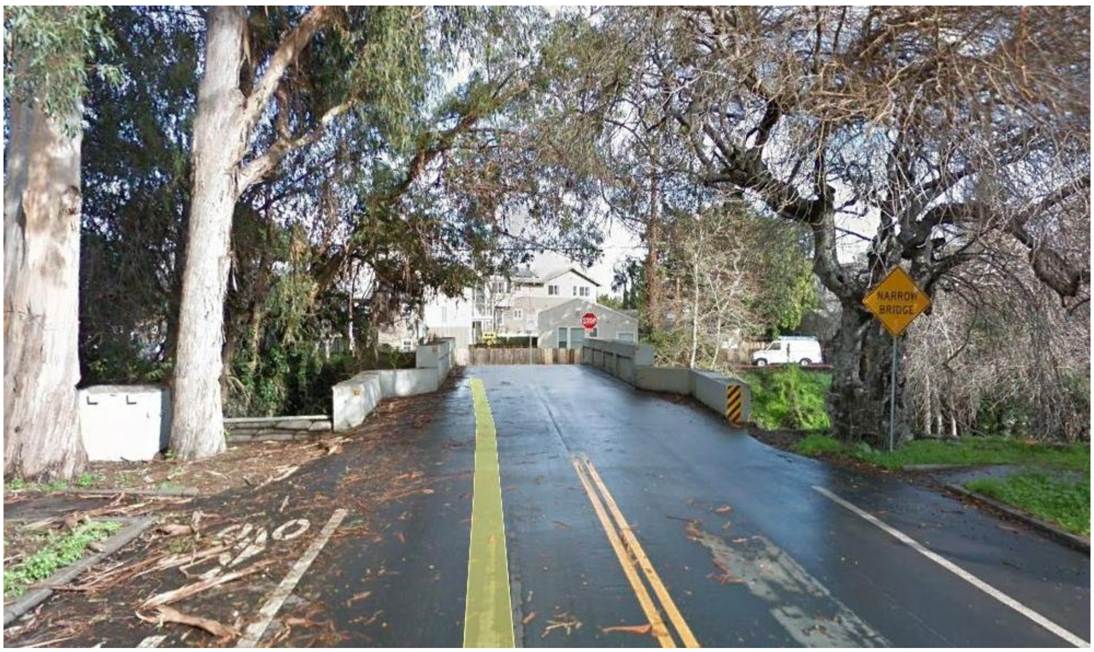
Newell Road Bridge Replacement Project

SANTA CLARA COUNTY AND SAN MATEO COUNTY, CALIFORNIA
DISTRICT 4 – SCL/SM-Newell Road
BRLS 5100(017)

Draft Environmental Impact Report/Environmental Assessment



Prepared by the
State of California Department of Transportation
and
City of Palo Alto

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

Caltrans

May 2019

General Information about This Document

What's in this document:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Environmental Impact Report/Environmental Assessment (EIR/EA), which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Santa Clara and San Mateo Counties, California. Caltrans is the lead agency under the National Environmental Policy Act (NEPA). The City of Palo Alto is the lead agency under California Environmental Quality Act (CEQA). The document tells you why the project is being proposed, what alternatives we have considered for the project, how the existing environment could be affected by the project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- Please read this document.
- Additional copies of this document and the related technical studies are available for review at:
  - Caltrans District 4, Office of Local Assistance
    111 Grand Avenue, Oakland, CA 94612
  - Palo Alto City Hall, 250 Hamilton Ave Floor 5, Palo Alto, CA 94301
  - Rinconada Library, 1213 Newell Rd, Palo Alto, CA 94303
  - This document may be downloaded at the following website: https://www.cityofpaloalto.org/gov/city_information/projects/newell_road_bridge_replacement_project.asp.
- Attend the public hearing on July 18, 2019, at 8:30 AM at the Palo Alto City Hall Council Chambers at 250 Hamilton Avenue, Palo Alto, CA 94301.
- We'd like to hear what you think. If you have any comments about the proposed project, please attend the public hearing and/or send your written comments by the deadline.
  - Send comments via postal mail to:
    City of Palo Alto
    Attn: Michel Jeremias
    250 Hamilton Ave, 6th Floor, Palo Alto, CA 94301
  - Send comments via email to: Michel.Jeremias@CityofPaloAlto.org.
- Be sure to send comments by the deadline: July 30, 2019

What happens next:

After comments are received from the public and reviewing agencies, Caltrans, as assigned by the Federal Highway Administration (FHWA), may: (1) give environmental approval to the proposed project, (2) request additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is obtained, the City of Palo Alto could design and construct all or part of the project. The City of Palo Alto Planning and Transportation Commission may recommended approval of the EIR, followed by City Council certification of the Final EIR, adoption of the Statement of Overriding Considerations, and a project specific Mitigation Monitoring and Reporting Program.

Alternative Formats:

For individuals with sensory disabilities, this document is available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternative formats, please write to Caltrans, Attn: Dan Rivas, Office of Environmental Planning, 111 Grand Avenue, Oakland, CA 94623-0660; or call (510) 286-6233 (voice); or use the California Relay Service TTY number, (800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

SCH #2015082026
4 – SCL/SM-Newell Road
BRLS 5100(017)

Demolish and reconstruct Newell Road Bridge, including roadway improvements on Newell Road from Edgewood Drive to Woodland Avenue in the Cities of Palo Alto and East Palo Alto, in Santa Clara and San Mateo Counties

Draft Environmental Impact Report/Environmental Assessment

Submitted Pursuant to: (State) Division 13, California Public Resources Code

(Federal) 42 USC 4332(2)(C)

THE STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

and

City of Palo Alto

Responsible Agency under California Environmental Quality Act: City of East Palo Alto

5/22/19
Date of Approval

Tony Tavares
District Director
California Department of Transportation
NEPA Lead Agency

5-16-19
Date of Approval

Jonathan Lait
Director of Planning and Community Environment
City of Palo Alto
CEQA Lead Agency

The following persons may be contacted for more information about this document:

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California Department of Transportation

Michel Jeremias, 250 Hamilton Ave, 6th Floor, Palo Alto, CA 94301, (650) 329-2129
City of Palo Alto

S.1 Introduction

The project is subject to federal as well as City of Palo Alto and state environmental review requirements because the City of Palo Alto proposes the use of federal funds from the Federal Highway Administration (FHWA) and/or the project requires an approval from FHWA. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The City of Palo Alto is the project proponent and the lead agency under CEQA.

California participated in the "Surface Transportation Project Delivery Pilot Program" (Pilot Program) pursuant to 23 U.S. Code (USC) Section 327, for more than 5 years, beginning July 1, 2007, and ending September 30, 2012. The Moving Ahead for Progress in the 21st Century Act (Public Law 112-141), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, the California Department of Transportation (Caltrans) entered into a Memorandum of Understanding (MOU) pursuant to 23 USC 327 (NEPA Assignment MOU) with FHWA. The NEPA Assignment MOU became effective October 1, 2012, and was renewed on December 23, 2016, for a term of 5 years. In summary, Caltrans continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and Caltrans assumed all of the United States Department of Transportation Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off of the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to Caltrans under the 23 USC 326 Categorical Exclusion Assignment MOU, projects excluded by definition, and specific project exclusions.

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. Because NEPA is concerned with the significance of the project as a whole, often a "lower level" document is prepared for NEPA. One of the most common joint document types is an Environmental Impact Report (EIR)/Environmental Assessment (EA).

After receiving comments from the public and reviewing agencies, a Final EIR/EA will be prepared. The City of Palo Alto and Caltrans may prepare additional environmental and/or engineering studies to address comments. The Final EIR/EA will include responses to comments received on the Draft EIR/EA and will identify the preferred alternative for NEPA purposes. This Draft EIR/EA identifies the preferred alternative (i.e., "the project") for CEQA purposes, subject to public review, and is referred to throughout this document as the locally preferred alternative (LPA). If the decision is made to approve the project, a Notice of Determination will be published for compliance with CEQA, and Caltrans, as assigned by the Federal Highway Administration, will decide whether to issue a Finding of No Significant Impact (FONSI) if the NEPA action does not significantly impact the environment, or require an EIS for compliance with NEPA. A Notice of Availability of the FONSI will be sent to the affected units of federal, state, and local government, and to the State Clearinghouse in compliance with Executive Order 12372.

S.2 Overview of the Project Area

The Project is located in the southern region of the San Francisco Bay Area in Santa Clara and San Mateo counties, in the cities of Palo Alto and East Palo Alto. The Project site is located on Newell Road between Edgewood Drive in Palo Alto and Woodland Avenue in East Palo Alto. San Francisquito Creek, over which the Project crosses, delineates the city limits between Palo Alto and East Palo Alto, as well as the boundary between Santa Clara and San Mateo counties.

In the general project area, additional transportation improvements include enhanced bike lanes along Homer Avenue and Channing Avenue and Greer Road and pedestrian and bicycle overcrossings at U.S. Highway 101 (US 101), Pad D New Municipal Water Well, Route 101/University Avenue (State Route 109) Interchange Modification Project, San Francisquito Creek Bridge Replacement at US 101, and San Francisquito Creek Flood Protection.

S.3 Statement of Project Purpose and Need

The purpose of the Project is to:

- Maintain connections for vehicular, bicycle, and pedestrian transportation across San Francisquito Creek at Newell Road while avoiding the following:
    - diversion of a substantial number of vehicles to adjacent streets.
    - a substantial increase in the number of vehicles using Newell Road.
    - an increase in average vehicle speed on Newell Road.
- Improve pedestrian and bicycle access across San Francisquito Creek at Newell Road.
- Improve safety for all modes of transportation across San Francisquito Creek at Newell Road.
- Design a bridge that accommodates increased flows related to San Francisquito Creek improvements to address anticipated flooding risk.
- Upgrade the channel width beneath the bridge to allow for the 50-year storm event (7,500 cubic feet per second [cfs]) to pass.

The Project need is demonstrated by the following deficient conditions:

- The existing bridge is classified as being functionally obsolete because:
    - It does not accommodate two-way vehicular traffic.
    - It does not provide access for pedestrians or bicyclists.
- The bridge abutments are within the San Francisquito Creek channel, reducing the flows that pass under the bridge and making the bridge hydraulically deficient.
- The bridge provides poor drivability for vehicular traffic due to substandard sight distances and vertical profile.

S.4 Project Description

The Project includes four build alternatives (Build Alternatives 1–4) and the No Build Alternative. Build Alternative 2 is the LPA and "the project" for CEQA purposes. Project improvements would extend for approximately 500 feet along Newell Road and 350 feet along Woodland Avenue. Within the limits of the Project, the bridge is a substandard two-lane bridge that does not provide bicycle or pedestrian access. Criteria used for evaluation included, but were not limited to, Project cost, potential for environmental impacts, and the ability of an alternative to meet the Project's objectives and purpose.

S.4.1 Build Alternatives

Taking agency and public input into account, the City of Palo Alto and Caltrans, as Lead Agencies for CEQA and NEPA, are evaluating four build alternatives.

- Build Alternative 1: A one-lane bridge with two-way traffic (under signal control) on the existing alignment of Newell Road.
- Build Alternative 2 (LPA): A two-lane bridge (with stop signs) on the existing alignment of Newell Road.
- Build Alternative 3: A two-lane bridge (with stop signs) on a partial realignment of Newell Road.
- Build Alternative 4: A two-lane bridge (with stop signs) on a full realignment of Newell Road.

The design features of these Build Alternatives, shown in Figures 3a through 3d, could include removal of the existing bridge; construction of new approaches, either a one-lane bridge (Build Alternative 1) or a two standard lanes bridge (Build Alternatives 2–4), and accommodation for bicycle and pedestrian travel (including sidewalk and potential road widening for sharrow); potential addition and reconfiguration of utilities including street lighting; modification to street signage or new traffic signals; addition of retaining walls; and bank stabilization measures in the portion of San Francisquito Creek disturbed by the construction. The Project would adhere to the American Association of State Highway and Transportation Officials standards to the degree feasible.

S.4.1.1 Roadway Improvements

The following roadway improvements would be included in all build alternatives (Build Alternatives 1–4).

- The proposed roadway improvements will accommodate either a two-way single lane bridge or two 14-foot-wide shared lanes (vehicles and bicycles) bridge. The roadway profile at the new bridge would be raised approximately 1.6 feet higher than the existing bridge in order to minimize flood hazards for the adjacent communities, and provide sufficient structure depth beneath the bridge needed to span the creek. Additional vertical and horizontal work would be required at each end of the bridge in order to transition from the new bridge profile and geometry to the existing roadway.
- To provide clear sight distance, there would be a red curb approach and railings installed, along with landscaping not to exceed 30 inches along Woodland Avenue near its intersection with Newell Road.

S.4.2 Bicycle and Pedestrian Facilities

The following bicycle and pedestrian facility improvements would be included in all build alternatives (Build Alternatives 1–4).

- The proposed bridge will accommodate either a two-way single lane bridge or two 14-foot-wide shared lanes (vehicles and bicycles). Five-foot-wide sidewalks on either side of the bridge will also be constructed to enhance pedestrian access and safety through the site.

S.4.3 Utility Relocations

The following utility relocations would be included in all build alternatives (Build Alternatives 1–4).

- Sanitary Sewer: No impacts are expected on the sanitary sewer on the East Palo Alto side of the bridge. On the Palo Alto side of the bridge an existing sewer manhole may need to be replaced on Newell Road to match the grade of the new roadway profile.
- Domestic Water: On the East Palo Alto side an existing water main runs along Woodland Avenue and a fire hydrant is located on the corner of Woodland and Newell Road. This line will remain in place and valve boxes within the street will be raised to grade to match the new roadway profile. The fire hydrant would be adjusted to match the new roadway profile. On the Palo Alto side a 6-inch PVC water main runs along Newell Road and terminates at a fire hydrant on the west side of the road near the existing bridge. The water main will remain but the fire hydrant assembly, lateral, and valves will be removed and replaced to accommodate the new roadway profile and sidewalk modifications.
- Overhead Electrical: No overhead electrical utilities exist on the Palo Alto side. On the East Palo Alto side overhead electrical poles and lines run along the south edge of Woodland Avenue within the Project limits. At least two utility poles are expected to require relocation to accommodate the proposed bridge and roadway improvements. Under Build Alternatives 2, 3, and 4, additional pole relocations may be required in order to accommodate clearances between the new bridge profile and the lowest power lines. This will be determined during final design based on coordination with PG&E.
- Street Lights: One street light on the Palo Alto side along Newell Road would be impacted by the proposed roadway improvements and would need to be removed and replaced to meet the new grades. On the East Palo Alto side street lights are integral with the overhead electrical poles; therefore, relocation will correspond with the overhead electrical pole impacts.
- Existing Steel Electrical Conduit: The 2-inch electrical conduit attached to the downstream edge of the existing bridge would be temporarily relocated prior to bridge removal and would be run within the sidewalk on the new bridge.
- Water Quality Sampling Station: The boxes and monitoring equipment located on the upstream side of the creek is associated with a water quality sampling station. The equipment inside the station would be removed by City of Palo Alto staff prior to construction; however, the contractor will remove anything that remains and let City of Palo Alto staff know when it is available for pick-up. A new water sampling station would not be installed with the Project. However, the power and fiber that serve the water sampling station would be maintained.

- Non-Utility Relocation of Eruv: The existing eruv[1] is supported on steel poles crossing the south side of Newell Road. Construction activities may require the temporary removal and relocation of the existing poles supporting the eruv over Newell Road. Coordination with the religious group associated with its original installation would be required before a relocation process could be established.
- Survey Monuments[2]: Two Survey Monuments on Woodland Avenue would need to be adjusted. Existing monument number 2433 located on the south west corner of the bridge would be removed. New survey monuments would be added on the bridge.
- Other Utilities: Fiber and power for camera and flow sensors would need to be provided.

S.4.4 Retaining Walls

The following retaining wall improvements would be included in all build alternatives (Build Alternatives 1–4).

- Retaining walls are needed adjacent to the creek near the approaches and where the proposed roadway elevation is higher than the existing conform grades. The maximum height of these retaining walls is expected to be approximately 4.75 feet at the roadway approach nearest to the bridge on the City of Palo Alto side and at the north side of Woodland Avenue under Build Alternatives 1 and 2. The profile of the retaining walls would mimic that of the roadway approaches on both sides of the bridge. Railing would be required along the top of the retaining wall in order to provide pedestrian safety in areas where the vertical differential between the top of wall and adjacent ground is greater than 30 inches or greater.

S.4.5 Channel Stabilization

The following channel improvements would be included in all build alternatives (Build Alternatives 1–4).

- Bank stabilization measures, such as rock slope protection or soil nail wall, would be required in the portion of San Francisquito Creek disturbed by construction. These measures would be implemented approximately 50 feet upstream and downstream of the bridge. Channel improvements would upgrade the channel width beneath the bridge to allow 7,500 cfs conveyance.

S.4.5.1 Construction Staging Areas

Construction staging/laydown would be included in all build alternatives (Build Alternatives 1–4) and would likely occur on Newell Road between San Francisquito Creek, Woodland Avenue, and Edgewood Drive within the roadway right-of way. The final location of staging/laydown areas would be determined during the design phase and will require additional analysis if there are any changes that result in impacts that are not described in this Draft EIR/EA or addressed by standard measures included in the project description.

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[1] A virtual wall or border surrounding a community which allows Orthodox Jews to travel, carry, and push objects on the Sabbath.

[2] A survey marker that shows the survey point for a land survey.

S.4.6 No Build Alternative

Under the No Build (No-Action) Alternative, no changes would be made to the existing bridge and approaches. No construction activities would occur, and there would be no change in the operations of the existing facilities. Other planned and approved land use development and transportation improvements along local routes may be implemented by local agencies or under other projects. Under the No-Build Alternative, the flooding issue along the creek would also not be addressed. The existing bridge flow that can pass under is 6,600 cfs, which can handle the existing flow of 5,400 cfs, but would not be sufficient to handle the future natural creek flow of 7,500 cfs. If upstream improvements are completed, flows exceeding 6,600 cfs would not be able to pass under the existing bridge. This would result in flooding upstream of the Newell Road Bridge.

S.5 Summary of Environmental Impacts and Mitigation Measures

Table S-1 provides a summary of the environmental impacts of the Project and associated avoidance, minimization, and/or mitigation measures. Refer to Chapter 2, Environmental Setting, Impacts, and Avoidance, Minimization and/or Mitigation Measures, for a detailed impact analysis of each resource area, including the regulatory setting and existing conditions.

Table S-1. Summary of Environmental Impacts and Avoidance, Minimization, and/or Mitigation Measures

Environmental Impact Topic	Potential Impact: No Build Alternative	Potential Impact: Build Alternative 1	Potential Impact: Build Alternative 2 (LPA)	Potential Impact: Build Alternative 3	Potential Impact: Build Alternative 4	Avoidance, Minimization, and/or Mitigation Measures
Land Use	No impacts.	The build alternatives would be constructed within existing transportation right-of-way. Accordingly, no changes to existing land uses would occur. Temporary Construction Easements may be required to allow the contractor access to some portions of the Project area; however, these would not affect the existing land uses adjacent to the Project. The replacement of a bridge with no increase in roadway capacity is not typically considered to have potential to induce growth. Therefore, land use impacts related to growth are not anticipated.				No avoidance, minimization, and/or mitigation measures are required.
Consistency with State, Regional, and Local Plans and Programs	No impacts.	The build alternatives would not conflict with any goals or policies of relevant plans and programs.				No avoidance, minimization, and/or mitigation measures are required.
Community Character and Cohesion	No impacts.	Construction of the Project would require temporary closure of the existing Newell Road Bridge crossing for all build alternatives, which could temporarily affect access between the cities of Palo Alto and East Palo Alto. However, access will be maintained at other existing nearby crossings (Embarcadero Road, University Avenue, and West Bayshore Road). Construction activities would also require partial closure of Woodland Avenue and Newell Road on the East Palo Alto side of the Project site to accommodate construction activities and equipment movement/stockpiling. To the extent possible, at least one lane along Woodland Avenue would remain open for the majority of construction to ensure access. To maintain the integrity of the symbolic "doorway" presented by the eruv, the contractor will be required to install temporary conduits across the creek bank between Friday evening and Saturday night during the construction period if needed to avoid any potential impact on the local Jewish community's religious practices, beliefs, and traditions. The Project would provide operational benefits in terms of vehicular safety, as well as the larger community benefit of providing safe pedestrian and bicycle access.				The contractor would be required to provide bilingual notification of construction activities including any utility disruptions to the local residents and businesses. The contractor will also be required to maintain coordination with the Orthodox Jewish community during pre-construction and construction of the Project and in the event that the poles supporting the eruv over Newell Road require moving during any period of construction when the bridge structure is in place and accessible to pedestrians, to ensure a temporary eruv is in place prior to any Friday evening.
Acquisitions	No impacts.	Temporary Construction Easements (TCEs) are anticipated from all parcels within and adjacent to the Project improvements. One or two TCEs are expected on the Palo Alto side (one under Build Alternatives 1 and 2, two under Build Alternatives 3 and 4) and five on the East Palo Alto side. All TCEs would be minor and would be required to modify the driveways, backyards, or sidewalks to match the new grade of the roadways.				Access to all properties for property owners and users will be maintained by the contractor during construction.
Environmental Justice	No impacts.	The population of the Palo Alto portion of the study area is not considered an environmental justice population while the population of the East Palo Alto portion of the study area is considered an environmental justice population. There would be some adverse effects on residents of both East Palo Alto and Palo Alto in the study area related to temporary construction-period nuisances, including noise and staging. However, effects related to on-street parking availability would be experienced entirely on the City of East Palo Alto side of San Francisquito Creek and therefore would be predominantly borne by minority and low-income populations. The effects would be temporary and on-street parking would be restored upon completion of construction. All construction effects posed by the Project would be minimized through the implementation of measures included in the project. Permanent on-street parking impacts would consist of the loss of one space due to the new pedestrian sidewalk along the bridge approach along Woodland Avenue, which would not constitute a substantial change. As such, the Project would not result in disproportionately high adverse effects on minority and low-income populations.				The contractor will be required to maintain access along Woodland Avenue during construction or to provide a detour route. The contractor will also be required to provide accommodations for nighttime parking during non-construction hours. This would include opening the work zone up for residents to park at night and utilizing head-in (perpendicular) parking rather than parallel parking in these areas.
Utilities and Emergency Services	No impacts.	A number of utility relocations would be required under all build alternatives during construction, including relocations of sewer, domestic water, overhead electrical, street lights, electrical conduits, water quality sampling station, survey monuments, and other utilities. Because the Newell Road Bridge crossing would be closed during construction, first responders would have to use other existing nearby crossings (University Avenue and West Bayshore Road). However, advance notice and coordination with emergency service providers will be included in the Traffic Management Plan prepared as part of the project to minimize any potential temporary impacts on response times. Ultimately, the Project, under all build alternatives, could improve emergency response conditions in this area by creating a safer crossing over Newell Road for emergency response vehicles.				The contractor will be required to provide bilingual notification of construction activities including any utility disruptions to the local residents and businesses. Advance notice and coordination with emergency service providers will be included in the Traffic Management Plan prepared as part of the project to minimize any potential temporary impacts on response times.

