Clark, Matthew	A Report of Findings of an Archaeological Field Reconnaissance of the EBRPD Lands Inside of Wildcat Canyon, Tilden and Alvarado Parks, Contra Costa County, California	1983	0.25 – 0.5
009090	Chavez, David	Carriage Hills West Project (letter report)	1987	0.5 – 1
009825	Roberson, Wayne	Report on an Archaeological Survey of a One-Half Acre Parcel Located at 5779 San Pablo Dam Road, El Sobrante, Contra Costa, California	1987	0.5 – 1
010254	Garaventa, Donna M. and Guedon, Stuart A.	Archaeological Study for 209 Regency Court/Lot 3 of Minor Subdivision MS 53-88 in El Sobrante, Contra Costa County, California (letter report)	1988	0 – 0.25
010447	Holman, Miley Paul	Archaeological Field Investigation of the Boerner Building Site, 4863 San Pablo Dam Road, El Sobrante, Contra Costa County, California (letter report)	1988	0.25 – 0.5
010806	Holman, Miley Paul	Archaeological Field Inspection of the Proposed Mosher Property Development, Richmond, Contra Costa County, California (letter report)	1989	0.25 – 0.5
010858	Archaeological Resource Management	Cultural Resource Evaluation of the Spanish Trails/El Sobrante Subdivision on Valley View Road in the County of Contra Costa	1989	0 – 0.25
011245	Baker, Suzanne	Archaeological Reconnaissance of the Laurel Lane Project, near El Sobrante, Contra Costa County, California	1989	0.5 – 1
011352	Baker, Suzanne	Archaeological Reconnaissance of the El Grande Town Homes Project, Contra Costa County, California	1984	0.25 – 0.5
011693	Haney, Jefferson	An Archaeological Study of the 1-acre Heisler Property in El Sobrante, Contra Costa County, California	1990	0.5 – 1
011693a	Haney, Jefferson	Subsurface Investigations of the Southern Corner of the 1-acre Heisler Property in El Sobrante, Conta Costa County, California (letter report)	1990	0.5 – 1

Report No. (S-)	Author(s)	Title	Year	Distance (miles) from APE
017152	Baker, Suzanne	Archaeological Reconnaissance of the Hope Lutheran Church Property at 2830 May Road, El Sobrante, California	1995	0.25 – 0.5
019799	Chavez, David and Ilic, Nina	Cultural Resources Investigations for El Sobrante Estates EIR, Richmond, California (Subcontract Number 731681.3058)	1997	0.5 – 1
021208	Busby, Colin I.	Cultural Resources Literature Review - Kennedy Grove Regional Recreation Area, Contra Costa County, California (letter report)	1997	0.5 – 1
022713	Self, William	Archaeological Survey and Assessment of Forest Green Estates Project, Richmond, CA (letter report)	2000	0.5 – 1
022947	Holman, Miley Paul	Archaeological Field Inspection of the Emerald Heights Project, Richmond, Contra Costa County, California	2000	0.25 – 0.5
024436	Self, William and Martin, Leigh	Archaeological Survey and Assessment of a 2.3-Acre Parcel Located at 5529 Olinda Road, El Sobrante, Contra Costa County, California (letter report)	2001	0.25 – 0.5
025523	Pastron, Allen G.	Phase I Cultural Resources Evaluation of the Proposed Clark Road Residential Project, Richmond, Contra Costa County, California	2002	0 – 0.25
025524	Pastron, Allen	Phase I Cultural Resources Evaluation of the Proposed 4781 San Pablo Dam Road Project, City of Richmond, Contra Costa County, California	2002	0.25 – 0.5
029439	Wills, Carrie D.	Archaeological Assessment for parcel at 5870 Hunters Lane, El Sobrante, California (letter report)	2004	0.5 – 1
030205	Kaptain, Neal	Archaeological Resources Study of 5586 San Pablo Dam Road, El Sobrante, Contra Costa County, California, LSA Project #SUA530 (letter report)	2005	0.25 – 0.5
030910	Martin, Leigh A.	Archaeological Reconnaissance and Assessment of the 22-Acre Canyon Oaks II Residential Development Project, City of Richmond, Contra Costa County, California (letter report)	2005	0.5 – 1
031847	Bonner, Wayne H. and Keasling, James M.	Cultural Resource Records Search Results and Site Visit for Cingular Telecommunications Facility Candidate OK-005-01 (Taylor Ranch), 5500 Valley View Road, Richmond, Contra Costa County, California (letter report)	2005	0.5 – 1
033256	Martin, Leigh A.	Archaeological Survey and Assesment of a 1.5-Acre Parcel Located at 5330 San Pablo Dam Road, El Sobrante, Contra Costa County, California	2007	0.5 – 1
037948	Billat, Lorna	Collocation Submission Packet, San Pablo Dam Rd & Olinda Rd, Project Number CN4990	2011	0.25 – 0.5
043203	Billat, Lorna	Collocation Submission Packet; San Pablo Dam Road and Olinda Road; CNU4990; 5500 Valley View Road, Richmond.	2013	0.5 – 1
043533	Koenig, Heidi	West County Wastewater District Capital Improvement Plan, First SRF Application Projects, Contra Costa County, Cultural Resources Survey Report	2013	0.5 – 1
043533	Koenig, Heidi	West County Wastewater District Water Pollution Control Plant, Richmond, Contra Costa County, Cultural Resources Survey Report	2014	0.5 – 1
044169	DeGeorgey, Alex and Snyder, Devin	Cultural Resources Constraints Report: Santa Rita and Penny GPRP ED El Sobrante	2013	0.5 – 1

Report No. (S-)	Author(s)	Title	Year	Distance (miles) from APE
046299	Turner, Angie	A Cultural Resources Study of the Belgum Trail in Wildcat Canyon Regional Park, Contra Costa County, California	2013	0.5 – 1
050452	Kaptain, Neal	Cultural Resources Study of 5780 San Pablo Dam Road, El Sobrante, Contra Costa County, California (LSA Project #MEL1301) (letter report)	2013	0.5 – 1
051734	Whitaker, Adrian	Historic Property Survey Report for the San Pablo Dam Road Sidewalk Project, El Sobrante, Contra Costa County, California, 4-CCO-HSIPL-5928(133)	2018	0.5 – 1
051734a	Whitaker, Adrian, Colligan, Kaely, Scher, Naomi, Meyer, Jack and Rosenthal, Jeffrey	Archaeological Survey Report for the San Pablo Dam Road Sidewalk Project, El Sobrante, Contra Costa County, California	2018	0.5 – 1
051734b	Parker, Ashley, Whitaker, Adrian and Acher, Naomi	Extended Phase I Report for the San Pablo Dam Road Sidewalk Project, El Sobrante, Contra Costa County, California	2018	0.5 – 1
056197		East Bay Municipal Utility District, Sobrante Water Treatment Plant Reliability Improvements Project, Draft Cultural Resource Assessment Report	2022	0.0 – 0.25

APPENDIX B. HISTORICAL SOCIETY CONSULATION

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY



June 3, 2025

Contra Costa County Historical Society
724 Escobar St.
Martinez, CA. 94553

RE: Request for Information regarding the Cultural Resources Assessment for the San Pablo Dam Road Storm Drain and Slide Repair Project, Contra Costa County, California.

To Whom It May Concern:

Cogstone Resource Management (Cogstone) is conducting a cultural resources assessment for the San Pablo Dam Road Storm Drain and Slide Repair Project (Project) located on the north side of San Pablo Dam Road approximately 200 feet southeast of La Honda Road in the census designated place of El Sobrante, Contra Costa County, California.

The Project is needed to repair the embankment and damaged section of roadway, including replacing the existing 18" culvert that was sheared off. One of two westbound lanes is closed due to the storm damage. The Project is needed to reestablish the second westbound lane and prevent damage to the remaining open traffic lanes. San Pablo Dam Road is a route for commuters heading from the El Sobrante area to I-80 and provides and important connection during the daily commute.

The Project will likely include excavation, structural backfill, culvert removal, culvert installation, removal and replacement of concrete lined ditch, removal of vegetation and trees, construction of a soldier pile retaining wall, placing aggregate base and hot mix asphalt (HMA), and striping and guardrail installation. The alternative to a retaining wall is to repair the entire slide area as was done 50 years ago at this location. However, this would require significantly more excavation and removal of significantly more vegetation and trees on the embankment/creek bank than a retaining wall project.

We are contacting you because we would like to invite members of the Contra Costa County Historical Society to provide input regarding the redevelopment of the Project area. We appreciate any information regarding the history of the Project area that you may have as well as any comments, issues, and/or concerns you may have relating to the history of the Project area. Please contact me at slopez@cogstone.com. Thank you for your attention to this matter.

Sincerely,

Shannon Lopez

Shannon Lopez, M.A.
Architectural Historian
slopez@cogstone.com

1518 West Taft Avenue
Orange, CA 92865
Office (714) 974-8300

Branch Offices
San Diego - Riverside - Morro Bay - Sacramento

cogstone.com
Toll free (888) 333-3212

Federal Certifications EDWOSB , SDB
State Certifications DBE, WBE, UDBE

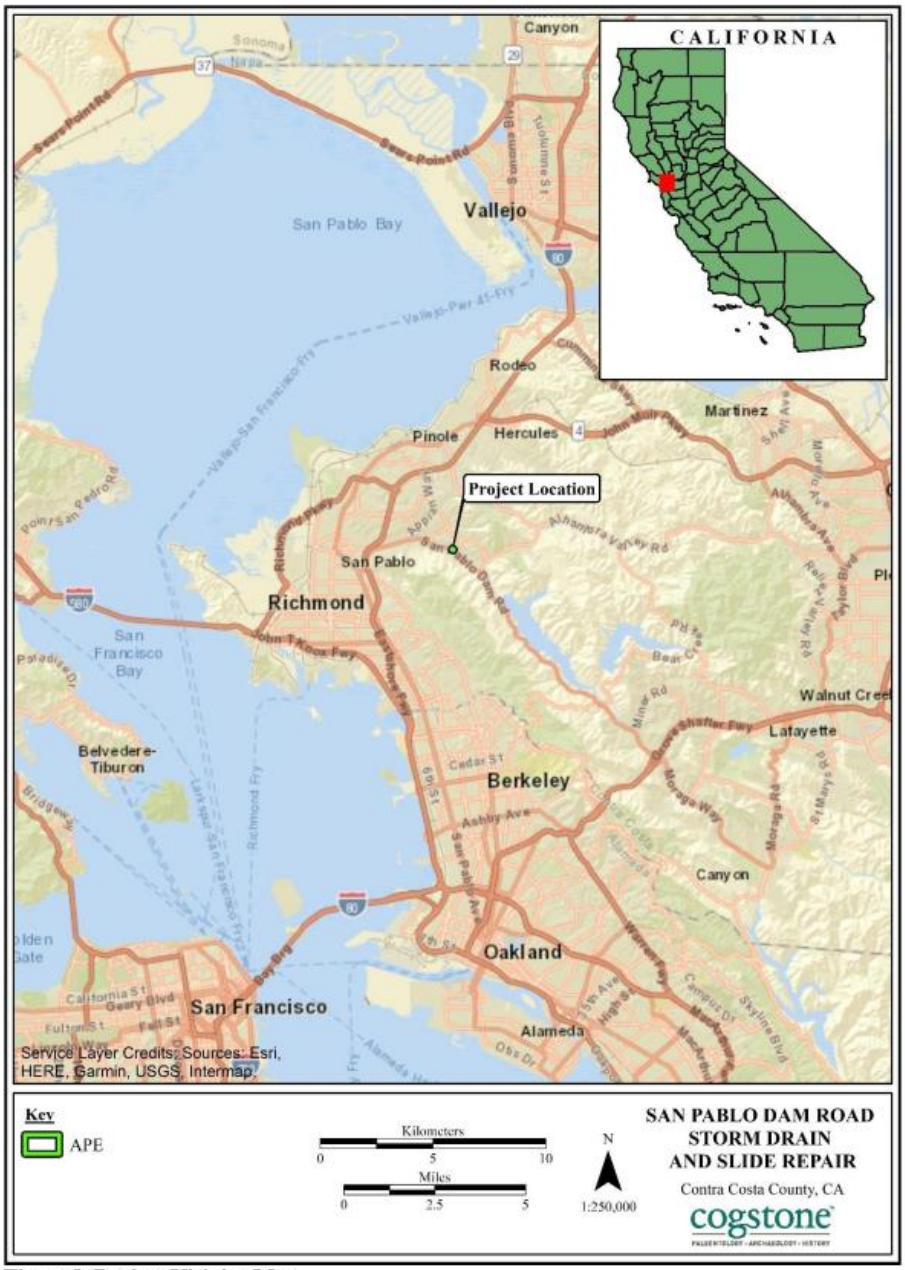


Figure 1. Project Vicinity Map

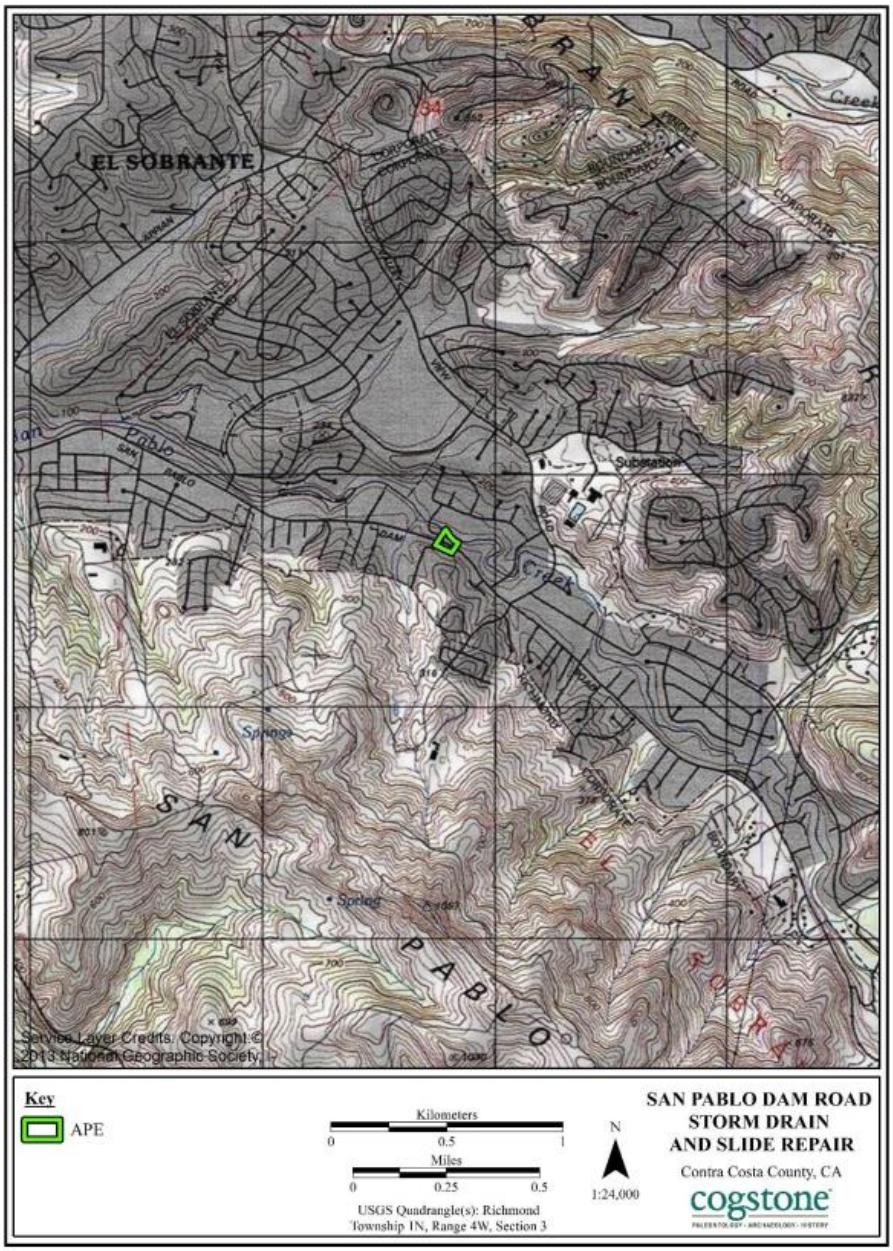


Figure 2. Project Location Map

cogstone.com

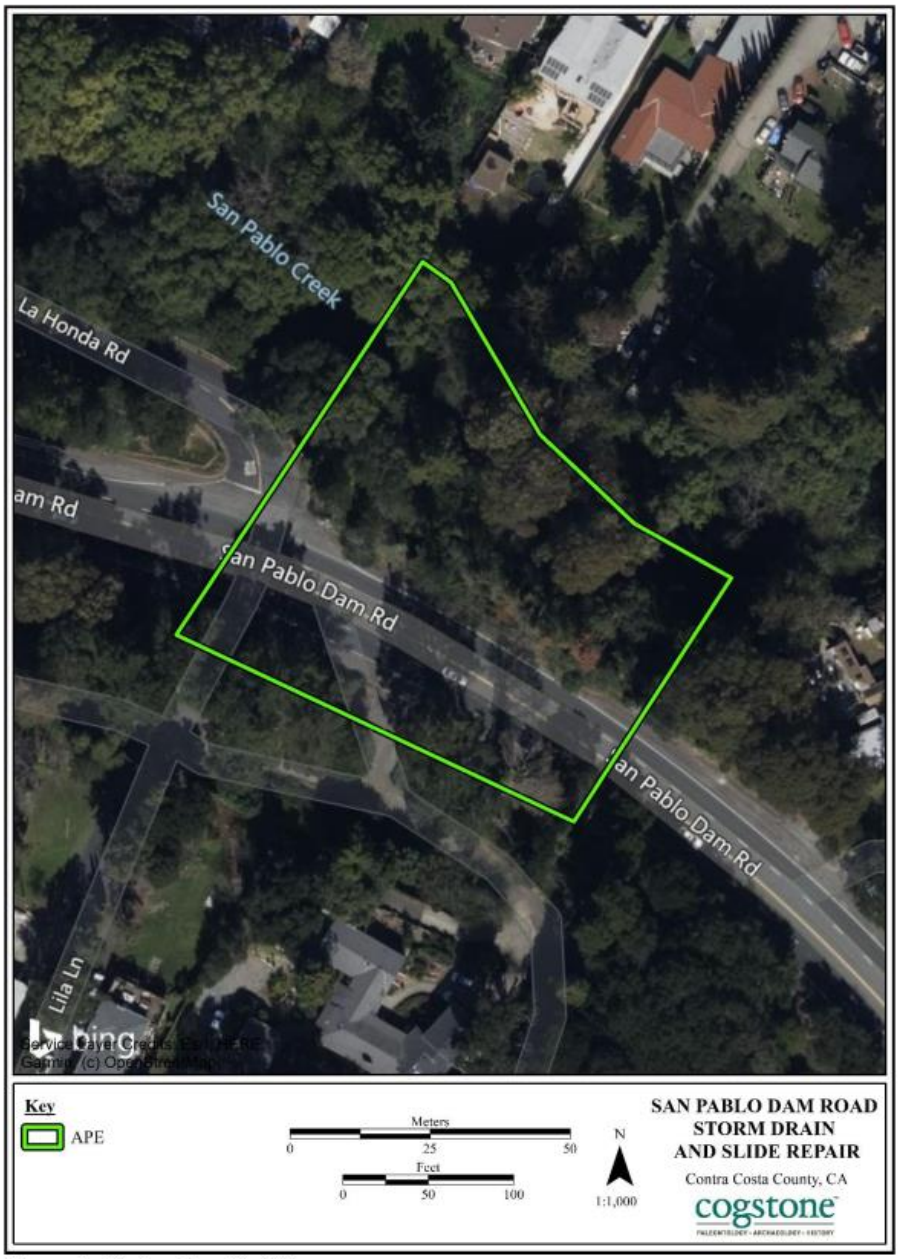


Figure 3. Project Aerial Map

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY



June 3, 2025 (Final Attempt)

El Sobrante Historical Society
4300 Garden Rd.
El Sobrante, CA 94803

RE: Request for Information regarding the Cultural Resources Assessment for the San Pablo Dam Road Storm Drain and Slide Repair Project, Contra Costa County, California.

To Whom It May Concern:

Cogstone Resource Management (Cogstone) is conducting a cultural resources assessment for the San Pablo Dam Road Storm Drain and Slide Repair Project (Project) located on the north side of San Pablo Dam Road approximately 200 feet southeast of La Honda Road in the census designated place of El Sobrante, Contra Costa County, California.

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We are contacting you because we would like to invite members of the El Sobrante Historical Society to provide input regarding the redevelopment of the Project area. We appreciate any information regarding the history of the Project area that you may have as well as any comments, issues, and/or concerns you may have relating to the history of the Project area. Please contact me at slopez@cogstone.com. Thank you for your attention to this matter.

Sincerely,

Shannon Lopez

Shannon Lopez, M.A.
Architectural Historian
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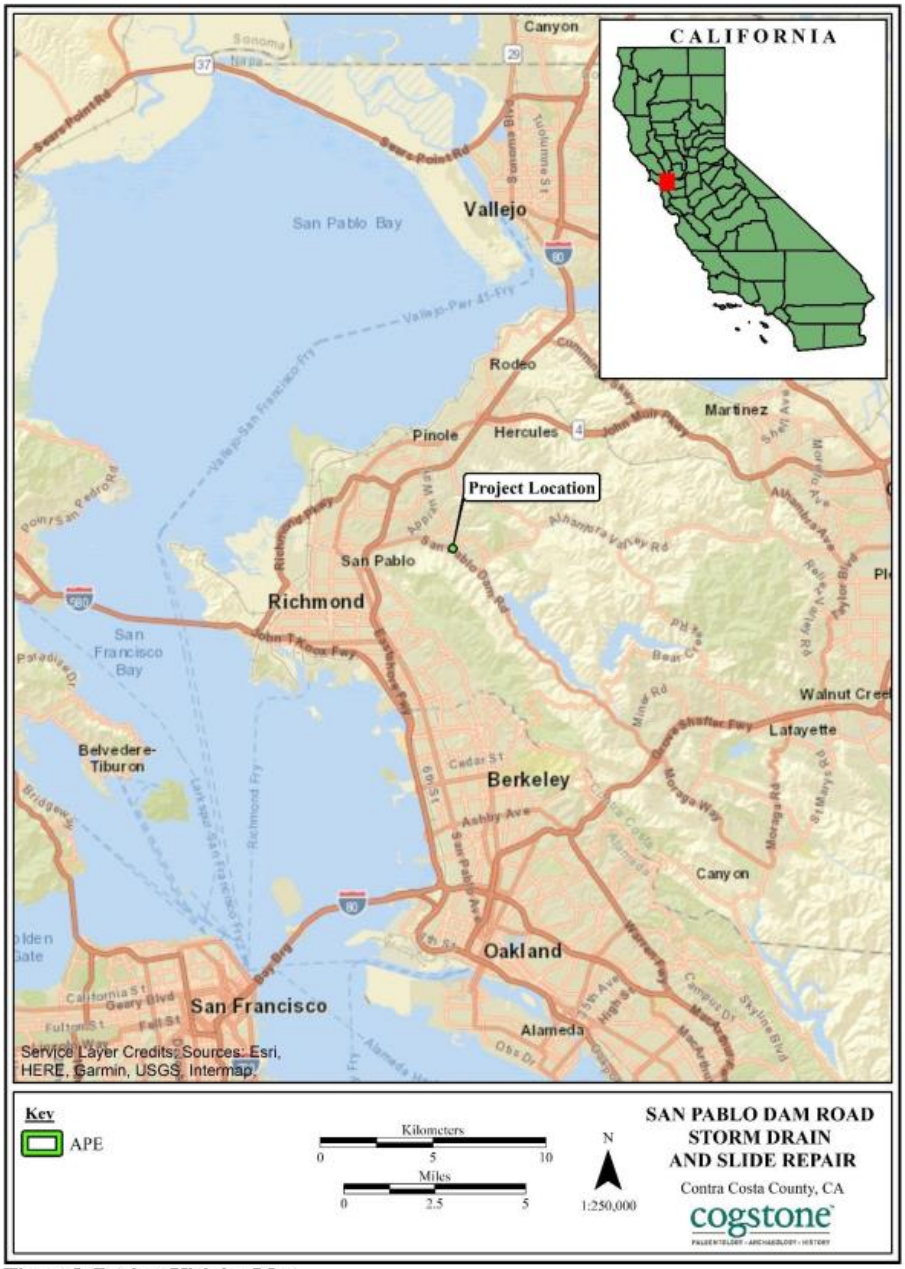