Environmental Impact Topic	Potential Impact: No Build Alternative	Potential Impact: Build Alternative 1	Build Alternative 2 (LPA)	Build Alternative 3	Build Alternative 4	Avoidance, Minimization, and/or Mitigation Measures
Traffic and Transportation, Pedestrian and Bicycle Facilities	Traffic conditions under 2020 and 2040 scenarios are similar to the build alternatives.	Construction of all build alternatives would temporarily affect access and on-street parking. In addition, the effect of diverted traffic during construction would cause increased delay at the East Crescent Drive/University Avenue, resulting in unacceptable level of service F and E during the a.m. and p.m. peak periods respectively, exceeding the CEQA delay threshold of 4 seconds. However, under 2020 and 2040 scenarios, there is no substantial difference in level of service and delay between the build alternatives, with the exception of Build Alternative 1. Build Alternatives 2, 3, and 4, accounting for the increase in traffic along Newell Road, do not substantially alter the level of service under either of the scenarios. Build Alternative 1, however, results in a higher delay at Newell Road/Woodland Avenue (North Leg) for both scenarios, as compared to Build Alternatives 2, 3, and 4. None of the transportation impacts during operations would substantially alter delay, congestion, or safety.				The contractor will implement a Traffic Management Plan during construction activities. Access along Edgewood Drive for the southeast resident's driveway will be maintained at all times during construction. Access will be maintained along Woodland Avenue or a detour route provided. During construction, the contractor will also make accommodations for nighttime parking during non-construction hours. This would include opening the work zone up for residents to park at night and utilizing head-in (perpendicular) parking rather than parallel parking in these areas. There is no feasible mitigation available to reduce the increased delay associated with diverted traffic at the East Crescent Drive/University Avenue intersection during construction.
Visual/ Aesthetics	No impacts.	While construction activities will be noticeable, the proposed Project would not have a negative effect on a scenic vista, damage scenic resources (trees, rock outcroppings, and/or historic buildings within a state scenic highway), or degrade the visual character or quality of the site and its surroundings over the long-term. Street light adjustments and/or removals are not expected to change ambient illumination levels in a noticeable way with implementation of mitigation measures. Therefore, the proposed Project would not create a new source of substantial light or glare that would negatively affect daytime or nighttime views in the area with mitigation. Under all of the proposed Build Alternatives, the proposed Project would result in a moderate-low resource change for Build Alternatives 1, 2, and 3 and moderate resource change for Build Alternative 4 (under construction and operation), and the average response of all viewer groups would be moderate-high for all build alternatives. This would result in a moderate visual impact for Build Alternatives 1, 2, and 3 and a moderate-high visual impact for Build Alternative 4 over the short-term. In all cases, the visual changes expected as a result of the project would be modest with implementation of mitigation measures.				The contractor will install visual barriers to obstruct undesirable views of construction activities and staging areas from sensitive receptors, namely residents and viewers on neighborhood sidewalks and streets, which are located adjacent to the construction site. Where appropriate and to the degree possible, landscaping and related appurtenances, such as fencing, driveway gates, and similar features that would be removed from private properties as a result of construction will be relocated, replaced, or restored in place and in-kind to mitigate for visual impacts and to maintain the quality of views from neighborhood roadways and sidewalks. The Project will implement an aesthetic design treatment with a consistent motif for new structures such as retaining walls, bridge sides, fencing, and wing walls. Streetscaping (urban design and improvements made to the street) and planting native vegetation at the tops of the creek's banks will improve the visual quality of the roadway corridor. All artificial outdoor lighting will be limited to safety and security requirements, designed using Illuminating Engineering Society's design guidelines, and in compliance with International Dark-Sky Association approved fixtures.
Cultural Resources	No impacts.	There are no historic properties present in the Area of Potential Effects (APE). Therefore, there would be no historic properties affected during construction or operation of any of the build alternatives. There is limited archaeological sensitivity within the APE and it is not anticipated that previously unidentified prehistoric or historic archaeological sites are located in the APE.				If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will cease until a qualified archaeologist can assess the nature and significance of the find and recommend/implement appropriate data collection/recovery activities. If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities will stop in any area or nearby area suspected to overlie remains, and the County Coroner will be contacted.
Hydrology and Floodplain	In the absence of additional bank stabilization activities, the banks of San Francisquito Creek would be expected to erode further. In addition to erosion continuing along some banks and beginning along others, existing structures may degrade and present additional threats to bank stability.	The base flood elevation would be lowered compared to existing conditions. Further, the existing 50-year and 100-year flood events would be minimized compared to existing conditions. Therefore, there would be no increased flood risk and no risk to life or property associated with implementation of the Project. The Project would not support incompatible floodplain development since the areas surrounding the Newell Bridge floodplain are already developed. Construction of the Project would result in additional flow capacity in the project area. However, upstream constraints along the creek currently restrict lower flows (i.e., Pope Chaucer Road Bridge limits creek flows downstream to approximately 5,400 cubic feet per second (cfs), Middlefield Road Bridge limits creek flows downstream to approximately 7,500 cfs), which means increasing the flow at the Newell Road Bridge would not cause flooding elsewhere. Operation of the Project is not anticipated to impact the natural and beneficial floodplain values of San Francisquito Creek. The proposed action does not constitute a significant floodplain encroachment as defined in 23 Code of Federal Regulations Section 650.105(q).				No avoidance, minimization, and/or mitigation measures are required.

Environmental Impact Topic	Potential Impact: No Build Alternative	Build Alternative 1	Build Alternative 2 (LPA)	Build Alternative 3	Build Alternative 4	Avoidance, Minimization, and/or Mitigation Measures
Water Quality and Stormwater Runoff	No impacts during construction. In the absence of additional bank stabilization activities, the banks of San Francisquito Creek would be expected to erode further.	Potential impacts of the build alternatives on existing water quality conditions in San Francisquito Creek include temporary increases in sediments, oil, grease, and chemical pollutants during construction, as well as potential long-term discharges of sediments and other pollutants collected in stormwater runoff. Short-term or temporary construction impacts on water quality have the potential to occur during grading, demolition, land-disturbance activities, material and equipment use and storage at staging areas, and other construction activities. Long-term impacts on water quality could occur from increased impervious area, operation and maintenance activities (such as bridge maintenance), and inspections.				A Stormwater Pollution Prevention Plan will be implemented during construction, as well as an National Pollutant Discharge Elimination System Permit and Construction General Permit water quality measures. Best management practices will be included to prevent adverse changes in downstream water quality. Measures will include feasible temporary best management practices such as temporary sediment control, temporary soil stabilization, scheduling waste management, materials handling, and other non-stormwater best management practices.
		Build Alternative 1 would result in 45,000 square feet of disturbed soil area and 666 square feet of added impervious area.	Build Alternative 2 would result in 45,000 square feet of disturbed soil area and 1,700 square feet of added impervious area.	Build Alternative 3 would result in 46,000 square feet of disturbed soil area and 1,983 square feet of added impervious area.	Build Alternative 4 would result in 55,000 square feet of disturbed soil area and 2,023 square feet of added impervious area.	
Geology, Soils, and Seismicity	The No Build Alternative would have the same potential impacts as described for the Build Alternatives.	Site preparation and grading associated with Project construction activities would potentially expose bare soil to erosive forces; however, the effects of erosion will be addressed by preparation and implementation of a Stormwater Pollution Prevention Plan. Earthquake shaking potential for this site is considered strong, and the risk of secondary seismic hazards to affect users of the intersection (i.e., liquefaction, seismically induced landslides, rock falls, settlement, and subsidence) is low. These hazards will be addressed by use of California Department of Transportation (Caltrans) design standards.				The City of Palo Alto will adhere to current Caltrans seismic design criteria for bridge design and construction.
Paleontology	No impacts.	Construction of Build Alternatives 1 and 2 would involve excavation for the roadway to a depth of 2 feet from existing grade to remove existing asphalt and base, excavation to a depth of 5 feet for installation of retaining walls, and excavation to a depth of 6 feet for installation of bridge abutments. Because the excavation work is shallow and would proceed within the previously disturbed roadbed any effect on sensitive paleontological resources would be minor.		Similar to Build Alternatives 1 and 2, construction of Build Alternatives 3 and 4 would involve excavation for the roadway to a depth of 2 feet from existing grade to remove existing asphalt and base, excavation to a depth of 5 feet for installation of retaining walls, and excavation to a depth of 6 feet for installation of bridge abutments. The excavation work is shallow; however, it would involve disturbance of previously undisturbed soil in the area of the road realignment. Because sensitive paleontological resources could occur at depths below 5 feet, it is possible that excavation could encounter sensitive paleontological resources, necessitating mitigation.		A qualified paleontologist will be required to educate workers and the construction crew will stop work in the event of discovery of paleontological resources to reduce impacts on paleontological resources. Construction work in the affected areas will remain stopped or be diverted to allow recovery of fossil remains in a timely manner. Caltrans and the City of Palo Alto will retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology guidelines. The recovery plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings.
Hazardous Waste and Materials	No impacts.	Based on the status of the three hazardous material release sites within 0.25 mile of the Project site, none of the hazardous material releases is considered likely to have the potential to affect development of the Project. Asbestos was not found during surveys, and no naturally occurring asbestos has been mapped in the project vicinity. Impacts from lead contamination from paint could occur where reconstruction of the bridge involves disturbing or removing the existing paint. Direct contact with contaminated paint and subsequent hand-to-mouth activities (e.g., smoking, drinking, or eating) could result in the inadvertent ingestion of contaminated paint. Construction activities could produce dust, which could expose workers or nearby residents and business occupants to lead via inhalation. Mitigation is required.				The contractor will be required to treat all paint as lead-containing for the purposes of complying with Division of Occupational Safety and Health worker safety requirements, which apply to all worksites where construction workers may be exposed to lead. The contractor will be required to implement standard dust control measures.
Air Quality	No impacts.	Construction activities associated with the Project would generate short-term emissions of reactive organic gases (ROG), nitrogen oxides (NO_X), carbon monoxide (CO), particulate matter 10 micrometers or smaller (PM10), and particulate matter 2.5 micrometers or smaller (PM2.5). NO_X emissions would be above the Bay Area Air Quality Management District threshold for CEQA purposes, requiring mitigation. Implementation of Caltrans standard specification and measures to control dust during construction would also help to minimize air quality impacts from construction activities. Operation-related emissions of ozone precursors, such as ROG, NO_X, CO, and PM10, would increase slightly as a result of the Project; however, the increases would not exceed any ambient air quality standards.				Implementation of Caltrans Standard Specification, Bay Area Air Quality Management District Basic Control Measures to control dust by the contractor, and the use of Tier 4 construction equipment during construction would help to minimize air quality impacts from construction activities.

Environmental Impact Topic	Potential Impact: No Build Alternative	Potential Impact: Build Alternative 1	Potential Impact: Build Alternative 2 (LPA)	Potential Impact: Build Alternative 3	Potential Impact: Build Alternative 4	Avoidance, Minimization, and/or Mitigation Measures
Noise	No impacts.	Noise from Project construction activities may intermittently dominate the noise environment in the immediate area of construction, and could be substantial at nearby residences. Construction would be conducted in accordance with Caltrans Standard Specifications Section 14-8.02 and applicable local noise standards, but additional mitigation is required for CEQA purposes. The operation of heavy equipment would generate localized ground-borne vibration during construction of the Project. Vibration impacts at homes closest to the bridge and for homes located within approximately 50 feet of the construction site would be substantial and could cause annoyance. During operation, traffic noise levels are not predicted to approach or exceed the noise abatement criteria for Activity Category B land uses located adjacent to the Project study area limits. The bridge alignment under Build Alternative 4 would result in a slightly higher noise increase at the nearest receivers of up to 2 dB relative to existing conditions, and up to 1 dB under future no-Project conditions. An increase of less than 3 dB would generally not be perceptible during daytime hours.				The construction contractor must comply with Caltrans Standard Specifications Section 14-8.02, Noise Control and local noise standards. All equipment used by the contractor will have sound-control devices that are no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust. In addition, advance notice to nearby residences would be provided, a disturbance coordinator to handle resident complaints would be designated, and noise barriers installed to further attenuate noise. To address vibration impacts, vibration monitoring at homes would be required and control approaches would be implemented.
Natural Communities	No impacts.	Build Alternative 1 would permanently remove 0.020 acres of intermittent stream and 0.014 acres of valley foothill riparian, and affect 23 trees with removal of 10 trees.	Build Alternative 2 would permanently remove 0.029 acres of intermittent stream and 0.022 acres of valley foothill riparian, and affect 24 trees with removal of 12 trees.	Build Alternative 3 would permanently remove 0.028 acres of intermittent stream and 0.022 acres of valley foothill riparian, and affect 23 trees with removal of 14 trees.	Build Alternative 4 would permanently remove 0.023 acres of intermittent stream and 0.031 acres of valley foothill riparian, and affect 25 trees with removal of 18 trees.	The contractor will be responsible for implementation of avoidance, minimization, and mitigation measures including installing construction barrier fencing around environmentally sensitive areas, preparing an environmental awareness program and training for construction employees, retaining a biological monitor on site, avoiding and minimizing disturbance of valley foothill riparian, and protecting water quality and preventing erosion and sedimentation in the creek. In addition, loss of native riparian trees will be compensated by replanting at a ratio of 3:1 and loss of non-native riparian trees will be compensated at a ratio of 1:1.
		The incremental effects on biological resources under all build alternatives would be moderate due to implementation of avoidance, minimization, and mitigation measures; replacement of trees; and avoidance of impacts on wetlands and special-status species.				
Wetland and Other Waters of the United States	No impacts.	No jurisdictional wetlands are present within the Biological Study Area (BSA); therefore, no impacts from any of the build alternatives would result during construction or operation. Impacts on the creek and intermittent stream habitat are described above under Natural Communities.				Implementation of avoidance and minimization measures such as protecting water quality and preventing erosion and sedimentation in the creek will minimize potential impacts.
Plant Species	No impacts.	None of the build alternatives would affect special-status plant species during construction or operation because none are present in the BSA.				No avoidance, minimization, or mitigation measures are required.
Animal Species	No impacts.	Construction activities could affect western pond turtle, pallid bat, hoary bat, snowy egret, and saltmarsh common yellowthroat. If pond turtles are present in the creek channel or along the creek bank during the construction period, they could be injured or killed during construction. Potential bat roosting areas that could be directly disturbed during new bridge construction occur in portions of the existing bridge and more mature trees in the BSA. Construction of the proposed Project could result in the loss or abandonment of active nests for special-status raptors and migratory birds. Permanent tree removal could remove roosting habitat for bats and birds. All of these potential impacts would be addressed via avoidance and minimization measures prior to or at the time of construction.				The City of Palo Alto will implement avoidance and minimization measures such as conducting preconstruction surveys for western pond turtle and relocating if needed, conducting preconstruction surveys for bats, and implementing nesting bird avoidance measures will minimize potential impacts.
Threatened and Endangered Species	No impacts.	California red-legged frogs could be directly and indirectly affected by construction activities occurring in or adjacent to the BSA. If California red-legged frogs are present within the construction work area, they could be inadvertently killed or wounded by construction vehicles, construction personnel, and accidental spill of toxic fluids. Construction activities associated with road and bridge construction in potential California red-legged frog habitat in the Project area could result in indirect effects on water quality downstream from the construction work area. The proposed Project could affect habitat conditions for steelhead. Activities associated with bridge removal and reconstruction and revegetation could increase erosional processes, thereby increasing sedimentation and turbidity in downstream waterways. Excessive sediment deposited in or near stream channels can degrade aquatic habitats. Increased turbidity can increase fish mortality, reduce feeding opportunities for fish including rearing steelhead, and cause fish to avoid important habitat. All of these potential impacts would be addressed via avoidance, minimization, and mitigation measures prior to or at the time of construction.				The City of Palo Alto or its contractor will implement avoidance, minimization, and mitigation measures such as avoiding work during the breeding and dispersal season, conducting preconstruction surveys, providing construction worker awareness training, installing exclusion fencing and construction monitoring, and limiting stream bank construction to the dry season will minimize impacts on listed species.

Environmental Impact Topic	Potential Impact: No Build Alternative	Build Alternative 1	Build Alternative 2 (LPA)	Build Alternative 3	Build Alternative 4	Avoidance, Minimization, and/or Mitigation Measures
Invasive Species	No impacts.	The Project is not anticipated to increase or decrease the area currently occupied by invasive weeds or the potential for spreading invasive weed species. It is possible that new invasive species could be introduced into San Francisquito Creek during construction; however, none of the identified species on the California list of invasive species is currently used by Caltrans or the Cities of Palo Alto and East Palo Alto for erosion control or landscaping in order to stop the spread of invasive species. For this reason, and because the contractor will be required to implement standard precautions, impacts would minor.				The Project proponent, or their contractor, will be responsible for avoiding the introduction of new invasive plants and the spread of invasive plants previously documented in the BSA.
Cumulative Impacts	No impacts.	The Project would replace an existing bridge with one that is substantially similar and would not contribute to any identified cumulative transportation or flooding impacts. The Project has the potential to result in cumulative impacts on aesthetics, paleontological resources, hazardous materials and waste, and the natural communities of valley foothill riparian and protected trees. With implementation of the measures prescribed for minimizing impacts and compensating for remaining impacts, the proposed Project's incremental contribution to cumulative impacts would not be cumulatively considerable.				The avoidance, minimization and mitigation measures described above for aesthetics, paleontological resources, hazardous materials and waste, and the natural communities of valley foothill riparian and protected trees, will be implemented to minimize impacts.

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Acronyms and Abbreviations

μg/m3	micrograms per cubic meter
AB	Assembly Bill
AB 32	California Global Warming Solutions Act of 2006
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
ADA	Americans with Disabilities Act
ADT	average daily traffic
AMM	Avoidance and Minimization Measure
APE	Area of Potential Effects
APN	Assessor's Parcel Number
ARB	California Air Resources Board
ASAR	Alternatives Screening Analysis Report
AWSC	All Way Stop Control
BAAQMD	Bay Area Air Quality Management District
BAU	business-as-usual
BMPs	best management practices
bridge	Newell Road Bridge
BSA	Biological Study Area
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH4	methane
CNDDB	California Natural Diversity Database
CO	carbon monoxide
CO_2	carbon dioxide
creek	San Francisquito Creek
CRHRs	California Register of Historical Resources
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
dbh	diameter at breast height

DDT	dichlorodiphenyltrichloroethane
DSA	disturbed soil area
EA	Environmental Assessment
EFH	essential fish habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EOs	Executive Order
EPA	U.S. Environmental Protection Agency
EPACT92	Energy Policy Act of 1992
FCAA	Federal Clean Air Act
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
FHWA	Federal Highway Administration
FO	functionally obsolete
FONSI	Finding of No Significant Impact
FR	Federal Register
FTIPs	Federal Transportation Improvement Programs
GHGs	greenhouse gas
Guidelines	Section 404(b)(1) Guidelines
H_2S	hydrogen sulfide
HBP	Caltrans Highway Bridge Program
Kw	soil erodibility factor
lbs	pounds
LED	light-emitting diode
LOS	Level of Service
LPA	Locally Preferred Alternative
MLD	Most Likely Descendant
MM	Mitigation Measure
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
MOU	Memorandum of Understanding
MRP	Municipal Regional Permit
MS4	municipal separate storm sewer system
MSAT	mobile source air toxics
MTC	Metropolitan Transportation Commission
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NACs	noise abatement criteria
NAHCs	Native American Heritage Commission
NEPA	National Environmental Protection Act
NHPAs	National Historic Preservation Act

NHTSA	National Highway Traffic Safety Administration
NO_2	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NOA	naturally occurring asbestos
NOAA Fisheries Service	National Oceanic and Atmospheric Administration's National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRHPs	National Register of Historic Places
O_3	ozone
OHWM	ordinary high water mark
OWSC	One-Way Stop Control
PA	Programmatic Agreement
Pb	lead
PCB	polychlorinated biphenyl
PM	particulate matter
PM10	particles of 10 micrometers or smaller
PM2.5	particles of 2.5 micrometers and smaller
POAQC	project of air quality concern
ppm	parts per million
PPV	peak particle velocity
PRCq	Public Resources Code
Project	Newell Road Bridge Replacement Project
ROG	reactive organic gases
ROW	right-of-way
RSA	resource study area
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCVWD	Santa Clara Valley Water District
SDCs	Seismic Design Criteria
SF6	sulfur hexafluoride
SFCJPA	San Francisquito Creek Joint Powers Authority
SFRWQCB	San Francisco Bay Regional Water Quality Control Board
SHPO	State Historic Preservation Officer
SIPs	State Implementation Plan
SLR	sea-level rise
SM	standardized measure
SO_2	sulfur dioxide
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan

SWRCB	State Water Resources Control Board
TCE	Temporary Construction Easement
TIP	Transportation Improvement Program
TIRE	Traffic Infusion on Residential Environment
TMDLs	Total Maximum Daily Load
TMP	Traffic Management Plan
TWSC	Two-Way Stop Control
US 101	U.S. Highway 101
USACEs	U.S. Army Corps of Engineers
USCs	U.S. Code
USDOTs	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
VMT	vehicle miles travelled
vpd	vehicles per day
WDRs	Waste Discharge Requirements
WSEL	water surface elevation level

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Chapter 1
Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans) in cooperation with the City of Palo Alto, proposes to replace the Newell Road Bridge (bridge) and roadway approaches across San Francisquito Creek (creek).

The Newell Road Bridge Replacement Project (Project) is subject to state and federal environmental review requirements. Accordingly, Project documentation is being prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the lead agency under NEPA (under assignment from the Federal Highway Administration) and the City of Palo Alto is the lead agency under CEQA. As the bridge connects two separate jurisdictions, the City of East Palo Alto, pursuant to CEQA, is a responsible agency. The Project is identified in the April 18, 2011, Federal State Transportation Improvement Program (California Department of Transportation 2011).[1] It is also included in the City of East Palo Alto's Capital Improvement Plan (City of East Palo Alto 2014) and the City of Palo Alto's Capital Budget Plan (City of Palo Alto 2018).

Funding for the Project (Project # BRLS-5100[017], Bridge #37C-0223) is being provided through a Caltrans Highway Bridge Program (HBP) grant (contributing 88.5% of design, planning, and construction costs) and by the Santa Clara Valley Water District (SCVWD) (11.5% of design, planning, and construction costs) with Project management assumed by the City of Palo Alto.

1.1.1 Project Location

The Project is located in Santa Clara and San Mateo counties, in the cities of Palo Alto and East Palo Alto. The Project is located southwest of U.S. Highway 101 (US 101) and east of State Route 82 (El Camino Real), as shown in Figure 1-1. The Project site is located on Newell Road between Edgewood Drive in Palo Alto and Woodland Avenue in East Palo Alto, as shown in Figure 1-2. The limits of the Project, Project footprint (including build alternatives), street names, and prominent landmarks are shown in Figures 1-3a through 1-3d. San Francisquito Creek, over which the Project crosses, delineates the city limits between Palo Alto and East Palo Alto, as well as the boundary between Santa Clara and San Mateo counties.

1.1.2 Project Background

The San Francisquito Creek Joint Powers Authority (SFCJPA), formed in 1999, was established to address flooding issues affecting the several jurisdictions within the San Francisquito Creek watershed. The Project is within the study area for proposed channel and bridge improvements that would provide increased flood protection and hydraulic capacity in this waterway.

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[1] The Project description in the April 18, 2011, Federal State Transportation Improvement Program is to "replace existing two-lane bridge with a new two-lane bridge conforming to current standards."

Figure 1-1. Project Vicinity

Figure 1-2. Project Location

The SCVWD-estimated 1% flow rate[2] for San Francisquito Creek is 8,150 cubic feet per second (cfs). The 2016 SCVWD hydraulic model indicates that the existing bridge opening can convey peak flows of approximately 6,600 cfs. However, upstream constraints along the creek currently restrict lower flows (i.e., Pope Chaucer Road Bridge limits creek flows downstream to approximately 5,400 cfs).

The Middlefield Road Bridge currently allows flows of up to 7,500 cfs. A separate SFCJPA project (San Francisquito Creek Upstream of Highway 101 Project) is currently underway, which would affect the crossing at Pope/Chaucer Street and could allow flows of up to approximately 7,500 cfs to reach the Project.[3] The SFCJPA's San Francisquito Creek Upstream of Highway 101 Project's improvements could also increase the downstream capacity to at least 7,500 cfs. This Project is separate from the SFCJPA San Francisquito Creek Upstream of Highway 101 Project because in addition to taking potential flooding risk into consideration, it is funded by the Caltrans HBP as a functionally obsolete (FO) bridge and addresses better accessibility for vehicular, bicycle, and pedestrian users. The purpose of the HBP is to replace or rehabilitate public highway bridges over waterways, other topographical barriers, other highways, or railroads when the state and Federal Highway Administration determine that the bridge is significantly important and has structural deficiencies, physical deterioration, or functional obsolescence.[4] Analysis and design included in the San Francisquito Creek Upstream of Highway 101 Project is outside the scope of this Project. In addition, the SFCJPA does not currently have plans to replace the Middlefield Road Bridge.

Caltrans has Project oversight authority and manages the financing for HBP-funded projects. This Project is within the jurisdiction of the Caltrans District 4 Office of Local Assistance. As a result, the Caltrans District 4 Office of Local Assistance is responsible for review, comment, and approval of NEPA Project documentation, including environmental technical studies and reports, engineering, and construction documents.

1.1.3 Existing Bridge Information

The existing bridge, located between Woodland Avenue (East Palo Alto) and Edgewood Drive (Palo Alto), was built in 1911. In East Palo Alto, Newell Road connects to Woodland Avenue, which provides access to University Avenue and US 101. In the City of Palo Alto, Newell Road connects to two main thoroughfares, Channing Avenue and Embarcadero Road, which also provide access to US 101.

The bridge is 42 feet long, 40 feet of which is clear span. It consists of a reinforced concrete rigid frame through girder structure, with an 18-foot-wide curb-to-curb width and overall bridge width of 22 feet. The existing abutments are within the creek bed and channel slopes, causing flow constriction in the channel that will not accommodate the natural creek capacity of 7,500 cfs.

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[2] A 1% flow rate (also informally referred to as the 100-year flow rate) is the creek flow rate that has a 1% chance of being equaled or exceeded in any given year.

[3] The Revised Notice of Preparation for the Draft Environmental Impact Report (EIR) for the San Francisquito Creek Flood Protection, Ecosystem Restoration, and Recreation Project Upstream of Highway 101 was published on December 21, 2016. The public comment period closed in February 2017. It can be accessed at: http://www.sfcjpa.org/documents/SFCJPA_Upstream_NOP_1.6_.16_.pdf.

[4] Overview of the Local Highway Bridge Program is provided on the Caltrans Division of Local Assistance Website. Accessed on March 28, 2017 at: http://www.dot.ca.gov/hq/LocalPrograms/hbrr99/hbrr99a.htm#overview.

The October 2016 Caltrans Structure Maintenance & Investigations Report indicates that the bridge is considered FO[5] with a sufficiency rating[6] of 47.5 (California Department of Transportation 2016) per Code 31,[7] indicating substandard roadway geometry. The bridge's traffic lanes and sight distance are substandard because it does not accommodate two standard-width lanes for vehicle traffic, and the bridge has no provision for bicycle or pedestrian access. As a result, the existing bridge is classified as being FO. The FO status and low sufficiency rating of the existing bridge make it eligible for replacement under the Federal HBP.

The Newell Road right-of-way (ROW) western approach to the bridge is over 70 feet wide, accommodating a two-lane road and two designated bike lanes within a 36-foot-wide curb-to-curb section, and 5-foot-wide sidewalks and planter areas on both sides.

1.1.3.1 Newell Road

Newell Road, within the Project limits, is an urban collector road with a current average daily traffic (ADT) volume of 3,300 vehicles per day. The roadway approach width (in the City of Palo Alto) is 36 feet wide, which provides for two 11-foot lanes and two 7-foot shoulders which are designated as part of a bike route. The public road ROW also includes planter strips and sidewalks on both sides of Newell Road. Approximately 20 feet north of the bridge span, Newell Road intersects Woodland Avenue. There are no shoulders, planter strips, or sidewalks in the area within East Palo Alto. The horizontal alignment of Newell Road between the two cities is offset 90 feet from centerline. There are no public transit facilities in the immediate Project area. The closest transit service includes SamTrans bus routes on University Avenue and Santa Clara Valley Transportation Authority bus routes on University Avenue. Santa Clara Valley Transportation Authority also operates a weekday shuttle along University Avenue between East Palo Alto and the Caltrain Palo Alto Station.

1.2 Purpose and Need

The Project proposes to improve the vehicle, bicycle, and pedestrian access on the Newell Road Bridge over San Francisquito Creek. Construction of the proposed Project improvements have independent utility[8] because the Project is not dependent on other projects in the area to meet the Project's purpose and need. This Project could proceed with or without additional upstream or downstream improvements. However, the Project does take into consideration upstream and downstream improvements that are planned or underway, and addresses potential flooding risk by increasing the area below the bridge to allow larger flows to pass. Other closely related past,

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[5] "Functionally obsolete" is a description or classification of highway bridges in the Highway Bridge Replacement and Rehabilitation Program (23 Code of Federal Regulations 650.409). A "deficient" bridge is defined as having a Sufficiency Rating ≤80 and is Structurally Deficient and/or Functionally Obsolete (FO). Inadequate appraisal ratings of deck geometry, under clearances, approach roadway alignments, structural conditions, and waterway adequacy, can result in FO classification. This is described in Section 6.12.1, page 6-35 and 6-36 of the Local Assistance Program Guidelines.

[6] "Sufficiency rating" is a 0 to 100 score, with 100% representing an entirely structurally sufficient bridge and 0% representing an entirely structurally insufficient or deficient bridge.

[7] This code is defined in *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges* as: "Replacement of bridge or other structure because of substandard load carrying capacity or substandard roadway geometry."

[8] "Independent utility" is defined as being a usable and reasonable expenditure even if no additional transportation improvements in the area are made.

present, and reasonably foreseeable future projects are discussed in greater detail as part of Section 2.4, *Cumulative Impacts*. The Project has logical termini in that the footprint and extent were chosen to provide the greatest potential for resolving the deficiencies identified in the Project need.[9] Refinements to proposed alternatives were made in response to expressed public input and preference, as well as to avoid unacceptable traffic operations such as unsafe conditions and extensive queuing.

1.2.1 Purpose of the Project

The purpose of the Project is to:

- Maintain connections for vehicular, bicycle, and pedestrian transportation across San Francisquito Creek at Newell Road while avoiding the following:
  - diversion of a substantial number of vehicles to adjacent streets.
  - a substantial increase in the number of vehicles using Newell Road.
  - an increase in average vehicle speed on Newell Road.
- Improve pedestrian and bicycle access across San Francisquito Creek at Newell Road.
- Improve safety for all modes of transportation across San Francisquito Creek at Newell Road.
- Design a bridge that accommodates increased flows related to San Francisquito Creek improvements to address anticipated flooding risk.
- Upgrade the channel width beneath the bridge to allow for the 50-year storm event (7,500 cfs) to pass.

1.2.2 Need for the Project

The Project need is demonstrated by the following deficient conditions:

- The existing bridge is classified as being FO because:
  - It does not accommodate two-way vehicular traffic.
  - It does not provide access for pedestrians or bicyclists.
- The bridge abutments are within the San Francisquito Creek channel, reducing the flows that pass under the bridge and making the bridge hydraulically deficient.
- The bridge provides poor drivability for vehicular traffic due to substandard sight distances and vertical profile.

1.2.2.1 Capacity, Transportation Demand, and Safety

As previously described, the existing bridge is a narrow, substandard two-lane bridge. According to the 2019 Supplemental Traffic Evaluation Report (TJKM 2019) prepared for this Project, the 2016 ADT is approximately 3,300 vehicles per day (vpd) on the bridge, 3,423 vpd on Newell Road between Edgewood Drive and Hamilton Avenue (south of the bridge), and 1,805 vpd on Newell

[9] "Logical termini" is defined as endpoints or Project limits that are of sufficient length and location to address environmental matters on a broad scope and not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Road from Woodland Avenue to W. Bayshore Road (north of the bridge). On Woodland Avenue, 2016 ADT was 4,144 vpd from Cooley Avenue to Newell Road (west of Newell Road), and 1,314 vpd from Newell Road to Clarke Avenue (east of Newell Road). On Edgewood Drive, 2016 ADT was 582 vpd from Newell Road to Island Drive (west of Newell Road), and 434 vpd from Newell Road to Jefferson Drive (east of Newell Road).

The City of East Palo Alto adopted their general plan update, *2035 East Palo Alto General Plan,* in October 2016, and the City of Palo Alto adopted the Updated Comprehensive Plan on November 13, 2017. Based on the updated East Palo Alto General Plan, and with concurrence from City of Palo Alto staff, an annual growth rate of 1% is assumed for traffic volumes in the area. This increase would increase the transportation demand on the bridge.

1.2.2.2 Roadway Deficiencies

Existing roadway deficiencies include:

- Operational Deficiencies: The existing traffic lanes are substandard. The minimum bridge width, per state requirements, is 28 feet. Standard traffic lanes per Palo Alto and East Palo Alto requirements are 11-foot-wide lanes and 5-foot-wide sidewalks. The existing roadway width is not striped, is 18 feet wide between bridge rails, and does not include sidewalks. Also, sight distances from the bridge are poor (sight stopping distance would only accommodate a speed of 15 miles per hour and the current listed speed is 25 miles per hour).
- Bridge Age: The existing bridge was constructed in 1911 and is over 100 years old. It was originally constructed at a time when vehicular travel was limited.
- Roadway Section: The existing bridge has non-standard lane and shoulder widths. The existing bridge is 18 feet wide between curbs as compared to the Caltrans and City of Palo Alto standard 11-foot-wide lanes plus separate 5-foot-wide bike lanes (32 foot total width) or 14-foot-wide standard sharrow[10] lanes (28 foot total width).
- Vertical Alignment: The vertical roadway alignment at the bridge connection has steep approach grades (up to 7%) that reduce the amount of roadway a driver can see entering or leaving the bridge and reduces response time for drivers to respond to conditions in front of the vehicle. Vertical curves are required between grade differences, but none exist on the existing bridge.
- Stopping Sight Distance: The existing bridge does not provide adequate stopping sight distance. At the intersection of Newell Road and Woodland Avenue, the sight distance is limited by the existing bridge barriers and flood walls. Per current Caltrans standards, the stopping sight distance would only accommodate a speed of 15 miles per hour.

1.2.2.3 Social Demands/Economic Development

According to the *2035 East Palo Alto General Plan* (City of East Palo Alto 2016), Newell Road Bridge is one of two secondary gateways into East Palo Alto and is one of six routes into and out of the Westside area of East Palo Alto (west of US 101). The 2035 East Palo Alto General Plan includes planned improvements at the bridge to improve connectivity and add pedestrian and bicycle facilities. According to the Palo Alto Comprehensive Plan, adopted on November 13, 2017 (City of

[10] A "sharrow" is a shared vehicle/bicycle lane. Sharrow markings alert motorists of the location a bicyclist may occupy within the traveled roadway. The markings also assist bicyclists with positioning themselves on a shared roadway.

Palo Alto 2017), Newell Road is a concern due to flooding in the vicinity. In addition, the goals of the Metropolitan Transportation Commission's Regional Transportation Plan, *Plan Bay Area 2040* (Metropolitan Transportation Commission 2013) include improving pedestrian and bicycle facilities in the region.

Growth management is a concern for both jurisdictions. In the 2035 East Palo Alto General Plan, future growth is prioritized in the University Avenue corridor, Ravenswood Business District, Gateway District, and in the Westside areas; preserving and enhancing residential neighborhoods is also prioritized. The Palo Alto Comprehensive Plan establishes the limits to urban growth and sets the direction for maintaining the City of Palo Alto's scale and character. It states that the amount of urban land in Palo Alto will remain essentially the same going forward, with growth occurring through infill and redevelopment. There are no planned land use changes in the vicinity of the Newell Road Bridge.

1.2.2.4 Modal Interrelationships and System Linkages

The City of Palo Alto *Bicycle + Pedestrian Transportation Plan*, adopted in July 2012, identifies this Project as a top recommended project, which would provide enhanced (dedicated) bicycle and pedestrian facilities and planning (City of Palo Alto 2012). The Bicycle + Pedestrian Transportation Plan also calls for new or enhanced Class II bikeways along Newell Road from Woodland Avenue to Embarcadero Road, and recommends that the Project be compatible with the proposed overcrossing of Highway 101 in East Palo Alto, which was the highest bicycle priority identified in the City of East Palo Alto's 2011 *Bicycle Transportation Plan* (City of East Palo Alto 2011). With an option for a touchdown at Newell Road near Woodland Avenue, there is potential for direct linkage to the Gateway 101 Shopping Center and the Bay Trail from Palo Alto's Community Center and adjacent neighborhoods. The proposed Project would support the goals of these plans.

1.2.2.5 Air Quality Improvements

The Project proposes to add pedestrian and bicycle facilities to the bridge in the form of sidewalks and shared vehicle/bicycle lanes[11] (sharrows). This multimodal option could encourage more people to walk and/or bike, which would have the effect of improving air quality by reducing vehicle miles travelled. This is discussed in greater detail in Section 2.2.6*, Air Quality.*

1.3 Project Description

This section describes the proposed action and the Project alternatives that were developed to meet the purpose and need of the Project while avoiding and minimizing environmental impacts. The alternatives are Build Alternative 1 through Build Alternative 4, and the No-Build Alternative. Build Alternative 2 is the locally preferred alternative (LPA) and "the project" for CEQA purposes, subject to public review.

[11] Separated bike lanes could be painted in the future if there is a bicycle facility to connect to in East Palo Alto, or the bridge could also have separated bike lanes.

The Project (Figures 1-1 and 1-2) is located in Santa Clara and San Mateo counties on Newell Road across San Francisquito Creek. The Project proposes to replace the existing bridge crossing San Francisquito Creek at Newell Road to safely accommodate vehicle, bicycle, and pedestrian traffic and also to accommodate increased flow conveyance when other upstream creek improvements are completed.

The current flow of the creek is 5,400 cfs and the future flow of the creek is 7,500 cfs, which accounts for the improvements proposed by the Upstream of 101 project as well as for the 50-year flood. Environmental impacts for hydrology and water quality will take the future flow into account. The baseline for all other environmental resource topics is existing physical conditions.

Project improvements would extend for approximately 500 feet along Newell Road and 350 feet along Woodland Avenue. Within the limits of the Project, the bridge is a substandard two-lane bridge that provides limited vehicle, bicycle, or pedestrian access. The purpose of the Project is to construct a two-lane bridge that accommodates both vehicles and bicycles, includes access for pedestrians, and improves safety for multi-modal traffic (Section 1.2, *Purpose and Need*). The Project will also be designed to protect adjacent communities from flood hazards by accommodating larger flows. The need for the Project is demonstrated by the existing creek flow capacity limitations after other creek projects are completed and the transportation deficiencies described in Section 1.2.2.2, *Roadway Deficiencies*.

1.4 Alternatives

This following is a description of the proposed Project Alternatives. In February 2014, the City of Palo Alto prepared an Alternatives Screening Analysis Report (ASAR), which evaluated a total of eight alternatives, including alternatives to remove the existing bridge or construct a bicycle/pedestrian-only bridge, as well as various alternatives that would maintain vehicular use. The ASAR evaluated the alternatives, taking public input collected to date into account.

The ASAR recommended carrying forward two of the seven considered build alternatives (specifically Build Alternative 6: Two-lane Bridge on Existing Alignment and Build Alternative 7: Two-Lane Bridge with Partial Realignment). Taking agency and public input into account, the City of Palo Alto advanced the following four build alternatives (Figures 1-3a through 1-3d) to be carried forward through the Environmental Impact Report (EIR)/Environmental Assessment (EA) analysis:

- Build Alternative 1: A one-lane bridge with two-way traffic (under signal control) on the existing alignment of Newell Road (ASAR #5)
- Build Alternative 2 (LPA): A two-lane bridge on the existing alignment of Newell Road (ASAR #6).
- Build Alternative 3: A two-lane bridge on a partial realignment (offset) of Newell Road (ASAR #7).
- Build Alternative 4: A two-lane bridge on a full realignment (offset) of Newell Road (ASAR #8).

As required by CEQA and NEPA, the effect of not implementing the proposed Project has also been included as the No-Build (No Action) Alternative. Additional information explaining why alternatives from the ASAR were not carried forward is provided in Section 1.4.5, *Alternatives Considered but Eliminated from Further Discussion*.

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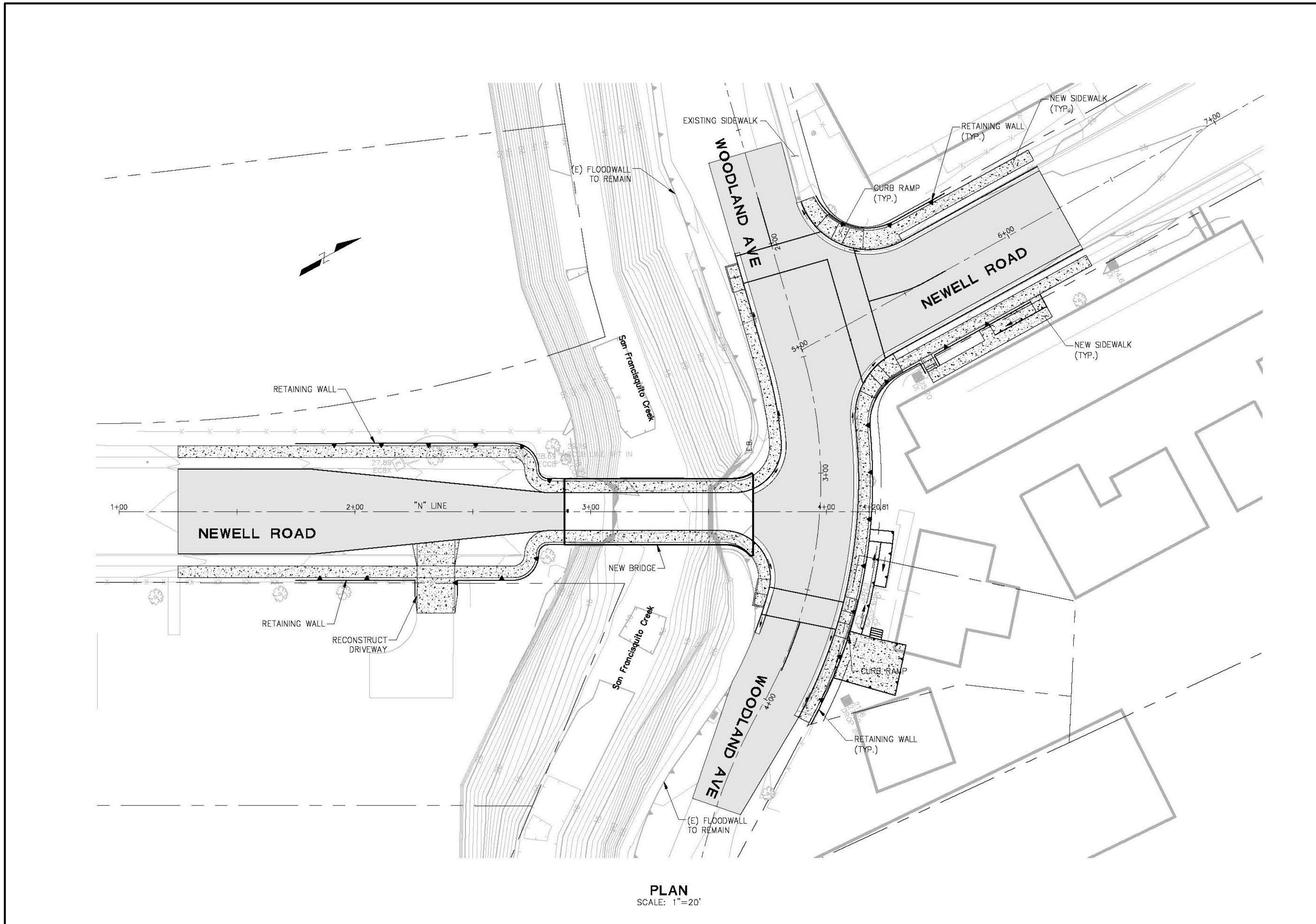

Figure 1-3a. Build Alternative 1

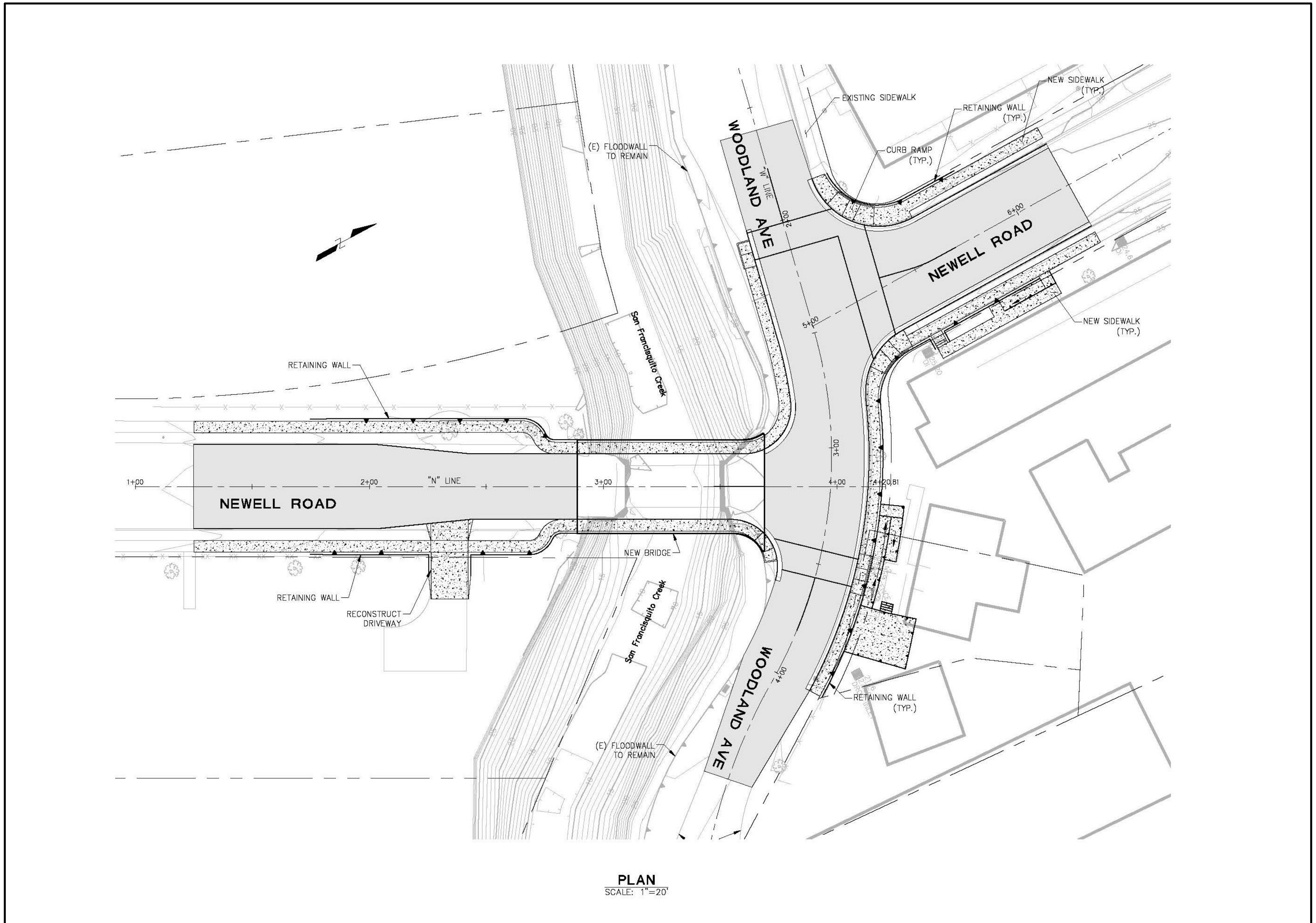

Figure 1-3b. Build Alternative 2 (LPA)