Figure 1. Project Vicinity Map

cogstone.com

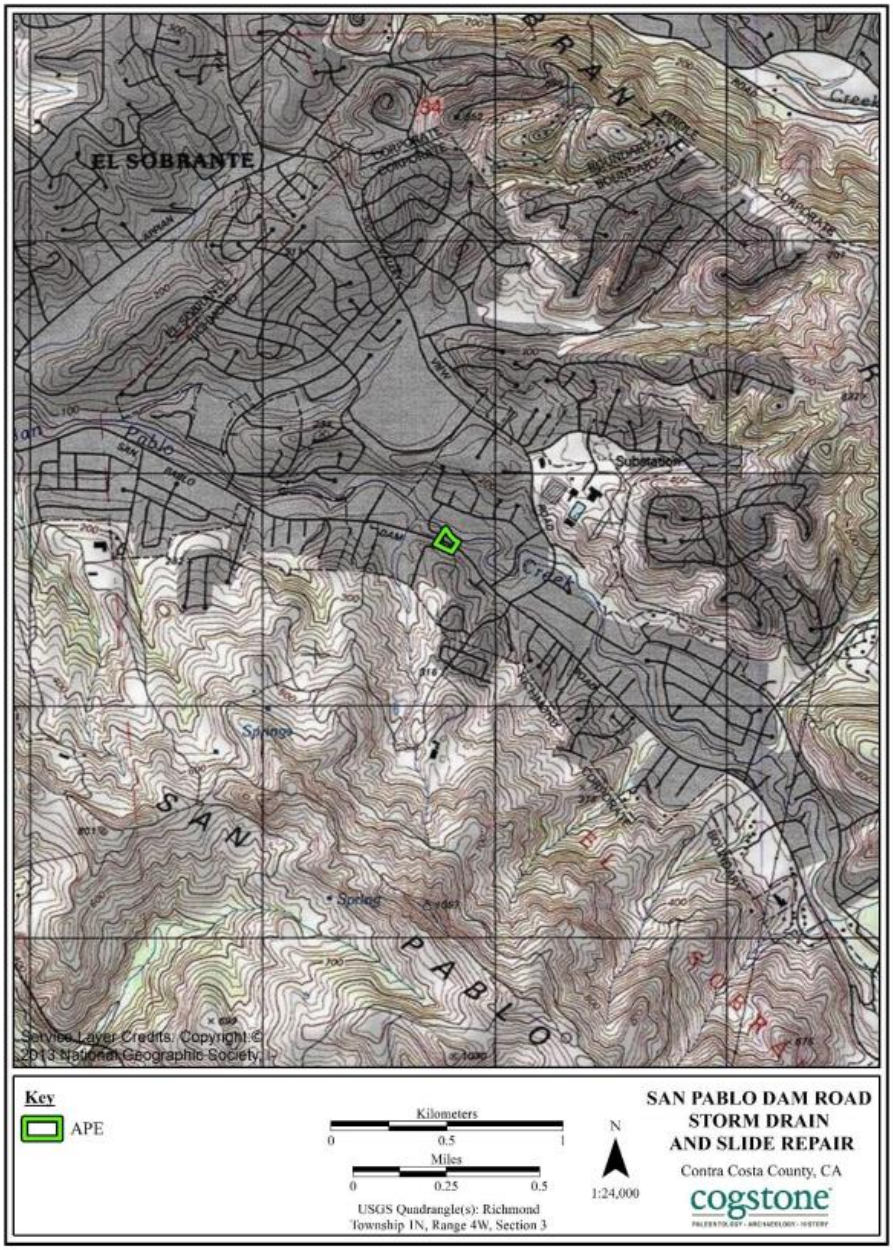


Figure 2. Project Location Map

cogstone.com

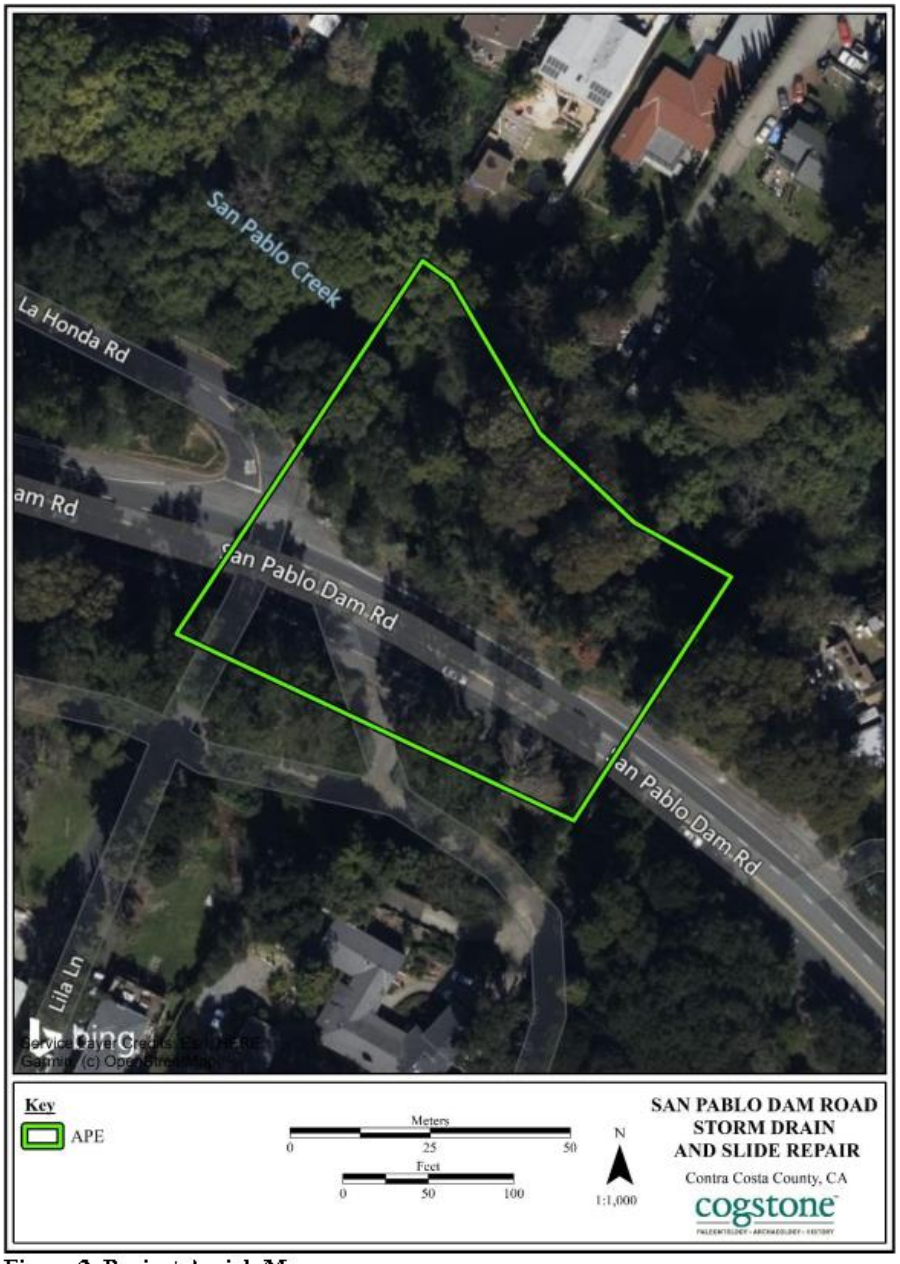


Figure 3. Project Aerial Map

Outlook

San Pablo Dam Road Slide Repair Project

From donald bastin <donaldbastin@comcast.net>
Date Thu 6/5/2025 8:27 AM
To Shannon Lopez <SLopez@cogstone.com>
Cc Steve James <sojames@comcast.net>; roxmiravalle@msn.com <roxmiravalle@msn.com>; Munkres, Emil <emilmunk1@gmail.com>; Lyle Miller <whlbrk@aol.com>

Hello Shannon,

Thank you for your query.
After some consideration, it is the general opinion of our organization that the road project be completed as soon as possible. It is our opinion that it is unlikely that any artifacts of cultural significance exist within the proposed work area.

That said, as the work site is not far from a local recreational area (La Honda Bowl) that was popular from the late 1800s until 1955, and, while we have no evidence of this, may have been, at some time, a temporary living site for indigenous peoples. It is possible (again, unlikely) that some artifacts (pieces of train track, cooking utensils, stone bowls, etc.) may be turned up. All we ask is that, if anything of interest is found, that we be informed and given a chance to inspect same. You can contact me directly at my email address.

Thanks again,
Donald Bastin
president, ESHS
510-210-7968

APPENDIX C. NATIVE AMERICAN CONSULATION

STATE OF CALIFORNIA — Gavin Newsom, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Reginald Pagaling
Chumash

VICE-CHAIRPERSON
Buffy McQuillen
Yokaya Pomo, Yuki, Nomlaki

SECRETARY
Sara Dutschke
Miwok

PARLIAMENTARIAN
Wayne Nelson
Luiseño

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Stanley Rodriguez
Kumeyaay

COMMISSIONER
Laurena Bolden
Serrano

COMMISSIONER
Reid Milanovich
Cahuilla

COMMISSIONER
Bennae Calac
Pauma-Yuima Band of Luiseño Indians

EXECUTIVE SECRETARY
Raymond C. Hitchcock
Miwok, Nisenan

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

July 29, 2024

Cogstone Resource Management

Via Email to: CogstoneConsult@cogstone.com

Re: San Pablo Dam Road Storm Drain and Slide Repair Project, Contra Costa 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 you have submitted for the above referenced project. The results were positive. Please contact the tribes on the attached list for more information. Other sources of cultural resources should also be contacted for information regarding known and recorded 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. I suggest you contact all of those indicated; if they cannot supply information, they might 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 me. With your assistance, we can assure that our lists contain current information.

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

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Contact Log

Contact Information

Amah Mutsun Tribal Band
Valentin Lopez, Chairperson
P.O. Box 5272
Galt, CA, 95632
(916) 743-5833
vjltestingcenter@aol.com

Date	Method	Comments
5/6/2025	Email	Sent initial consultation letter via email
5/30/2025	Email	Follow up e-mail sent

Contact Log

Contact Information

Amah MutsunTribal Band of Mission San Juan Bautista
Irene Zwierlein, Chairperson
3030 Soda Bay Road
Lakeport, CA, 95453
(650) 851-7489
amahmutsuntribal@gmail.com

Date	Method	Comments
5/6/2025	Email	Sent initial consultation letter via email
5/6/2025	Email	Response received from Lorelei Alli, with recommendation documents attached. Contact information was given in order to set up a meeting.
5/7/2025	Email	Email sent to follow up on response with an offer to schedule a meeting. No response received.
5/30/2025	Email	Follow up e-mail sent
5/30/2025	Email	Response received. Recommendation documents and contact information were again provided.

Contact Log

Contact Information

Confederated Villages of Lisjan Nation
Corrina Gould, Chairperson
10926 Edes Avenue
Oakland, CA, 94603
(510) 575-8408
cvltribe@gmail.com

Date	Method	Comments
5/6/2025	Email	Initial consultation sent via email
5/9/2025	Email	Response received from Lucy Gill, requesting consultation for the project, as well as the NAHC SLF request results letter, CHRIS records request results, and any cultural resource reports that had been prepared.
5/15/2025	Email	Email sent confirming receipt and informing Lucy that the data had been requested and will be sent through once received.
6/17/2025	Email	A link to view the CHRIS records request results was sent.
6/17/2025	Email	The requested documents were shared along with an offer to schedule a consultation meeting once they have been reviewed.

Contact Log

Contact Information

Costanoan Rumsen Carmel Tribe
Carla Munoz, Tribal Council
(415) 690-3110
crct.crd@gmail.com

Date	Method	Comments
5/6/2025	Email	Initial consultation letter sent via email
5/30/2025	Email	Follow up email sent

Contact Log

Contact Information

Guidiville Rancheria of California
Bunny Tarin, Tribal Administrator
PO Box 339
Talmage, CA, 95481
(707) 462-3682
admin@guidiville.net

Date	Method	Comments
5/6/2025	Email	Initial consultation letter sent via email
5/6/2025	Email	For the historian@guidiville.net cc'd the following response was received " The following addresses had permanent fatal errors ----- <historian@guidiville.net"
5/30/2025	Email	Follow up email sent to the *admin@guidiville.net* email only.

Contact Log

Contact Information

Indian Canyon Mutsun Band of Costanoan
Kanyon Sayers-Roods, MLD Contact
1615 Pearson Court
San Jose, CA, 95122
(408) 673-0626
kanyon@kanyonkonsulting.com

Date	Method	Comments
5/6/2025	Email	Initial consultation letter sent via email
5/6/2025	Email	For the ams@indiancanyons.org email cc'd the following response was received " The following addresses had permanent fatal errors ----- <ams@indiancanyons.org"
5/30/2025	Email	Follow up email sent to the *kanyon@kanyonkonsulting.com* only.

Contact Log

Contact Information

Muwekma Ohlone Tribe of the SF Bay Area
Charlene Nijmeh, Chairperson
1169 S. Main Street, Ste. 336
Manteca, CA, 95377
(408) 464-2892
cnijmeh@muwekma.org

Date	Method	Comments
5/6/2025	Email	Initial consultation letter sent via email
5/14/2025	Email	Response received from Richard Massiatt, requesting consultation for the project.
5/19/2025	Email	Followup email sent, explaining that the incorrect table of known sites was sent with the consultation letter. The correct NWIC information on sites was sent over along with an offer to set up a meeting and provide cultural documents for review once available. No response was received.
5/30/2025	Email	Follow up email sent

Contact Log

Contact Information

Northern Valley Yokut / Ohlone Tribe
Katherine Perez, Chairperson
P.O. Box 717
Linden, CA, 95236
(209) 649-8972
canutes@verizon.net

Date	Method	Comments
5/6/2025	Email	Initial consultation letter sent via email
5/30/2025	Email	Follow up email sent

Contact Log

Contact Information

The Ohlone Indian Tribe
Andrew Galvan, Chairperson
P.O. Box 3388
Fremont, CA, 94539
Phone: (510) 882-0527
chochenyo@AOL.com

Date	Method	Comments
5/6/2025	Email	Initial consultation letter sent via email
5/6/2025	Email	Response received from Andy Galvan, requesting a copy of the NAHC results letter and contact list.
		Received the following for one of the e-mails cc'd "The following addresses had permanent fatal errors ----- <vincent.d.medina@gmail.com> (reason: 552-5.2.2 The recipient's inbox is out of storage space and inactive. Please)"
5/7/2025	Email	Requested documents were shared.
5/30/2025	Email	Follow up email sent excluding the Vincent Medina email
6/16/2025	Email	Email was stuck in the outbox folder, so another follow up email was sent.

Contact Log

Contact Information

Wuksachi Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas, CA, 93906
(831) 443-9702
kwood8934@aol.com

Date	Method	Comments
5/6/2025	Email	Sent initial consultation letter via email
5/30/2025	Email	Follow up email sent

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Appendix D:
Geology and Soils Supporting Information

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D-1: Geotechnical Report

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Geotechnical Report

San Pablo Dam Road Storm Drain and Slide Repair – 200 ft Southeast of La Honda Road

El Sobrante, Contra Costa County, CA

24-1088.2
April 6, 2026

Prepared by:

Crawford & Associates, Inc.
4701 Freeport Boulevard
Sacramento, CA 95822

Prepared for:

Consor North America, Inc.
2868 Prospect Park Drive, Suite 250
Rancho Cordova, CA 95670

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

Sacramento
Chico
Eureka
Modesto
Santa Rosa
Seattle
Ukiah

April 6, 2026
Crawford File No. 24-1088.2

Mr. Robert Ferguson PE,
Principal Engineer
Consor North America, Inc.
2868 Prospect Park Drive, Suite 250
Rancho Cordova, CA 95670

Subject: **GEOTECHNICAL REPORT**
San Pablo Dam Road Storm Drain and Slide Repair - 200ft Southeast of La Honda Road
El Sobrante, Contra Costa County, California

Dear Mr. Ferguson,

Crawford & Associates, Inc. (Crawford) prepared this Geotechnical Report for the San Pablo Dam Road Storm Drain and Slide Repair - 200ft Southeast of La Honda Road Project, in accordance with our agreement dated June 24, 2024. This report summarizes the results of the field investigation, assesses the cause(s) of the failure, and provides recommendations for the selected repair alternative. This report supersedes the draft Geotechnical Report dated August 1, 2025, and incorporates comments from Consor and Contra Costa County.

Thank you for the opportunity to be part of the design team. Please contact us if you have questions or require additional information.

Benjamin D. Crawford, PE, GE
Principal Geotechnical Engineer

Ellen Tiedemann, PE
Project Manager





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Appendix B – Crawford Boring Log Legend, Boring Logs
Appendix C – Crawford Laboratory Test Results

1 INTRODUCTION

This Geotechnical Report presents the results of Crawford & Associates (Crawford)'s geotechnical investigation completed for the San Pablo Dam Road Landslide Repair. This report summarizes the results of the 2024 field investigation and the previous field investigation performed by BSK Associates (BSK) and provides recommendations for the selected repair alternative to restore the integrity of the roadway and embankment.

2 GEOTECHNICAL SERVICES

To prepare this report, Crawford:

- Discussed the project with Consor North America, Inc (Consor);
- Reviewed the "DRAFT Type Selection Memorandum", and 30% design drawings prepared by Consor, dated November 11, 2024.
- Review the draft 95% plans prepared by Consor and provided on March 26, 2026;
- Reviewed published topographic, geologic, landslide, and seismic mapping of the site;
- Reviewed the Damage Assessment Form (DAF) no. LTP-CCCO-003-0;
- Reviewed the 1971 As-Built plans from the previous roadway repair;
- Reviewed the four borings completed by BSK;
- Reviewed the "Geological and Geotechnical Site Reconnaissance Memorandum" prepared by BSK dated May 16, 2023;
- Reviewed the "Geological and Geotechnical Investigation Report" prepared by BSK dated June 20, 2024;
- Completed two additional borings on September 19 and 20, 2024 to better define the depth to competent material below the existing bench;
- Performed laboratory testing and geotechnical engineering analysis in support of the recommendations contained herein; and
- Discussed the preliminary recommendations with the design team.

3 PROJECT AND SITE DESCRIPTION

This project site is located on San Pablo Dam Road just east of its intersection with La Honda Road in El Sobrante, California. The site is approximately located at latitude 37.9624° and longitude -122.2859°. See Figure 1 for the Vicinity Map and Figure 2 for the topography on the Exploration Map.

At the project site, San Pablo Road is a paved four-lane travel-way roadway that was established on a cut-fill section. San Pablo Creek is about 110 to 140 feet downslope from edge of pavement along San Pablo Road at an elevation approximately 45 feet lower than San Pablo Road. The adjacent slopes are covered primarily with dense vegetation including ivy, brush, and trees such as oak and deciduous.

In 1971, the slope was partially reconstructed following a failure in the late 1960's (discussed in Section 4 below), and a 12 to 16 feet wide bench was installed about ½ way down the slope to San Pablo Creek. The repair depth was reduced during construction leaving in place 6 to 10 feet

of slide debris below the reconstructed embankment. The reconstructed embankment slopes ranged from about 1.7H:1V to 2H:1V above and below the bench.

Based on our discussions with the Design Team and site review, we understand a landslide occurred along the westbound outer lane and shoulder of San Pablo Dam Road about 200 feet southeast of La Honda Road during the winter storms of February and March 2023. An existing culvert outlet (inboard collection), constructed as part of the 1971 repair also deposited stormwater onto the subject slope below the bench. This 18-inch culvert was also damaged during the landslide. It is unknown whether culvert inundation and failure saturated and weakened the embankment, or if embankment failure occurred first due to heavy rains and caused the culvert to fail. During our site visit, some erosion at the creek near the toe of the slope was observed. It is suspected that the bench failed (likely due to a combination of erosion and saturated soils) through old landslide debris in a portion of the 1971 partially repaired embankment. This failure led to the loss of support to the upper portion of the slope and subsequent roadway failure. The 120 feet long failure at the road elevation encroached into the westbound lane by roughly two feet. Roadway and slope cracks were about 8 to 17 inches wide, and the roadway settled more than 3 feet.

Based on our review of the plans and onsite observations, overhead communication, fiber, and electric lines are present in the westbound shoulder. An underground gas line is present within the westbound shoulder, except between about Station 19+50 to 21+00 where the gas line is within the roadway. A storm drain inlet is in the eastbound shoulder and outlets to the eastbound shoulder where the failure occurred. Two underground water lines and a sewer line present within the eastbound lanes. An underground gas line is also present within the eastbound shoulder. An overhead electric line crosses perpendicular to the roadway to a power pole near the corner of La Honda Road and San Pablo Dam Road.

4 AS-BUILT

Based on our review of the 1971 as-built plans, the slope was previously reconstructed within similar limits of the current failure. The reconstruction depths appear to have been reduced during construction, and 6 to 10 feet of slide debris was left in place below the reconstructed embankment. The reconstruction started about 10 feet south of the roadway center line and extended to about elev. 140 feet within the travel way, before extending to elev. 112 to 122 feet at the bottom of the keyway; new bench was constructed midway between the roadway and San Pablo Creek. The bench ranged from about 15 to 28 feet wide. The total reconstruction ranged from about 100 to 125 feet in width with finished outboard slopes of 1.5H:1V (steeper than existing observed slopes).

A total of 61 vertical drainage wells were installed along the inboard lane at 5 feet on-center intervals and backfilled with permeable material. The drainage wells were 30 feet deep with a 2.5 foot diameter column and a 6 foot diameter bell within the bottom 5 feet. The drainage wells extended to about elev. 120 to 122 feet. Three of the drainage wells connect to 2.5-inch horizontal drains which outfall on the new embankment near the creek. The 2.5-inch horizontal drains are located within the existing ordinary high water mark. An existing 18-inch RCP horizontal outlet pipe appears to have been abandoned during construction and rerun at a higher elevation (elevation 140 ft) before out letting at the toe of the new embankment near the creek.

5 FIELD EXPLORATION

A total of six borings by BSK and Crawford were completed near the failure. A summary of the explorations is provided in Table 1. Refer to Sections 6.1 and 6.2 for additional details.

Table 1: Summary of Exploratory Borings

Boring I.D.	Boring Location	Completion Date	Surface Elevation (ft)	Drilled Depth (ft)	Drill Rig	Hammer Type	Hammer Efficiency Ratio
B-4 (BSK)	La Honda Road	9/27/23	152	46.5	CME 55 Truck	Auto (140 lbs)	NA[1]
B-5 (BSK)	Roadway Shoulder	10/09/23	155	22.5	Minute-man Tripod	Cathead (140 lbs)	NA[1]
B-6 (BSK)	Landslide Scarp	10/10/23	153	23.5			
B-7 (BSK)	Landslide	10/10/23	136	21.0			
A-24-001	Landslide	9/19/24	138	49.25	Bobcat Rig	Cathead (140 lbs)	60.0
R-24-002	Roadway Shoulder	9/20/24	155	55.0	D-70 Truck	Auto (140 lbs)	79.7

[1] No hammer efficiency reported.

5.1 2023 BORINGS

BSK completed four borings at the site from September 27, 2023 to October 10, 2023. Borings B-5, B-6, and B-7 were located within the immediate vicinity of the site failure and were drilled with a Minuteman Tripod utilizing a cathead hammer to a maximum depth of 23.5 feet below ground surface (bgs). B-5 was located on the roadway shoulder outside of the failure. B-6 was located on the landslide scarp near the roadway shoulder. B-7 was located within the bench downslope of the road, however, the boring did not extend below the recent and historical slide debris, 1971 embankment fill, into the underlying native/intact material. Soil samples were recovered by means of 2.0-inch O.D. Standard Penetration Test (SPT) split-spoon sampler (ASTM D1586), a 2.5-inch O.D. “California” split-spoon sampler, and/or a 3.0-inch O.D. “Modified California” split-spoon sampler (ASTM D3550) without liners.

Boring B-4 was drilled on the adjacent La Honda Road to a depth of 46.5 feet bgs. B-4 was advanced with a CME-55 truck mounted drill rig utilizing 4-inch diameter hollow stem auger. Soil samples were recovered by means a 3.0-inch O.D. “Modified California” split-spoon sampler (ASTM D3550) with liners.

BSK observed water “dripping” out of the two 2.5-inch outfall pipes on June 22, 2023.

The BSK logs and boring locations are included in Appendix A.

5.2 2024 BORINGS

To supplement the previous borings, Crawford completed two additional borings on September 19, 2024 and September 20, 2024. Both borings were located within the immediate vicinity of the failure. A-24-001 was located on the bench downslope of the road to observe the conditions of the recent slide debris, 1971 embankment fill, underlaying historical slide debris, and underlying native/intact material. R-24-002 was located on San Pablo Dam Road just west of the failure. See Figure 2 for boring locations.

A-24-001 was drilled using a walk behind bobcat mounted rig and cathead hammer to a maximum depth of 49.25 feet bgs. R-24-002 was advanced using a Diedrich D-70 truck mounted rig with solid flight auger and mud-rotary drilling methods to 55 feet bgs. Samples were driven with a 140 lb automatic hammer. Soil samples were recovered by means a 3.0-inch O.D. “Modified California” split-spoon sampler (ASTM D3550) with liners and a 2.0-inch O.D. Standard Penetration Test (SPT) split-spoon sampler (ASTM D1586). The logs for these borings are included in Appendix B.

Crawford observed water draining out of one of the 2.5-inch outfall pipes on September 19, 2024.