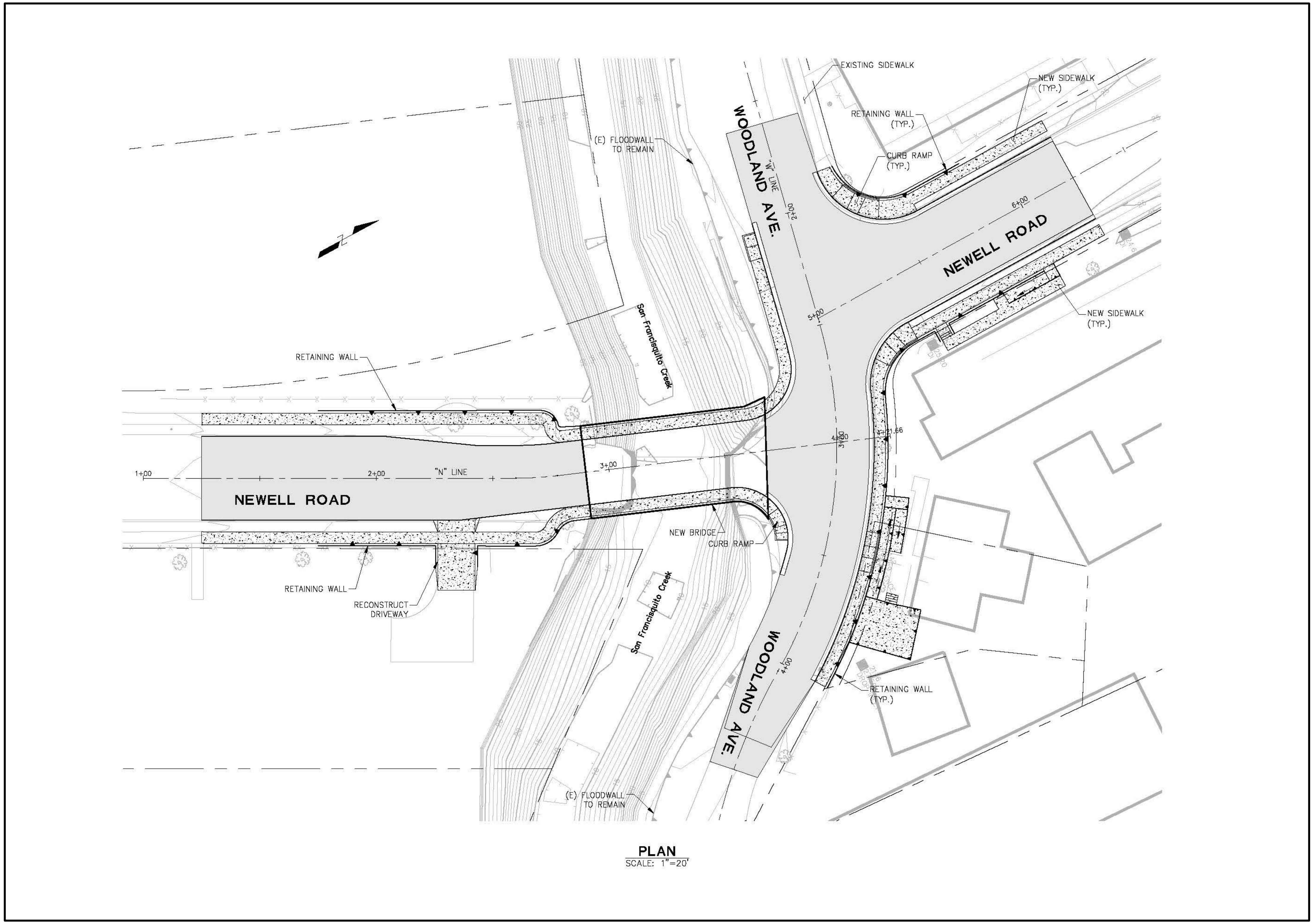

Figure 1-3c. Build Alternative 3

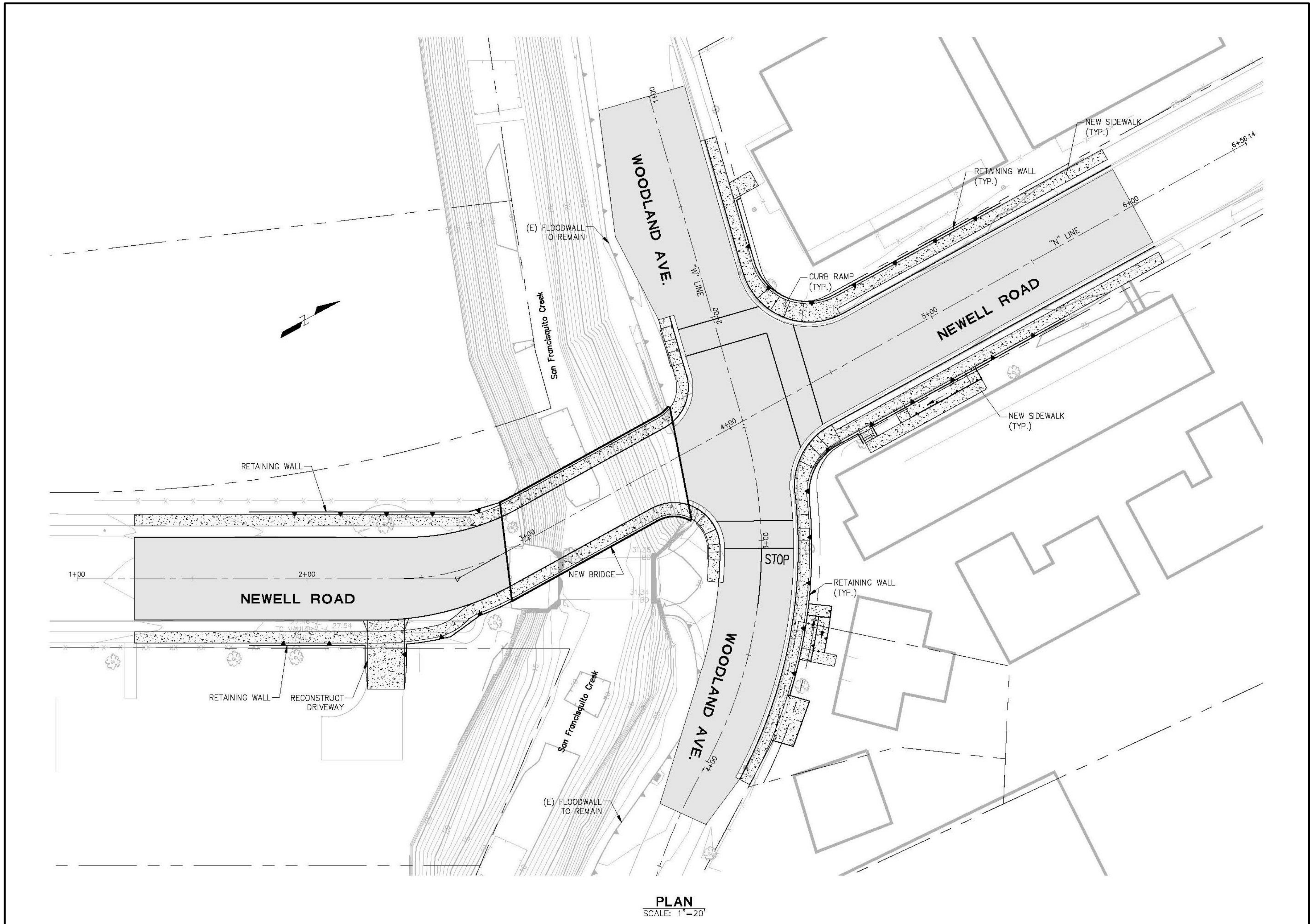

Figure 1-3d. Build Alternative 4

1.4.1 Common Design Features of the Build Alternatives

The design features of these build alternatives could include removal of the existing bridge; construction of new approaches, either a one-lane bridge (Build Alternative 1) or a two-standard-lane bridge (Build Alternatives 2–4), and accommodation for bicycle and pedestrian travel (including sidewalk and potential road widening for sharrow); potential addition and reconfiguration of utilities including street lighting; modification to street signage or new traffic signals; addition of retaining walls; and bank stabilization measures in the portion of San Francisquito Creek disturbed by the construction. The Project would adhere to American Association of State Highway and Transportation Officials standards to the degree feasible. Through replacement of the existing bridge, the channel would be widened to increase the flow capacity to allow for the 50-year storm event (7,500 cfs) to pass.

1.4.1.1 Roadway Improvements

The following roadway improvements would be included in all build alternatives (Build Alternatives 1–4).

- The proposed roadway improvements would accommodate either a two-way single lane bridge or two 14-foot-wide shared lanes (vehicles and bicycles) bridge to meet Caltrans standards. The roadway profile at the new bridge would be raised approximately 1.6 feet higher than the existing bridge in order to minimize flood hazards for the adjacent communities, and would provide sufficient structure depth beneath the bridge to span the creek. Additional vertical and horizontal work would be required at each end of the bridge in order to transition from the new bridge profile and geometry to the existing roadway.
- To provide clear sight distance, there would be a red curb approach and railings installed, along with landscaping not to exceed 30-inches, along Woodland Avenue near its intersection with Newell Road.

1.4.1.2 Bicycle and Pedestrian Facilities

The following bicycle and pedestrian facility improvements would be included in all build alternatives (Build Alternatives 1–4).

- The proposed bridge would accommodate either a two-way single lane bridge or two 14-foot-wide shared lanes (vehicles and bicycles). Five-foot wide sidewalks on either side of the bridge would also be constructed to enhance pedestrian access and safety through the site.

1.4.1.3 Utility Relocations

The following utility relocations would be included in all build alternatives (Build Alternatives 1–4).

The following utility relocations or facility adjustments are expected:

- Sanitary Sewer: No impacts are expected on the sanitary sewer on the East Palo Alto side of the bridge. On the Palo Alto side of the bridge an existing sewer manhole may need to be replaced on Newell Road to match the grade of the new roadway profile.

- Domestic Water: On the East Palo Alto side an existing water main runs along Woodland Avenue and a fire hydrant is located on the corner of Woodland and Newell Road. This line will remain in place and valve boxes within the street will be raised to grade to match the new roadway profile. The fire hydrant would be adjusted to match the new roadway profile. On the Palo Alto side a 6-inch PVC water main runs along Newell Road and terminates at a fire hydrant on the west side of the road near the existing bridge. The water main will remain but the fire hydrant assembly, lateral, and valves will be removed and replaced to accommodate the new roadway profile and sidewalk modifications.
- Overhead Electrical: No overhead electrical utilities exist on the Palo Alto side. On the East Palo Alto side overhead electrical poles and lines run along the south edge of Woodland Avenue within the Project limits. At least two utility poles are expected to require relocation to accommodate the proposed bridge and roadway improvements. Under Build Alternatives 2, 3, and 4, additional pole relocations may be required in order to accommodate clearances between the new bridge profile and the lowest power lines. This will be determined during final design based on coordination with PG&E.
- Street Lights: One street light on the Palo Alto side along Newell Road would be impacted by the proposed roadway improvements and would need to be removed and replaced to meet the new grades. On the East Palo Alto side street lights are integral with the overhead electrical poles; therefore, relocation will correspond with the overhead electrical pole impacts.
- Existing Steel Electrical Conduit(s): Any electrical conduits that would be affected by Project construction would be temporarily relocated prior to bridge removal and would be run within the sidewalk on the new bridge.
- Water Quality Sampling Station: The boxes and monitoring equipment located on the upstream side of the creek are associated with a water quality sampling station. The equipment inside the station would be removed by City of Palo Alto staff prior to construction; however the contractor shall remove anything that remains and let City of Palo Alto staff know when it is available for pick-up. A new water sampling station would not be installed with the Project. However, the power and fiber that serve the water sampling station would be maintained.
- Non-Utility Relocation of Eruv: The existing eruv[12] is supported on steel poles crossing the south side of Newell Road. Construction activities may require the temporary removal and relocation of the existing poles supporting the eruv over Newell Road. Coordination with the religious group associated with its original installation would be required before a relocation process could be established.
- Survey Monuments: Two Survey Monuments on Woodland Avenue would need to be adjusted. Existing monument number 2433 located on the south west corner of the bridge would be removed. A new survey monument would be added on the bridge.
- Other Utilities: Fiber and power for camera and flow sensors would need to be provided.

[12] A virtual wall or border surrounding a community which allows Orthodox Jews to travel, carry, and push objects on the Sabbath.

1.4.1.4 Retaining Walls

The following retaining wall improvements would be included in all build alternatives (Build Alternatives 1–4).

- Retaining walls are needed adjacent to the creek near the approaches and where the proposed roadway elevation is higher than the existing conform grades. The maximum height of these retaining walls is expected to be approximately 4.75 feet at the roadway approach nearest to the bridge on the City of Palo Alto side and at the north side of Woodland Avenue under Build Alternatives 1 and 2. The profile of the retaining walls would mimic that of the roadway approaches on both sides of the bridge. Railing would be required along the top of the retaining wall in order to provide pedestrian safety in areas where the vertical differential between the top of wall and adjacent ground is 30 inches or greater.

1.4.1.5 Channel Stabilization

The following channel improvements would be included in all build alternatives (Build Alternatives 1–4).

- Bank stabilization measures, such as rock slope protection or soil nail wall, would be required in the portion of San Francisquito Creek disturbed by construction. These measures would be implemented approximately 50 feet upstream and downstream of the bridge. Channel improvements would upgrade the channel width beneath the bridge to allow 7,500 cfs conveyance.

1.4.1.6 Construction

Methodology

The construction of the Newell Road Bridge replacement structure and associated roadway approaches and features would be completed by closing Newell Road on both the Palo Alto and East Palo Alto sides, from Edgewood drive to the existing crossing.

Prior to initiation of construction, a temporary surface water diversion would be installed in San Francisquito Creek to allow for construction activities to take place along the banks of the active creek. Check dams, such as clean gravel dams or any other type of approved Caltrans standard dam, would be installed both upstream and downstream of the construction zone within 50 feet of the bridge, and culvert piping would route surface water flows through the construction zone. Best management practices (BMPs) would be employed to protect the active stream.

Bridge Demolition and Construction

The existing bridge would be removed by jackhammers, cranes, and excavators. All reasonable methods available would be used to catch the broken concrete from the bridge and to protect the channel slopes from erosion. If any concrete falls into the creek, it would be removed.

Heavy equipment such as excavators, backhoes, and other machinery would be used for the removal and excavation of the proposed abutments, and the driving or drilling of the new piles to the required depth. Once the required lengths of the piles are completed and accepted, then the temporary forms for the foundations and abutments would be constructed using timber materials, and steel reinforcement installed. Dewatering may be necessary in order to pour the foundation and abutment walls should shallow groundwater be encountered. Following these activities, the concrete abutments would be poured, cured, tested, and accepted, after which the wingwalls[13] would be formed. After the adjoining retaining walls have been constructed, the abutments would be backfilled with earth in accepted lifts and compacted per engineered specifications with the proper structure drainage in place.

Following the construction of the abutment walls and retaining walls, construction of the new cast-in-place post-tensioned slab-type bridge structure will begin, including falsework within the creek channel, as follows.

1. The falsework would be constructed across the creek. It is anticipated that two falsework bents would be constructed on each side of the creek in the channel. Falsework materials consist of timber materials and steel beams. No heavy equipment would be required in the creek.
2. Steel reinforcement would be installed for the deck, timber forms would be installed, and then concrete would be poured into the forms for the deck.
3. Once the concrete deck is cured, timber forms and steel reinforcement would be installed, and concrete would be poured into the forms for the pedestrian safety barriers.
4. The barriers would then be cured, inspected, and accepted, and guard railings would be installed in concrete for permanent attachment. Once the proposed bridge is constructed, the Caltrans standard approach slabs would be formed and poured. Once the approach slabs are cured and accepted, improvements to the roadway approaches and shoulder would take place.

Anticipated equipment that would be used for construction of the Newell Road Bridge includes the following.

- Front end loaders
- Backhoes
- Graders
- Dump trucks
- Concrete trucks
- Excavators
- Asphalt compactor (roller)
- Crane
- Pile drivers (vibratory)
- Fork lifts
- Trailer-mounted portable generators
- Pick-up trucks
- Light hand tools
- Pumps (for dewatering)

[13] The wing walls are adjacent to the abutments and act as retaining walls.

No heavy equipment would be used in the creek. Minor construction activities that could occur within the creek include installation of the check dams, such as clean gravel dams or any other type of approved Caltrans standard dam, and implementation of BMPs.

Construction Staging Areas and Temporary Traffic Detour and Access

Construction staging/laydown is anticipated to occur on Newell Road between the creek, Edgewood Drive, and Woodland Avenue within the roadway ROW. The final location of staging/laydown areas would be determined during the design phase and will require additional review if there are impacts that are not described in this EIR/EA.

Construction of the Project would require closure of the existing Newell Road Bridge crossing for all build alternatives. Closing the existing bridge crossing would require detouring traffic to other existing nearby crossings (University Avenue and West Bayshore Road).

Newell Road on the Palo Alto side would be closed from Edgewood Drive to the existing bridge crossing but would allow access to the southeast resident's driveway. On the East Palo Alto side, Woodland Avenue would have limited access during construction. Complete closure of Woodland Avenue would have impacts on access and parking for multi-family residential units. The contractor would use one-lane traffic detours to the extent possible to assure passage along Woodland Avenue during construction. The construction zone would be established so that limited parking can be made available in the area during off hours.

1.4.1.7 Standardized Measures

Each build alternative includes the following standardized measures (SM) that are included as part of the Project description. Standardized measures (such as BMPs) are those measures that are generally applied to most or all Caltrans projects. These standardized or pre-existing measures allow little discretion regarding their implementation and are not specific to the circumstances of a particular project. Where these SMs address potential impacts of the Project, additional measures to avoid or mitigate impacts will not be required. More information on each measure can be found in the applicable sections of Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*.

- SM-UT-1: Bilingual notification of utility disruptions will be provided to the local residents and businesses.
- SM-TR-1: A Traffic Management Plan will be prepared for the Project.
- SM-CUL-1: Standard provisions dealing with the discovery of unanticipated cultural materials will be included in the Project plans and specifications.
- SM-CUL-2: Standard provisions dealing with the discovery of human remains will be included in the Project plans and specifications.
- SM-WQ-1: The Project will implement the National Pollutant Discharge Elimination System Permit and Construction General Permit Water Quality Measures.
- SM-WQ-2: The Project will prepare and implement a storm water pollution prevention plan.
- SM-GEO-1: Bridge design and construction will adhere to current Caltrans Seismic Design Criteria.

- SM-AQ-1: The construction contractor must comply with Caltrans Standard Specifications in Section 14.
- SM-AQ-2: The construction contractor must implement dust control BMPs.
- SM-NOI-1: The construction contractor must comply with Caltrans Standard Specifications Section 14-8.02, Noise Control.
- SM-NOI-2: The construction contractor must have sound-control devices that are no less effective than those provided on the original equipment.
- SM-NOI-3: The Project proponent and/or their construction contractor will review and ensure that construction activities are conducted in accordance with local noise standards from the cities of Palo Alto and East Palo Alto.

1.4.2 Unique Design Features of the Build Alternatives

Pedestrian facilities, utility improvements, channel improvements, and construction staging areas would be identical for each build alternative. Thus, this section focuses on the build alternative alignments, bicycle facilities, and retaining walls only. The primary differences between Build Alternatives 1 through 4 are the alignments.

1.4.2.1 Build Alternative 1

The following roadway improvements are unique to Build Alternative 1 and can be seen in Figure 1-3a.

Build Alternative 1 would remove the existing bridge structure and construct a new one-lane bridge with bi-directional traffic on the existing alignment. Only one direction of travel for vehicles and bicycles would be provided on the bridge at a time.

To eliminate all potential conflicting vehicle movements, Build Alternative 1 would require complete signalization of the intersections of Newell Road with Woodland Avenue and Edgewood Avenue in order to control the direction of travel on the bridge and adjacent roadways. One additional signal would be provided for the sole residential driveway on the Palo Alto side of the bridge to indicate the direction of traffic on Newell Road at all times.

Build Alternative 1 would provide bicycle access across the bridge via shared vehicle/bicycle lanes (sharrows), but bicycles would only be allowed to travel in the same direction as the vehicle traffic. Control of bicyclist movement would rely on the ability/willingness of bicyclists to obey the traffic signals at each intersection.

The new bridge would be approximately 1.6 feet higher than the existing roadway profile at the bridge to improve flood hazard protection for the adjacent communities. Retaining walls (approximately 120 linear feet by 12 inches wide, varying between 1 foot and 4 feet in height) would be required on both sides of the roadway to limit the ROW needs for the Project.

On the East Palo Alto side of the bridge, Woodland Avenue would also be raised to meet the higher bridge profile and would require approximately 300 feet to conform to the existing roadway to the east and west of the bridge. Newell Road would also require approximately 125 feet of improvements. Retaining walls (approximately 290 linear feet by 12 inches wide, varying between 1 foot and 4.75 feet in height) would be required along the north side of Woodland Avenue and both sides of Newell Road to limit the ROW needs for the Project. The south side of Woodland Avenue would use the existing flood wall to support the raised roadway.

1.4.2.2 Build Alternative 2 (LPA)

The following are roadway improvements unique to Build Alternative 2 and can be seen in Figure 1-3b.

Build Alternative 2 would remove the existing bridge and construct a new two-lane bridge on the existing bridge alignment. This build alternative would include bicycle access on both the northbound and southbound lanes of Newell Road via shared vehicle/bicycle lanes (sharrows). Four-foot-wide sidewalks would also be provided.

Build Alternative 2 does not realign the existing north and south intersections with Woodland Avenue, but clear sight distance would be provided through a combination of red-curb striping, providing either no landscaping or landscaping that does not exceed 30-inches in height, and bridge barriers would be either open spaced concrete walls or railings.

The new bridge would be approximately 1.6 feet higher than the existing roadway profile at the bridge to improve flood hazard protection for the adjacent communities. Retaining walls (approximately 120 linear feet by 12 inches wide, varying between 1 foot and 4 feet in height) would be required on both sides of the roadway to limit the ROW needs for the Project.

On the East Palo Alto side of the bridge, Woodland Avenue would be raised to meet the new bridge profile and would require approximately 300 feet to conform to the existing roadway on the east and west sides of the bridge. Newell Road would also require approximately 125 feet of improvements. Retaining walls (approximately 290 linear feet by 12 inches wide, varying between 1 foot and 4.75 feet in height) would be required along the north side of Woodland Avenue and both sides of Newell Road to limit the ROW needs for the Project. The south side of Woodland Avenue would use the existing flood wall to support the raised roadway.

1.4.2.3 Build Alternative 3

The following are roadway improvements unique to Build Alternative 3 and can be seen in Figure 1-3c.

Build Alternative 3 is identical to Build Alternative 2, except that Newell Road south of Woodland Avenue would be partially realigned (approximately 30 feet) so that the degree of offset between the existing north and south intersections with Woodland Avenue would be reduced compared to the existing condition.

Build Alternative 3 provides an intersection where the centerline-to-centerline connection on Newell Road from Edgewood Road to Woodland Avenue is partially aligned, which would improve sight lines for vehicles, pedestrians, and bicyclists entering the intersection.

The new bridge would be approximately 1.6 feet higher than the existing roadway profile at the bridge to improve flood hazard protection for the adjacent communities. Similar to previous alternatives, the entire Newell Road roadway would be raised 3.5 feet on the Palo Alto side in order to meet the higher profile of the new bridge. Retaining walls (approximately 120 linear feet long by

12 inches wide varying between 1 foot and 4 feet in height) would be constructed on both sides of the roadway to limit the ROW needs for the Project.

On the East Palo Alto side of the bridge, Woodland Avenue would be raised to meet the new bridge profile and would require approximately 275 feet to conform to the existing roadway on Woodland Ave on the east and west sides of the bridge. Newell Road would also require approximately 125 feet of improvements on Newell Road on the East Palo Alto side to conform to the existing sidewalks, driveways, curbs, and gutters. Retaining walls (approximately 290 linear feet by 12 inches wide, varying between 1 foot and 4.5 feet in height) would be required along the north side of Woodland Avenue and both sides of Newell Road to limit the ROW needs for the Project. The south side of Woodland Avenue would use the existing flood wall to support the raised roadway.

1.4.2.4 Build Alternative 4

The following are roadway improvements unique to Build Alternative 4 and can be seen in Figure 1-3d.

Build Alternative 4 is similar to Build Alternatives 2 and 3, except that Newell Road south of Woodland Avenue would be fully realigned (approximately 90 feet) to eliminate the offset between the existing north and south intersections with Woodland Avenue.

This build alternative would provide a standard four-way intersection at Newell Road and Woodland Avenue, improving sight lines for vehicles, pedestrians, and bicyclists at the intersection.

The new bridge would be approximately 1.6 feet higher than the existing roadway profile at the bridge to improve flood hazard protection for the adjacent communities. Similar to previous build alternatives, the entire Newell Road roadway would be raised 4 feet on the Palo Alto side in order to meet the higher profile of the new bridge. Retaining walls (approximately 110 linear feet long by 12 inches wide, varying between 1 foot and 4.5 feet in height) would be constructed on both sides of the roadway to limit the ROW needs for the Project.

On the East Palo Alto side of the bridge, Woodland Avenue would be raised to meet the new bridge profile and would require approximately 325 feet to conform to the existing roadway on the east and west sides of the bridge. Newell Road would also require approximately 125 feet of improvements, including reconstruction of sidewalks and readjustments of an existing driveway and walkways. Retaining walls (approximately a total of 390 linear feet long by 12 inches wide, varying between 1 foot and 4.5 feet in height) would be required on the north side of Woodland Avenue and both sides of Newell Road to limit the ROW needs for the Project.

1.4.3 No-Build (No-Action) Alternative

Under the No-Build (No-Action) Alternative, no changes would be made to the existing bridge and approaches. No construction activities would occur, and there would be no change in the operations of the existing facilities. Other planned and approved land use development and transportation improvements along local routes may be implemented by local agencies or under other projects. Under the No-Build Alternative, the flooding issue along the creek would also not be addressed. The existing bridge flow that can pass under is 6,600 cfs, which is not sufficient to handle the natural creek flow of 7,500 cfs. If upstream improvements are completed, flows exceeding 6,600 cfs would not be able to pass under the existing bridge, resulting in flooding upstream of the Newell Road Bridge.

Under NEPA, the No-Build (No-Action) Alternative is considered the environmental baseline against which potential environmental effects of the build alternatives are evaluated. For CEQA, the baseline for environmental impact analysis consists of the existing conditions at the time of the Notice of Preparation. For the purposes of the hydrology and water quality, the current baseline flow of the creek (5,400 cfs) and the future baseline flow of the creek (7,500 cfs), which accounts for the improvements proposed by the separate SFCJPA Project, will be taken into account. The baseline for all other environmental resource topics is existing physical conditions.

1.4.4 Comparison of Alternatives

The criteria developed to evaluate the build alternatives are the points outlined in the purpose statement. These criteria were developed in coordination with Caltrans, the City of Palo Alto, the City of East Palo Alto, and through the public participation process. They are based on what each of these entities hopes the Project will achieve. The build alternatives and the No-Build Alternative will be evaluated based on how well they accomplish the criteria outlined in the purpose statement. A comparison of the build alternatives is provided in Table 1-1. Refer to Table ES-1 in the Summary and the various sections of Chapters 2 and 3 for a comparison of environmental impacts of the build alternatives. Refer to Section 3.4, *Environmentally Superior Alternative*, for a description of the environmentally superior alternative as required by CEQA.

Table 1-1. Comparison of Alternatives

Potential Impact	Build Alternative 1	Build Alternative 2 (LPA)	Build Alternative 3	Build Alternative 4	No-Build (No-Action) Alternative
Traffic Signal	Y	N	N	N	N
Pedestrian and Bicycle Access	Y	Y	Y	Y	N
Right-of-Way Impacts	N	N	N	N	N
Displacements	N	N	N	N	N
Flood Control	Y	Y	Y	Y	N
Landscape Changes	Y	Y	Y	Y	N
Utility Relocation	Y	Y	Y	Y	N

After comparing and weighing the benefits and impacts of all feasible alternatives, the City of Palo Alto as the Lead Agency under CEQA and East Palo Alto have selected Build Alternative 2 as the LPA (or “the project” for CEQA purposes), subject to public review. For the purposes of NEPA, final identification of a preferred alternative will occur after the public review and comment period.

1.4.5 Alternatives Considered but Eliminated from Further Discussion

As described in Section 1.4*, Alternatives*, an ASAR was conducted that considered feasible build alternatives. A total of eight conceptual build alternatives were considered; two were recommended for carrying forward to the EIR/EA, and four were ultimately determined to be feasible.

Build alternatives proposed in the ASAR that were considered but eliminated from further discussion include the following:

- ASAR Alternative 2: Remove Existing Bridge (Without Replacement)
- ASAR Alternative 3: Bicycle-Pedestrian (only) Bridge
- ASAR Alternative 4: Bicycle-Pedestrian Bridge with Emergency Access

These build alternatives were dropped from further consideration because they did not meet the criteria identified in the purpose statement and would not satisfy the Project's basic purpose and needs, in particular the objective of maintaining vehicular transportation across San Francisquito Creek at Newell Road. In addition, it was determined in the ASAR that ASAR Alternatives 2, 3, and 4 would have had a negative effect on Level of Service and would have increased the Traffic Infusion on Residential Environment (TIRE) index[14] on residential streets by more than 0.1 (any projected change of 0.1 or greater would be noticeable to residents). These three alternatives also performed poorly when evaluated against accommodating multi-modal traffic, including vehicles, bicycles, and pedestrians. For these reasons, ASAR Alternatives 2, 3, and 4 were eliminated from further consideration.

Transportation Demand Management, Transportation System Management, and Mass Transit alternatives, which assume retention of the existing bridge, were considered but eliminated from further discussion because the proposed build alternatives already include measures to improve accessibility for other modes of travel (bicycle and pedestrian facilities). Furthermore, implementation of other measures typically included as part of Transportation Demand Management and Transportation System Management alternatives, as well as a stand-alone Mass Transit alternative, would not meet the basic Project objectives (purpose and need).[15]

[14] TIRE is the measure of traffic impact on residents along a roadway. TIRE represents the effect of traffic on the safety and comfort of human activities, such as walking, bicycling, and playing on or near a roadway, and on the freedom to maneuver personal autos in and out of residential driveways.

[15] Transportation Demand Management alternatives focus on regional strategies for reducing the number of trips and miles traveled as well as increasing vehicle occupancy. As stated, the Project build alternatives already include improved bicycle and pedestrian facilities, expanding traveler choice in terms of travel method and routes. Transportation System Management alternatives include actions that increase the efficiency of existing facilities and the number of vehicle trips a facility can accommodate and include strategies such as auxiliary lanes, turning lanes, reversible lanes, and traffic signal coordination, as well as encouraging automobile, public, and private transit as elements of a unified transport system. Similar to Transportation Demand Management, the Project build alternatives already include Transportation System Management improvements like auxiliary lanes, turning lanes, and signal coordination. Other measures such as reversible lanes and/or expanded transit options would either be infeasible (in part due to limited ROW and potential for increased environmental impacts) or would not meet the basic Project objectives (purpose and need).

1.5 Permits and Approvals Needed

The permits, reviews, and approvals in Table 1-2 would be required for Project construction.

Table 1-2. Permits and Approvals Needed

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service (USFWS)	Concurrence letter documenting informal consultation for threatened and endangered species under Section 7 of the Federal Endangered Species Act.	Caltrans sent a letter to USFWS on January 22, 2018, to complete Section 7 informal consultation requirements. Concurrence from USFWS was received on March 20, 2018.
National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service)	Concurrence letter documenting informal consultation for threatened and endangered species under Section 7 of the Federal Endangered Species Act.	Caltrans sent a letter to the NOAA Fisheries Service on January 22, 2018, to complete Section 7 informal consultation. Concurrence from the NOAA Fisheries Service was received on March 29, 2018.
U.S. Army Corps of Engineers, San Francisco District	Concurrence of wetland/waters of the U.S. delineation.	The City of Palo Alto will consult with the U.S. Army Corps of Engineers to obtain a Wetland/Waters of the U.S. Determination before the Final EIR/EA is approved.
U.S Environmental Protection Agency	Section 402 Clean Water Act controls discharges of Municipal Separate Storm Sewer Systems.	The City of Palo Alto will obtain this permit during final design.
Federal Highway Administration	Project-level transportation conformity determination.	Caltrans will request that the Federal Highway Administration issue a Project-level transportation conformity determination for the Project after a preferred alternative is selected.
Federal Emergency Management Agency	Variance due to lack of 2 feet of freeboard[1] on 50-year bridge design.	The City of Palo Alto will consult with the Federal Emergency Management Agency during final design.
California Department of Fish and Wildlife	1602 Notification of Lake or Streambed Alteration.	The City of Palo Alto will consult with the California Department of Fish and Wildlife during final design.
State Historic Preservation Officer	Concurrence with the project Historic Property Survey Report and Section 106 requirement.	Caltrans sent a letter to the State Historic Preservation Officer on October 27, 2017, to complete Section 106 requirements. Concurrence from the State Historic Preservation Officer was received on November 30, 2017.

Agency	Permit/Approval	Status
San Francisco Bay Regional Water Quality Control Board	Report of discharge.	If necessary, the City of Palo Alto will consult with the San Francisco Bay Regional Water Quality Control Board during final design.
	San Francisco Bay Region Municipal Regional Stormwater National Pollutant Discharge Elimination System Permit (Order No. R2-2015-0049-DWQ).	The City of Palo Alto will consult with the San Francisco Bay Regional Water Quality Control Board during final design, during construction and post-construction.
State Water Resources Control Board	National Pollutant Discharge Elimination System Permit for Stormwater Discharges Associated with Construction Activities (Construction General Permit).	The City of Palo Alto will obtain coverage under the General Permit by preparation and submittal of a Notice of Intent before start of construction.
	Section 402 Clean Water Act National Pollutant Discharge Elimination System Permit for Stormwater Discharges Associated with Construction Activities.	The City of Palo Alto will obtain this permit during final design.
Santa Clara Valley Water District	District Well Ordinance Permit, Encroachment Permits, and Water Resources Protection Ordinance Permit.	The City of Palo Alto will obtain these permits during final design.
City of Palo Alto	Architectural Review.	The City of Palo Alto will provide architectural review of the final design of the bridge.
	Construction Contract.	The City of Palo Alto will approve the construction contract.
City of East Palo Alto	Tree Removal Permit.	If required, the City of Palo Alto will apply for and obtain the approvals prior to construction and vegetation clearing.
	Encroachment Permits.	The City of Palo Alto will obtain this permit during final design.

[1] Freeboard is a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. Freeboard tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed.

1.6 Right-of-Way Requirements

It is not anticipated that there will be any permanent ROW acquisitions as a result of the Project. All of the permanent improvements proposed are within available Palo Alto and East Palo Alto ROW.

Temporary construction easements in Table 1-3 are anticipated from all parcels within and adjacent to the proposed Project improvements for all build alternatives unless otherwise stated. Two temporary construction easements are expected on the Palo Alto side and five on the East Palo Alto side.

Table 1-3. Temporary Construction Easements

Assessor's Parcel Number	Address	Owner	Existing Use/Proposed Work	Type of Acquisition
003-12-013	475 Newell Road (Palo Alto)	Private property	Home/driveway would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur[1]	Permit to enter and construct
003-11-020[2]	1499 Edgewood Dr. (Palo Alto)	Private property	Home/backyard would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur[1]	Permit to enter and construct for Build Alternatives 3 and 4 only
063-513-350	5 Newell Road (East Palo Alto)	Woodland Park Property Owner	Apartments/walkways would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur[1]	Permit to enter and construct
063-513-440	15 Newell Road (East Palo Alto)	Woodland Park Property Owner	Apartments/walkways would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur for Build Alterative 4 only[1]	Permit to enter and construct
063-515-370	1761 Woodland Avenue (East Palo Alto)	Woodlands Newell Associates	Apartments/walkways would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur[1]	Permit to enter and construct
063-515-380	1767 Woodland Avenue (East Palo Alto)	Woodlands Newell Associates	Apartments/walkways would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur[1]	Permit to enter and construct
063-515-280	1773 Woodland Avenue (East Palo Alto)	Woodland Park Property Owner	Apartments/walkways would be reconstructed to match new grade	Permit to enter and construct

Source: Nolte Vertical Five 2017.

[1] The retaining walls would be constructed within City of Palo Alto or East Palo Alto ROW, but access to the parcels are needed in order to construct the retaining walls.

[2] Not all of the side yard is part of this parcel. There is an encroachment permit along the side yard of this parcel, which can be revoked.

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Chapter 2

Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

This chapter explains the impacts that the Project would have on the environment. It describes the regulatory setting, existing environment that could be affected by the Project, potential impacts (environmental consequences), and proposed avoidance, minimization, and/or mitigation measures. Potential impacts are broken up into construction impacts, which are temporary impacts during construction, and operational impacts, which occur permanently during project operation. The environmental resource discussions presented in this chapter are based on the technical studies cited at the beginning of each discussion and listed at the end of this document. An evaluation of the Project per the CEQA checklist criteria is provided in Chapter 3, *California Environmental Quality Act Evaluation*. Avoidance, minimization, and/or mitigation measures for each of the environmental resource areas are discussed in the following sections. Standardized measures are coded as SM, avoidance and minimization measures are coded as AMM, and mitigation measures are coded as MM.

As part of the scoping and environmental analysis carried out for the Project, the following environmental issues were considered but no adverse impacts were identified. As a result, there is no further discussion about these issues in this document.

- Coastal Zone: The study area is not within a coastal zone; therefore, no impact on this resource is anticipated (Data Basin 2017). In addition, the study area is not within San Francisco Bay Conservation and Development Commission jurisdiction.
- Wild and Scenic Rivers: There are no wild and scenic rivers within the study area, as defined by the National Wild and Scenic Rivers System. The closest wild and scenic rivers are Big Sur River in Big Sur and the American River in Sacramento; therefore, no impact on this resource is anticipated (National Wild and Scenic Rivers System 2017).
- Parks and Recreational Facilities: There are no parks, recreational facilities, or Section 4(f) resources of this type near the Project. The closest parks and recreational facilities are 0.35 miles southwest in Palo Alto (Eleanor Pardee Park) and 0.35 miles northeast in East Palo Alto, (University Square Park); therefore, no impacts are anticipated. Although these parks are within the 0.5-mile radius normally analyzed for Section 4(f), given the project type (bridge replacement) in a heavily built-up urban location, the radius within which 4(f) properties were analyzed was reduced to 0.25 miles.
- Growth: The California Department of Transportation (Caltrans) and the City of Palo Alto conducted the first-cut screening in accordance with the Caltrans Standard Environmental Reference (California Department of Transportation 2016) Guidance for Preparers of Growth-Related, Indirect Impact Analyses to determine whether there would be growth impacts due to implementation of the Project. The purpose of the Project is to maintain connections for vehicular, bicycle, and pedestrian transportation, provide a pedestrian sidewalk and improve bicycle access, improve safety for all modes of transportation, and design a bridge that accommodates increased flows related to San Francisquito Creek improvements. These

improvements could change the accessibility of the area by making this intersection a more attractive travel option (e.g., safer), which could encourage additional pedestrians, bicyclists, and vehicles to use the bridge. However, the project type (bridge reconstruction) would only widen the existing two travel lanes and shoulders to standard widths; it would not increase capacity in an already heavily built up area. Capacity would not be increased because the number of lanes provided on the bridge would not change; Newell Road Bridge would remain a two-lane bridge under all build alternatives. Therefore, no growth-related impacts are anticipated.

- Farmlands/Timberlands: There are no farmlands or timberlands within the study area; therefore, no impacts on these resources are anticipated.
- Mineral Resources: There are no mineral resources within the study area; therefore, no impacts on these resources are anticipated.

2.1 Human Environment

2.1.1 Land Use

The information in this section is from the Community Impact Assessment (September 2017).

2.1.1.1 Existing and Future Land Use

The Project is located in Santa Clara and San Mateo Counties, in the cities of Palo Alto and East Palo Alto. The Project is located southwest of U.S. Highway 101 (US 101) and east of State Route 82 (El Camino Real). The Project site is located on Newell Road between Edgewood Drive in Palo Alto and Woodland Avenue in East Palo Alto. San Francisquito Creek, over which the Project crosses, delineates the city limits between the City of Palo Alto and the City of East Palo Alto, as well as the boundary between Santa Clara and San Mateo Counties. The bridge provides vehicular access across San Francisquito Creek but does not have sidewalks or marked bicycle paths. There are sidewalks on both sides of Newell Road in Palo Alto and there is a sidewalk on the opposite side of Woodland Avenue in East Palo Alto. There is a marked bicycle lane on Newell Road in Palo Alto, but no marked bicycle lane on either Woodland Avenue or Newell Road in East Palo Alto. In East Palo Alto, Newell Road connects to West Bayshore Road which provides access to University Avenue and US 101. In Palo Alto, Newell Road connects to main thoroughfares, including Channing Avenue and Embarcadero Road.

An initial site visit was conducted on May 23, 2012, with follow up site visits conducted in August 2015 and April 2017. Reconnaissance surveys were conducted to determine locations of community facilities and resources, public utilities, and land-use characteristics within and surrounding the Project area. Overhead and underground electrical systems were visually located. Development adjacent to the Project site includes single-family residential homes on the City of Palo Alto (west) side of the existing bridge, and multi-family residential development on the City of East Palo Alto (east) side of the existing bridge. Public parking is available on the northern side of the bridge along both sides of Woodland Avenue.

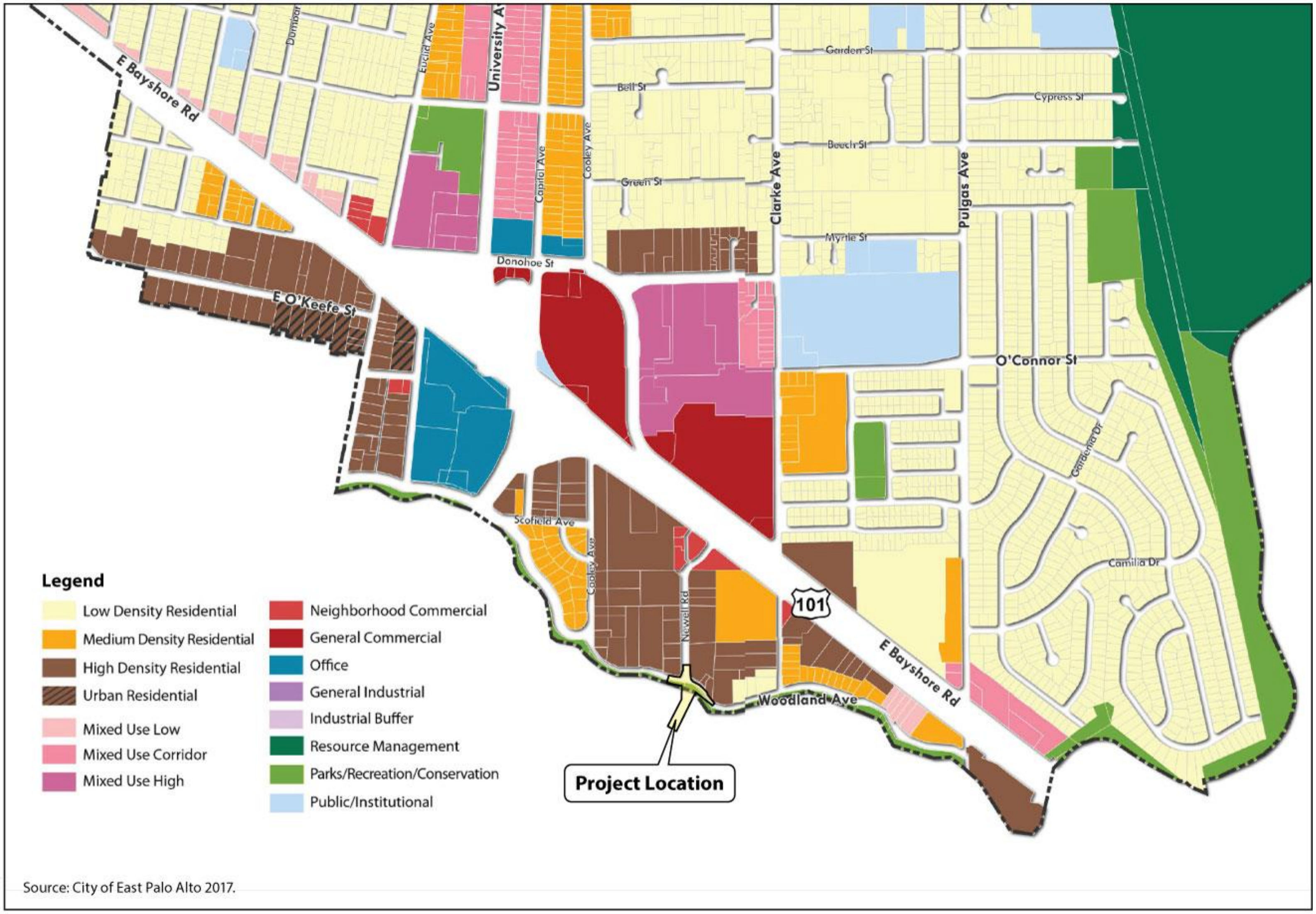

Figure 2.1.1-1. Land Use Designations, City of East Palo Alto

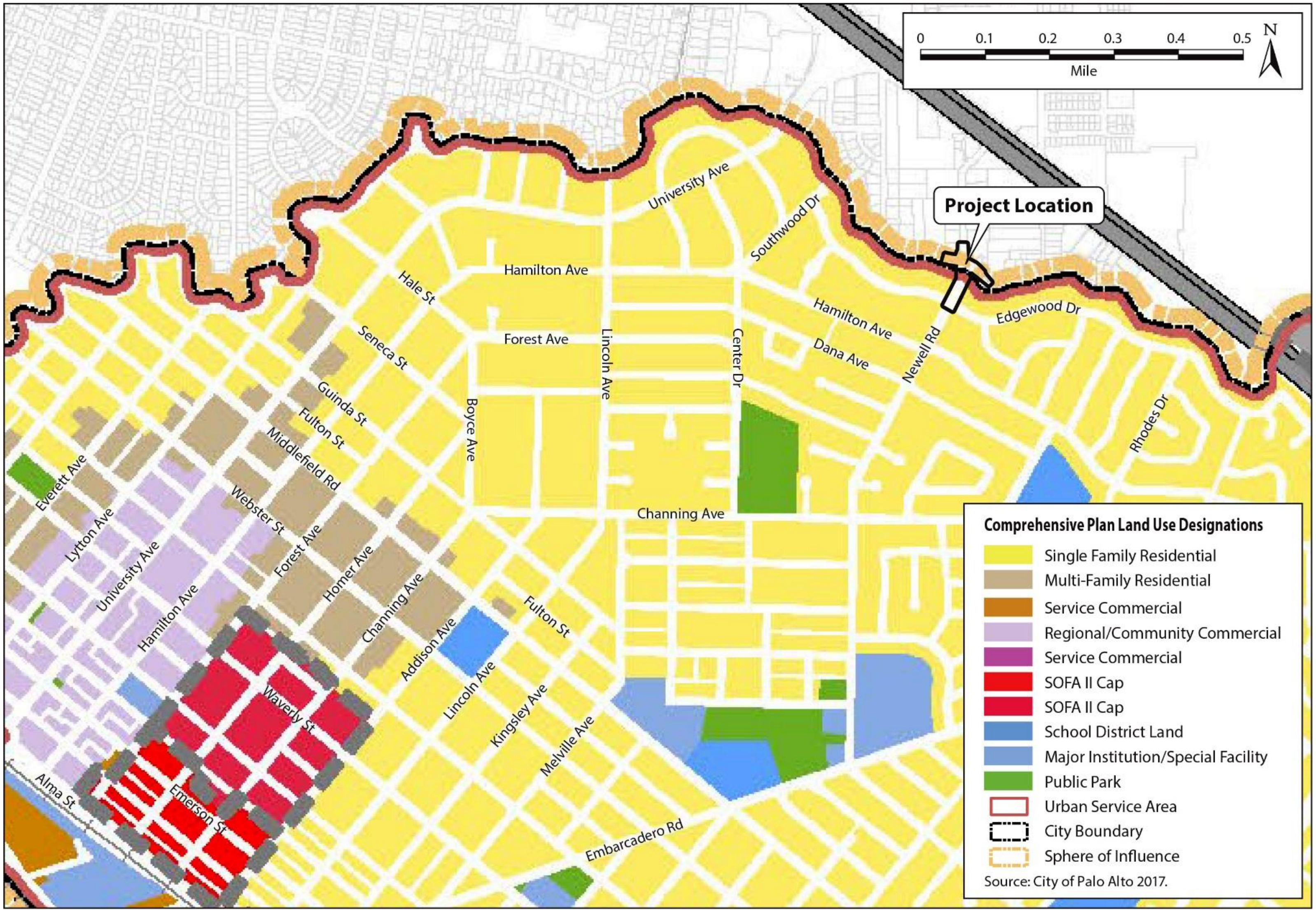

Figure 2.1.1-2. Land Use Designations, City of Palo Alto

Figures 2.1.1-1 and 2.1.1-2 show the land uses surrounding the Project site in the cities of East Palo Alto and Palo Alto, respectively. The land use and setting south of the bridge is characterized by single-family residential homes and is adjacent to a landscaped strip alongside a sidewalk, and a private residential fence, backyard, and single-story residence on the southwest. On the southeast is a landscaped strip alongside a sidewalk; and a private residential front yard, gated driveway, and single-story residence. The residences to the south of the bridge are detached and have no on-street parking.