6 LABORATORY TESTING

6.1 2023 BORINGS

The following laboratory tests were completed by BSK on representative soil samples obtained from the exploratory borings:

- Atterberg Limits (ASTM D4318)
- Resistance Value (R-value) (ASTM D2844)
- Unconsolidated-Undrained Triaxial Compression (ASTM D2850-23)
- pH, minimum-resistivity, Chloride, and Sulfate (CT 643, CT 422, CT 417)

The BSK laboratory test results are presented in Appendix A following the boring logs.

6.2 2024 BORINGS

The following laboratory tests were completed by Crawford on representative soil samples obtained from the exploratory borings:

- Consolidated-Undrained Triaxial Compression (ASTM D4767m)
- Dry Density and Moisture Content (ASTM D2937 / D2216)
- No. 200 Sieve Wash (ASTM D1140)
- Particle Size Distribution (ASTM 6913)
- Unconfined Compressive Strength (ASTM D2166)
- Unconsolidated-Undrained Triaxial Compression (ASTM D2850-23)
- Unit Weight (ASTM D7263)

The Crawford lab results are presented in Appendix C.

7 CORROSION EVALUATION

For structural elements, Caltrans[1] defines a corrosive environment as an area where the soil has either a chloride concentration of 500 ppm or greater, a sulfate concentration of 1,500 ppm or greater, or has a pH of 5.5 or less. With the exception of MSE wall design, Caltrans does not include minimum resistivity as a parameter to define a corrosive area for structures. Soil and water are not required to be tested for chlorides and sulfates if the minimum resistivity is greater than 1,100 ohm-cm.
BSK completed corrosion analysis via CERCO Analytical, Inc on two borings at the site. The results are summarized in Table 2.

Table 2: Soil Corrosion Test Summary

Boring / Sample No.	Depth (ft)	Elevation (ft)	Soil Description	Minimum Resistivity (ohm-cm)	pH	Chloride Content (mg/kg)	Sulfate Content (mg/kg)
B-4 / 4B	15.5	136.5	Lean Clay	720	8.03	23	260
B-5 / 5B	21.5	133.5	Lean Clay	1,000	8.36	33	67

Based on Caltrans requirements, the site is considered non-corrosive. The test results are only an indicator of soil corrosivity. Section 12 of Caltrans' guidelines provides information regarding corrosion mitigation measures for structural elements and lists additional Caltrans guideline documents regarding corrosion mitigation if deemed appropriate by the designer. The CERCO Analytical Inc. laboratory summary indicated the resistivity is considered corrosive for all buried steel, iron, cast iron, galvanized steel, and dielectric coated steel/iron, and the sulfate concentration is detrimental to reinforced concrete and cement mortar-coated steel. The designer should also consult with a corrosion engineer if the test result values are considered significant.

8 SITE GEOLOGY AND SUBSURFACE CONDITIONS

8.1 SITE GEOLOGY

The project site lies within the Coast Ranges Geomorphic Province, which is characterized by a series of northwest-trending mountain ranges with intermountain valleys and sub-parallel to the active San Andreas Fault. The Coast Ranges is composed of thick Cenozoic sedimentary and volcanic strata overlying Mesozoic metamorphic rock. The northern Coast Ranges are dominated by the irregular, knobby, landslide-topography of the Franciscan Complex.

From our review of published regional geologic maps, the site is underlain by Holocene-age Basin Deposits of Alluvium (Q) and Miocene-age Contra Costa Group – Nonmarine Sedimentary Rocks (Mcc). The Alluvium is described as unconsolidated stream and basin deposits, clay to boulder size. The Contra Costa Group is described as sandstone, conglomerate, shale and minor claystone, limestone and tuff.

See attached Figure 3 for the Geologic Map.

[1] Caltrans Corrosion Guidelines Version 3.2, May 2021

8.2 FAULTS AND SEISMIC ACTIVITY

Based on mapping by the California Geological Survey[2], the nearest "active" fault (defined as surface displacement within the last 11,000 years) is the Hayward Fault located approximately 2.25 miles southwest of the site. No active fault traces are shown on either the cited published mapping to cross the site and the site is not within or adjacent to an Alquist-Priolo Earthquake Fault Zone[3] for fault rupture hazard.

See attached Figure 4 for the Fault Map.

8.3 SOIL CONDITIONS

Earth materials encountered in the borings are generally consistent with published geologic maps with near surface materials consisting of predominantly clay and fill underlain by sedimentary rock. Soil descriptions for the site are summarized below. Refer to the boring logs in Appendices I and II for more detailed soil conditions.

Unit 1 (Fill) consists of roadway/embankment fill generally comprised of very stiff to hard sandy lean clay with gravel, and some clayey sand. This unit was encountered from ground surface to a depth of about 13.5 feet (elev. 124.5±) in boring A-24-001, about 20 feet (elev. 135±) in boring R-24-002. Borings B-5, B-6 and B-7 from BSK show similar data in this unit.

Unit 2 (Old Landslide Debris) consists of landslide material generally comprised of medium stiff to stiff lean clay with sand, sandy lean clay, fat clay with sand and sandy fat clay. This unit was encountered from 13.5 (elev. 124.5±) to a depth of about 26 feet (elev. 112±) in boring A-24-001, and from 20 feet (elev. 135±) to 34 feet (elev. 121±) in boring R-24-002. Borings B-6 and B-7 from BSK also noted this landslide slip plane zone with similar characteristics. BSK also encountered perched groundwater at a depth of 18.5 to 19.5 feet within this zone.

Unit 3 (Intact Native Soil) consists of native soil generally comprised of stiff to hard sandy lean clay, lean clay with sand and clayey sand. This unit was encountered from a depth of 26 feet (elev. 112±) to 38 feet (106±) in boring A-24-001, and about 34 feet (elev. 121±) to 48 feet (107±) in boring R-24-002.

Unit 4 (Intact Sedimentary Rock) consists of variably weathered sedimentary rock and was encountered below Unit 3 to the maximum depth explored (49.2± feet elev. 88.8 in A-24-001 and 55±feet elev. 100 in R-24-002). This rock unit was generally intensely to moderately weathered and very soft.

8.4 GROUNDWATER

Free ground water was not observed in the borings performed for the current exploration or in borings B-4 and B-5 performed for the BSK exploration. Perched groundwater was observed in borings B-6 and B-7 performed for the BSK exploration at a depth of 18.5 to 19.5 feet below the ground surface. The perched water is likely the result of seepage, and damaged outfall pipeline(s) (18-inch culvert and possibly the drainpipes) and are not indicative of regional groundwater levels. We expect groundwater would coincide with water levels within San Pablo Creek (approximately elev. 110 ft). Groundwater levels can fluctuate due to changes in precipitation, seasonal variations, local irrigation, and possibly other factors.

[2] https://maps.conservation.ca.gov/cgs/fam/
[3] http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps

8.5 SHEAR WAVE VELOCITY

Based on the soil profile obtained in the sampled borings, a V_{s30} velocity of 277 meters/second (984 feet/second) is considered appropriate for use in design, which corresponds to a Soil Profile Type D (shear wave velocity 600 < V_{s30} feet/second) per Caltrans SDC 2.0.

8.6 GROUND MOTION PARAMETERS

The Caltrans ARS Online (3.1.0), web-based tool was used to calculate the probabilistic acceleration response spectra for the site based on criteria outlined in Appendix B of Caltrans SDC 2.0. Table 3 summarizes the recommended ground motion design parameters.

Table 3: Ground Motion Parameters

Site Parameters			**Design Ground Motion Parameters (Return Period = 975 years)**			**Soil Profile Class**
Latitude (degrees)	Longitude (degrees)	Shear-Wave Velocity VS30 (m/sec)	Horizontal Peak Ground Acceleration (g)	Deaggregated Mean Earthquake Fault Moment Magnitude for PGA	Deaggregated Mean Site-to-Fault Distance for 1.0 Second Spectral Acceleration (km)	
37.9624	-122.2859	277	0.8	7.01	6.7	D

9 CONCLUSIONS AND DISCUSSION

Based on our discussions with Consor, the preferred alternative for the embankment rehabilitation is a stitch pile retaining wall. The stitch pile wall will help protect the slope from further erosion. The location of the stitch pile wall is near the middle of the embankment, where the existing bench between the roadway and San Pablo Creek is located. The embankment above the stitch pile wall will be excavated and reconstructed at about a 1.5H:1V (or flatter) slope with a 10-foot wide horizontal bench behind the stitch pile wall. A wider bench means the slope is set farther away from the wall which reduces the soil pressure during static and seismic loading conditions. The length of the stitch pile wall is approximately 150 feet and will consist of 25 piles spaced at 6 feet. The plans show the stitch piles to be 36-inch diameter cast-in-place-drilled-hole (CIDH) piles. The top of wall elevation ranges between 131.7 to 134.7 feet.

The proposed stitch pile wall and embankment reconstruction is considered feasible provided the recommendations in this report are followed. The following summarizes the general key elements of the stitch pile wall.

- Following temporary grading and slope excavation, over-excavate the recently failed slide debris to a depth of 3 ft below top of stitch pile wall elevation, scarify the exposed subgrade, place geogrid and drainage blanket, and place and compact backfill to 95% relative compaction. Reestablish finished grade. The overexcavation does not apply to the temporary slope. Based on discussions with Consor, the drainage blanket will extend to the top of the bench.
- Drill vertical piles with minimum 27 ft embedment into the very stiff soil and decomposed weathered rock units.
- Space piles a maximum twice the pile diameter on centers to take advantage of soil arching.

- Construct and/or install stitch pile retaining wall elements.
- Maintain the existing concrete-lined v-ditch to intercept surface water.
- Protect and ensure drainage is maintained in the 2.5-inch outfall pipes.
- Reconstruct reinforced embankment and place drainage elements.
- Control surface runoff to direct water away from the slide area
- Reconstruct pavement section.

10 RECOMMENDATIONS

10.1 STITCH PILE WALL RECOMMENDATIONS

10.1.1 LPILE PARAMETERS

The LPILE parameters for use in lateral pile capacity analysis are shown in Table 4.

Table 4: LPILE Parameters

Material	Elevation (feet)	L-Pile Soil Type	Total Unit Weight (lb/ft^3)	Friction Angle (degrees)	Undrained Shear Stength (psf)	Strain Factor, E50 (dim.)	p-y Modulus, k (lb/in^3)
Unit 1: Previous Fill	136 to 124	Stiff Clay without Water (Reese)	120	-	3,000	0.005	-
Unit 2: Landside Debris	124 to 112	Stiff Clay without Water (Reese)	119	-	1,200	0.007	-
Unit 3: Intact Soil	112 to 106	Stiff Clay without Water (Reese)	124	-	2,400	0.006	-
Unit 4: Intact Sedimentary Rock	106 to 89	Stiff Clay without Water (Reese)	125	-	4,500	0.0045	-

For a single row of piles spaced at 2D (two times the diameter), we recommend using a P-multiplier of 0.6[4].

10.1.2 AXIAL CAPACITY

Axial capacity is not expected to control the pile tip elevations, however if requested, Crawford can perform additional analysis to determine the axial pile tip elevations.

[4] Reese, L. C., Isenhower, W. M., & Wang, S.-T. (2006). *Analysis and design of shallow and deep foundations Lymon C. Reese, William M. Isenhower, Shin-tower Wang*. John Wiley and Sons.

10.1.3 LATERAL EARTH PRESSURES

The nominal equivalent fluid weights (EFWs) shown in Table 5 and 6 are recommended to design the stitch pile retaining wall. The drainage blanket extends only to the top of the bench and does not extend to the bottom of the pile cap. As a result, soils behind the pile cap are anticipated to be saturated, resulting in higher unit weights

Table 5: Nominal Static EFWs

Soil Type	Active Static EFW (pcf)[5]	Passive Static EFW (pcf)
Unit 1: Previous Fill	49	-
Unit 1: Previous Fill (Saturated)	53	-
Unit 2: Landside Debris	59	135
Unit 3: Intact Soil	47	300
Unit 4: Intact Rock	--	320

Table 6: Additional Seismic EFWs

Material	Condition	ΔEFW_{EQ} (pcf)
Unit 1: Previous Fill	Active	42
Unit 1: Previous Fill (Saturated)	Active	46
Unit 2: Landside Debris	Active	42
Unit 3: Intact Soil	Active	44

Refer to Figure 3.11.5.6-1 of AASHTO LRFD BDS (8th Edition) for application of static earth pressure distributions for cantilever walls. Active EFW (EFWA) should be used if the wall is free to rotate at least 0.016 times the wall. Static at-rest EFW (EFWO) should be used for walls that are restrained at the top, at corners, or have sharp bends and do not deflect or move. The active pressure is applied along the full length of the wall. Active pressure against the back of the piles is neglected in Unit 4 since the piles are embedded into rock material. The active pressure should also be applied along the pile cap along the top of the wall. The passive pressure should be distributed using a triangular distribution from elev. 124 to 106. The passive earth pressure resistance can be applied to an effective pile width of two times the pile diameter, provided that the pile spacing is greater than or equal to the effective pile width.

For seismic design, add the incremental lateral seismic active earth pressure specified above to the static active earth pressure (i.e., $P_{EQ} = P_{static} + \Delta P_{EQ}$). We used a horizontal seismic acceleration coefficient (k_h) of 0.27 (i.e., one-third of the site PGA of 0.8g) and recommend using a triangular pressure distribution and applying the magnitude of the resultant at H/3 from the top of the wall to elev. 106 feet. Refer to Figure 11.8.6.2-1 of AASHTO LRFD BDS, 8th Edition that shows the seismic force diagram for non-gravity cantilever walls.

[5] Traditional Caltrans recommended active earth pressure.
[6] AASHTO LRFD BDS Table C3.11.1-1 for compacted lean clay

10.2 EMBANKMENT RECONSTRUCTION RECOMMENDATIONS

10.2.1 COMPACTION AND REGRADING

The excavated material should be re-graded as compacted embankment fill at a slope of 1.5H:1V (or flatter), placed to 95% relative compaction (per ASTM 1557). Spreading and drying of the excavated soils may be necessary for moisture control in the clayey soils prior to placement. The slopes should be overbuilt and cut back to grade, track walking slopes is not an adequate method of compaction.

10.2.2 GEOGRID REINFORCEMENT

Geogrid reinforcement is required to stabilize the reconstructed embankment due to the proposed finish slope angle and reuse of onsite material. The slope should be scarified to a depth of 6-inches. After scarifying the temporary slope, place geogrid prior to reconstructing the slope. The geogrid should consist of the following:

- Primary Reinforcement – Place reinforcement (e.g., uniaxial geogrid) the full-width of the reconstructed section with a 2-foot vertical spacing. A minimum long-term design strength (LTDS) of 2,000 lbs/ft following Caltrans[7] for the geogrid reinforcement is required.
- Secondary Reinforcement – Place reinforcement (e.g., biaxial geogrid) along the outer 4 feet of the reconstructed embankment slope, between the primary reinforcement layers, for surficial reinforcement. A minimum ultimate tensile strength of 800 lbs/ft for the geogrid reinforcement is required.

The geogrid should be placed in accordance with the manufacturer's construction recommendations. Surficial facing material is not required.

10.2.3 DRAINAGE

Additional subdrainage should be provided with a minimum 18-inch thick "drainage blanket" placed along the backslope of the excavation, above the bench. The drainage blanket should extend to within approximately 2 feet of the road grade. The drainage blanket should consist of Caltrans Class 1 permeable material (with Class C filter fabric) or Class 2 permeable material (without filter fabric). Based on discussions with Consor, the base of the drainage blanket is set at or up to 1 foot below the top of wall to promote positive drainage within the project limits. A perforated pipe should be placed at the base of the drainage blanket to collect perched water. The perforated pipe should connect to a solid pipe that drains away from the repair/stitch pile wall and into an energy dissipator. The bench above the stitch pile wall should be graded so that water is not allowed to collect near the wall and is drained away from the wall.

The inboard deep column drains were likely installed during the previous repair at the site to capture drainage from the above slope and the 2.5-inch drainpipes (hydroaugers) associated with these column drains appear to continue to function in some manner (as water continues to be observed at the outlet pipes in the field). Therefore, they need to be accounted for during design and construction. Due to their age, we would generally not expect them to be completely intact, and initially recommended they be decommissioned and filled with grout. However, we understand decommissioning the 60+, 30-foot-deep inboard drainage walls would require closing

[7] Caltrans Standard Specifications, 2025

the inboard eastbound lane and excavation of 300 feet of shoulder and possible roadway to locate the drainage columns, which would be difficult and may be cost prohibited.

After discussions with the Design Team, there were concerns on the feasibility of decommissioning the drainage columns and drainpipes. The drainage columns will be left in place and the 2.5-inch outfall drainpipes will be protected during construction to maintain the current level of drainage control. The construction of the stitch pile may damage the existing drainage system (including the 2.5-inch outfall pipes). We understand the drainpipes were located prior to construction and their locations will be shown on the plans to reduce this risk. If the existing drainage wells are left intact and the 2.5-inch drainpipes are damaged during construction, seepage will likely saturate the deeper historical slide debris and potentially reactivate it. Therefore, if the outfall drains are damaged during construction, new drainage pipes (in the vicinity of the damage pipes) should be installed to the drainage columns to reestablish the drainage paths.

Subsurface drains should be constructed following Caltrans Standard Specifications Section 68-3.

10.2.4 EROSION PROTECTION

The finished slope in front of the wall should be vegetated to minimize erosion potential. Placement of erosion control mats or other suitable erosion control measures are recommended to minimize erosion during establishment of vegetation.

10.2.5 ADDITIONAL CONSIDERATIONS

Controlling the onsite drainage is important to the success of the reconstructed embankment and stitch pile wall. Based on conversations with the Design Team, removal and full decommissioning of the historical drainage columns and horizontal drains may be challenging to achieve and may require a larger excavation in the inbound shoulder. Some level of additional excavation and investigation should be expected to address the existing drainage elements and prevent uncontrolled saturation of the project elements. Adding additional horizontal drains or a trench underdrain behind the stitch pile wall would help control the existing seepage and reduce the potential of hydrostatic pressures behind the wall. At a minimum, drainage elements damaged during construction should be replaced. The water from the outfall drains should be controlled to reduce the saturation of the embankment soils.

11 CONSTRUCTION CONSIDERATIONS

11.1 EXCAVATIONS

Site soils are anticipated to be rippable by typical excavation equipment and it is expected that excavation of soils and rock within CIDH pile excavations can be achieved using heavy-duty foundation drilling equipment. The CIDH pile excavations should be constructed in a way where piles within 4 pile diameters (center to center) are not drilled until the concrete in the previous hole has set up (i.e. drill every other CIDH pile).

Construct CIDH piles in conformance with Section 49-3 of the Standard Specifications, Revised Standard Specifications, and Standard Special Provisions. The CIDH piles should be poured as soon as possible after completion of excavation. Free groundwater is not expected to be presented within the CIDH pile excavations during summer construction and can be constructed

"in the dry". Perched groundwater was encountered and will likely accumulate in some of the stitch pile excavations. If the CIDH piles extend past the creek elevation, water will likely be encountered within the excavations. The CIDH piles should be poured in clean, dry excavations; good practice dictates pouring of such piles as soon as possible after completion of excavation. If there is more than 3-inches of water in the bottom of the hole, the water should be pumped out prior to placing the concrete or the concrete should be placed with a tremie pipe.

The contractor is responsible for design, construction, and safety of all excavations in accordance with CalOSHA requirements. The contractor should construct the CIDH piles in a manner that prevents the presence of anomalies which may require construction using the wet specification.

The following section should be added to the Standard Special Provisions.

49-1.03 Expected Difficult Pile Installation
Boring data indicate the presence of lean clay and weathered rock. The contractor should anticipate very dense driving conditions.

Table 7: Expected Difficult Pile Installation

Pile Type	Support Location	Conditions
36-inch CIDH	Stitch Pile Wall	Variably weathered sedimentary rock. This rock unit was generally intensely to moderately weathered and very soft. Refer to boring logs.

11.2 TEMPORARY CONSTRUCTION SLOPES

For planning and design, existing materials within the anticipated excavation depths are considered consistent with CalOSHA Type B Soils. Temporary construction slopes of 1H:1V, or flatter, are expected to be appropriately stable during dry season construction (summer/fall). Subdrainage may be required if significant perched water is encountered in the excavation. Temporary construction slopes should be reviewed by a competent person during construction to confirm soil types and evaluate excavation stability for possible supplemental support. The contractor is responsible for design, construction, and safety of all excavations in accordance with CalOSHA requirements.

11.3 DE-WATERING

Groundwater was not encountered during field exploration activities however water seepage/perched groundwater was observed within the recently failed material. During dry-season construction (summer/fall), seepage if/as encountered within CIDH pile excavations is expected to be controllable by pumping.

12 RISK MANAGEMENT

Our experience and that of our profession indicates that the risks of costly design, construction, and maintenance problems can be significantly lowered by retaining the Geotechnical Engineer of Record to provide additional services during design and construction.

For this project, Crawford should be retained as the Geotechnical Engineer of Record to:

- Review and provide comments on the final plans and specifications, insofar as they rely upon this report, prior to construction bidding to verify consistency with the recommendations contained herein.
- Review and provide comments on Contractor submittals, insofar as they rely upon this report, for conformance with the recommendations contained herein;
- Provide construction observation of embankment excavations and reconstruction, and pile installations to confirm anticipated subsurface conditions and provide supplemental recommendations, if necessary; and
- Update this report if design changes occur, two years or more lapse between this report and construction, or site conditions have changed.

Should there be any change in the project or should subsurface conditions differ from those described in this report be encountered during construction, this office should be contacted/notified for evaluation and supplemental recommendations, as needed.

Crawford is not responsible for any other parties' interpretation of our report and recommendations contained herein, as well as subsequent addendums, letters, and discussions. If others perform the construction observation, they should review this report and either accept the conclusions and recommendations herein as their own or provide alternative recommendations

13 LIMITATIONS

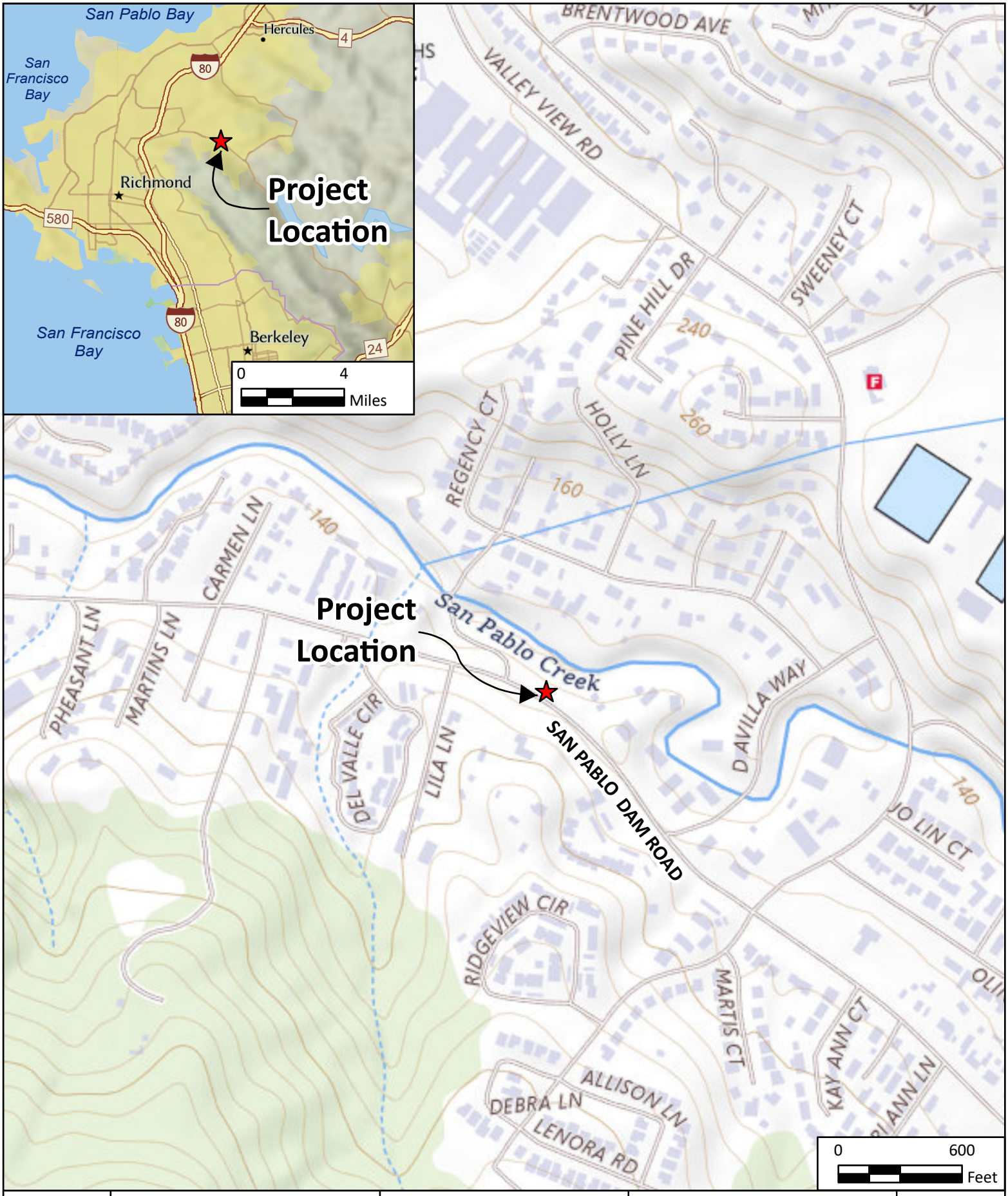
Crawford performed services in accordance with generally accepted geotechnical engineering principles and practices currently used in this area. Where referenced, ASTM or Caltrans standards are used as a general (not strict) guideline only. We do not warranty our services.

This report is based on the current site and project conditions and should only be used for the evaluation and design of repair alternatives for the San Pablo Dam Road Storm Drain and Slide Repair - 200ft Southeast of La Honda Road project**.** It is assumed the soil and groundwater conditions interpreted/encountered in the current and previous explorations (see logs provided in the Appendices I and II) are representative of the subsurface conditions at the site. Actual conditions between explorations will vary along the project alignment. The interface shown between soil materials on the exploration logs is approximate; the transition between material types may be abrupt or gradual. The recommendations are based on the final exploration logs provided by others and our interpretation of them along with our general knowledge of the site and geological conditions.

Modern design and construction are complex, with many regulatory sources/restrictions, involved parties, and construction alternatives. It is common to experience changes and delays. The owner should set aside a reasonable contingency fund based on project complexities and cost estimates to cover changes and delays.

Figures

Figure 1: Vicinity Map
Figure 2: Exploration Map
Figure 3: Geologic Map
Figure 4: Fault Map
Figure 5: ARS Curve



NORTH

References

1. Base Map: USGS Topographic Map Layer, ArcGIS Pro, ESRI

2. Insert Base Map: National Geographic Style, ArcGIS Pro, ESRI

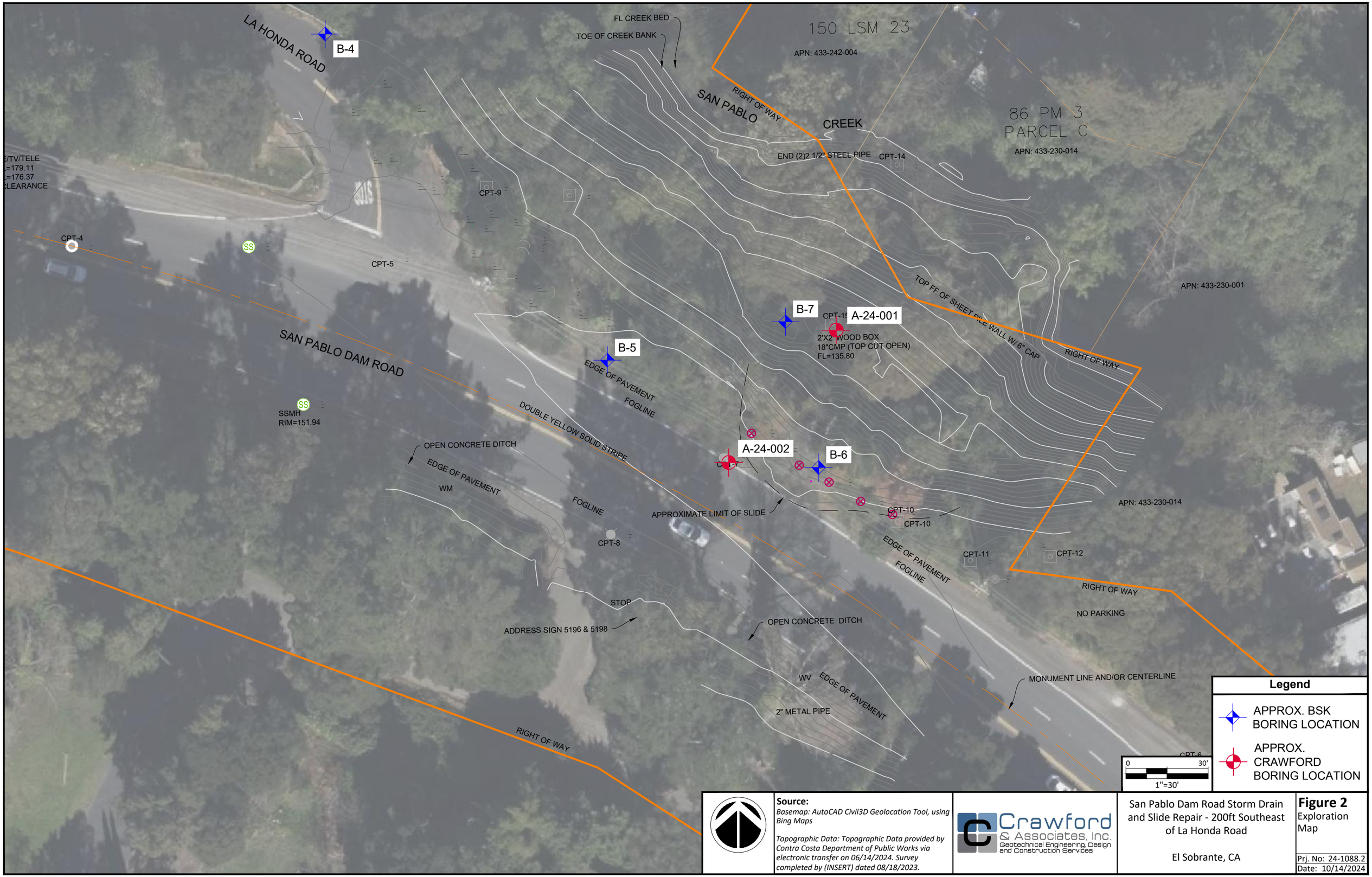
Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

San Pablo Dam Road Storm Drain and Slide Repair - 200ft Southeast of La Honda Road

El Sobrante, CA

Figure 1
Vicinity Map

Prj. No: 24-1088.2
Date: 10/14/2024



Source:
Basemap: AutoCAD Civil3D Geolocation Tool, using Bing Maps

Topographic Data: Topographic Data provided by Contra Costa Department of Public Works via electronic transfer on 06/14/2024. Survey completed by (INSERT) dated 08/18/2023.

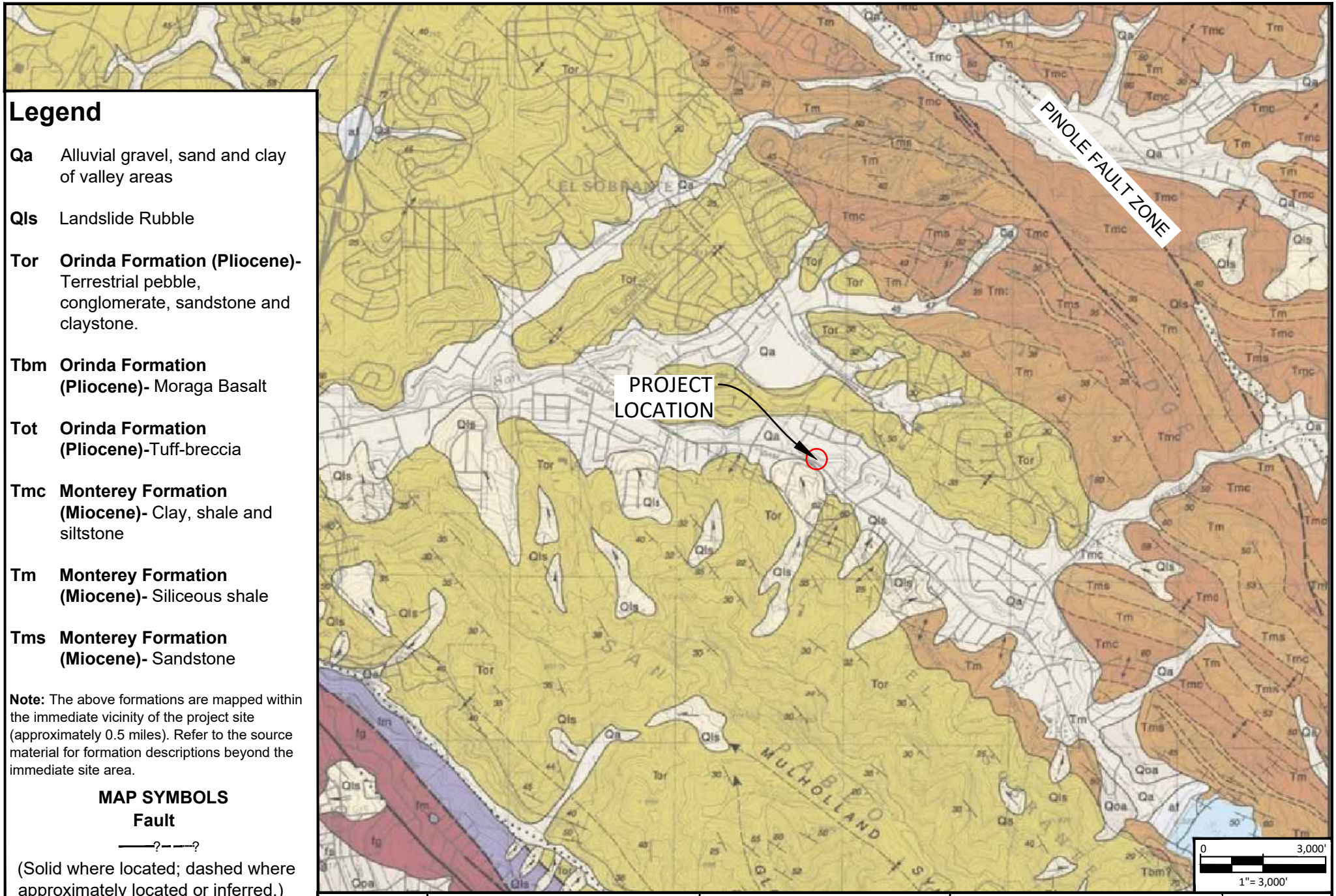
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San Pablo Dam Road Storm Drain and Slide Repair - 200ft Southeast of La Honda Road

El Sobrante, CA

Figure 2
Exploration Map

Prj. No: 24-1088.2
Date: 10/14/2024



Legend

Qa Alluvial gravel, sand and clay of valley areas

Qls Landslide Rubble

Tor **Orinda Formation (Pliocene)-** Terrestrial pebble, conglomerate, sandstone and claystone.

Tbm **Orinda Formation (Pliocene)-** Moraga Basalt

Tot **Orinda Formation (Pliocene)-**Tuff-breccia

Tmc **Monterey Formation (Miocene)-** Clay, shale and siltstone

Tm **Monterey Formation (Miocene)-** Siliceous shale

Tms **Monterey Formation (Miocene)-** Sandstone

Note: The above formations are mapped within the immediate vicinity of the project site (approximately 0.5 miles). Refer to the source material for formation descriptions beyond the immediate site area.

MAP SYMBOLS

Fault

——?– –?

(Solid where located; dashed where approximately located or inferred.)

Anticlinal fold

(Dashed where inferred; dotted where concealed by younger rocks.)

NORTH

Source:
Dibblee, D.W; 2005, Dibblee Geology Center; Geologic Map of The Richmond Quadrangle, Contra Costa and Alameda Counties; Map No. DF-147, sheet 1 of 1, 1:24,000.

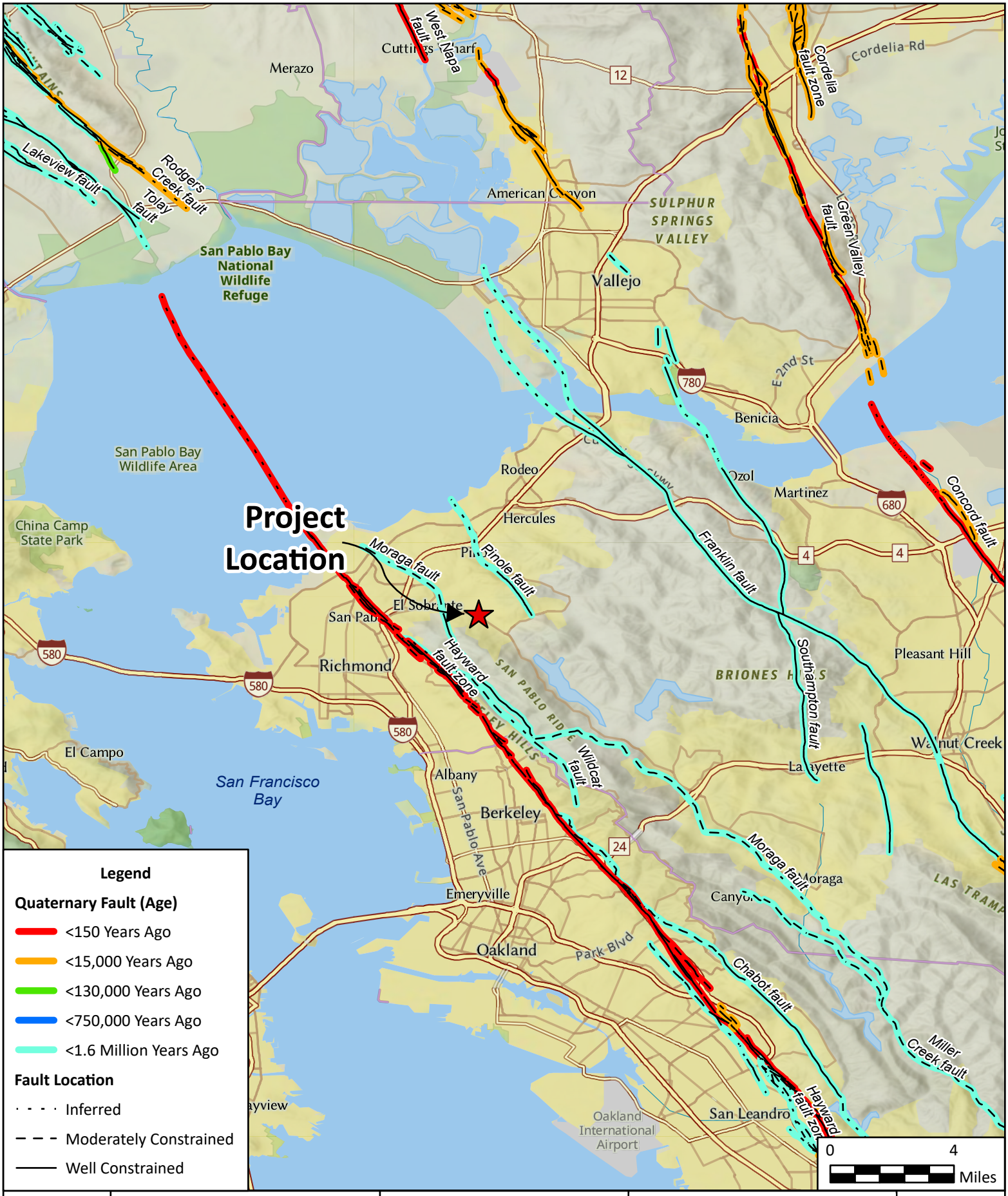
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Geotechnical Engineering, Design and Construction Services

San Pablo Dam Road Storm Drain and Slide Repair - 200ft Southeast of La Honda Road

El Sobrante, CA

Figure 3
Geologic Map

Prj. No: 24-1088.2
Date: 1/21/2025



NORTH

References

1. Fault Data: USGS GIS Data

2. Base Map: National Geographic Style, ArcGIS Pro, ESRI

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

San Pablo Dam Road Storm Drain and Slide Repair - 200ft Southeast of La Honda Road

El Sobrante, CA

Figure 4
Fault Map

Prj. No: 24-1088.2
Date: 10/14/2024

GROUND MOTION DATA SHEET - SAFETY EVALUATION EARTHQUAKE (SEE)

San Pablo Dam Road Storm Drain and Slide Repair - 200ft Southeast of La Honda Road

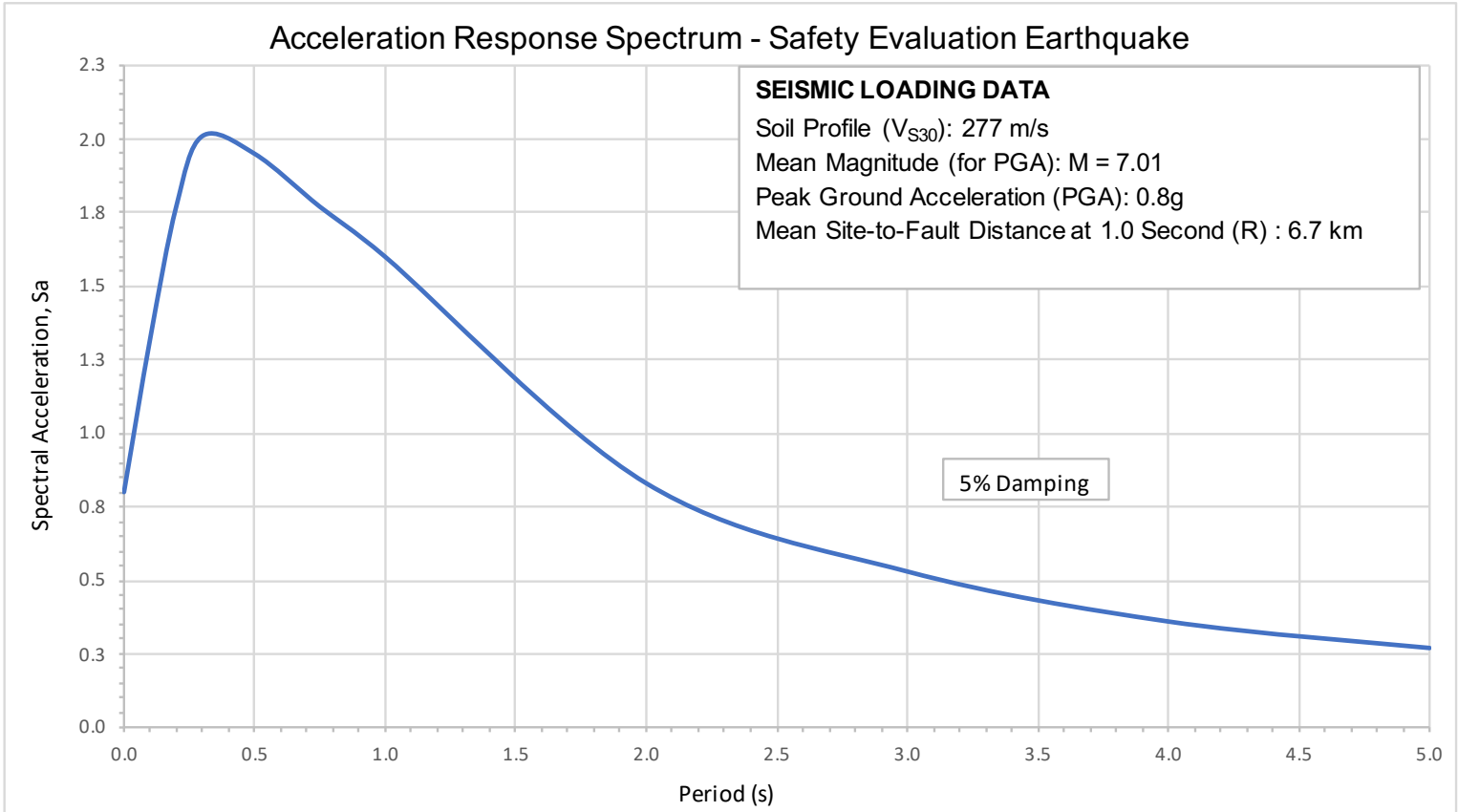
Contra Costa County, California

Caltrans Seismic Design Criteria: V2.0

Caltrans ARS Online Version: V3.1.0

Date Accessed: 1/25/2025

Period (s)	Spectral Acceleration, Sa (g)
0.0	0.80
0.1	1.32
0.2	1.77
0.3	2.01
0.5	1.95
0.8	1.77
1.0	1.60
2.0	0.83
3.0	0.53
4.0	0.36
5.0	0.27



The Acceleration Response Spectrum (ARS) for the Safety Evaluation Earthquake (SEE) is based on the USGS 2014 National Seismic Hazard Map for 975-year return period, (Hazard Model/Edition "Dynamic Conterminous U.S. 2014 (Update)(V4.2.0)") hazard data obtained by using ARS Online. Modifications for basin-effects and/or near-fault effects were applied, where applicable.

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Geotechnical Engineering, Design and Construction Services

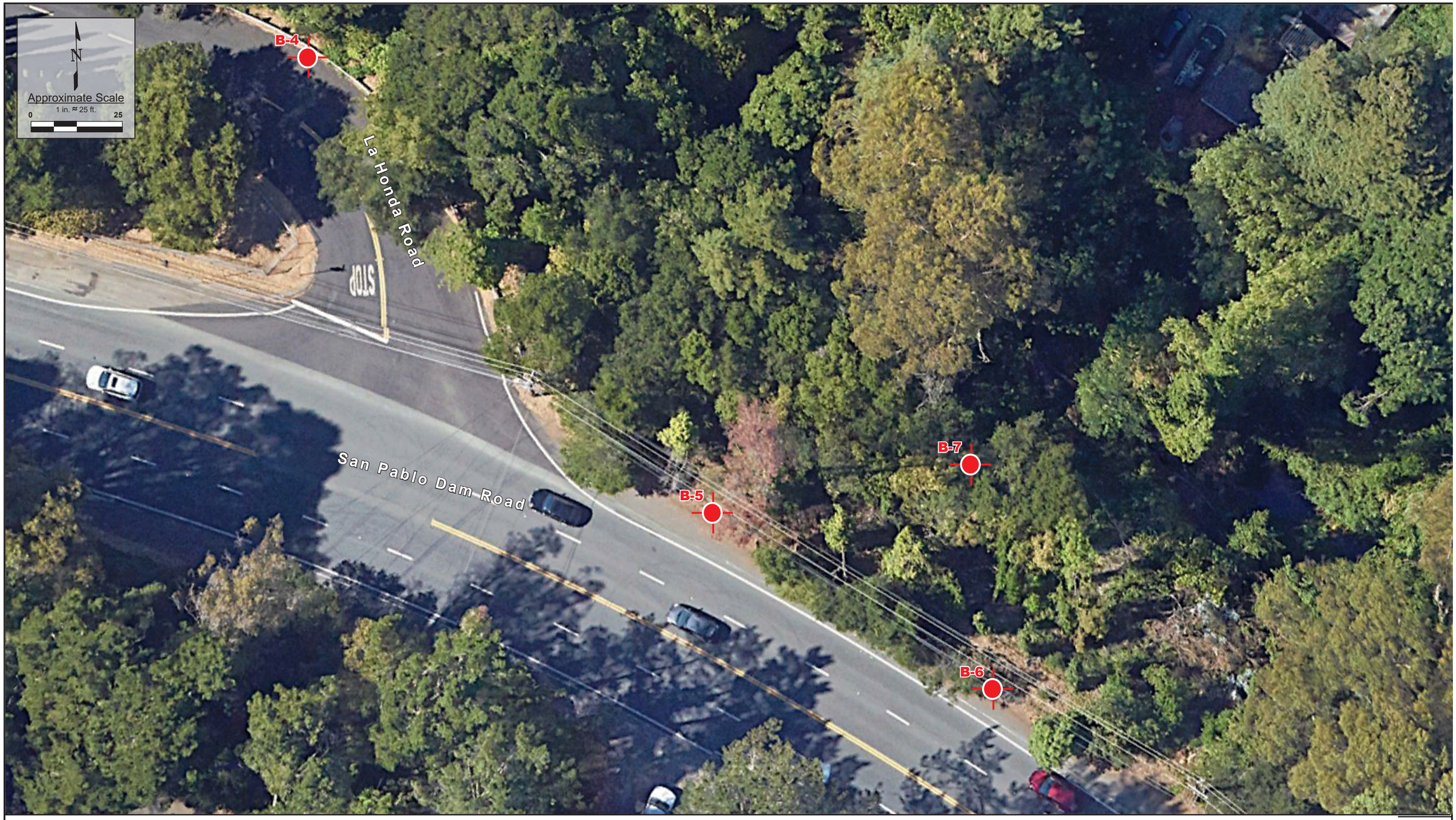
Site Latitude: 37.9624
Site Longitude: -122.2859

Crawford No.: 24-1088.2

FIGURE 5

Appendix A

BSK Boring Locations, Legend, Logs, and Laboratory Test Results



References: 1. http://earth.google.com, 2023

Note: Locations are approximate

Legend

B-4 Approximate Boring Location (BSK, 2023)

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BSK ASSOCIATES®

PROJECT NO.	G00001300
DRAWN:	12/21/23
DRAWN BY:	D. Tower
CHECKED BY:	C. Melo
FILE NAME:	Figures.indd

SITE PLAN
Site #2 - La Honda Road Landslide

San Pablo Dam Rd. Settlement Near Sta. 190+00 and Landslide at La Honda Rd.
San Pablo Dam Road
Contra Costa County, CA