The area north of the bridge is perpendicularly crossed by Woodland Avenue (which includes public on-street parking parallel to the street on both sides [a few car lengths and marked as restricted for clearance and safety] from the mouth of the bridge) and is characterized by landscaped areas and private detached, multi-story, multi-family residential development and associated structures on the northwest (two-story development immediately west of Newell Road) and northeast (one-, two-, and three-story development immediately east of Newell Road). The on-street parallel parking spaces on the north side of the bridge are fully utilized. Further northeast is US 101.

There are a number of planned projects in the Project vicinity that demonstrate the development trends within both Palo Alto and East Palo Alto. In the vicinity of the Project, the City of Palo Alto includes many development requests for additions to single-family homes or reconstruction of new single-family homes (City of Palo Alto 2017a). There are no development projects in the vicinity of the study area that would increase the size of the local population. For the purposes of this analysis, only larger size projects have been included. Table 2.1.1-1 identifies these planned projects.

Table 2.1.1-1. Planned Projects in the Vicinity of the Project

Name	Jurisdiction	Proposed Uses	Status
Homer Avenue-Channing Avenue Enhanced Bikeway	City of Palo Alto	The project proposes enhanced bikeway facilities between Guinda Street and Alma Street.	Planning stage
Greer Road Bicycle Boulevard Project	City of Palo Alto	The proposed Greer Road Bicycle Boulevard will provide a new north-south bicycle route for the community from Edgewood Drive to the north to Louis Road to the south.	Planning stage
Bay Road Phase II and III	City of East Palo Alto	The project consists of three phases of roadway improvements between University Avenue and Cooley Landing. The proposed Phase II/III project will include the design of the roadway to accommodate new sidewalks, bike lanes, ADA accessibility, lighting, landscaping, and street furniture.	Construction Summer 2019 through Winter 2020
Highway 101 Pedestrian/Bicycle Overcrossing Project	City of East Palo Alto	The project will consist of constructing a Class I Pedestrian/Bicycle Overcrossing Structure over U.S. Highway 101 between West and East Bayshore Roads, aligned with Clarke Avenue and connecting to West Bayshore Road at Newell Road, to provide a direct connection between the south side and north side of U.S. Highway 101 in East Palo Alto.	Under Construction

Name	Jurisdiction	Proposed Uses	Status
Pad D New Municipal Water Well	City of East Palo Alto	Construct a new municipal water supply well at the "Pad D" site, located at the intersection of Clarke Avenue and East Bayshore Road.	Design stage
Route 101/University Avenue (State Route 109) Interchange Modification Project	City of East Palo Alto	Construct safety and traffic operational improvements at the U.S. Highway 101/ University Avenue Overcrossing. The project will include widening the overcrossing to accommodate wider sidewalk and class 2 bicycle lanes to fill a missing bicycle gap over U.S. Highway 101 to improve bicycle and pedestrian access and safety along University Avenue.	Design stage
San Francisquito Creek Flood Protection, Ecosystem Restoration, and Recreation Project: Upstream of U.S. 101	San Francisquito Creek Joint Powers Authority	The Upstream of Highway 101 proposed project includes channel widening at five sites, replacement of the Pope-Chaucer Bridge, construction of creekside parks, and enhancement of aquatic habitat. The alternative involves, rather than channel widening at four of the five sites, construction of floodwalls. The project also includes a program-level upstream detention basin that would be constructed adjacent to the channel at one of two potential sites. The Upstream of U.S. 101 project cannot be constructed until the SF Bay to Highway 101 project is completed to accommodate larger flows.	Planning stage
San Francisquito Creek Flood Protection	San Francisquito Creek Joint Powers Authority	A regional comprehensive plan for both the waters that flow into San Francisquito Creek and on to San Francisco Bay (its watershed) and the waters that threaten our communities from the Creek and from Bay tides (our floodplains).	Planning stage

Source: City of East Palo Alto 2017a, 2017b, 2017c, 2017d, 2017e; City of Palo Alto 2017b; San Francisquito Creek Joint Powers Authority 2017; Santa Clara Valley Water District 2018.

2.1.1.2 Consistency with State, Regional, and Local Plans and Programs

The Palo Alto Comprehensive Plan,[1] adopted on November 13, 2017, dictates the land use patterns and development for the western portion of the bridge (located within the City of Palo Alto). This area is designated as Single-Family Residential in the update, with no plan for land use modification.

The City of East Palo Alto General Plan (City of East Palo Alto 2016), the West Side Area Plan (City of East Palo Alto 2016), and the City of East Palo Alto Housing Element (City of East Palo Alto 2015) dictate the land use patterns and development on the eastern portion of the bridge (located within the City of East Palo Alto). This area, which falls within the Westside Area Plan (Chapter 11 of the General Plan), is zoned for Multi-Family Residential and designated as High-Density Residential. The plan permits higher residential densities than currently exist in the neighborhood adjacent to the Newell Road Bridge, but development will require a Master Plan or Specific Plan. Westside Area Plan

[1] The comprehensive plan, also known as a general plan, master plan or land-use plan, is a document designed to guide the future actions of a community. It presents a vision for the future, with long-range goals and objectives for all activities that affect the local government.

policies and goals include language to discourage and prevent displacement of existing residents/renters as well as to establish a process and framework for future development.

The Project is identified in the April 18, 2011, Federal State Transportation Improvement Program (California Department of Transportation 2011).[2]

2.1.1.3 Environmental Consequences

Construction Impacts

Land use impacts during construction would be the same for all build alternatives. The Project would be constructed within the existing transportation right-of-way, the stream corridor, and immediately adjacent areas. Accordingly, no changes to existing land uses would occur. Existing land use designations would also remain unaffected. Modifications would be consistent with existing land use plans, programs, and policies. Temporary Construction Easements may be required to allow the contractor access to some portions of the Project area; however, these would not affect the existing land uses adjacent to the Project. Since on-street parking would be unavailable along a portion of Woodland Avenue in the City of East Palo Alto, residents of the multi-family developments along Woodland Avenue and Newell Road may have to park farther away than they typically do during the period of construction. However, this impact would be temporary and would not have any permanent effect related to zoning requirements for on-street parking.

Operational Impacts

Land use impacts during operation would be the same for all build alternatives. No land use impacts on adjacent private property are anticipated during Project operation. Additionally, the replacement of a bridge is not typically considered to have potential to induce growth. Therefore, land use impacts related to growth are not anticipated. The expressed purpose and need of the Project is to safely accommodate vehicle, bicycle, and pedestrian traffic. The Project would also provide adequate capacity to allow for larger stormwater flows to be conveyed under the bridge. No changes to existing or planned land uses are anticipated to result from the Project because the Project would be consistent with local planning documents that guide land use decisions in the area. Only Temporary Construction Easements may be necessary in order to construct the bridge, retaining walls, and associated infrastructure.

Table 2.1.1-2 analyzes the consistency of the Project with the relevant plans and programs. As detailed in Table 2.1.1-2, the Project would not conflict with any goals or policies of relevant plans and programs.

[2] The Project Description in the April 18, 2011, Federal State Transportation Improvement Program is to "replace existing two-lane bridge with a new two-lane bridge conforming to current standards."

Table 2.1.1-2. Consistency with State, Regional, and Local Plans and Programs

Policy	Build Alternatives 1–4
East Palo Alto Bicycle Transportation Plan	
Pedestrian overcrossing project for consistency with the 2004 Bay Area Access Master Plan.	No Conflict. The proposed Project is identified as supporting the potential pedestrian overcrossing project the City of East Palo Alto is pursuing at Clarke Avenue/Newell Road and Bayshore Road.
East Palo Alto General Plan	
Goal LU-1. Maintain an urban form and land use pattern that enhances the quality of life and meets the community's vision for its future.	No Conflict. Build Alternatives 1–4 would improve existing infrastructure, which would enhance the quality of life for those using any component of the proposed Project.
LU-1.1: Balanced Land uses. Create a balanced land use pattern to support a jobs-housing balance, minimize traffic and vehicle miles traveled, reduce greenhouse gas emissions, and promote a broad range of housing choices, retail businesses, employment opportunities, cultural venues, educational institutions and other supportive land uses.	No Conflict. Build Alternatives 1–4 would improve access/connections between the Cities of Palo Alto and East Palo Alto and would not result in a change in land use.
LU-1.3: Coherent pattern of land use. Ensure that new development occurs in a unified and coherent pattern that avoids conflicts between uses and promotes job creation and fiscal stability, creating a high-quality environment for East Palo Alto residents.	No Conflict. Build Alternatives 1–4 would improve access/connections between the Cities of Palo Alto and East Palo Alto and would not result in a change in land use. The Project supports the City's Transportation Plan implementation.
Goal LU-9. Provide an urban environment that is tailored to the pedestrian.	No Conflict. Build Alternatives 1–4 would improve existing pedestrian infrastructure.
Goal LU-16. Enable new pedestrian connections, improve safety, and provide guidelines for incremental improvements to the neighborhood.	No Conflict. Build Alternatives 1–4 would improve existing pedestrian infrastructure.
Goal ED-1. Grow and stabilize revenue-generating land uses and tools to diversify and expand the City's tax revenue base and provide jobs for local residents.	No Conflict. Build Alternatives 1–4 would not prevent the growth and stabilization of revenue-generating land uses or tools to expand the City of Palo Alto's tax revenue base and provide jobs for local residents.
Goal T-1. Improve safety through the design and maintenance of sidewalks, streets, intersections, and other roadway improvements.	No Conflict. Build Alternatives 1–4 would improve safety of the existing Newell Road Bridge.
Goal T-2. Foster the creation of complete, multimodal streets.	No Conflict. Build Alternatives 1–4 would improve a portion of Newell Road by improving pedestrian, bicycle, and automotive infrastructure.

Policy	Build Alternatives 1–4
Goal T-3. Create a complete, safe, and comfortable pedestrian network for people of all ages and abilities.	No Conflict. Build Alternatives 1–4 would improve existing pedestrian infrastructure.
POC 2.3 Access to parks. Improve bike and pedestrian access to existing parks and school	No Conflict. Build Alternatives 1–4 would improve bike and pedestrian infrastructure along Newell Road, which would improve bike and pedestrian access to parks and schools in the area.
Palo Alto Bicycle + Pedestrian Transportation Plan	
Chapter 5 – Recommended Programs, Across Barrier Connections Chapter 7 – Implementation and Funding	No Conflict. The proposed Project is identified as a recommended project (ABC-5) to address across barrier connections.
Palo Alto Comprehensive Plan	
Goal L-1: A compact and resilient city providing residents and visitors with attractive neighborhoods, work places, shopping districts, public facilities, and open spaces.	No Conflict. Build Alternatives 1–4 would provide the city with a more attractive bridge area because final design of the bridge is subject to review by the City of Palo Alto Architectural Review Board and subject to the Architectural Review findings in the City of Palo Alto Municipal Code.
Policy L-1.3: Infill development in the urban service area should be compatible with its surroundings and the overall scale and character of the city to ensure a compact, efficient development pattern.	No Conflict. Build Alternatives 1–4 would be compatible with its surroundings and the overall scale and character of the city because the improvements would be designed with the character and scale of the area in mind.
Goal L-6: Well-designed buildings that create coherent development patterns and enhance city streets and public spaces.	No Conflict. Build Alternatives 1–4 would be compatible with its surroundings and would enhance city streets because the improvements are required to comply with the Architectural review findings, which include a requirement that the improvements "provide a harmonious transition in scale, mass and character to adjacent land uses and land use designations."
Policy L-6.1: Promote high-quality design and site planning that is compatible with surrounding development and public spaces.	No Conflict. Build Alternatives 1–4 would be compatible with surrounding development and public spaces because there would be no change in land use. Final design of the bridge would be subject to the City of Palo Alto Architectural Review Board.

Policy	Build Alternatives 1–4
Goal L-9: Attractive, inviting public spaces and streets that enhance the image and character of the city.	No Conflict. Build Alternatives 1–4 would design an attractive street and bridge because final design of the bridge would be subject to the Architectural review findings, which require that the "The design is of high aesthetic quality, using high quality, integrated materials and appropriate construction techniques, and incorporating textures, colors, and other details that are compatible with and enhance the surrounding area."
Policy L-9.10: Design public infrastructure, including paving, signs, utility structures, parking garages and parking lots to meet high-quality urban design standards and embrace technological advances. Look for opportunities to use art and artists in the design of public infrastructure. Remove or mitigate elements of existing infrastructure that are unsightly or visually disruptive.	No Conflict. Build Alternatives 1–4 would design public infrastructure to be compatible with the surrounding areas. Final design of the bridge would be subject to the City of Palo Alto Architectural Review Board.
Goal T-1: Create a sustainable transportation system, complemented by a mix of land uses, that emphasizes walking, bicycling, use of public transportation and other methods to reduce greenhouse gas emissions and the use of single-occupancy motor vehicles.	No Conflict. Build Alternative 1–4 would improve vehicle circulation along a portion of Newell Road and would improve existing pedestrian and bike safety.
Policy T-1.19: Provide facilities that encourage and support bicycling and walking.	No Conflict. Build Alternatives 1–4 would improve existing pedestrian and bike safety.
Goal T-3: Maintain an efficient roadway network for all users.	No Conflict. Build Alternatives 1–4 would improve vehicle circulation along a portion of Newell Road and provide safe access for pedestrians and bicyclists, encouraging multi-model transportation.
Policy T-3.2: Enhance connections to, from and between parks, community centers, recreation facilities, libraries and schools for all users.	No Conflict. Build Alternatives 1–4 would improve existing pedestrian and bike safety.
Policy T-3.5: When constructing or modifying roadways, plan for use of the roadway by all users.	No Conflict. Build Alternatives 1–4 would improve bike, pedestrian, and automotive safety along a portion of Newell Road.
Goal T-6: Provide a safe environment for motorists, pedestrians and bicyclists on Palo Alto Streets.	No Conflict. Build Alternatives 1–4 would improve safety for motorists, pedestrians, and bicyclists along a portion of Newell Road.

Policy	Build Alternatives 1–4
Policy T-6.1: Continue to make safety the first priority of citywide transportation planning. Prioritize pedestrian, bicycle, and automobile safety over motor vehicle level of service at intersections and motor vehicle parking.	No Conflict. Build Alternatives 1–4 would improve safety for motorists, pedestrians, and bicyclists along a portion of Newell Road.
Goal T-7: Provide mobility options that allow people who are transit dependent to reach their destinations.	No Conflict. Build Alternatives 1–4 would be compliant with Americans with Disabilities Act requirements and would improve infrastructure to allow for all modes of transit to more safely utilize this bridge.
Policy T-7.1: Support mobility options for all groups in Palo Alto who require transit for their transportation.	No Conflict. Build Alternatives 1–4 would be compliant with Americans with Disabilities Act requirements and would improve automotive infrastructure along a portion of Newell Road.
Policy T-7.2: Utilize the principles of Universal Design, and local and State design standards, to guide the planning and implementation of transportation and parking improvement projects to ensure the needs of community members with limited mobility, including some seniors and people with disabilities, are addressed.	No Conflict. Build Alternatives 1–4 would be compliant with Americans with Disabilities Act requirements.
Source: City of East Palo Alto 2011, 2016; City of Palo Alto 2012, 2017; County of San Mateo 1986; County of Santa Clara 1994.	

2.1.1.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures would be required.

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2.1.2 Community Impacts

2.1.2.1 Community Character and Cohesion

Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). The Federal Highway Administration, in its implementation of NEPA (23 USC 109[h]), directs that final decisions on projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under the California Environmental Quality Act (CEQA), an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

Affected Environment

The information in this section is from the *Community Impact Assessment* (September 2017).

Population and Housing

A population and housing study area has been defined to include the 2015 U.S. Census of Population and Housing census tracts located adjacent to the Project. The study area is intended to encompass an area where the potential population and housing impacts, if any, of construction and operation of the Project would be reasonably foreseeable. The study area encompasses four census tracts adjacent to the Project site (Figure 2.1.2-1). Two of the census tracts are located within the City of Palo Alto and two of the census tracts are located within the City of East Palo Alto. Demographic data are provided for the study area and for the cities of Palo Alto and East Palo Alto in Table 2.1.2-1 through Table 2.1.2-3.

As shown in Table 2.1.2-1, according to the U.S. Census Bureau (California Department of Transportation 2017), 2011–2015 American Community Survey (ACS) 5-year estimates, racial and ethnic data was collected for 66,478 persons in the City of Palo Alto. Of these, 56.7% identified themselves as White; 29.9% as Asian; 1.6% as Black or African American; <0.1% as American Indian and Alaska Native; <0.1% as Native Hawaiian and Other Pacific Islanders; 0.3% as "some other race"; and 4.1% as "two or more race." According to the U.S. Census Bureau (2015), 7.3% persons identified themselves as of Hispanic or Latino ethnicity in the City of Palo Alto.

In the City of East Palo Alto, racial and ethnic data was collected for 29,198 persons. Of these, 7.6% identified themselves as White; 3.1% as Asian; 13.0% as Black or African American; <0.1% as American Indian and Alaska Native; 8.8% as Native Hawaiian and Other Pacific Islanders; 0.3% as

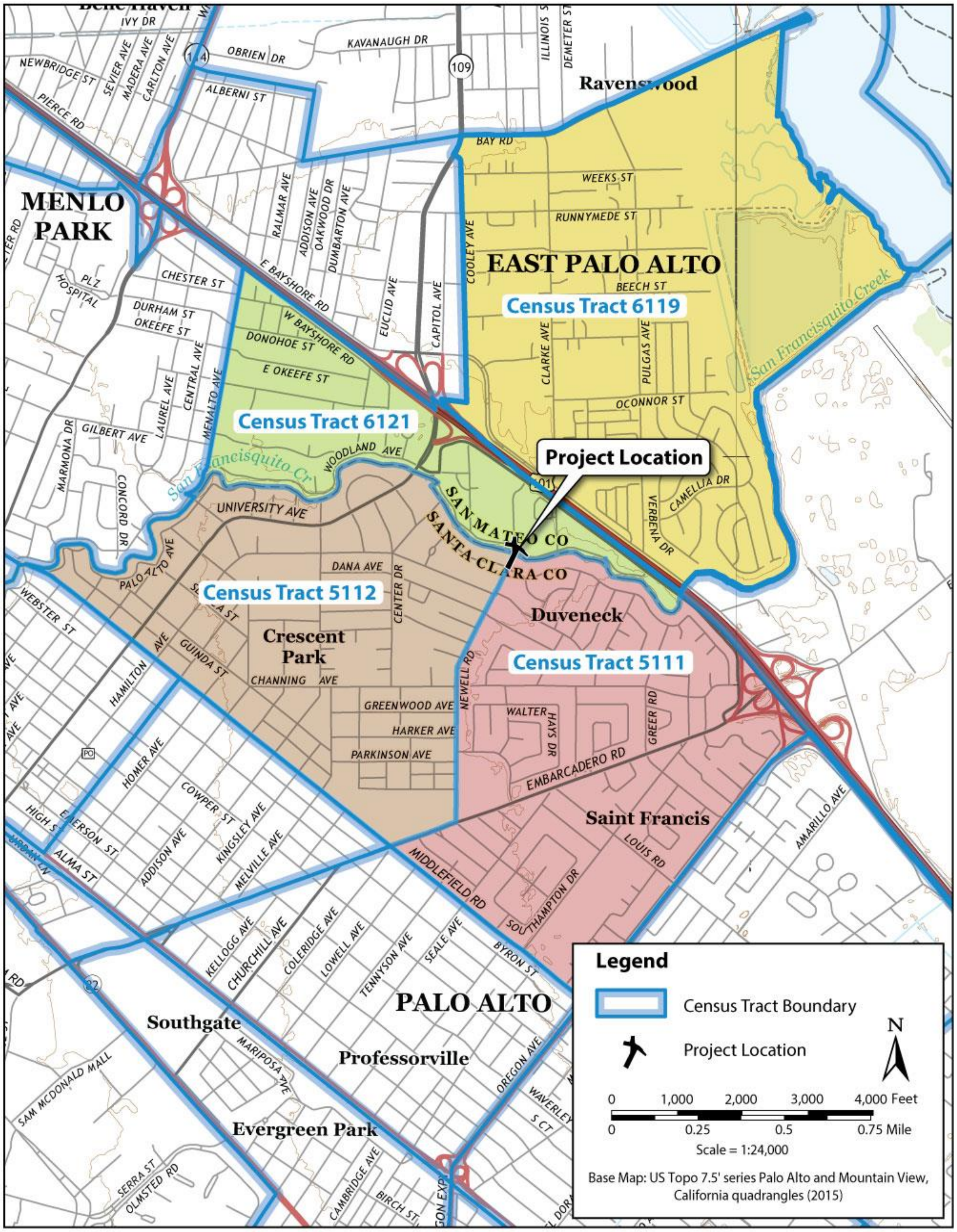

Figure 2.1.2-1. Census Tracts in the Study Area

Table 2.1.2-1. Census 2015 Race and Ethnicity for the City of Palo Alto, the City of East Palo Alto, and the Study Area

	Total Population for which Data was Compiled	White Alone		Black or African American Alone		American Indian and Alaskan Native Alone		Asian Alone		Native Hawaiian and Other Pacific Islanders Alone		Some other Race Alone		Two or More Races Alone		Hispanic Ethnicity	
City of Palo Alto	66,478	37,698	56.7%	1,054	1.6%	14	0.0%	19,867	29.9%	62	0.1%	173	0.3%	2,734	4.1%	4,876	7.3%
City of East Palo Alto	29,198	2,217	7.6%	3,786	13.0%	4	0.0%	902	3.1%	2,577	8.8%	83	0.3%	609	2.1%	19,020	65.1%
Study Area Total*	**28,941**	9,558	33.0%	2,042	7.1%	10	0.0%	3,619	12.5%	881	3.0%	143	0.5%	747	2.6%	11,941	41.3%
Census Tract 5111	5,586	3,069	54.9%	42	0.8%	10	0.2%	1,799	32.2%	-	0.0%	49	0.9%	176	3.2%	441	7.9%
Census Tract 5112	5,024	3,679	73.2%	74	1.5%	-	0.0%	876	17.4%	-	0.0%	-	0.0%	206	4.1%	189	3.8%
Census Tract 6119	10,170	1,172	11.5%	1,127	11.1%	-	0.0%	421	4.1%	366	3.6%	75	0.7%	271	2.7%	6,738	66.3%
Census Tract 6121	8,161	1,638	20.1%	799	9.8%	-	0.0%	523	6.4%	515	6.3%	19	0.2%	94	1.2%	4,573	56.0%

*Study area comprises 4 census tracts.
Source: California Department of Transportation 2017

Table 2.1.2-2. Housing Characteristics for the City of Palo Alto, the City of East Palo Alto, and the Study Area

	Total Households	Average Household Size	Housing Units					Occupied Housing Units			
			Total	Occupied		Vacant		Owner Occupied		Renter Occupied	
City of Palo Alto	26,087	2.51	27,555	**26,087**	**(94.7%)**	1,468	(5.3%)	14,358	(55.0%)	11,729	(45.0%)
City of East Palo Alto	7,065	4.15	7,455	7,065	(94.8%)	390	(5.2%)	2,476	(35.0%)	4,589	(65.0%)
Study Area*	**8,621**	**3.37**	**9,113**	**8,621**	**(94.6%)**	**492**	**(5.4 %)**	**4,466**	**(51.8%)**	**4,155**	**(48.2%)**
Census Tract 5111	1,847	3.29	1,924	1,847		77		1,550	(83.9%)	297	(16.1%)
Census Tract 5112	1,668	3.12	1,793	1,668		125		1,315	(78.8%)	353	(21.2%)
Census Tract 6119	2,486	4.05	2,578	2,486		92		1,188	(47.8%)	1,298	(52.2%)
Census Tract 6121	2,620	3.03	2,818	2,620		198		413	(15.8%)	2,207	(84.2%)

*Study area comprises 4 census tracts.
Source: California Department of Transportation 2017

"some other race"; and 2.1% as "two or more race." According to the U.S. Census Bureau (California Department of Transportation 2017), 65.1% persons identified themselves as of Hispanic or Latino ethnicity in the City of East Palo Alto.