FIGURE
3A

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487/2488)

MAJOR DIVISIONS				GRAPHIC LOG		TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	GRAVELS (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVELS WITH <5% FINES	Cu ≥4 and 1≤ Cc≤3		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			Cu <4 and/or 1>Cc >3		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH 5 to 12% FINES	Cu ≥4 and 1≤ Cc≤3		GW-GM	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
					GW-GC	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
			Cu <4 and/or 1>Cc >3		GP-GM	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
					GP-GC	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
		GRAVELS WITH >12% FINES			GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
					GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
					GC-GM	CLAYEY GRAVELS, GRAVEL-SAND-CLAY-SILT MIXTURES
	SANDS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH <5% FINES	Cu ≥6 and 1≤ Cc≤3		SW	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			Cu <6 and/or 1>Cc >3		SP	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH 5 to 12% FINES	Cu ≥6 and 1≤ Cc≤3		SW-SM	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
					SW-SC	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
			Cu <6 and/or 1>Cc >3		SP-SM	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
					SP-SC	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
		SANDS WITH >12% FINES			SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
					SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
					SC-SM	CLAYEY SANDS, SAND-SILT-CLAY MIXTURES
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid limit less than 50)				ML	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY,
					CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
					CL-ML	INORGANIC CLAYS-SILTS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
					OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid limit greater than 50)				MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
					CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
					OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487/2488)

FIGURE B-1

SOIL DESCRIPTION KEY

MOISTURE CONTENT

DESCRIPTION	ABBR	FIELD TEST
Dry	D	Absence of moisture, dusty, dry to the touch
Moist	M	Damp but no visible water
Wet	W	Visible free water, usually soil is below water table

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

PLASTICITY

DESCRIPTION	ABBR	FIELD TEST
Non-plastic	NP	A 1/8-in. (3 mm) thread cannot be rolled at any water content.
Low (L)	LP	The thread can barely be rolled and the lump or thread cannot be formed when drier than the plastic limit.
Medium (M)	MP	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump or thread crumbles when drier than the plastic limit
High (H)	HP	It takes considerable time rolling and kneeding to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump or thread can be formed without crumbling when drier than the plastic limit

STRUCTURE

DESCRIPTION	CRITERIA
Stratified	Alternating layers of varying material or color with layers at least 1/4 in. thick, note thickness
Laminated	Alternating layers of varying material or color with the layer less than 1/4 in. thick, note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

CONSISTENCY - FINE-GRAINED SOIL

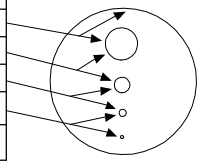
CONSISTENCY	ABBR	FIELD TEST
Very Soft	VS	Thumb will penetrate soil more than 1 in. (25 mm)
Soft	S	Thumb will penetrate soil about 1 in. (25 mm)
Firm	F	Thumb will indent soil about 1/4 in. (6 mm)
Hard	H	Thumb wil not indent soil but readily indented with thumbnail
Very Hard	VH	Thumbnail will not indent soil

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 - #10	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	<0.0029	Flour-sized and smaller

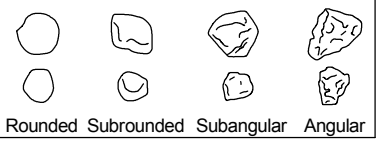
REACTION WITH HCL

DESCRIPTION	FIELD TEST
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately



ANGULARITY

DESCRIPTION	ABBR	CRITERIA
Angular	A	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	SA	Particles are similar to angular description but have rounded edges
Subrounded	SR	Particles have nearly plane sides but have well-rounded corners and edges
Rounded	R	Particles have smoothly curved sides and no edges



APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	ABBR	SPT (# blows/ft)	MODIFIED CA SAMPLER (# blows/ft)	CALIFORNIA SAMPLER (# blows/ft)	RELATIVE DENSITY (%)	FIELD TEST
Very Loose	VL	<4	<4	<5	0 - 15	Easily penetrated with 1/2-inch reinforcing rod by hand
Loose	L	4 - 10	5 - 12	5 - 15	15 - 35	Difficult to penetrate with 1/2-inch reinforcing rod pushed by hand
Medium Dense	MD	10 - 30	12- 35	15 - 40	35 - 65	Easily penetrated a foot with 1/2-inch reinforcing rod driven with 5-lb. hammer
Dense	D	30 - 50	35 - 60	40 - 70	65 - 85	Difficult to penetrate a foot with 1/2-inch reinforcing rod driven with 5-lb. hammer
Very Dense	VD	>50	>60	>70	85 - 100	Penetrated only a few inches with 1/2-inch reinforcing rod driven with 5-lb. hammer

LOG SYMBOLS

	BULK / BAG SAMPLE	-4	PERCENT FINER THAN THE NO. 4 SIEVE (ASTM Test Method C 136)
	SPLIT BARREL SAMPLER (2-1/2 inch outside diameter)	-200	PERCENT FINER THAN THE NO. 200 SIEVE (ASTM Test Method C 117)
	SPLIT BARREL SAMPLER (3 inch outside diameter)	LL	LIQUID LIMIT (ASTM Test Method D 4318)
	STANDARD PENETRATION SPLIT SPOON SAMPLER (2 inch outside diameter)	PI	PLASTICITY INDEX (ASTM Test Method D 4318)
	CONTINUOUS CORE	TXUU	UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (EM 1110-1-1906)/ASTM Test Method D 2850
	SHELBY TUBE	EI	EXPANSION INDEX (UBC STANDARD 18-2)
	ROCK CORE	COL	COLLAPSE POTENTIAL
	GROUNDWATER LEVEL (encountered at time of drilling)	UC	UNCONFINED COMPRESSION (ASTM Test Method D 2166)
	GROUNDWATER LEVEL (measured after drilling)		
	SEEPAGE	MC	MOISTURE CONTENT (ASTM Test Method D 2216)

GENERAL NOTES

Boring log data represents a data snapshot.

This data represents subsurface characteristics only to the extent encountered at the location of the boring.

The data inherently cannot accurately predict the entire subsurface conditions to be encountered at the project site relative to construction or other subsurface activities.

Lines between soil layers and/or rock units are approximate and may be gradual transitions.

The information provided should be used only for the purposes intended as described in the accompanying documents.

In general, Unified Soil Classification System designations presented on the logs were evaluated by visual methods.

Where laboratory tests were performed, the designations reflect the laboratory test results.

The Responsible Geotechnical Engineer, Professional Engineer, or Professional Geologist uses professional judgement and visual-manual procedures in general conformance with ASTM D2488 to classify soil when the full classification suite of tests per ASTM D2487 is not conducted.

BSK Associates
399 Lindbergh Avenue
Livermore, CA 94551
Telephone: (925) 315-3151

LOG OF BORING NO. B-4

Project Name: **Settlement at Sta. 190/La Honda Landslide**
Project Number: **G00001300**
Project Location: **San Pablo Dam Rd, Contra Costa County, CA**
Logged by: **O. Khan**
Checked by: **M. Romero**

Surface El.: **152 feet**
Location: **Northbound lane, La Honda Road**

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Sample Number	Penetration Blows / 6 inches	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
0		**ASPHALT:** approximately 2 inches of asphalt										
		FILL: approximately 6 inches of gravel, possibly aggregate base										
		Sandy Lean CLAY (CL): light yellowish brown to pale olive, dry to moist, hard, medium plasticity, fine to medium sand (FILL)		1A 1B 1C	5 6 7	>4.5						
5				2A 2B 2C	6 9 10	>4.5		101	18			
		TXUU (see figure B-3) c= 3,670 psf										
		Lean CLAY with Sand (CL): light yellowish brown to light olive brown, moist, hard, medium to high plasticity, fine sand (FILL)										
10				3A 3B 3C	5 7 12	4.0				47	20	27
15		mottled with very dark grayish brown, increased sand content		4A 4B 4C	8 11 18	>4.5		109	17			
20		**Sandy Lean CLAY (CL):** dark grayish brown, moist, hard, medium plasticity, fine sand, trace fine gravel, trace organics, slightly porous		5A 5B 5C	15 14 13	>4.5						
25												

Completion Depth: 46.5
Date Started: 9/27/23
Date Completed: 9/27/23
California Sampler: 2.5-in inner diameter

Drilling Equipment: Taber Drilling CME 55
Drilling Method: Hollow Stem Auger
Drive Weight: 140 lbs
Hole Diameter: 4-in
Drop: 30-in
Remarks: Automatic Hammer

GEO_TARGET BORING LOGS- SAN PABLO DAM ROAD.GPJ GEOTECHNICAL 08.GDT 12/22/23

BSK Associates
399 Lindbergh Avenue
Livermore, CA 94551
Telephone: (925) 315-3151

LOG OF BORING NO. B-4

Project Name: **Settlement at Sta. 190/La Honda Landslide**
Project Number: **G00001300**
Project Location: **San Pablo Dam Rd, Contra Costa County, CA**
Logged by: **O. Khan**
Checked by: **M. Romero**

Surface El.: **152 feet**
Location: **Northbound lane, La Honda Road**

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Sample Number	Penetration Blows / 6 inches	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
		Lean CLAY with Sand (CL): pale olive, moist, hard, medium to high plasticity, fine sand, manganese oxide staining, trace rootlets		6A 6B 6C	10 12 18	>4.5		97	16			
30		dark olive brown		7A 7B 7C	7 12 19	>4.5						
35		olive brown, firm to hard, iron oxide staining TXUU (see figure B-3) c= 3,300 psf		8A 8B 8C	5 9 12	3.0- 3.5		106	22			
40		pale olive, decreased sand content		9A 9B 9C	6 11 18	3.5- 4.0						
45		hard, linear strations observed		10A 10B 10C	10 16 27	>4.5						
50		Boring terminated at approximately 46.5 feet below ground surface. No free groundwater was observed. Boring was backfilled with cement grout and capped with Quikrete.										

Completion Depth: 46.5
Date Started: 9/27/23
Date Completed: 9/27/23
California Sampler: 2.5-in inner diameter

Drilling Equipment: Taber Drilling CME 55
Drilling Method: Hollow Stem Auger
Drive Weight: 140 lbs
Hole Diameter: 4-in
Drop: 30-in
Remarks: Automatic Hammer

GEO_TARGET BORING LOGS- SAN PABLO DAM ROAD.GPJ GEOTECHNICAL 08.GDT 12/22/23

BSK Associates
399 Lindbergh Avenue
Livermore, CA 94551
Telephone: (925) 315-3151

LOG OF BORING NO. B-5

Project Name: **Settlement at Sta. 190/La Honda Landslide**
Project Number: **G00001300**
Project Location: **San Pablo Dam Rd, Contra Costa County, CA**
Logged by: **O. Khan**
Checked by: **M. Romero**

Surface El.: **155 feet**
Location: **Shoulder of northbound lane, San Pablo Dam Road**

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Sample Number	Penetration Blows / 6 inches	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
		Sandy Lean CLAY (CL): light yellow, dry to moist, hard, low to medium plasticity, fine sand (FILL)		1A 1B 1C	9 10 14	>4.5		85	21			
5		mottled with dark olive brown, moist, firm to hard, medium plasticity, decreased sand content, fine to coarse sand		2A 2B 2C	5 11 15	2.5-3.5		102	21			
10		**Lean CLAY with Sand (CL):** dark olive brown, moist, firm to hard, medium plasticity, fine sand		3A 3B 3C	17 22 31	2.5-3.5		117	10			
		Clayey SAND with Gravel (SC): dark olive gray to grayish olive, moist, medium dense to dense, fine sand, fine to coarse gravel TXUU (see figure B-3) c= 2,440 psf										
15		**Lean CLAY with Sand (CL):** dark grayish brown to grayish green, moist, firm to hard, medium plasticity, fine sand, trace gravel, iron oxide staining		4A 4B 4C	13 25 40	2.5-3.5		106	21			
20		decreased sand content										
		TXUU (see figure B-3) c= 3,270 psf		5A 5B 5C	10 23 33	2.5-3.5		103	20			
25		Boring terminated at approximately 22.5 feet below ground surface. No free groundwater was observed. Boring was backfilled with cement grout.										

Completion Depth: 22.5
Date Started: 10/9/23
Date Completed: 10/9/23
California Sampler: 2.5-in inner diameter

Drilling Equipment: Access Soil Drilling
Drilling Method: Minuteman Tripod
Drive Weight: 140 lbs
Hole Diameter:
Drop:
Remarks: Cathead, rope, and pulley system

GEO_TARGET BORING LOGS- SAN PABLO DAM ROAD.GPJ GEOTECHNICAL 08.GDT 12/22/23

BSK Associates
399 Lindbergh Avenue
Livermore, CA 94551
Telephone: (925) 315-3151

LOG OF BORING NO. B-6

Project Name: **Settlement at Sta. 190/La Honda Landslide**
Project Number: **G00001300**
Project Location: **San Pablo Dam Rd, Contra Costa County, CA**
Logged by: **O. Khan**
Checked by: **M. Romero**

Surface El.: **153 feet**
Location: **Scarp area of landslide**

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Sample Number	Penetration Blows / 6 inches	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
		Sandy Lean CLAY (CL): light yellow, dry to moist, low to medium plasticity, fine sand (Landslide Debris)		1A 1B 1C	3 7 12							
		large diameter root		2A 2B 2C	9 12 14	4.5						
				3	9							
		Fat CLAY with Sand (CH): dark grayish brown, moist, hard, medium to high plasticity, fine sand (Landslide Debris)			13	4.5						
5		**Sandy Lean CLAY (CL):** light yellow, moist, low to medium plasticity, fine to medium sand (Landslide Debris)		4A 4B 4C	25 31 36							
				5A 5B 5C	7 14 13	>4.5						
		mottled with dark grayish green, increased moisture		6	8 9 12							
		Fat CLAY with Sand (CH): dark olive, moist, high plasticity, fine to medium sand (Landslide Debris)		7A 7B 7C	11 13 14	1.5- 3.5				50	23	27
10		dark olive		8A 8B 8C	5 6 6							
		Sandy Lean CLAY with Gravel (CL): dark olive brown, moist, firm, fine to medium sand, fine gravel (Landslide Debris)		9	4 4 5							
15				10A 10B 10C	14 14 15	2.0						
				11A 11B 11C	6 6 9							
		dark greenish gray			5 6 9							
20		▽ **Sandy Lean CLAY with Gravel (CL):** dark greenish gray to dark grayish green, wet, very soft (Landslide Slip Plane Zone)		12A 12B 12C	6 9 15							
		Sandy Lean CLAY with Gravel (CL): dark grayish green, moist, firm, fine to medium sand, fine to coarse gravel		13A 13B 13C	10 16 17					46	22	24
		decreased gravel content		14	6 9 15	1.0-1.5						
		Boring terminated at approximately 23.5 feet below ground surface. Perched groundwater was observed at approximately 19.5 feet. Boring was backfilled with cement grout.										
25												

Completion Depth: 23.5
Date Started: 10/9/23
Date Completed: 10/10/23
California Sampler: 2-in inner diameter
SPT Sampler: 1.4- in inner diameter
Modified CA Sampler: 2-in inner diameter

Drilling Equipment: Access Soil Drilling
Drilling Method: Minuteman Tripod
Drive Weight: 140 lbs
Hole Diameter:
Drop:
Remarks: Cathead, rope, and pulley system (no sample liners used)

GEO_TARGET BORING LOGS- SAN PABLO DAM ROAD.GPJ GEOTECHNICAL 08.GDT 12/22/23

BSK Associates
399 Lindbergh Avenue
Livermore, CA 94551
Telephone: (925) 315-3151

LOG OF BORING NO. B-7

Project Name: **Settlement at Sta. 190/La Honda Landslide**
Project Number: **G00001300**
Project Location: **San Pablo Dam Rd, Contra Costa County, CA**
Logged by: **O. Khan**
Checked by: **M. Romero**

Surface El.: **136 feet**
Location: **Central area of landslide**

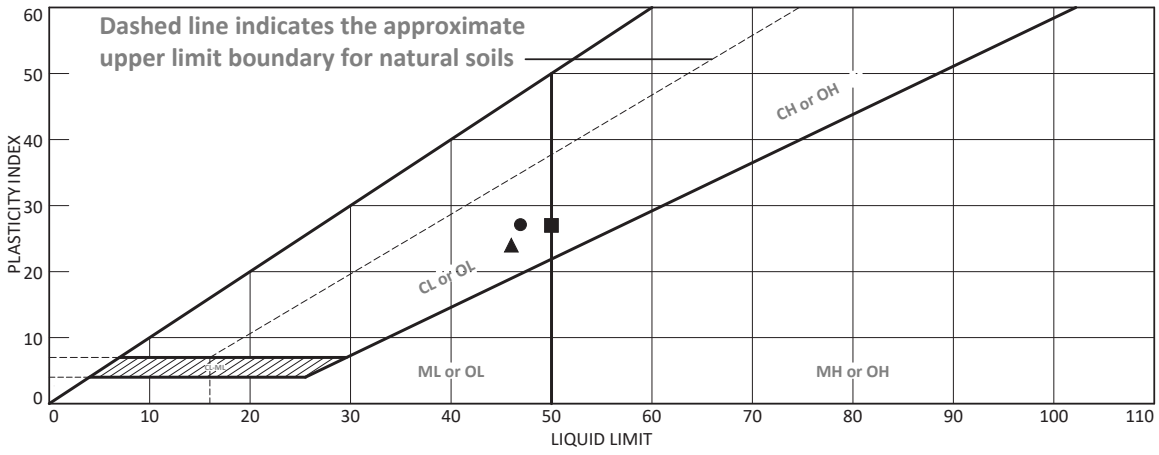
Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Samples	Sample Number	Penetration Blows / 6 inches	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
		Sandy Lean CLAY (CL): dark grayish brown, moist, fine to medium sand, trace fine gravel, rootlets (Landslide Debris)		1A 1B 1C	25 45 40	>4.5						
		olive gray, trace fine and coarse gravel		2A 2B 2C	19 24 32							
				3	15 19 20							
5		dark yellowish brown, decreased gravel content		4A 4B 4C	29 34 33	>4.5						
		mottled grayish green to dark grayish brown		5A 5B 5C	11 10 10							
				6	8 10 10	>4.5						
10				7A 7B 7C	14 15 16	2.5						
		increased gravel content		8A 8B 8C	9 13 12	2.0- 3.0						
		dark olive		9	5 5 5							
		Lean CLAY with Sand (CL): dark olive to dark greenish gray, very moist, soft to firm, medium plasticity, fine sand (Landslide Debris)		10	2 1 2							
15				11	4 6 9	0.0- 2.0						
				12A 12B 12C	8 9 9							
		▽ **Fat CLAY with Sand (CH):** dark olive greenish gray, wet, very soft to firm, medium plasticity, fine sand (Landslide Slip Plane Zone)		13	8 9 9	0.0- 2.5						
20		**Lean CLAY with Sand (CL):** dark olive greenish gray, moist, firm, medium plasticity, fine sand		14	8 10 12							
		Boring terminated at approximately 21 feet below ground surface. Perched groundwater was observed at approximately 18.5 feet. Boring was backfilled with cement grout.										
25												

Completion Depth: 23.5
Date Started: 10/9/23
Date Completed: 10/10/23
California Sampler: 2-in inner diameter
SPT Sampler: 1.4- in inner diameter
Modified CA Sampler: 2-in inner diameter

Drilling Equipment: Access Soil Drilling
Drilling Method: Minuteman Tripod
Drive Weight: 140 lbs
Hole Diameter:
Drop:
Remarks: Cathead, rope, and pulley system (no sample liners used)

GEO_TARGET BORING LOGS- SAN PABLO DAM ROAD.GPJ GEOTECHNICAL 08.GDT 12/22/23

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318)





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Lean Clay with Sand (CL)	47	20	27			
■	Fat CLAY with Sand (CH)	50	23	27			
▲	Sandy Lean Clay (CL)	46	22	24			

Project No. 664-511 **Client:** BSK Associates

Project: San Panlo Dam Rd/La Honda Rd - G00001300

Remarks:

●**Source of Sample:** B-4 **Depth:** 11' **Sample Number:** 3C

■**Source of Sample:** B-6 **Depth:** 9.5' **Sample Number:** 7

▲**Source of Sample:** B-6 **Depth:** 20.5' **Sample Number:** 13

COOPER TESTING LABORATORY

Figure

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BSK ASSOCIATES

PROJECT NO. G00001300

DRAWN: 12/06/23

DRAWN BY: D. Tower

CHECKED BY: C. Melo

FILE NAME: Figures.indd

ATTERBERG LIMITS

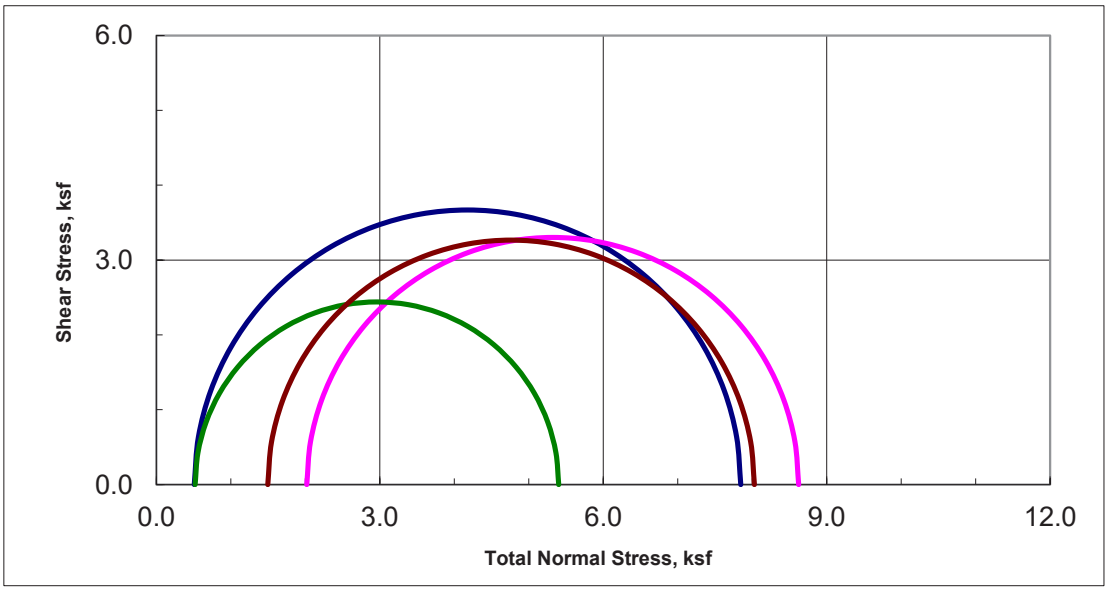
San Pablo Dam Rd. Settlement Near Sta. 190+00 and Landslide at La Honda Rd.
San Pablo Dam Road
Contra Costa County, CA

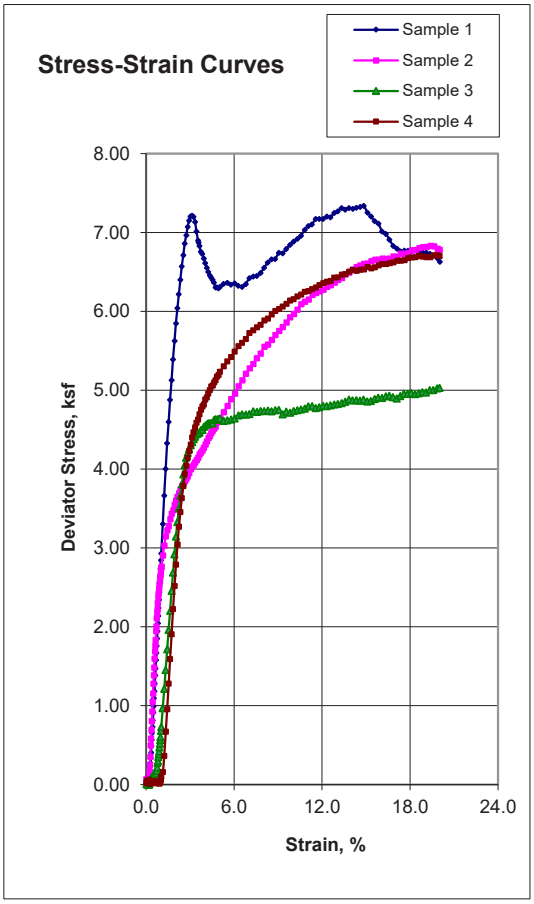
FIGURE

C-1

COOPER TESTING LABORATORY

Unconsolidated-Undrained Triaxial Test
ASTM D2850





Sample Data				
	1	2	3	4
Moisture %	18.1	21.7	10.1	19.7
Dry Den,pcf	101.1	105.9	116.5	106.3
Void Ratio	0.668	0.591	0.447	0.586
Saturation %	73.1	99.3	61.3	90.6
Height in	5.00	5.00	5.00	4.99
Diameter in	2.40	2.40	2.40	2.40
Cell psi	3.5	14.0	3.6	10.4
Strain %	14.84	15.00	15.00	15.00
Deviator, ksf	7.338	6.605	4.882	6.534
Rate %/min	1.00	1.00	1.00	1.00
in/min	0.050	0.050	0.050	0.050
Job No.:	664-511b			
Client:	BSK Associates			
Project:	G00001300			
Boring:	B-4	B-4	B-5	B-5
Sample:	2C	8C	3C	5C
Depth ft:	6	36	11	22

Visual Soil Description	
Sample #	
1	Lean Clay with Sand (CL)
2	Lean Clay with Sand (CL)
3	Clayey Sand with Gravel (SC)
4	Lean Clay with Sand (CL)

Remarks:

Note: Strengths are picked at the peak deviator stress or 15% strain which ever occurs first per ASTM D2850.

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BSK ASSOCIATES

PROJECT NO.	G00001300
DRAWN:	12/06/23
DRAWN BY:	D. Tower
CHECKED BY:	C. Melo
FILE NAME:	Figures.indd

UNCONSOLIDATED-UNDRAINED TRIAXIAL TEST

San Pablo Dam Rd. Settlement Near Sta. 190+00 and Landslide at La Honda Rd.
San Pablo Dam Road
Contra Costa County, CA

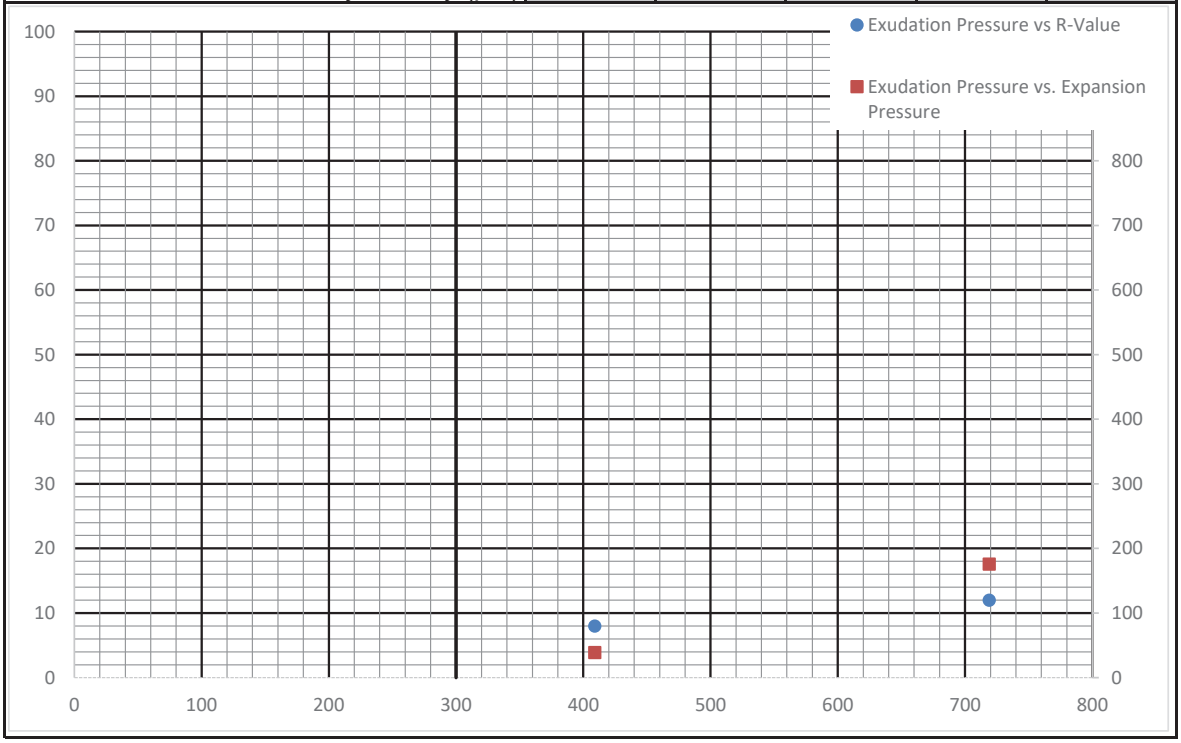
FIGURE
C-3

COOPER TESTING LABORATORY

R-Value
CTM 301

CTL Job No.:	664-511	Boring:	B-4	Reduced By:	RU
Client:	BSK Associates	Sample:	Bulk	Checked By:	PJ
Project Number:	G00001300	Depth:	2'-35'	Date:	11/1/2023
Project Name:	San Pablo Dam Rd/La Honda Rd		R-Value		<5
Soil Description:	Lean Clay with Sand (CL)				
Remarks:	Soil extruded from the mold giving a false exudation pressure (exudation pressures for Specimens A & B are greater than the values reported). Per Caltrans, the R-value test was terminated and an R-value of less than 5 was reported.		Expansion Pressure		

Specimen Designation	A	B	C	D	E
Compactor Foot Pressure (psi)	150	90			
Exudation Pressure (psi)	719	409			
Exudation Load (lbf)	9035	5140			
Height After Compaction (in)	2.38	2.53			
Expansion Pressure (psf)	176	39			
Stabilometer @ 2000	140	144			
Turns Displacement	2.51	3.08			
R-value	12	8			
Corrected R-Value	12	8			
Moisture Content (%)	20.9	23.2			
Wet Density (pcf)	126.3	122.6			
Dry Density (pcf)	104.5	99.5			



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BSK ASSOCIATES

PROJECT NO.	G00001300
DRAWN:	12/06/23
DRAWN BY:	D. Tower
CHECKED BY:	C. Melo
FILE NAME:	Figures.indd

R-VALUE

La Honda Rd. Landslide and Settlement at Station 190
San Pablo Dam Road
Contra Costa County, CA

FIGURE
C-13

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

31 October, 2023

Job No. 2310056
Cust. No. 12667

Mr. Michael Romero
BSK Associates Engineers & Laboratories
399 Lindbergh Avenue
Livermore, CA 94551

Subject: Project No.: G00001300
Project Name: San Pablo Dam Rd/La Honda Dr
Corrosivity Analysis – Caltrans Test Methods

Dear Mr. Romero:

Pursuant to your request, CERCO Analytical has analyzed the soil samples submitted on October 26, 2023. Based on the analytical results, this brief corrosivity evaluation is enclosed for your consideration.

Based upon the resistivity measurements, all samples are classified as "corrosive". All buried iron, steel, cast iron, ductile iron, galvanized steel and dielectric coated steel or iron should be properly protected against corrosion depending upon the critical nature of the structure. All buried metallic pressure piping such as ductile iron firewater pipelines should be protected against corrosion.

The chloride ion concentrations ranged from none detected to 33 mg/kg and are determined to be insufficient to attack steel embedded in a concrete mortar coating.

The sulfate ion concentrations ranged from none detected to 260 mg/kg and are determined to be sufficient to potentially be detrimental to reinforced concrete structures and cement mortar-coated steel at these locations. Therefore, concrete that comes into contact with this soil should use sulfate resistant cement such as Type II, with a maximum water-to-cement ratio of 0.55.

The pH of the soils ranged from 8.03 to 8.36, which does not present corrosion problems for buried iron, steel, mortar-coated steel and reinforced concrete structures.

This corrosivity evaluation is based on general corrosion engineering standards and is non-specific in nature. For specific long-term corrosion control design recommendations or consultation, please call *JDH Corrosion Consultants, Inc. at (925) 927-6630.*

We appreciate the opportunity of working with you on this project. If you have any questions, or if you require further information, please do not hesitate to contact us.

Very truly yours,
CERCO ANALYTICAL, INC.

for

J. Darby Howard, Jr., P.E.
President

JDH/jdl
Enclosure

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

Client: BSK Associates
Client's Project No.: G00001300
Client's Project Name: San Pablo Dam Rd/La Honda Dr
Date Sampled: 09/25 - 10/09/23
Date Received: 26-Oct-23
Matrix: Soil
Authorization: Signed Chain of Custody

Date of Report: 31-Oct-2023

Job/Sample No.	Sample I.D.	Moisture (%)	pH	Min.Resistivity (ohms-cm)	Sulfide (mg/kg)*	Chloride (mg/kg)*	Sulfate (mg/kg)*
2310056-001	B-1/9C @ 41'	-	8.21	1,200	-	N.D.	N.D.
2310056-002	B-3/8B @ 35.5'	-	8.30	2,000	-	N.D.	17
2310056-003	B-4/4B @ 15.5'	-	8.03	720	-	23	260
2310056-004	B-5/5B @ 21.5'	-	8.36	1,000	-	33	67

Method:	CT 226 [a]	CT 643 [b]	CT 643 [b]	-	CT 422 [c]	CT 417 [c]
Reporting Limit:	-	-	-	50	15	15
Date Analyzed:	-	27-Oct-2023	30-Oct-2023	-	27-Oct-2023	27-Oct-2023

* Results Reported on an "As Received" Basis
N.D. - None Detected

[a] Rev. July 2010 [b] Rev. April 2020 [c] Rev. April 2020

Julia Clauson
Chemist

Quality Control Summary - All laboratory quality control parameters were found to be within established limits

Appendix B

Crawford Boring Log Legend, Boring Logs

GROUP SYMBOLS AND NAMES

Graphic / Symbol	Group Names	Graphic / Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND	CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND	CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND	ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GM	SILTY GRAVEL SILTY GRAVEL with SAND	OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND	OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL		
SP	Poorly graded SAND Poorly graded SAND with GRAVEL	CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
SM	SILTY SAND SILTY SAND with GRAVEL		
SC	CLAYEY SAND CLAYEY SAND with GRAVEL	OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
PT	PEAT	OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	COBBLES COBBLES and BOULDERS BOULDERS		

FIELD AND LABORATORY TESTS

C	Consolidation
CL	Collapse Potential
CP	Compaction Curve
CR	Corrosion, Sulfates, Chlorides
CU	Consolidated Undrained Triaxial
DR	Drained Residual Shear Strength
DS	Direct Shear
EI	Expansion Index
OC	Organic Content
P	Permeability
PA	Particle Size Analysis
PI	Plasticity Index
PL	Point Load Index
PM	Pressure Meter
PP	Pocket Penetrometer
R	R-Value
SE	Sand Equivalent
SG	Specific Gravity
SW	Swell Potential
TV	Pocket Torvane Shear Test
UC	Unconfined Compression - Soil
	Unconfined Compression - Rock
UU	Unconsolidated Undrained Triaxial
W	200 Wash

SAMPLER GRAPHIC SYMBOLS

- Standard Penetration Test (SPT)
- Standard California Sampler (ID 2.0 in.)
- Modified California Sampler (ID 2.5 in.)
- Shelby Tube
- Piston Sampler
- NX Rock Core
- HQ Rock Core
- Bulk Sample
- Other (see remarks)

DRILLING METHOD SYMBOLS

- Auger Drilling
- Rotary Drilling
- Dynamic Cone or Hand Driven
- Diamond Core

WATER LEVEL SYMBOLS

- First Water Level Reading (during drilling)
- Static Water Level Reading (short-term)
- Static Water Level Reading (long-term)

REFERENCE: **Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2022).**

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Boring Record Legend

Soil Legend

CONSISTENCY OF COHESIVE SOILS				
Descriptor	**Unconfined Compressive Strength (tsf)**	**Pocket Penetrometer (tsf)**	**Torvane (tsf)**	**Field Approximation**
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 - 0.50	0.25 - 0.50	0.12 - 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 - 1.0	0.50 - 1.0	0.25 - 0.50	Can be penetrated several inches by thumb with moderate effort
Stiff	1.0 - 2.0	1.0 - 2.0	0.50 - 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2.0 - 4.0	2.0 - 4.0	1.0 - 2.0	Readily indented by thumbnail
Hard	> 4.0	> 4.0	> 2.0	Indented by thumbnail with difficulty

APPARENT DENSITY OF COHESIONLESS SOILS	
Descriptor	**SPT N_{60} (blows / 12 inches)**
Very Loose	0 - 5
Loose	5 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	> 50

MOISTURE	
Descriptor	**Criteria**
Dry	No discernable moisture
Moist	Moisture present, but no free water
Wet	Visible free water

PERCENT OR PROPORTION OF SOILS	
Descriptor	**Criteria**
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

SOIL PARTICLE SIZE		
Descriptor		**Size**
Boulder		> 12 inches
Cobble		3 to 12 inches
Gravel	Coarse	3/4 inch to 3 inches
	Fine	No. 4 Sieve to 3/4 inch
Sand	Coarse	No. 10 Sieve to No. 4 Sieve
	Medium	No. 40 Sieve to No. 10 Sieve
	Fine	No. 200 Sieve to No. 40 Sieve
Silt and Clay		Passing No. 200 Sieve

PLASTICITY OF FINE-GRAINED SOILS	
Descriptor	**Criteria**
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled, and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll, and not much time is required to reach the plastic limit; it cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

CEMENTATION	
Descriptor	**Criteria**
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

REFERENCE: **Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2022).**

ROCK GRAPHIC SYMBOLS


IGNEOUS ROCK


SEDIMENTARY ROCK


METAMORPHIC ROCK

BEDDING SPACING

Descriptor	Thickness or Spacing
Massive	> 10 ft
Very thickly bedded	3 ft - 10 ft
Thickly bedded	1 ft - 3 ft
Moderately bedded	4 in - 1 ft
Thinly bedded	1 in - 4 in
Very thinly bedded	1/4 in - 1 in
Laminated	< 1/4 in

WEATHERING DESCRIPTORS FOR INTACT ROCK

	Diagnostic Features					
	Chemical Weathering-Discoloration-Oxidation		Mechanical Weathering and Grain Boundary Conditions	Texture and Solutioning		
Descriptor	Body of Rock	Fracture Surfaces		Texture	Solutioning	General Characteristics
Fresh	No discoloration, not oxidized	No discoloration or oxidation	No separation, intact (tight)	No change	No solutioning	Hammer rings when crystalline rocks are struck.
Slightly Weathered	Discoloration or oxidation is limited to surface of, or short distance from, fractures; some feldspar crystals are dull	Minor to complete discoloration or oxidation of most surfaces	No visible separation, intact (tight)	Preserved	Minor leaching of some soluble minerals may be noted	Hammer rings when crystalline rocks are struck. Body of rock not weakened.
Moderately Weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty"; feldspar crystals are "cloudy"	All fracture surfaces are discolored or oxidized	Partial separation of boundaries visible	Generally preserved	Soluble minerals may be mostly leached	Hammer does not ring when rock is struck. Body of rock is slightly weakened.
Intensely Weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in situ disaggregation (refer to grain boundary conditions)	All fracture surfaces are discolored or oxidized; surfaces are friable	Partial separation, rock is friable; in semi-arid conditions, granitics are disaggregated	Altered by chemical disintegration such as via hydration or argillation	Leaching of soluble minerals may be complete	Dull sound when struck with hammer; usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness such as incipient or hairline fractures or veinlets. Rock is significantly weakened.
Decomposed	Discolored of oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay		Complete separation of grain boundaries (disaggregated)	Resembles a soil; partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete		Can be granulated by hand. Resistant minerals such as quartz may be present as "stringers" or "dikes".

Note: Combination descriptors (such as "slightly weathered to fresh") are used where equal distribution of both weathering characteristics is present over significant intervals or where characteristics present are "in between" the diagnostic feature. However, combination descriptors should not be used where significant identifiable zones can be delineated. Only two adjacent descriptors shall be combined. "Very intensely weathered" is the combination descriptor for "decomposed to intensely weathered".

PERCENT CORE RECOVERY (REC)

$$\frac{\Sigma \text{ Length of the recovered core pieces (in.)}}{\text{Total length of core run (in.)}} \times 100$$

ROCK QUALITY DESIGNATION (RQD)

$$\frac{\Sigma \text{ Length of intact core pieces} > 4 \text{ in.}}{\text{Total length of core run (in.)}} \times 100$$

Note: RQD* indicates soundness criteria not met

ROCK HARDNESS

Descriptor	Criteria
Extremely Hard	Specimen cannot be scratched with pocket knife or sharp pick; can only be chipped with repeated heavy hammer blows
Very hard	Specimen cannot be scratched with pocket knife or sharp pick; breaks with repeated heavy hammer blows
Hard	Specimen can be scratched with pocket knife or sharp pick with heavy pressure; heavy hammer blows required to break specimen
Moderately Hard	Specimen can be scratched with pocket knife or sharp pick with light or moderate pressure; breaks with moderate hammer blows
Moderately Soft	Specimen can be grooved 1/16 in. with pocket knife or sharp pick with moderate or heavy pressure; breaks with light hammer blow or heavy hand pressure
Soft	Specimen can be grooved or gouged with pocket knife or sharp pick with light pressure, breaks with light to moderate hand pressure
Very Soft	Specimen can be readily indented, grooved, or gouged with fingernail, or carved with pocket knife; breaks with light manual pressure.

FRACTURE DENSITY

Descriptor	Criteria
Unfractured	No fractures
Very Slightly Fractured	Core lengths greater than 3 ft.
Slightly Fractured	Core lengths mostly from 1 ft. to 3 ft.
Moderately Fractured	Core lengths mostly from 4 in. to 1 ft.
Intensely Fractured	Core lengths mostly from 1 in. to 4 in.
Very Intensely Fractured	Mostly chips and fragments.

REFERENCE: **Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2022).**

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Boring Record Legend

Rock Legend

LOG OF BORING A-24-001

PROJECT NO: 24-1088.2
PROJECT: San Pablo Dam Road - Landslide Repair
LOCATION: El Sobrante
COUNTY: Contra Costa
CLIENT: Consor
LOGGED BY: LEK
DEPTH OF BORING: 49.2 (ft)

BEGIN DATE: 09/19/2024
COMPLETION DATE: 09/19/2024
SURFACE ELEVATION: 138.0 (ft)
SURFACE CONDITION: Soil
WATER DEPTH: Not Encountered
READING TAKEN: N/A
HAMMER EFFICIENCY: 60 (%)

DRILLING CONTRACTOR: Stapleton Engineering
DRILLING METHOD: Solid-stem Auger
DRILL RIG: Bobcat Rig
HAMMER TYPE: Manual - Safety
SAMPLER TYPE & SIZE: MCAL (2.4" ID), SPT (1.4" ID)
BOREHOLE DIAMETER: 4.0 (in)
BACKFILL METHOD: Tremie Grout

FIELD										LABORATORY							
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	TORVANE (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	RQD (%)	PLASTICITY INDEX	LIQUID LIMIT	MOISTURE (%)	D. DENSITY (PCF)	% PASSING 200 SIEVE	DRILL METHOD / CASING DEPTH	REMARKS
137	1								SANDY lean CLAY (CL); hard; mottled orange, brown and grayish brown; dry; mostly medium plastic fines; some fine to coarse SAND; trace medium GRAVEL; [FILL].									
136	2																	
135	3																	
134	4																	
133	5		1	9						50								
132	6			9 11	20	+4.5 +4.5								13.7	98.8			
131	7																	
130	8																	
129	9								SANDY lean CLAY with GRAVEL (CL); very stiff to hard; brown; moist; mostly medium plastic fines; some fine to coarse SAND; little medium to coarse GRAVEL; [FILL].									
128	10		2	9						94								
127	11			13 21	34	4.50 3.00												
126	12																	
125	13																	
124	14								Lean CLAY with SAND (CL); stiff to very stiff; grayish brown, dark brown and orange; moist; mostly medium plastic fines; little fine to coarse SAND.									
123	15		3	10					Trace organics.	72								
122	16			11 12	23	4.00 1.00	0.62											

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ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	TORVANE (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	RQD (%)	PLASTICITY INDEX	LIQUID LIMIT	MOISTURE (%)	D. DENSITY (PCF)	% PASSING 200 SIEVE	DRILL METHOD	CASING DEPTH	REMARKS
									Lean CLAY with SAND (CL); stiff to very stiff; grayish brown, dark brown and orange; moist; mostly medium plastic fines; little fine to coarse SAND.										
									SANDY lean CLAY (CL); (stiff); mottled brown, orange and tan; moist; mostly medium plastic fines; some medium SAND.										
									Organic odor.										
121	17																		
120	18																		
119	19																		
118	20		4	7						56									
				9	20	3.00													
117	21			11		1.75								23.6	99.9				
			5	5					Fat CLAY with SAND (CH); stiff; blueish gray; moist; mostly medium to high plastic fines; little fine SAND.	61									
116	22			6	14				Trace organics; organic odor.										
				8		1.25			SANDY fat CLAY (CH); stiff; blueish gray; moist; mostly medium to high plastic fines; some fine to medium SAND.										
115	23		6	10						61									
				11	25				SANDY lean CLAY (CL); stiff; mottled blueish gray and brown; moist; mostly medium plastic fines; some fine SAND.										
114	24			14		1.50			Organic odor.										CU Total: phi = 21 and c = 200psf Effective: phi = 30.3 and c = 300psf
			7	3						89									
113	25			7	18	1.25													
				11		1.50													
112	26		8	14						67									
				24	54	1.50													
111	27			30		1.00			SANDY lean CLAY/CLAYEY SAND (CL); stiff to very stiff; yellowish brown and grayish brown; moist; 50% medium plastic fines; 50% fine SAND.					18.3	102.4				
			9	11					Trace organics.	89									
110	28			15	35	2.00													
				20		2.00										50			
109	29								Blueish gray.										
108	30																		
107	31																		
106	32																		
105	33								SEDIMENTARY ROCK (CLAYSTONE); grayish brown; intensely to moderately weathered; very soft; (Excavates as: Lean Clay with Sand (CL); hard; moist; medium plastic fines; fine SAND).										
104	34																		
103	35		10	20						78									
				33	82	+4.5													
102	36			49		4.00								22.6					UU = 4.25ksf

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PROJECT NO: 24-1088.2
PROJECT: San Pablo Dam Road - Landslide Repair
BORING: A-24-001
ENTRY BY: LEK
CHECKED BY: ETT

ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	TORVANE (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	RQD (%)	PLASTICITY INDEX	LIQUID LIMIT	MOISTURE (%)	D. DENSITY (PCF)	% PASSING 200 SIEVE	DRILL METHOD	CASING DEPTH	REMARKS
									FIELD			**LABORATORY**							
101	37								SEDIMENTARY ROCK (CLAYSTONE); grayish brown; intensely to moderately weathered; very soft; (Excavates as: Lean Clay with Sand (CL); hard; moist; medium plastic fines; fine SAND).										
100	38																		
99	39								SEDIMENTARY ROCK (SILTSTONE); grayish brown; intensely to moderately weathered; very soft.										
98	40		11	50/5	REF	+4.5				80									
97	41		12	28 50	78/12	+4.5			SEDIMENTARY ROCK (SANDSTONE); blueish gray; intensely weathered; very soft.	67				19.6					UU = 4.5ksf
96	42																		
95	43																		
94	44																		
93	45																		
92	46																		
91	47																		
90	48																		
89	49		13	43 50	50/3				(Excavates as: SILTY SAND (SM); very dense; gray; moist; mostly fine to medium sand; some fines). Bottom of borehole at 49.2 ft bgs	67									
88	50																		
87	51																		
86	52																		
85	53																		
84	54																		
83	55																		
82	56																		

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PROJECT NO: 24-1088.2
PROJECT: San Pablo Dam Road - Landslide Repair
BORING: A-24-001
ENTRY BY: LEK
CHECKED BY: ETT

LOG OF BORING R-24-002

PROJECT NO: 24-1088.2
PROJECT: San Pablo Dam Road - Landslide Repair
LOCATION: El Sobrante
COUNTY: Contra Costa
CLIENT: Consor
LOGGED BY: LEK
DEPTH OF BORING: 55.0 (ft)

BEGIN DATE: 09/20/2024
COMPLETION DATE: 09/20/2024
SURFACE ELEVATION: 155.0 (ft)
SURFACE CONDITION: Asphalt
WATER DEPTH: Not Encountered
READING TAKEN: N/A
HAMMER EFFICIENCY: 79.7 (%)

DRILLING CONTRACTOR: Terra-Ex LLC
DRILLING METHOD: Solid-stem Auger, Mud Rotary
DRILL RIG: D-70 (Truck)
HAMMER TYPE: Automatic; 140 (lbs); 30 (in) drop
SAMPLER TYPE & SIZE: MCAL (2.4" ID), SPT (1.4" ID)
BOREHOLE DIAMETER: 4.0 (in)
BACKFILL METHOD: Tremie Grout

FIELD										LABORATORY							
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	TORVANE (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	RQD (%)	PLASTICITY INDEX	LIQUID LIMIT	MOISTURE (%)	D. DENSITY (PCF)	% PASSING 200 SIEVE	DRILL METHOD / CASING DEPTH	REMARKS
154	1								ASPHALT CONCRETE(10")									
									AGGREGATE BASE(6")									
153	2								SANDY lean CLAY with GRAVEL (CL); hard; dark brown mottled with orange; moist; mostly medium plastic fines; some fine to coarse SAND; little fine GRAVEL.									
152	3																	
151	4																	
150	5		1	5						67								
149	6			7 8	15	+4.5 4.00												
148	7								CLAYEY SAND (SC); loose; yellowish brown; moist; mostly fine SAND; some low to medium plastic fines.									
147	8																	
146	9								SANDY lean CLAY (CL); hard; yellowish brown; moist; mostly medium plastic fines; some fine to coarse SAND.									
145	10																	
144	11		2	7 8 15	23	4.00 +4.5				56				15.1	111.2			
143	12																	
142	13																	
141	14																	
140	15		3	8					Mottled brown, yellowish brown and orange; very stiff.	61								
139	16			11 11	22	+4.5 +4.5												