In comparison, the study area had a lower percentage of White (33.0%), Asian (12.5%), and "two or more race" (2.6%) and a higher percentage of Black or African American (7.2%), Native Hawaiian and Other Pacific Islanders (3.0%), "some other race" (16.5%), and Hispanics (41.3%) than the City of Palo Alto. The study area had a lower percentage of Black or African American (7.1%), Native Hawaiian and Other Pacific Islander (3.0%), "some other race" (16.5%), and Hispanics (41.3%). The study area has a similar percentage (<0.1%) of American Indian and Alaska Native as the City of Palo Alto and City of East Palo Alto.

As shown in Table 2.1.2-2, according to the U.S. Census Bureau (California Department of Transportation 2017), 2011–2015 ACS 5-year estimates, there were 27,555 total housing units within the City of Palo Alto, of which 94.7% were occupied and 5.3% were vacant. The average household size within the occupied housing units was 2.51 persons, with 55.0% housing units being owner occupied and 45.0% renter occupied.

Within the City of East Palo Alto, there were 7,455 total housing units, of which 94.8% were occupied and 5.2% were vacant. The average household size within the occupied housing units was 4.15 persons, with 35.0% housing units being owner occupied and 65.0% renter occupied.

Overall, the study area had a slightly lower percentage of occupied units (94.6%) than the City of Palo Alto (94.7%) and the City of East Palo Alto (94.8%). Of the occupied units, the study area has a lower percentage of owner-occupied housing units (51.8%) than the City of Palo Alto (55.0%), but a higher percentage than the City of East Palo Alto (35.0%). The average household size within the study area (3.37 persons) was larger than the average household size of the City of Palo Alto (2.51 persons), but nearly 1 person on average smaller than the average household size of the City of East Palo Alto (4.15 persons).

Economic Characteristics

As shown in Table 2.1.2-3, according to the U.S. Census Bureau (California Department of Transportation), 2011–2015 ACS 5-year estimates, per capita income in the City of Palo Alto was $77,419. As of 2015, 5.4% of citizens within the City of Palo Alto were expected to be living below the poverty level. Per capita income in the City of East Palo Alto was $18,675. As of 2015, 18.5% of citizens within the City of East Palo Alto were expected to be living below the poverty level.

The per capita income for the study area is significantly less than that of the City of Palo Alto ($59,499 in the study area) and more than that of the City of East Palo Alto. The number of citizens within the study area living below the poverty level is 3,883, which is slightly higher than the City of Palo Alto (3,596), but less than the City of East Palo Alto (5,360).

Table 2.1.2-3. Economic Data for the City of Palo Alto, the City of East Palo Alto, and the Study Area (2015)

	Per Capita Income	Population for Whom Poverty Status is Determined: Total	Population for Whom Poverty Status is Determined: Estimated Income in 2015 Below Poverty Level	
City of Palo Alto	77,419	66,013	3,596	(5.4%)
City of East Palo Alto	18,675	29,023	5,360	(18.5%)
Study Area*	**59,499**	**28,833**	**3,883**	**(13.5%)**
Census Tract 5111	79,985	5,586	295	(5.3%)
Census Tract 5112	106,639	5,024	29	(0.6%)
Census Tract 6119	21,932	10,062	1,642	(16.3%)
Census Tract 6121	29,441	8,161	1,917	(23.5%)

*Study area comprises 4 census tracts.
Source: California Department of Transportation 2017

Community Character

The Project area is characterized by residential uses. Housing in the immediate vicinity of the Project area on the Palo Alto side is predominantly single-family residential, and the character of the community is well defined by the City of Palo Alto's urban forest. Housing in the immediate vicinity of the Project area on the East Palo Alto side is predominantly medium- to high-density residential. For the portion of the study area in Palo Alto, there are two neighborhood associations, the Crescent Park Neighborhood Association and the Duveneck/St. Francis Neighborhood Association (California Department of Transportation 2017). The Crescent Park Neighborhood Association encompasses the area from Newell Road, to Channing Avenue, to Middlefield Road, and to Palo Alto Road in the north. The Duveneck/St. Francis Neighborhood Association includes the area from Newell Road south to Oregon Expressway and Embarcadero Road. For the portion of the study area in East Palo Alto, there is no distinct neighborhood association. However, it should be noted that residents from the study area of both cities have been active in public outreach activities for the Project. Additionally, the vacancy rate in Palo Alto (5.3%), East Palo Alto (5.2%), and the study area (5.4%) are similarly low, which may suggest these places are desirable places to live with strong interconnected neighborhoods, indicating strong community character and cohesion. Newell Road Bridge over San Francisquito Creek serves as one of the connections between the residential neighborhoods in the cities of East Palo Alto and Palo Alto.

There are a number of community facilities within the study area, including six schools and four parks. A number of places of worship, including Faith Missionary Baptist Church, True Light Missionary Church, 24HR Prayer Center, Bay Christian Ministries, East Palo Alto Seventh-Day Adventist Church, Chùa Giác Minh, Seventh-Day Adventist Church of Palo Alto, St. Albert the Great Roman Catholic Church, St. Albert the Great Rectory, Byzantine Catholic Church, Trinity Lutheran Church, and Chabad Israeli Community are found within the study area. In addition, there is a thin metal wire suspended across Newell Road between two steel poles on the south end of the bridge in Palo Alto. This installation is an eruv (a virtual wall or border surrounding a community which allows Orthodox Jews to travel, carry, and push objects on the Sabbath) surrounding the City of Palo Alto.

Environmental Consequences

Construction Impacts

Build Alternatives

Construction of the Project would require closure of the existing Newell Road Bridge crossing for all build alternatives, which could temporarily affect access between the cities of Palo Alto and East Palo Alto. However, access will be maintained at other existing nearby crossings (Embarcadero Road, University Avenue, and West Bayshore Road). Construction activities would also require partial closure of Woodland Avenue and Newell Road on the East Palo Alto side of the Project site to accommodate construction activities and equipment movement/stockpiling. To the extent possible, at least one lane along Woodland Avenue would remain open for the majority of construction to ensure access throughout the neighborhood in East Palo Alto adjacent to the Project. Newell Road on the East Palo Alto side would be closed for Stage 4 of construction (see Section 2.1.4.3, *Environmental Consequences*, for possible construction stages); however, access for residents of the housing developments along Newell Road would be maintained. Further detail related to access and parking is provided in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*.

Additionally, some trees would be removed during construction in both the cities of Palo Alto and East Palo Alto under all build alternatives. Tree removal is discussed in more detail in Section 2.3.1, *Natural Communities*. Construction activities may require the temporary removal of the existing poles supporting the eruv over Newell Road. To maintain the integrity of the symbolic "doorway" presented by the eruv, the contractor will install temporary conduits across the creek bank between Friday evening and Saturday night during the construction period (Section 2.1.2.1, *Avoidance, Minimization, and/or Mitigation Measures*). This would avoid any potential impact on the local Jewish community's religious practices, beliefs, and traditions.

Construction work would result in a small and temporary increase in the demand for construction workers under all build alternatives. Given the minor nature of the Project scope, a limited number of construction workers would be required and could easily be accommodated by the local labor force. Temporary impacts on circulation and access would result from construction activities, which may affect local residents' ability to commute to their places of employment. These effects on access to employment would be addressed through implementation of the Traffic Management Plan, described in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*.

No Build Alternative

The No Build Alternative would not affect the community because construction activities would not occur.

Operational Impacts

Build Alternatives

The Project does not include changes that could result in an effect on the regional population or housing characteristics. The Project would not result in the displacement or relocation of any people. The Project is intended to maintain connections for vehicular, bicycle, and pedestrian transportation; address bicycle and pedestrian safety, all while avoiding changes to traffic, such as diversions of vehicles to adjacent streets, increases in the number of vehicles, and/or increasing speeds. As such, the Project would not affect the population characteristics in the region.

Build Alternatives 1–4 would not have impacts on housing. The Project would not result in the displacement or relocation of any housing nor would the Project have impacts on land use development or housing types. While construction would limit street parking along Woodland Avenue and Newell Road and operation would result in the loss of one unmarked parallel parking space on Woodland Avenue adjacent to the bridge, it is not anticipated that the Project would affect tenure and vacancies as the existing housing developments along Newell Road in East Palo Alto that have parking spaces provided to tenants. The Project would not create the need for additional housing in the project area.

Because the Project is not growth-inducing, the Project would not directly increase the number of people or school-aged children in the area. The Project would not result in the need for new or physically altered school facilities, fire protection, police protection, park, or other public facilities.

The Project would not result in the creation of permanent jobs in the cities of Palo Alto or East Palo Alto. No adverse impacts on employment and income are anticipated with implementation of the Project. The Project would improve access for residents in the neighborhood surrounding the Project site, particularly those who bicycle to work as the proposed bridge would include bicycle facilities. A minor improvement in access to employment would result from the Project.

The Project would provide operational benefits in terms of vehicular safety, as well as the larger community benefit of providing safe pedestrian and bicycle access. Under the build alternatives, the Project would improve safety for all modes of transportation with two standard lanes and accommodation for bicycle and pedestrian travel (including sidewalk and potential road widening for sharrows) while avoiding diversion of a significant number of vehicles to adjacent streets, a significant increase in the number of vehicles using Newell Road, or an increase in average vehicle speed on Newell Road. This would provide improved access to community facilities in the area and lead to improved community interaction as residents could more freely walk or bicycle through their neighborhood.

The Project would support the goals of the City of Palo Alto Bicycle + Pedestrian Transportation Plan (City of Palo Alto 2012) and City of East Palo Alto's 2011 Bicycle Transportation Plan (City of East Palo Alto 2011) to provide enhanced bicycle and pedestrian facilities, and specifically new or enhanced Class II bikeways along Newell Road from Woodland Avenue to Embarcadero Road that would be compatible with the proposed overcrossing of U.S. Highway 101 in East Palo Alto from Newell Road/West Bayshore Road to Clarke Avenue/East Bayshore Road. This multimodal option could encourage more people to walk and/or bicycle, which would have the effect of improving air quality by reducing vehicle miles travelled.

No Build Alternative

The No Build Alternative would not affect the community during operations, but benefits accrued under the build alternatives would also not occur.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures (AMM) are proposed to ensure that impacts on the community are minimized and will be implemented under all build alternatives. Measures to reduce impacts associated with access and parking are included in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities.*

- AMM-COM-1: The contractor will provide bilingual notification of construction activities including any utility disruptions to the local residents and businesses.
- AMM-COM-2: The contractor will maintain ongoing coordination with the Orthodox Jewish Community during pre-construction and construction of the Project. In the event that the poles supporting the eruv over Newell Road require moving during any period of construction when the bridge structure is in place and accessible to pedestrians, the contractor will take the following steps to ensure a temporary eruv is in place prior to any Friday evening.
    - The existing poles must be dug out completely so that they may be reused.
    - Temporary replacement shall be installed consisting of 20-foot conduits to be fastened to nearby structures.
    - Fishing line, or other unobtrusive wire, shall be fastened to the conduits to maintain the eruv alignment.

2.1.2.2 Relocations and Real Property Acquisition

Regulatory Setting

The California Department of Transportation's (Caltrans') Relocation Assistance Program is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and Title 49 Code of Federal Regulations (CFR) Part 24. The purpose of the Relocation Assistance Program is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole.

All relocation services and benefits are administered without regard to race, color, national origin, persons with disabilities, religion, age, or sex. Please see Appendix A for a copy of Caltrans' Title VI Policy Statement.

Affected Environment

The information in this section is from the *Community Impact Assessment* (September 2017). The properties that would be affected by the Project include the seven parcels immediately adjacent to the project limits on both the Palo Alto and East Palo Alto sides of Newell Road Bridge. They are all residential parcels, either single-family residential or multiple-family residential.

Environmental Consequences

Construction Impacts

Build Alternatives

Temporary Construction Easements (TCEs) are anticipated from all parcels within and adjacent to the Project improvements. Two TCEs are expected on the Palo Alto side and five on the East Palo Alto side, as shown in Table 2.1.2-4. All TCEs would be minor and would be required to modify the driveways, backyards, or sidewalks to match the new grade of the roadways. Property acquisition will be conducted in compliance with Title VI of the Civil Rights Act (42 USC 2000d, et seq.), the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended), and Title 49 CFR Part 24.

Table 2.1.2-4. Temporary Construction Easements

APN No.	Address	Owner	Existing Use/ Proposed Improvements	Type of Acquisition
003-12-013	475 Newell Road (Palo Alto)	Private property	Home/driveway would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur[1]	Permit to enter and construct
003-11-020[2]	1499 Edgewood Dr. (Palo Alto)	Private property	Home/backyard would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur[1]	Permit to enter and construct for Build Alternatives 3 and 4 only
063-513-350	5 Newell Rd (East Palo Alto)	Woodland Park Property Owner	Apartments/walkways would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur[1]	Permit to enter and construct
063-513-440	15 Newell Rd (East Palo Alto)	Woodland Park Property Owner	Apartments/walkways would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur for Build Alterative 4 only[1]	Permit to enter and construct
063-515-370	1761 Woodland Ave (East Palo Alto)	Woodlands Newell Associates	Apartments/walkways would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur[1]	Permit to enter and construct
063-515-380	1767 Woodland Ave (East Palo Alto)	Woodlands Newell Associates	Apartments/walkways would be reconstructed to match new grade, landscaping would be redone, and construction of retaining wall would occur[1]	Permit to enter and construct

APN No.	Address	Owner	Existing Use/ Proposed Improvements	Type of Acquisition
063-515-280	1773 Woodland Ave (East Palo Alto)	Woodland Park Property Owner	Apartments/walkways would be reconstructed to match new grade	Permit to enter and construct

Source: Nolte Vertical Five 2017

[1] The retaining walls would be constructed within City of Palo Alto or East Palo Alto right-of-way, but access to the parcels are needed in order to construct the retaining walls.

[2] Not all of the side yard is part of this parcel. There is an encroachment permit along the side yard of this parcel, which can be revoked.

No Build Alternative

The No Build Alternative would not require TCEs because construction would not occur.

Operational Impacts

Build Alternatives

It is not anticipated that there would be any permanent parcel acquisitions from adjacent parcels as a result of the Project. All of the permanent improvements proposed are within available Palo Alto and East Palo Alto right-of-way.

No Build Alternative

The No Build Alternative would not require permanent parcel acquisitions because no improvements are proposed.

Avoidance, Minimization, and/or Mitigation Measures

Property acquisition will be conducted in compliance with Title VI of the Civil Rights Act (42 USC 2000d, et seq.), the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended), and Title 49 CFR Part 24. The following avoidance and minimization measure will be implemented for all build alternatives to minimize the effects of TCEs on property owners.

- AMM-COM-3: Access to all properties for property owners and users will be maintained by the contractor during construction.

2.1.2.3 Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2017, this was $24,600 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964, and related statutes, have also been included in this project. Caltrans' commitment to upholding the mandates of Title VI is demonstrated by its Title VI Policy Statement, signed by the Director, which can be found in Appendix A of this document.

Affected Environment

The information in this section is from the *Community Impact Assessment* (September 2017). To determine if environmental justice populations exist within the study area, the demographic profile of the study area census tracts was developed to identify the low-income and minority populations present in the study area. For the purposes of this analysis, a census tract was considered to contain an environmental justice population if:

- The total minority population of the census tract is more than 50% of the total population; or
- The proportion of the census tract population that is below the Federal Poverty level exceeds that of the city where it is located.

The Project straddles the cities of Palo Alto and East Palo Alto. The City of East Palo Alto has a high concentration of low-income and minority residents, based on available U.S. Census information. Census tracts are shown in Figure 2.1.2-1. Tables 2.1.2-1 and 2.1.2-3 present the ethnicity and income data for the study area and census tracts. The 2011–2015 ACS 5-year estimates estimated per capita income of East Palo Alto to be $18,675 compared to $77,419 in Palo Alto, and $59,499 in the study area. The percentage of low-income populations in East Palo Alto was 18.5% compared to 5.4% in Palo Alto, and 13.5% in the study area. The 2011–2015 ACS 5-year estimates indicate that the minority population in the East Palo Alto portion of the study area was particularly high as approximately 88.5% of census tract 6119 identified as a racial minority or Hispanic, and approximately 79.9% of the population of census tract 6121 identified as a racial minority or Hispanic. The 2011–2015 ACS 5-year estimates indicate that the City of Palo Alto portion of the study area has a smaller minority population, with only 45.1% of census tract 5111 considered a racial minority or Hispanic and approximately 26.8% of census tract 5112 considered a racial minority or Hispanic. Accordingly, the population of the Palo Alto portion of the study area is not considered an environmental justice population while the population of the East Palo Alto portion of the study area is considered an environmental justice population.

Environmental Consequences

Construction Impacts

Build Alternatives

There would be some adverse effects on residents of both East Palo Alto and Palo Alto in the study area related to temporary construction-period nuisances. However, once the replacement bridge is constructed, the benefits of the Project would include improved access and safety benefits for the local community.

According to the Section 2.2.7, *Noise*, noise from Project construction activities may intermittently dominate the noise environment in the immediate area of construction. This would include noise generated from construction equipment that may exceed 96 decibels L_{max} at 50 feet if pile driving is required for construction. No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with Caltrans Standard Specifications Section 14-8.02 and applicable local noise standards. Construction noise would be experienced on both the Palo Alto and East Palo Alto sides of the Project area and would be short-term and intermittent. Despite this, minimization measures have been identified to address potential noise impacts posed by construction. Section 2.2.7, *Noise,* provides more information related to noise.

While the East Palo Alto side of the study area has a high concentration of low-income and minority residents, the Project is proposed in this general location because there is an existing (although functionally obsolete) bridge structure. The Project would replace this bridge in the same vicinity and provide the same accessibility over San Francisquito Creek in this area. While effects related to on-street parking availability would be experienced entirely on the City of East Palo Alto side of San Francisquito Creek; and therefore would be predominantly borne by minority and low-income populations, the effects would be temporary and on-street parking would be restored upon completion of construction.

Construction staging, which would include equipment and materials storage as well as access to the bridge, would be sited along Newell Road in Palo Alto and East Palo Alto, and along Woodland Avenue in East Palo Alto. It is anticipated that the staging area in East Palo Alto would be larger due to the extent of construction activities (related to the approach, utility relocations, and retaining walls) in East Palo Alto; not due to the socioeconomic status of the population residing in the vicinity. Parking disruption in East Palo Alto would be due to construction requirements related to the partial closure of Woodland Avenue and the complete closure of Newell Road Bridge depending on the stage of construction, as described in more detail in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*. There is no on-street parking on the Palo Alto side of the Project area and residents on this side utilize their own driveways and garages for parking. Additional discussion of parking effects is provided in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities.*

All effects posed by the Project would be minimized through the implementation of avoidance, minimization, and/or mitigation measures, including potential parking accommodations for residents on the East Palo Alto side of San Francisquito Creek which would be developed in coordination with both cities. Further, local motorists from the immediate study area, as well as those traveling to and from the Project area from elsewhere, would all be inconvenienced by construction-period delays and other disruptions during the Project construction period. Outreach efforts associated with the Project will continue to involve the local community and will target minority and low-income residents to ensure their involvement in the planning process. As such, the Project would not result in disproportionately high adverse effects on minority and low-income populations.

No Build Alternative

The No Build Alternative would not affect environmental justice populations because construction activities would not occur.

Operational Impacts

Build Alternatives

According to Section 2.2.7, *Noise*, no long-term adverse noise impacts are anticipated to result from any of the build alternatives. Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*, concludes that under each of the Project alternatives potential increases in traffic would not result in changes in level of service such that existing traffic circulation would be significantly affected. While Build Alternative 2 would result in a higher delay at Newell Road/Woodland Avenue on the East Palo Alto side of the Project area, this impact would not be considered adverse. Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*, provides more information related to traffic impacts. Operation would also result in the loss of one unmarked parallel parking space on Woodland Avenue adjacent to the bridge, which would not be considered a substantial change. As such, the Project would not result in disproportionately high adverse effects on minority and low-income populations.

No Build Alternative

The No Build Alternative would not affect environmental justice populations during operations, but benefits accrued under the build alternatives would also not occur.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures would be required beyond those described in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*, to address access and parking impacts.

Based on the above discussion and analysis, the build alternatives will not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of EO 12898. No further environmental justice analysis is required.

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2.1.3 Utilities/Emergency Services

2.1.3.1 Affected Environment

The information in this section is from the *Community Impact Assessment* (September 2017). For this analysis, the study area includes the area within 0.25 mile of the Newell Road Bridge.

Utilities

For the portion of the study area within the City of Palo Alto, the City of Palo Alto Utilities Department provides electricity and natural gas to residents and businesses. Pacific Gas and Electric Company (PG&E) provides electricity and natural gas to residents and businesses in the portion of the study area within the City of East Palo Alto.

The City of Palo Alto receives water from the City and County of San Francisco's Regional Water System, operated by the San Francisco Public Utilities Commission. The City of East Palo Alto receives water from the American Water Enterprises and Palo Alto Park Mutual Water Company or the O'Connor Tract Co-Op Water Company. American Water Enterprises supplies water from the San Francisco Public Utilities Commission.

Emergency Services

The City of Palo Alto Police Department, headquartered at 275 Forest Avenue (west of the Project site), provides public safety services for the portion of the study area within the City of Palo Alto. The department maintains a full-service police department with approximately 169 personnel, including over 80 sworn officers (California Department of Transportation 2017). The Palo Alto Police Department responds to around 60,000 calls for service annually (California Department of Transportation 2017). No Palo Alto police stations are located in the study area. The closet Palo Alto Police Department is approximately 1.5 miles away.

The East Palo Alto Police Department, headquartered at 141 Demeter Street (north of the Project site) provides public safety services for the portion of the study area within the City of East Palo Alto. The department is budgeted for 36 sworn police officers (California Department of Transportation 2017).