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ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	TORVANE (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	RQD (%)	PLASTICITY INDEX	LIQUID LIMIT	MOISTURE (%)	D. DENSITY (PCF)	% PASSING 200 SIEVE	DRILL METHOD	CASING DEPTH	REMARKS
									SANDY lean CLAY (CL); hard; yellowish brown; moist; mostly medium plastic fines; some fine to coarse SAND.										
138	17																		
137	18																		
									SANDY lean CLAY with GRAVEL (CL); very stiff; mottled brown, yellowish brown and orange; moist; mostly medium plastic fines; some fine to coarse SAND; little fine to coarse GRAVEL.										
136	19																		
135	20																		
			4	8						67									
134	21			8	19														
				11		+4.5								22.4	102.7				
133	22																		
									SANDY lean CLAY (CL); stiff; blueish, greenish gray; moist; mostly medium plastic fines; some fine to coarse SAND; few fine GRAVEL. Organic odor.										
132	23		5	6						50									
				5	13														
131	24			8		1.25													
130	25								Lean CLAY with SAND (CL); stiff; dark gray; moist; mostly medium to high plastic fines; little fine SAND. Trace organics; organic odor.										
			6	6						61									
129	26			9	19														
				10		1.75								19.0					UU = 1.6ksf
128	27																		
			7	PUSH					Organic odor.	11									
127	28			PUSH	PUSH														
126	29			PUSH															
									SANDY lean CLAY/CLAYEY SAND (CL); stiff; blueish, greenish gray; moist; mostly fine SAND; 48% medium to high plastic fines. Trace organics.										
125	30		8	6						72									
				9	21														
124	31			12		2.00								26.7	100.9	48			
			9	5					Faint organic odor.	78									
123	32			4	10														
122	33			6		0.75													
121	34								Lean CLAY with SAND (CL); very stiff to hard; brown; moist; mostly low to medium plastic fines; little fine SAND.										
120	35		10	9						61									
				15	36	4.00													
119	36			21		+4.5								27.2	94.4				UC Strength: 6,192 psf Strain at Failure: 1%

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PROJECT NO: 24-1088.2
PROJECT: San Pablo Dam Road - Landslide Repair
BORING: R-24-002
ENTRY BY: LEK
CHECKED BY: ETT

ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	TORVANE (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	RQD (%)	PLASTICITY INDEX	LIQUID LIMIT	MOISTURE (%)	D. DENSITY (PCF)	% PASSING 200 SIEVE	DRILL METHOD	CASING DEPTH	REMARKS
				FIELD								LABORATORY							
118	37								Lean CLAY with SAND (CL); very stiff to hard; brown; moist; mostly low to medium plastic fines; little fine SAND.									
117	38																		
116	39								SEDIMENTARY ROCK (SILTSTONE); grayish brown; intensely to moderately weathered; very soft.									
115	40		11	11															
114	41			19 37	56	 +4.5			(Excavates as SILT (ML); hard; mostly fines; little fine SAND)	78				21.3					Drilling fluid loss Sampler rebound observed at bottom of sample at 40'. UU = 4.8ksf
113	42		12	19						83									
112	43			24 36	60	 +4.5													
111	44																		
110	45		13	10					Blueish, grayish brown	78									
109	46			10 15	25	4.00 +4.5													
108	47																		
107	48								SEDIMENTARY ROCK (MUDSTONE); blueish gray; intensely weathered; very soft.										
106	49																		
105	50		14	38					(Excavates as Lean CLAY (CL); hard; moist; mostly medium plastic fines; few fine to medium SAND)	83									Sampler rebound observed at 50'. Unable to put drill/ sample tooling back into hole due to caving
104	51			36 48	84	 +4.5													
103	52																		
102	53																		
101	54																		
100	55								Bottom of borehole at 55.0 ft bgs										Weak auger grinding observed at 55'.
99	56																		

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PROJECT NO: 24-1088.2
PROJECT: San Pablo Dam Road - Landslide Repair
BORING: R-24-002
ENTRY BY: LEK
CHECKED BY: ETT

Appendix C

Crawford Laboratory Test Results

Crawford & Associates, Inc.
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Project Name: San Pablo Dam Road - Landslide Repair
Crawford File No: 24-1088.2
Date: 10/7/24
Technician: KVC

MOISTURE-DENSITY TESTS - D2216/D7263

	1	2	3	4	5
Sample No.	A-24-001-1A	A-24-001-4A	A-24-001-8A	R-24-002-2A	R-24-002-4A
USCS Symbol	CL	CL	CL	CL	CL
Depth (ft.)	6	21	27	11	21
Sample Length (in.)	5.497	4.932	4.644	5.557	2.915
Diameter (in.)	2.406	2.371	2.368	2.372	2.374
Sample Volume (ft^3)	0.01446	0.01260	0.01184	0.01421	0.00747
Total Mass Soil+Tube (g)	976.6	981.3	932.3	1100.8	703.3
Mass of Tube (g)	238.8	275.7	281.9	275.9	277.3
Tare No.	136	100	322	314	C8
Tare (g)	14.4	14.1	12.8	12.9	13.6
Wet Soil + Tare (g)	90.3	59.3	72.4	68.6	60.7
Dry Soil + Tare (g)	81.1	50.7	63.2	61.3	52.1
Dry Soil (g)	66.8	36.6	50.4	48.5	38.5
Water (g)	9.2	8.6	9.2	7.3	8.6
Moisture (%)	**13.7**	**23.6**	**18.3**	**15.1**	**22.4**
Dry Density (pcf)	**98.9**	**99.9**	**102.4**	**111.2**	**102.7**

Notes:

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

Project Name: San Pablo Dam Road - Landslide Repair
Crawford File No: 24-1088.2
Date: 1/0/00
Technician: JOM

MOISTURE-DENSITY TESTS - D2216/D7263

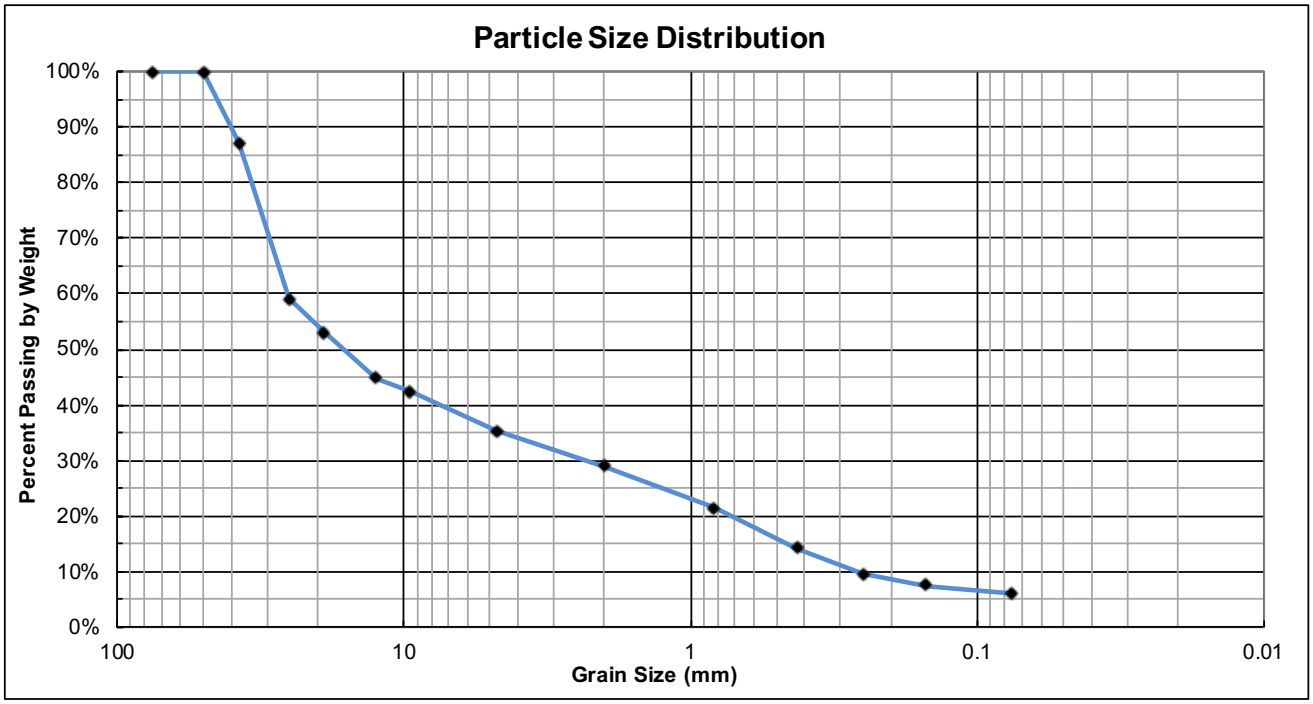
	1	2	3	4	5
Sample No.	R-24-002-8A	R-24-002-10A			
USCS Symbol	CL	CL			
Depth (ft.)	31	36			
Sample Length (in.)	5.987	5.596			
Diameter (in.)	2.375	2.380			
Sample Volume (ft^3)	0.01535	0.01441			
Total Mass Soil+Tube (g)	1167.8	1064.5			
Mass of Tube (g)	277.8	279.5			
Tare No.	A20	C8			
Tare (g)	13.6	13.7			
Wet Soil + Tare (g)	84.1	77.4			
Dry Soil + Tare (g)	69.2	63.8			
Dry Soil (g)	55.6	50.1			
Water (g)	14.8	13.7			
Moisture (%)	**26.7**	**27.2**			
Dry Density (pcf)	**100.9**	**94.4**			

Notes:

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

Project Name: San Pablo Dam Road - Landslide Repair
Crawford File No: 24-1088.2
Date: 10/14/24
Technician: AOM
Sample ID: Creek Bulk
Depth (ft): 0.0-0.5
USCS Classification: Poorly-graded Gravel with Clay and Sand

ASTM 6913 - Method A



% Cobble	% Gravel		% Sand			% Fines
	Coarse	Fine	Coarse	Medium	Fine	Silt/Clay
	47	18	6	15	8	
0	**65**		**29**			**6**

		Sieve #	Opening mm	Cummulative Mass Retained (g	% Passing %
Cobbles		**3"**	75	0.0	100%
Gravel	Coarse	**2"**	50	0.0	100%
		1-1/2"	37.5	164.0	87%
		1"	25.0	518.6	59%
		3/4"	19.0	597.6	53%
	Fine	**1/2"**	12.5	702.1	45%
		3/8"	9.50	733.0	42%
		#4	4.75	822.0	35%
Sand	Coarse	**#10**	2.00	902.7	29%
	Medium	**#20**	0.825	998.0	21%
		#40	0.425	1089.7	14%
	Fine	**#60**	0.250	1148.6	10%
		#100	0.150	1174.5	8%
Silt/Clay		**#200**	0.075	1193.2	6%

Coefficient of Uniformity	Coefficient of Curvature	50% of Cumulative Mass
Cu = 95.5	Cc = 0.9	D_{50} = 16.66

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

Project Name: San Pablo Dam Road - Landslide Repair
Crawford File No: 24-1088.2
Date: 10/8/24
Technician: KVC

200 Wash - ASTM D1140
Method A

Max Particle Size	Standard	Recommend
2 mm or less	No. 10	20 g
4.75 mm	No. 4	100 g
9.5 mm	3/8 "	500 g
19.0 mm	3/4 "	2.5 kg
37.5 mm	1 1/2 "	10 kg
75.0 mm	3 "	50 kg

Table from 6.2 of ASTM D1140

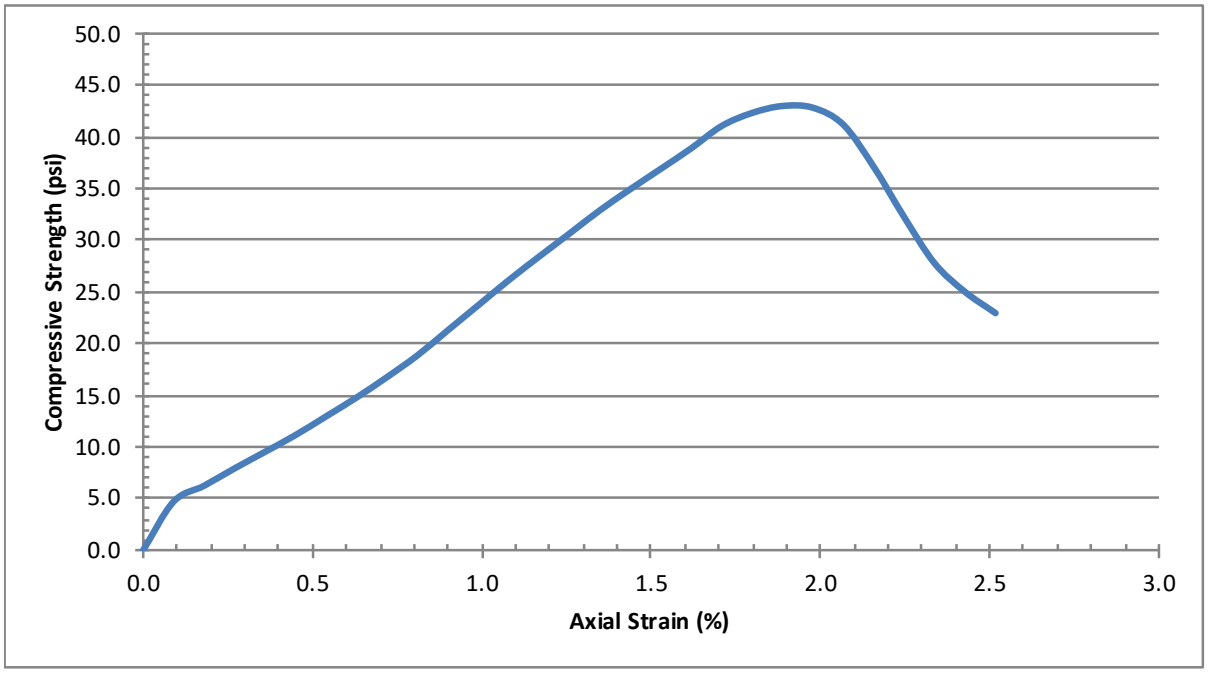
Sample No.	A-24-001-9C/9B/9A	R-24-002-9B/9A			
USCS Symbol	CL/SC	SC/CL			
Depth (ft.)	27.5-29	32-33			
Tare No.	X16	9019			
Tare (g)	117	115.1			
Dry Soil + Tare (g)	334.42	436.99			
Dry Mass before (g)	217.4	321.9			
Dry Mass after (g)	108.8	166.1			
Percent Fines (%)	50	48			

Notes:

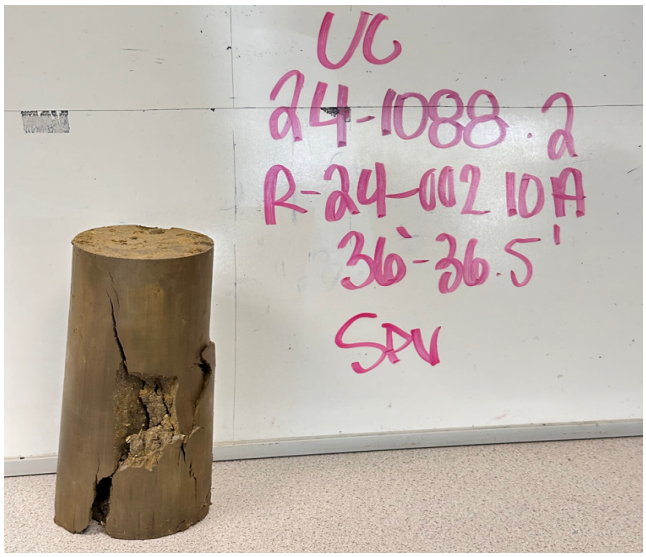
Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

Project Name: San Pablo Dam Road - Landslide Repair
Crawford File No: 24-1088.2
Date: 10/11/24
Technician: SPV
Sample ID: R-24-002-10A Depth (ft): 36.0
USCS Classification: CL

UNCONFINED COMPRESSION TEST - D2166



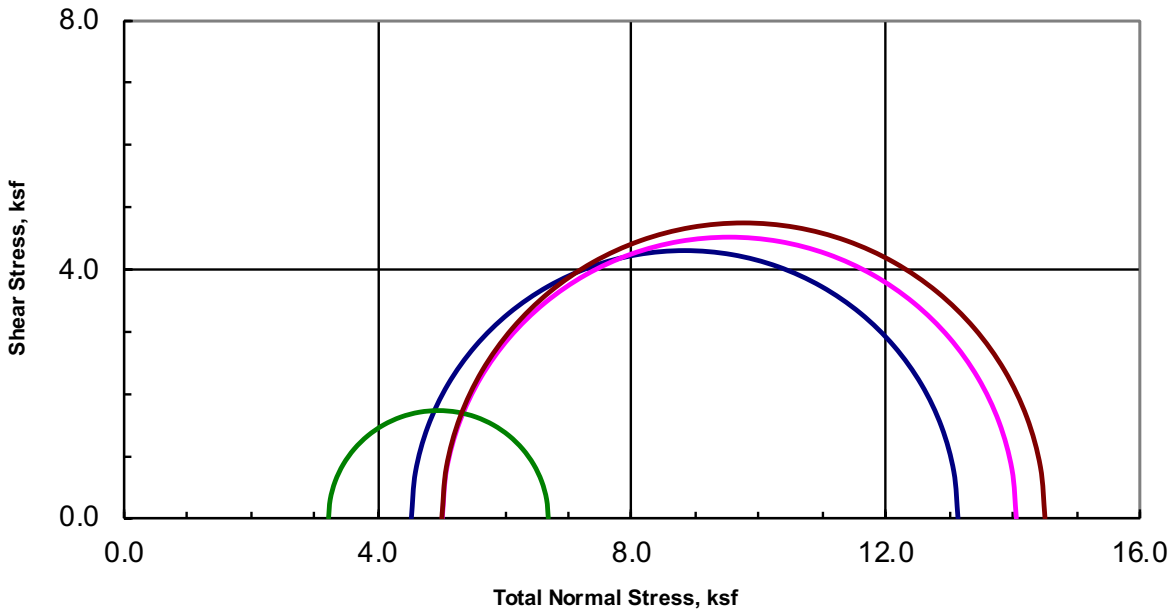
Dry Density (pcf)	**94.4**
Water Content (%)	**27.2**
Unconfined Compressive Strength (psi)	**43.0**
Unconfined Compressive Strength (psf)	**6192**
Average Height (in)	5.596
Average Diameter (in)	2.380
Rate of strain (%)	0.5
Strain at Failure (%)	1.9

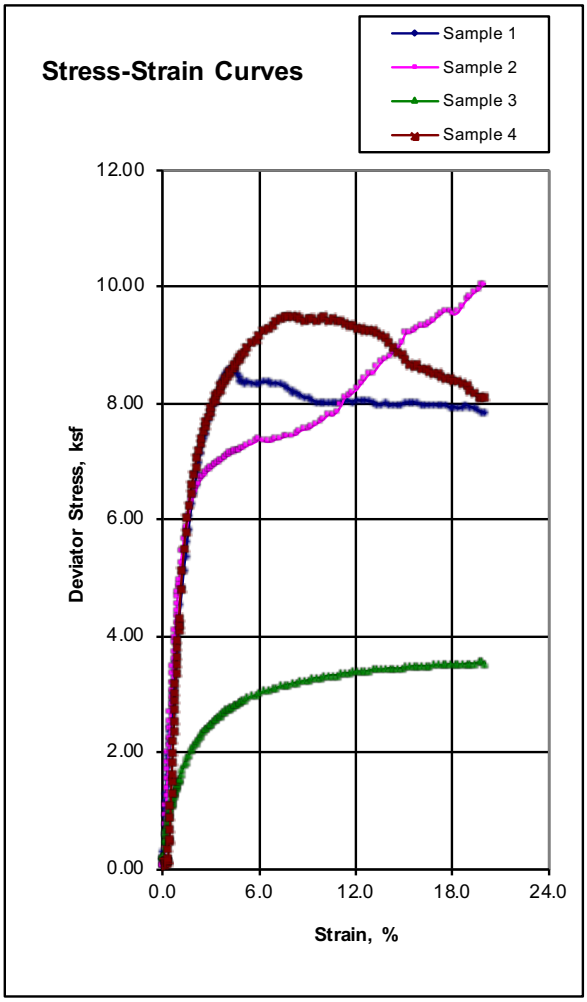


Notes:

Cooper Testing Labs, Inc.
937 Commercial Street
Palo Alto, CA 94303

Unconsolidated-Undrained Triaxial Test
ASTM D2850





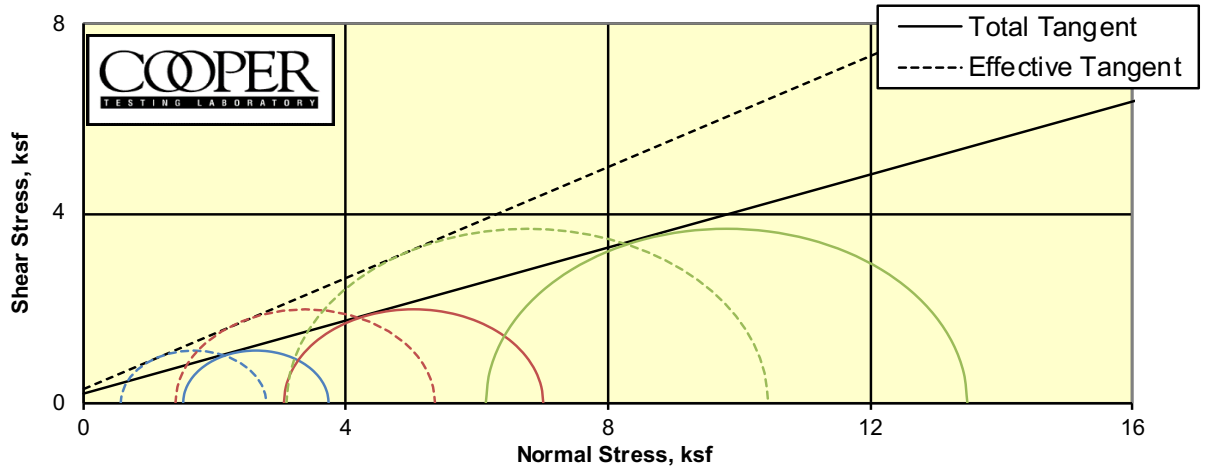
Sample Data				
	1	2	3	4
Moisture %	22.6	19.6	19.0	21.3
Dry Den,pcf	104.0	109.3	102.8	109.3
Void Ratio	0.621	0.542	0.639	0.599
Saturation %	98.3	97.5	80.2	99.7
Height in	5.01	5.02	5.00	5.01
Diameter in	2.40	2.40	2.40	2.41
Cell psi	31.4	34.8	22.4	34.8
Strain %	4.32	15.00	15.00	8.31
Deviator, ksf	8.610	9.043	3.461	9.501
Rate %/min	1.00	1.00	1.00	1.00
in/min	0.050	0.050	0.050	0.050
Job No.:	1181-004			
Client:	Crawford & Associates			
Project:	24-1088.2			
Boring:	A-24-001 10A	A-24-001 11A	A-24-002 6A	A-24-002 11A
Sample:				
Depth ft:	36-36.5	41-41.5	26-26.5	41-41.5

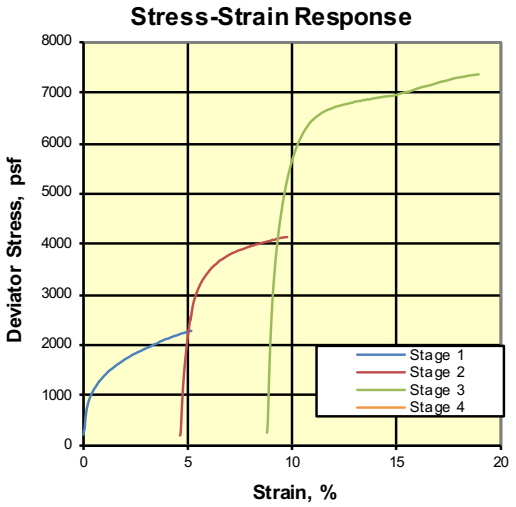
Visual Soil Description	
Sample #	
1	Olive Sandy CLAY
2	Olive CLAY w/ Sand
3	Dark Olive Gray Clayey SAND w/ Gravel
4	Olive Gray CLAY

Remarks:

Note: Strengths are picked at the peak deviator stress or 15% strain which ever occurs first per ASTM D2850.

Staged Consolidated Undrained Triaxial Compression with Pore Pressure
ASTM D4767m





CTL Number:	1181-004
Client Name:	Crawford & Associates
Project Name:	San Pablo Dam Road-Landslide Repairs
Project Number:	24-1088.2
Date:	11/5/24 By: MD/DC
Total C	0.200 ksf
Total phi	21.0 degrees
Eff. C	0.300 ksf
Eff. Phi	30.3 degrees ©

Remarks: Strengths picked at the peak effective stress ratios.

Stage	1	2	3	4
Boring	A-24-001			
Sample	6A			
Depth	24-24.5			
Visual Description	Dark Olive Gray Sandy CLAY, trace Gravel			
MC (%)	26.2			
Dry Density (pcf)	94.4			
Saturation (%)	89.9			
Void Ratio	0.786			
Diameter (in)	2.40			
Height (in)	5.00			
	Final			
MC (%)	28.1	26.2	24.3	
Dry Density (pcf)	95.9	98.8	101.8	
Saturation (%)	100.0	100.0	100.0	
Void Ratio	0.757	0.706	0.656	
Diameter (in)	2.42	2.44	2.46	
Height (in)	4.85	4.62	4.42	
Cell Pressure (psi)	90.2	100.6	121.9	
Back Pressure (psi)	79.6	79.4	79.3	
	Effective Stresses At:			
Strain (%)	4.7	3.6	10.9	
Deviator (ksf)	2.221	3.960	7.350	
Excess PP (psi)	6.6	11.5	21.1	
Sigma 1 (ksf)	2.787	5.360	10.444	
Sigma 3 (ksf)	0.565	1.401	3.093	
P (ksf)	1.676	3.380	6.768	
Q (ksf)	1.111	1.980	3.675	
Stress Ratio	4.929	3.827	3.376	
Rate (in/min)	0.0006	0.0006	0.0006	

Appendix E:
Noise Supporting Information

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Mobile Construction Activity Noise Calculation

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
	Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
Grader	85	1	40	50	1	0	85.0	81.0	126491106.4
Excavator	85	1	40	100	1	0	79.0	72.0	15811388.3
Dozer	85	1	40	100	1	0	79.0	72.0	15811388.3
Front End Loader	80	1	40	100	1	0	74.0	67.0	5000000
Backhoe	80	1	40	100	1	0	74.0	67.0	5000000
						Lmax[4]	85	Leq	82

Notes:
[1] Percentage of time activity occurs each hour
[2] Soft ground terrain between project site and receptor.
[3] Shielding due to terrain or structures
[4] Calculated Lmax is the Loudest value.

Distance to Receptor*
Leq answer above
Assuming closest equipment operating 100 feet from nearest receptor
Assuming closest equipment operating 150 feet from nearest receptor
Assuming closest equipment operating 200 feet from nearest receptor
Lunch break
Assuming closest equipment operating 250 feet from nearest receptor
Assuming closest equipment operating 300 feet from nearest receptor
Assuming closest equipment operating 350 feet from nearest receptor
Assuming closest equipment operating 400 feet from nearest receptor

Notes: *Equipment is measured as spaced out across the project site

8 Hour Average Calculations					
	Time	Hourly Leq	Leq'	0.1*Leq	antiLog
Night	12:00 AM	0.0	10.0	1	10
	1:00 AM	0.0	10.0	1	10
	2:00 AM	0.0	10.0	1	10
	3:00 AM	0.0	10.0	1	10
	4:00 AM	0.0	10.0	1	10
	5:00 AM	0.0	10.0	1	10
	6:00 AM	0.0	10.0	1	10
Day	7:00 AM	0.0	0.0	0	1
	8:00 AM	82.3	82.3	8.225603579	168113883
	9:00 AM	74.5	74.5	7.449386792	28144062.85
	10:00 AM	70.0	70.0	6.995095407	9887702.868
	11:00 AM	66.7	66.7	6.666544303	4640281.24
	12:00 PM	0.0	0.0	0	1
	1:00 PM	64.1	64.1	6.407138102	2553513.17
	2:00 PM	61.9	61.9	6.192121389	1556400.597
	3:00 PM	60.1	60.1	6.008231555	1019134.62
	4:00 PM	58.5	58.5	5.847460781	703818.6662
	5:00 PM	0.0	0.0	0	1
	6:00 PM	0.0	0.0	0	1
Evening	7:00 PM	0.0	5.0	0.5	3.16227766
	8:00 PM	0.0	5.0	0.5	3.16227766
	9:00 PM	0.0	5.0	0.5	3.16227766
Night	10:00 PM	0.0	10.0	1	10
	11:00 PM	0.0	10.0	1	10
			Sum		216618900.5
			Sum/8		27077362.56
			Log10(Sum/8)		7.43260636
			10*Log10(Sum/8)		74.3260636
			8 Hour Average		74

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
	Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
Grader	85	1	40	100	1	0	79.0	72.0	15811388.3
Excavator	85	1	40	150	1	0	75.5	66.7	4684855.793
Dozer	85	1	40	150	1	0	75.5	66.7	4684855.793
Front End Loader	80	1	40	150	1	0	70.5	61.7	1481481.481
Backhoe	80	1	40	150	1	0	70.5	61.7	1481481.481
						Lmax[4]	79	Leq	74

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
	Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
Grader	85	1	40	150	1	0	75.5	66.7	4684855.793
Excavator	85	1	40	200	1	0	73.0	63.0	1976423.538
Dozer	85	1	40	200	1	0	73.0	63.0	1976423.538
Front End Loader	80	1	40	200	1	0	68.0	58.0	625000
Backhoe	80	1	40	200	1	0	68.0	58.0	625000
						Lmax[4]	75	Leq	70

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements

Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
Grader	85	1	40	200	1	0	73.0	63.0	1976423.538
Excavator	85	1	40	250	1	0	71.0	60.1	1011928.851
Dozer	85	1	40	250	1	0	71.0	60.1	1011928.851
Front End Loader	80	1	40	250	1	0	66.0	55.1	320000
Backhoe	80	1	40	250	1	0	66.0	55.1	320000
						Lmax[4]	73	Leq	67

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
Grader	85	1	40	250	1	0	71.0	60.1	1011928.851
Excavator	85	1	40	300	1	0	69.4	57.7	585606.9741
Dozer	85	1	40	300	1	0	69.4	57.7	585606.9741
Front End Loader	80	1	40	300	1	0	64.4	52.7	185185.1852
Backhoe	80	1	40	300	1	0	64.4	52.7	185185.1852
						Lmax[4]	71	Leq	64

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
Grader	85	1	40	300	1	0	69.4	57.7	585606.9741
Excavator	85	1	40	350	1	0	68.1	55.7	368778.7359
Dozer	85	1	40	350	1	0	68.1	55.7	368778.7359
Front End Loader	80	1	40	350	1	0	63.1	50.7	116618.0758
Backhoe	80	1	40	350	1	0	63.1	50.7	116618.0758
						Lmax[4]	69	Leq	62

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
Grader	85	1	40	350	1	0	68.1	55.7	368778.7359
Excavator	85	1	40	400	1	0	66.9	53.9	247052.9422
Dozer	85	1	40	400	1	0	66.9	53.9	247052.9422
Front End Loader	80	1	40	400	1	0	61.9	48.9	78125
Backhoe	80	1	40	400	1	0	61.9	48.9	78125
						Lmax[4]	68	Leq	60

Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
Grader	85	1	40	400	1	0	66.9	53.9	247052.9422
Excavator	85	1	40	450	1	0	65.9	52.4	173513.1775
Dozer	85	1	40	450	1	0	65.9	52.4	173513.1775
Front End Loader	80	1	40	450	1	0	60.9	47.4	54869.6845
Backhoe	80	1	40	450	1	0	60.9	47.4	54869.6845
						Lmax[4]	67	Leq	58

MITIGATION MONITORING REPORTING PLAN

The following Mitigation Measures will be implemented according to Section 15097 of the CEQA guidelines. Contra Costa County Public Works Department (PWD) is responsible for ensuring these measures are implemented by PWD staff and by Contractors working on behalf of PWD.

Mitigation, Avoidance, and Minimization Measures

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
3. AIR QUALITY					
AIR-1: Proposed project construction will generate fugitive dust.	**MITIGATION MEASURE AIR-1**: Implement Bay Area Air District Basic Construction Best Management Practices				
	1) All exposed surfaces (e.g., parking areas, staging areas, graded areas, and unpaved access roads) shall be watered two times per day. 2) All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3) All visible mud or dirt track-out 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. 4) All vehicle speeds on unpaved roads shall be limited to 15 mph. 5) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. 6) Idling times shall be minimized either by shutting equipment off when not in use 7) Or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. 8) All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a	During construction.	Construction Contractor.	Contra Costa County Public Works Department (PWD).	

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	certified mechanic and determined to be running in proper condition prior to operation. 9) Post a publicly visible sign with the telephone number and contact information for the designated on-site construction manager available to receive and respond to dust complaints. This person shall report all complaints to Contra Costa County and take immediate corrective action as soon as practicable but not more than 48 hours after the complaint is received. The Bay Area Air District phone number shall also be visible to ensure compliance with applicable regulations.				
4. BIOLOGICAL RESOURCES					
BIO-1a: Proposed project construction may impact the California Red-legged Frog.	**MITIGATION MEASURE BIO-1a:** California Red-legged Frog Mitigation				
	Implementation of the following measures would ensure avoidance of impacts on California red-legged frog (CRLF): **Work Restriction:** To the greatest extent practicable, project activities shall be restricted to the period between April 15 and October 15, when CRLF are the least active. If project activities are proposed outside of the work restriction period, consultation with the California Department of Fish and Wildlife (CDFW)/United States Fish and Wildlife Service (USFWS) shall be required to ensure appropriate avoidance and/or minimization measures are incorporated. **Worker Environmental Awareness Program:** Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program (WEAP) for all construction personnel. At a minimum, the training shall include a description of the CRLF and its habitat; the regulatory protections afforded for these species; the general measures that are being implemented	Prior to and during grading and construction work activities.	Construction Contractor, PWD Environmental Services Division-supplied Biologist.	PWD Environmental Services Division.	

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	to conserve them as they relate to the proposed project, and the boundaries within which the project may be accomplished. **Pre-Construction Survey:** A qualified Biologist shall survey the Biological Study Area (BSA) no more than 5 days before the onset of work activities and present survey results to the County, for submittal to CDFW. If any life stage of the CRLF is detected, construction activities shall not be allowed to commence until consultation with USFWS has occurred. **Exclusion Fencing or Temporary Silt Fencing:** Prior to project work activities, wildlife exclusion fencing shall be installed around the perimeter of the development footprint in a manner that will prevent California red-legged frog (CRLF) from entering the project impact areas. A qualified Biologist shall be present during the installation of the wildlife exclusion fencing. The barrier fencing shall be removed within 72 hours of completion of work. The location and design of the fence shall be approved by a qualified Biologist, and the qualified Biologist shall also be present on-site to monitor installation until the exclusion fence is complete. At a minimum, the exclusion fencing shall be at least 3 feet high and the lower 6 inches of the fence shall be buried in the ground to prevent animals from crawling under. The remaining 2.5 feet shall be left above ground to serve as a barrier for animals moving on the ground surface. Fencing shall be installed and maintained in good condition during all construction activities and shall be inspected and maintained daily until the completion of project construction. **Revegetation:** Areas disturbed by the project shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by activities associated				

MITIGATION MONITORING REPORTING PLAN

Impact	Mitigation Measure:	Implementation Timing	Implementation Entity	Verification Entity	Compliance Verification Date
	with the project unless CDFW, USFWS, and the project applicant determine that it is not feasible or practical.				
BIO-1b: Proposed project construction may impact the Northwestern Pond Turtle.	**MITIGATION MEASURE BIO-1b:** Northwestern Pond Turtle Mitigation				
	Implementation of the following measures would ensure avoidance of impacts on northwestern pond turtle (NWPT): **Worker Environmental Awareness Program:** Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program (WEAP) for all construction personnel. At a minimum, the training will include a description of the NWPT and its habitat, the regulatory protections afforded for these species; the general measures that are being implemented to conserve them as they relate to the proposed project,, and the boundaries within which the project may be accomplished. **Pre-construction Survey:** A qualified Biologist shall survey the Biological Study Area (BSA) no more than 5 days before the onset of work activities and present survey results to the County, for submittal to the California Department of Fish and Wildlife (CDFW). If any life stage of the NWPT is detected, construction activities shall not be allowed to commence until consultation with the CDFW and the United States Fish and Wildlife Service (USFWS) has occurred. **Exclusion Fencing or Temporary Silt Fencing:** Prior to project work activities, wildlife exclusion fencing shall be installed around the perimeter of the development footprint in a manner that will prevent northwestern pond turtle (NWPT) from entering the project impact areas. A qualified Biologist shall be present during the installation of the wildlife exclusion fencing. The barrier fencing shall be removed within 72 hours of completion of work. The location and design of the fence shall be approved by a	Prior to and during grading and construction work activities.	Construction Contractor, PWD Environmental Services Division-supplied Biologist.	PWD Environmental Services Division.	

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	qualified Biologist, and the qualified Biologist shall also be present on-site to monitor installation until the exclusion fence is complete. At a minimum, the exclusion fencing shall be at least 3 feet high and the lower 6 inches of the fence shall be buried in the ground to prevent animals from crawling under. The remaining 2.5 feet shall be left above ground to serve as a barrier for animals moving on the ground surface. Fencing shall be installed and maintained in good condition during all construction activities and shall be inspected and maintained daily until the completion of project construction. **Revegetation:** Areas disturbed by the project shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by activities associated with the project unless the CDFW, USFWS, and the project applicant determine that it is not feasible or practical.				
BIO-1c: Proposed project construction may impact the San Francisco Dusky-footed Woodrat.	**MITIGATION MEASURE BIO-1c:** San Francisco Dusky-footed Woodrat Mitigation				
	Implementation of the following measures would ensure avoidance of impacts on San Francisco Dusky-footed Woodrat (SFDFW): **Worker Environmental Awareness Program:** Before any activities begin on the project, a qualified Biologist shall conduct a Worker Environmental Awareness Program (WEAP) for all construction personnel. At a minimum, the training will include a description of the SFDFW and its habitat, ; the regulatory protections afforded for these species; the general measures that are being implemented to conserve them as they relate to the proposed project, and the boundaries within which the project may be accomplished.	Prior to and during grading and construction work activities.	Construction contractor, PWD Environmental Services Division-supplied Biologist.	PWD Environmental Services Division.	

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	Pre-construction Survey: A qualified Biologist shall survey the Biological Study Area (BSA) no more than 5 days before the onset of work activities and present survey results to the County, for submittal to the California Department of Fish and Wildlife (CDFW). If any life stage or nest of the SFDFW is detected, construction activities shall not be allowed to commence until consultation with CDFW and the United States Fish and Wildlife Service (USFWS) has occurred. **Exclusion Fencing or Temporary Silt Fencing:** Prior to project work activities, wildlife exclusion fencing shall be installed around the perimeter of the development footprint in a manner that will prevent San Francisco Dusky-footed Woodrat (SFDFW) from entering the project impact areas. A qualified Biologist shall be present during the installation of the wildlife exclusion fencing. The barrier fencing shall be removed within 72 hours of completion of work. The location and design of the fence shall be approved by a qualified Biologist, and the qualified Biologist shall also be present on-site to monitor installation until the exclusion fence is complete. At a minimum, the exclusion fencing shall be at least 3 feet high and the lower 6 inches of the fence shall be buried in the ground to prevent animals from crawling under. The remaining 2.5 feet shall be left above ground to serve as a barrier for animals moving on the ground surface. Fencing shall be installed and maintained in good condition during all construction activities and shall be inspected and maintained daily until the completion of project construction. **Revegetation:** Areas disturbed by the project shall be revegetated utilizing an assemblage of native upland vegetation suitable for the area. Invasive, exotic plants shall be controlled to the maximum extent practicable during construction. This measure shall be implemented in all areas disturbed by activities associated				

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	with the project unless the CDFW, USFWS, and the project applicant determine that it is not feasible or practical.				
BIO-1d: Proposed project construction may impact migratory birds.	**MITIGATION MEASURE BIO-1d:** Migratory Bird Mitigation				
	Implementation of the following measures would ensure avoidance of impacts on Migratory Birds: **Avoidance of Nesting Season:** To the extent practicable, vegetation and/or tree removal shall be scheduled to avoid the avian nesting season. The nesting season typically runs from February 1 through August 31. **Pre-Construction Surveys for Active Nests:** For any construction during the nesting season (February 1 to August 31), pre-construction nesting bird surveys shall be conducted no more than 7 days prior to the start of ground or vegetation disturbance (including tree removal) and survey results presented to the County, for submittal to the California Department of Fish and Wildlife (CDFW). **Buffer zone for Active Nests:** If an active nest is located during pre-construction surveys, a qualified Biologist, in consultation with the CDFW, shall determine an appropriately sized avoidance buffer based on the species and anticipated disturbance level. The CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species, a 500-foot no-disturbance buffer around active nests of smaller raptors such as accipiters (Accipiter sp.), a 1,000-foot no-disturbance buffer around active nests of large raptors such as buteos (Bueto sp.), and up to a 1-mile no-disturbance buffer around active nests of bald eagle (Haliaeetus leucocephalus) and golden eagles (Aquila chrysaetos) if visible from the project site. A qualified Biologist shall delineate the avoidance buffer using Environmentally Sensitive Area fencing, pin flags, and/or yellow caution tape. The	Prior to and during grading and construction work activities.	Construction Contractor, PWD Construction Management Firm, PWD Environmental Services Division-supplied Biologist.	PWD Environmental Services Division.	

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	buffer zone shall be maintained around the active nest site(s) until qualified Biologist has determined that the nesting attempt is complete. No construction activities or construction foot traffic is allowed to occur within the avoidance buffer(s). In consultation with CDFW, the qualified Biologist shall monitor the active nest during the subject construction activities and modify the protection zone accordingly to prevent project-related nest disturbance, until the young have fledged, or nests fail due to other natural causes.				
BIO-2: Proposed project construction will result in the removal of trees.	**MITIGATION MEASURE BIO-2:** Compliance with Arborist Report Tree Preservation Measures				
	Trees proposed for preservation shall be protected in accordance with the Tree Preservation Measures outlined in the project-specific arborist report. The County, Contractor, and all site personnel must adhere to these Tree Preservation Measures throughout all phases of construction, including grading, trenching, and material storage. Preservation measures include, but are not limited to protective fencing, root zone safeguards, and other specified actions that shall be installed and/or maintained by qualified personnel to prevent construction-related damage to preserved trees on-site.	During all phases of construction.	Construction Contractor, PWD Construction Management firm, PWD Environmental Services Division.	PWD Environmental Services Division.	
5. CULTURAL RESOURCES					
CUL-1: Proposed project construction could impact unanticipated cultural resources during ground-disturbing activities.	**MITIGATION MEASURE CUL-1:** Unanticipated Discovery of Cultural Resources				
	• Contractor shall be notified of the possibility of encountering historic or archaeological materials during ground-disturbing activities. A standard inadvertent discovery clause will be included in every construction contract to inform Contractors of requirements during construction.	Notification prior to construction permits. WEAP training prior to any grading or construction work activities; and	Construction Contractor, PWD Environmental Services Division supplied Archaeologist, PWD	PWD Environmental Services Division.	

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	• Prior to the initiation of construction activities, a qualified Archaeologist shall provide Worker Environmental Awareness Program (WEAP) training to construction personnel with an overview of applicable laws, project mitigation measures, and procedures to be followed with regard to historical, archaeological, and Tribal resources that may be encountered over the course of the project. • Procedures for discovery include: - If potential archaeological or Tribal cultural materials are encountered during construction, the Contractor shall cease all ground-disturbing activities within a 100-foot radius of the find. The Contractor shall immediately notify the District Resident Engineer or their designated representative to request a qualified Archaeologist and Confederated Villages of Lisjan Nation (CVLN) representative to assess the nature and significance of the find. The Archaeologist shall stake the area of discovery, placing stakes no more than 10 feet apart, forming a circle having a radius of no less than 100 feet from the point of discovery. - If the finding(s) is not determined to be potentially significant, work may resume. - If the finding(s) is determined to be potentially significant, the Archaeologist in consultation with the Tribal representative shall develop a mitigation plan, which shall be implemented by the entity in accordance with State guidelines and in consultation with the consulting Tribe. The mitigation plan shall include avoidance of the resource or, if avoidance of the resource is not feasible, the plan shall outline appropriate treatment of the resource in	continuously thereafter as additional workers are mobilized or join the project.	Construction Management firm.		

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	coordination with the consulting Tribe and, if applicable, a qualified archeologist. Examples of appropriate mitigation for the Tribal Cultural Resources (TCRs) include, but are not limited to, protecting the cultural character and integrity of the resources, protecting traditional use of the resources, protecting the confidentiality of the resources, or heritage recovery. Preservation in place (i.e., avoidance) is typically the preferred manner of treatment of Tribal resources and cultural items. No photography of resources is permitted. - Any previously undiscovered resources found during construction within the Project Site shall be recorded on appropriate California Department of Parks and Recreation (DPR) 523 forms and shall be submitted to Contra Costa County Department of Conservation and Development, the Northwest Information Center (NWIC), and the California Office of Historic Preservation (OHP), as required.				
CUL-2: Proposed project construction could impact undiscovered human remains.	**MITIGATION MEASURE CUL-2:** Impact to Previously Undiscovered Human Remains				
	• In the event of the accidental discovery or recognition of any human remains, there shall be no further excavation or disturbance within 100 feet of the remains until the Contra Costa County Coroner is contacted to determine whether the remains are Native American and if an investigation of the cause of death is required. At the same time, an Archaeologist shall be contacted to assess the situation. • If the Coroner determines the remains to be Native American, the Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours of this	During construction.	Construction Contractor, PWD Environmental Services Division supplied Archaeologist, PWD Construction Management firm.	PWD Environmental Services Division.	

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	identification. The NAHC shall identify a Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated funerary objects. • If the Confederated Villages of Lisjan Nation (CVLN) is designated as the MLD, the Tribe shall make every effort to recommend keeping ancestral remains and funerary objects in situ and protected. If removal of burials is necessary, Tribal representatives shall work with the qualified Archaeologist to ensure that excavation and documentation are treated carefully, ethically, and respectfully. No photography, testing, or scientific study, destructive or non-destructive, shall be conducted on ancestral human remains. All bone, if not identifiable as human or animal, shall be treated as human remains and the appropriate protocols followed. The Archaeologist shall prepare a report of all activities, including documenting methods and results as well as recommendations for the treatment of the human remains and any associated archaeological materials. The report shall be submitted to the District, the Northwest Information Center (NWIC), and the Tribe. • Tribal representatives shall rebury the Native American human remains and associated funerary objects with appropriate dignity either: (1) in accordance with the recommendations of the MLD if available; or (2) in the project vicinity at a location decided upon between the CVLN representative and the County, where the reburial would be accessible to Tribal members in perpetuity and would not be subject to further disturbance. The discovery is to be documented on California Department of Parks and Recreation (DPR) 523 forms and otherwise				

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	kept confidential and secure to prevent any further disturbance.				
7. GEOLOGY AND SOILS					
GEO-1: Ground disturbance from the proposed project has the potential to disturb previously unknown paleontological resources.	**MITIGATION MEASURE GEO-1:** Paleontological Resource Discovery				
	Should unique paleontological materials be uncovered during grading, trenching, or other on-site excavation(s), the County shall be immediately notified, and all earthwork within 100 feet of the materials shall be stopped immediately until a qualified Paleontologist is contacted and retained to evaluate the significance of the find. If the find is not significant, work may resume. If the find is potentially significant, the Paleontologist, in coordination with the County, would implement appropriate sampling, salvaging, identification, and reporting procedures consistent with California Public Resources Code 30244.	During grading and construction.	Construction Contractor, PWD Construction Management firm, PWD Environmental Services Division –supplied Paleontologist.	PWD Environmental Services Division.	
9. TRIBAL CULTURAL RESOURCES					
TCR-1: Ground disturbance from the proposed project may lead to a discovery of tribal cultural resources.	**MITIGATION MEASURE TCR-1:** Native American Monitoring				
	Prior to ground disturbing activities, the County in consultation with the Confederated Villages of Lisjan Nation (CVLN), shall establish an Environmentally Sensitive Area (ESA) where ground disturbance would occur with potential to impact Tribal Cultural Resources. CVLN Tribal monitor(s) shall be retained to monitor ground disturbing activities within the ESA. CVLN monitor(s) will have the authority to halt and redirect work should any archaeological or tribal cultural resources be identified during monitoring. If archaeological or Tribal cultural resources are encountered during ground disturbing activities, work within 100 feet of the find must halt and the find must be evaluated for listing in the CRHR and NRHP. Monitoring may be reduced or	Prior to ground disturbing activities.	CVLN Tribal monitor(s).	PWD Environmental Services Division.	

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	halted at the discretion of the CVLN monitor, in consultation with the lead agency, as warranted by conditions such as encountering bedrock, sediments being excavated are fill, negative findings during the first 50 percent of the entire area of ground disturbance, etc. If monitoring is reduced to spot checking, spot checking shall occur when ground disturbing activities move to a new location within the project site and when ground disturbance will extend to depths not previously reached (unless those depths are within bedrock).				