The City of Palo Alto is responsible for fire protection services in the study area within the city limits of Palo Alto. The fire department primarily responds to medical calls, but also responds to fires in homes, cars, dumpsters, and wildland. The fire department, which employs approximately 121 staff, responds to over 8,000 incidents annually. The City of Palo Alto Fire Department covers roughly 50 square miles from its six full time stations located throughout the city (California Department of Transportation 2017). One fire station—Fire Station 3, located at 799 Embarcadero Road—is within the study area.

The Menlo Park Fire Protection District is responsible for providing fire protection services in the study area within the city limits of East Palo Alto. The Menlo Park Fire Protection District has seven fire stations to cover approximately 30 square miles and responds to around 8,500 emergencies a year, with the majority of the calls (approximately 60%) being emergency medical incidents (California Department of Transportation 2017). For the portion of the study area in the City of East Palo Alto, Station 2, located at 2290 University Avenue, of the Menlo Park Fire Protection District provides fire protection and emergency medical services. The department maintains three personnel (one captain and two firefighters) per shift (California Department of Transportation 2017).

2.1.3.2 Environmental Consequences

Construction Impacts

Build Alternatives

Utilities

A number of utility relocations would be required under all build alternatives during construction:

- Sanitary Sewer: No impacts are expected on the sanitary sewer on the East Palo Alto side of the bridge. On the Palo Alto side of the bridge an existing sewer manhole may need to be replaced on Newell Road to match the grade of the new roadway profile.
- Domestic Water: On the East Palo Alto side an existing water main runs along Woodland Avenue and a fire hydrant is located on the corner of Woodland and Newell Road. This line will remain in place and valves boxes within the street will be raised to grade to match the new roadway profile. The fire hydrant would be adjusted to match the new roadway profile. On the Palo Alto side a 6-inch PVC water main runs along Newell Road and terminates at a fire hydrant on the west side of the road near the existing bridge. The water main will remain but the fire hydrant assembly, lateral, and valves will be removed and replaced to accommodate the new roadway profile and sidewalk modifications.
- Overhead Electrical: No overhead electrical utilities exist on the Palo Alto side. On the East Palo Alto side overhead electrical poles and lines run along the south edge of Woodland Avenue within the Project limits. At least two utility poles are expected to require relocation to accommodate the proposed bridge and roadway improvements. Under Build Alternatives 2, 3, and 4, additional pole relocations may be required in order to accommodate clearances between the new bridge profile and the lowest power lines. This will be determined during final design based on coordination with PG&E.
- Street Lights: One street light on the Palo Alto side along Newell Road would be impacted by the proposed roadway improvements and would need to be removed and replaced to meet the new grades. On the East Palo Alto side, street lights are integral with the overhead electrical poles; therefore, relocation will correspond with the overhead electrical pole impacts.
- Existing Steel Electrical Conduit(s): Any electrical conduits that would be affected by project construction would be temporarily relocated prior to bridge removal and would be run within the sidewalk on the new bridge.
- Water Quality Sampling Station: The boxes and monitoring equipment located on the upstream side of the creek is associated with a water quality sampling station. The equipment inside the station would be removed by City of Palo Alto staff prior to construction; however the contractor shall remove anything that remains and let City staff know when it is available for pick-up. A new water sampling station would not be installed with the Project. However, the power and fiber that serve the water sampling station would be maintained.

- Survey Monuments: Two survey monuments on Woodland Avenue would need to be adjusted. Existing monument number 2433 located on the south west corner of the bridge would be removed. A new survey monument would be added on the bridge.
- Other Utilities: Fiber and power for camera and flow sensors would need to be provided.

As specified in standardized measure (SM) SM-UT-1 below, bilingual notification of construction activities including any utility disruptions will be provided to the local residents and businesses, which would reduce the potential impact from utility relocations.

Construction of the build alternatives would generate minor amounts of wastewater, but they would not exceed wastewater treatment requirements of the Regional Water Quality Control Board due to requirements set forth in waste discharge requirements and in the Section 401 Water Quality Certification Permit.

The Project would generate small amounts of solid waste during construction. The City of Palo Alto's Construction and Debris Diversion Ordinance requires projects to salvage, and/or divert at least 75% of project debris from landfills (City of Palo Alto 2015). The diverted debris would primarily be recycled at Zanker Recycling in San Jose. The remaining waste would go to landfill in which there is sufficient permitted capacity, such as Kirby Canyon Landfill in Morgan Hill or Ox Mountain Landfill in Half Moon Bay. The Project would comply with all federal, state, and local statues and regulations related to solid waste.

Emergency Services

Construction of the Project would require closing of the existing Newell Road Bridge crossing for all build alternatives. As a result, first responders would have to use other existing nearby crossings (University Avenue and West Bayshore Road). However, the temporary detour would not result in the need for additional emergency personnel or provision of or need for new or physically altered facilities to serve the Project. In addition, advance notice and coordination with emergency service providers will be included in the Traffic Management Plan to minimize any potential temporary impacts on response times, as discussed in SM-TR-1, further described in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*.

No Build Alternative

No impacts on utilities or emergency service providers would occur under the No Build Alternative because construction would not occur.

Operational Impacts

Build Alternatives

Utilities

Impacts to utilities would not occur during project operation under any of the build alternatives because all utility modifications and relocations would occur during construction. Because the Project is not growth-inducing, the Project would not result in the construction of new water or wastewater treatment facilities or expansion of existing facilities; existing capacity is sufficient to serve the Project. Operation of the Project would also not increase demand for potable water. No new or expanded entitlements would be needed to serve the Project. The Project would not result in substantial physical deterioration of public water facilities.

Emergency Services

The Project would continue to receive emergency services from the City of Palo Alto Police Department, the East Palo Alto Police Department, the Palo Alto Fire Department, and the Menlo Park Fire Protection District. Operation of the Project would include two standard lanes and accommodation for bicycle and pedestrian travel (including sidewalk and potential road widening for sharrows). Therefore, operation of the Project under all build alternatives would not result in an impact on the physical environment due to the incremental increase in demand for emergency services, and the potential increase in demand for services is not expected to adversely affect existing response times to the site or within the two cities. In addition, the Project, under all build alternatives, could improve emergency response conditions in this area by creating a safer crossing over Newell Road for emergency response vehicles.

No Build Alternative

No impacts on utilities or emergency service providers would occur under the No Build Alternative because operational changes would not occur.

2.1.3.3 Avoidance, Minimization, and/or Mitigation Measures

The following standardized measures (SM) will be implemented as part of the project description to ensure that impacts on the community are minimized.

- SM-UT-1: The contractor will provide bilingual notification of construction activities including any utility disruptions to the local residents and businesses.
- SM-TR-1: The contractor will include advance notice and coordination with emergency service providers in the Traffic Management Plan to minimize any potential temporary impacts on response times, further described in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*.

2.1.4 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.1.4.1 Regulatory Setting

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of Federal-aid highway projects (see 23 Code of Federal Regulations [CFR] 652). It further directs that the special needs of the elderly and the disabled must be considered in all Federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the U.S. Department of Transportation regulations (49 CFR 27) implementing Section 504 of the Rehabilitation Act (29 United States Code 794). The Federal Highway Administration has enacted regulations for the implementation of the 1990 Americans with Disabilities Act, including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the Americans with Disabilities Act requirements to federal-aid projects, including Transportation Enhancement Activities.

2.1.4.2 Affected Environment

The information in this section is from the *Supplemental Traffic Evaluation Report* (January 2019) and *Community Impact Assessment* (September 2017). Newell Road Bridge is a narrow 18-foot (not striped), two-lane bridge that connects Palo Alto and East Palo Alto. Within East Palo Alto's jurisdiction the intersection is currently offset into two intersections, forming two stop-controlled T-intersections at Woodland Avenue. The bridge provides vehicular access across San Francisquito Creek but does not have sidewalks or marked bicycle paths. There are sidewalks on both sides of Newell Road in Palo Alto. Samtrans bus routes 280 and 81 use Woodland Avenue at the north end of the bridge, but no transit service uses the bridge (Samtrans 2016; Santa Clara Valley Transportation Authority 2017).

The study area for the traffic operations analysis includes the following seven intersections. The peak periods observed were from 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.

1. Newell Road/Edgewood Drive (Unsignalized)
2. Newell Road/Channing Avenue (Signalized)
3. Newell Road/Woodland Avenue (Unsignalized)
4. University Avenue/Woodland Avenue (Signalized)
5. University Avenue/East Crescent Drive (Unsignalized)
6. Saint Francis Drive/Embarcadero Road (Signalized)
7. West Bayshore Road/Newell Road (Unsignalized)

The operational analysis evaluated existing and future traffic conditions. Existing conditions represent the year 2016. Opening year traffic forecasts were projected for the year 2020, and design year traffic forecasts were developed for 2040. Intersection turning movement counts were collected at the study intersections for vehicles, pedestrians, and bicycles on Tuesday, March 29, 2016, and Wednesday, February 24, 2016, on typical weekdays when schools were in session. The turning movement counts were collected for weekday a.m. (7:00 a.m. to 9:00 a.m.) and p.m. (4:00 p.m. to 6:00 p.m.) peak periods. Twenty-four-hour bi-directional counts were also collected for two days from Tuesday, February 23, 2016, to Wednesday, February 24, 2016, at the following six locations.

1. Edgewood Drive from Newell Road to Island
2. Edgewood Drive from Newell Road to Jefferson Drive
3. Newell Road from Edgewood Drive to Hamilton Avenue
4. Woodland Avenue from Cooley Avenue to Newell Road
5. Newell Road from Woodland Avenue to West Bayshore Road (East Palo Alto)
6. Woodland Avenue from Newell Road to Clarke Avenue

Existing Year Traffic Conditions

The Existing Conditions (Year 2016[1]) analysis was conducted for all of the study intersections, for the highest one-hour volume during the weekday a.m. and p.m. peak periods. Level of service (LOS) is an indicator of the operating performance of a road or intersection. It rates congestion and varies on a scale from LOS A to LOS F, where LOS A represents stable flow with very slight delay and LOS E represents unstable flow, poor progression, and long cycle lengths. At LOS F, an intersection is considered over capacity and operates at forced-flow, jammed conditions. In accordance with Caltrans criteria, the traffic analysis used LOS D or better (LOS A, B, C, or D) to indicate intersections that function or will function in the future at an “acceptable” level of performance, while LOS E or F indicate an “unacceptable” level of congestion. The acceptable LOS in the City of Palo Alto at signalized intersections is to maintain a “D” or better for non-Congestion Management Program Agency intersections and LOS E for Congestion Management Program intersections. At unsignalized intersections, the City of Palo Alto considers LOS D to be the minimum acceptable operations level. A project-generated increase in traffic is considered to be an impact if intersection operations degrade to LOS E or LOS F and the intersection satisfies the peak hour signal warrants from the California Manual of Uniform Traffic Control Devices.

For purposes of this analysis, LOS E or worse at unsignalized intersections along University Avenue are considered unacceptable. Based on the City of East Palo Alto 2016 General Plan, the acceptable LOS is also LOS D. The results of the LOS and delay analysis are presented in Table 2.1.4-1.

The CEQA significance thresholds for determining whether a transportation impact would occur are discussed in Chapter 3, *California Environmental Quality Act Evaluation.*

[1] 2016 was selected as the existing year because it was the year the lead agencies began analysis of the traffic following the filing of the Notice of Preparation in 2015.

Table 2.1.4-1. Existing Conditions (Year 2016) LOS and Delay Analysis

ID	Study Intersections	Control	Peak Hour	No Build Alternative		Build Alternative 1		Build Alternative 2 (LPA)		Build Alternative 3		Build Alternative 4	
				Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
1	Newell Rd./ Edgewood Dr.	AWSC	AM	8.1	A	11.1	B	8.1	A	8.2	A	8.2	A
			PM	8.8	A	27.0	C	8.8	A	8.9	A	8.9	A
2	Newell Rd./ Channing Ave.	Signal	AM	15.5	B	15.5	B	15.5	B	15.5	B	15.6	B
			PM	15.7	B	15.7	B	15.7	B	15.7	B	15.7	B
3[2]	Newell Rd./ Woodland Ave. (South Leg)	AWSC	AM	7.7	A	6.3	A	7.7	A	7.7	A	7.9	A
			PM	9.5	A	5.1	A	9.6	A	9.6	A	9.4	A
	Newell Rd./ Woodland Ave. (North Leg)	AWSC	AM	8.1	A	23.1	C	8.2	A	8.1	A	-	-
			PM	9.2	A	14.0	B	9.3	A	9.3	A	-	-
4	University Ave./ Woodland Ave.	Signal	AM	37.8	D	37.8	D	36.8	D	36.9	D	37.0	D
			PM	41.3	D	41.3	D	40.5	D	40.7	D	40.9	D
5	University Ave./ E. Crescent Dr.	TWSC	AM	**49.0**	**E**	**49.0**	**E**	**48.6**	**E**	**48.4**	**E**	**48.0**	**E**
			PM	32.2	D	32.2	D	31.8	D	31.6	D	31.2	D
6	St. Francis Dr./ Embarcadero Rd.	Signal	AM	27.1	C	27.1	C	27.0	C	27.0	C	27.0	C
			PM	16.4	B	16.4	B	16.3	B	16.3	B	16.3	B
7	W. Bayshore Rd./Newell Rd.	OWSC	AM	10.3	B	10.3	B	10.3	B	10.3	B	10.3	B
			PM	11.4	B	11.4	B	11.4	B	11.4	B	11.4	B

Source: TJKM 2019

[1] Delay: Overall intersection delay in seconds per vehicle for signalized intersections. Delay for minor approach worst movement at unsignalized intersections.

[2] Newell Road/Woodland Avenue is a four-legged intersection for Build Alternative 4.

AWSC = All Way Stop Control; TWSC = Two-Way Stop Control; OWSC = One-Way Stop Control; LOS = level of service; LPA = Locally Preferred Alternative

Under the existing conditions (Year 2016) scenario, all of the study intersections operate within applicable jurisdictional standards of the City of Palo Alto (LOS D or better) during the a.m. and p.m. peak hours, with the exception of the University Avenue/East Crescent Drive intersection, which operates at LOS E during the a.m. peak hour.

Access and Parking

Access to the portion of Newell Road within the Project site is provided via Edgewood Drive in Palo Alto, and via Woodland Drive in East Palo Alto. On-street parking is not permitted along Newell Road on the Palo Alto side of the creek; however, parking is permitted along Edgewood Drive. Parking in the vicinity of the Project site consists of approximately 27 unmarked on-street parking spots along Woodland Avenue and Newell Road on the East Palo Alto side of San Francisquito Creek.

2.1.4.3 Environmental Consequences

Construction Impacts

Build Alternatives

Construction impacts would be similar for all build alternatives. Construction work for all build alternatives would be done during allowed hours.[2] Construction of the Project would require closure of the existing Newell Road Bridge crossing for all build alternatives, which would temporarily affect access between the cities of Palo Alto and East Palo Alto. Newell Road on the Palo Alto side would be closed from Edgewood Drive to the existing crossing but would allow access to the southeast resident's driveway. As described under standardized measure SM-TR-1 below, a Traffic Management Plan (TMP) will be prepared and implemented during construction to provide public noticing of construction activities, traffic control implementation, signage, property and business access, parking, and safety during construction.

Closure of the existing Newell Road Bridge would cause traffic to be diverted to other bridge crossings. An analysis was conducted to assess impacts of redirected traffic. It is assumed that approximately 50% of the trips that use the Newell Road Bridge crossing under existing conditions would be diverted to the University Avenue crossing, which is the closest alternative crossing between East Palo Alto and Palo Alto. This percentage was based on professional judgement using reasonable assumptions as to how trips may be diverted depending on their potential origin and destination. It is assumed that the remaining trips would generally be dispersed at other existing creek crossings such as West Bayshore Road to/from Embarcadero Road or Channing Avenue, Pope Chaucer, or Middlefield Road. Because these other trips would be dispersed to several other intersections, the total number of additional trips in any one direction at each of these intersections would be nominal. However, the addition of 50% of trips at University Avenue was analyzed to determine whether a temporary impact would occur at this intersection due to the closure of Newell Road Bridge during construction. Table 2.1.4-2 shows the weekday a.m. and p.m. delay and LOS under existing 2018 conditions and existing conditions with the bridge closure.

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[2] The allowed hours of construction are Monday through Friday, 8AM–6PM, Saturday 9AM–6PM in Palo Alto (Municipal Code 09.10.060) and Monday through Friday, 7AM—6PM, Saturday 9AM–5PM in East Palo Alto (Municipal Code 15.04.125). Both jurisdictions prohibit construction activities on Sunday/Holidays.

Table 2.1.4-2. Bridge Closure (Year 2018) LOS and Delay Analysis

ID	Study Intersections	Peak Period	Existing (2018) Conditions		Existing Conditions + Bridge Closure Conditions	
			Delay	LOS	Delay	LOS
1	University Ave./Woodland Ave.	AM	37.4	D	40.0	D
		PM	41.3	D	46.2	D
2	University Ave./E. Crescent Dr.	AM	**51.7**	**F**	**65.7**	**F**
		PM	33.6	D	**49.1**	**E**

Source: TJKM 2019
LOS = level of service

Based on the LOS and delay analysis conducted, the closure of Newell Road Bridge during construction would cause the East Crescent Drive/University Avenue intersection to operate at unacceptable LOS E (where it currently operates at LOS D) during the p.m. peak hour. It would also cause a delay of more than 4 seconds during the a.m. peak hour (where this intersection already operates at unacceptable LOS F during the a.m. peak hour). Therefore, this would result in a temporary impact during construction.

Access for both Palo Alto and East Palo Alto will be maintained at other existing nearby crossings, as discussed previously.

On the East Palo Alto side, Woodland Avenue would have limited access during construction. The contractor would utilize one-lane traffic detours to the extent possible to assure passage along Woodland Avenue during construction. Complete closure of Woodland Avenue could occur intermittently under any of the build alternatives and would have impacts on parking for multi-family residential units. However, access for residents along Woodland Avenue in the study area would be maintained at all times.

Because on-street parking would be unavailable along a portion of Woodland Avenue in the City of East Palo Alto during construction, residents of the multi-family developments along Woodland Avenue and Newell Road may have to park farther away than they typically do during the period of construction. The construction zone could be established so that limited parking could be made available in the area during off hours and to maintain the maximum amount of existing parking available in the Project area. There would be no impact on on-street parking in the City of Palo Alto during construction because parking is not currently allowed on Newell Road within the proposed work area in Palo Alto.

The following describes the anticipated construction staging scenario and the associated on-street parking impacts. Impacts would be the same for all Build Alternatives.

- Stage 1: Bridge Reconstruction. Limited number of on-street parking spaces would be lost (approximately 5 spaces along Woodland Avenue) during this stage as all construction work would take place along the existing bridge structure and alignment.
- Stage 2: Construction work on the south side of Woodland Avenue. All parking on Woodland Avenue (approximately 15 spaces) would be unavailable during this stage.

- Stage 3: Construction work on the north side of Woodland Avenue. All parking on Woodland Avenue (approximately 15 spaces) would be unavailable during this stage.
- Stage 4: Construction work on East Palo Alto side of Newell Road. All parking on Newell Road (approximately 11 spaces) would be unavailable during this stage (Jeremias pers. comm.).

The actual construction staging scenario shall be determined during final design, coordinated by the construction contractor and the cities of Palo Alto and East Palo Alto, and consistent with the requirements detailed in the TMP. Furthermore, construction activities shall be coordinated with other nearby projects to reduce potential construction impacts, delays, and inconvenience related to on-street parking loss. Minimization measures have been developed to minimize on-street parking impacts during construction (Section 2.1.4.4 *Avoidance, Minimization, and/or Mitigation Measures*).

No Build Alternative

The No Build Alternative would have no effect on the transportation system because construction would not occur.

Operational Impacts

Pedestrian/Bicycle Facilities, Access, and Parking

Build Alternatives

Build Alternatives 1 through 4 would accommodate either a two-way single lane bridge or two 14-foot-wide shared lanes for use by vehicles and bicycles. Five-foot-wide sidewalks on either side of the bridge would also be constructed to enhance pedestrian safety though the site for all build alternatives.

Build Alternative 1 would provide bicycle access across the bridge via shared vehicle/bicycle lanes (sharrows), but bicycles would only be allowed to travel in the same direction as the vehicle traffic. Control of bicyclist movement would rely on the ability/willingness of bicyclists to obey the traffic signals at each intersection.

Build Alternatives 2, 3, and 4 would include bicycle access on both the northbound and southbound lanes of Newell Road via separated bike lanes or shared vehicle/bicycle lanes (sharrows). Build Alternative 3 would provide an intersection where the centerline-to-centerline connection on Newell Road from Edgewood Road to Woodland Avenue would be almost aligned, which would improve sight lines for vehicles, pedestrians, and bicyclists entering the intersection. Build Alternative 4 would also provide a standard four-way intersection at Newell Road and Woodland Avenue, improving sight lines for vehicles, pedestrians, and bicyclists at the intersection.

Upon completion of construction, access between the neighborhoods on either side of San Francisquito Creek would be improved. Permanent on-street parking impacts would consist of the loss of one space under Build Alternatives 1 through 4 due to the new pedestrian sidewalk along the bridge approach along Woodland Avenue (Montes pers. comm.).

No Build Alternative

The No Build Alternative would have no effect on existing pedestrian facilities, nor would it create any new pedestrian or bicycle facilities within the study area.

Traffic Operations

Build Alternatives

The opening year scenario (Year 2020) and design year scenario (Year 2040) evaluates LOS for the No Build Alternative and each of the four build alternatives using newly collected data, and applying a growth rate of 1% per year. This is based on the *East Palo Alto General Plan Update*, dated April 2016, existing and projected 2040 information provided by the City of Palo Alto for the University Avenue/Woodland intersection, and is a standard anticipated growth rate based on best practices. In addition to the 1% assumed growth rate, Build Alternatives 2, 3, and 4 assume additional background trips generated by the Car Dealership Project on 1700 Embarcadero Road that would be added to the Saint Francis Drive/Embarcadero Road intersection, and the rerouting of the vehicles through the study area, to show a 3%, 5%, and 2% increase respectively in traffic through the Newell Road Bridge under these three scenarios. The 3%, 5%, and 2% assumptions regarding rerouting were based a conservative planning estimate to accommodate for the potential that improving and/or re-aligning the bridge would mean that some drivers who currently avoid the area could use the new bridge instead. The results of the LOS and delay analysis are presented in Tables 2.1.4-3 and 2.1.4-4.

Under the opening year (Year 2020) scenario, all of the study intersections operate within applicable jurisdictional standards of the City of Palo Alto (LOS D or better) during the a.m. and p.m. peak hours, with the exception of the University Avenue/East Crescent Drive intersection, which is anticipated to operate at LOS F during the a.m. peak hour and LOS E during the p.m. peak hour under the No Build Alternative. Under Build Alternative 1, anticipated delay at the University Avenue/East Crescent Drive intersection would not change in comparison to the Year 2020 No Build Alternative and would remain at LOS F and LOS E, respectively, during the a.m. and p.m. peak hours. It should be noted that this scenario would result in further delays at other intersections, as shown in Table 2.1.4-3. While it would not cause other intersections to operate at an unacceptable level and therefore would not exceed the thresholds identified in Section 2.1.4.2, *Affected Environment*, it would result in increases in critical delay of more than 4 seconds at both the Newell Road/Edgewood Drive and the Newell Road/Woodland Avenue (north leg) intersections, causing the LOS to deteriorate during both the a.m. and p.m. peak hours at both of these intersections. Build Alternatives 2 through 4 would improve operations at the University Avenue/East Crescent intersection during both the a.m. and p.m. peak hours. Under the p.m. peak hour all three of these alternatives would reduce delay at the University Avenue/East Crescent intersection such that the intersection would operate at an acceptable level (LOS D). Although Build Alternatives 2 through 4 would nominally increase delay at other intersections in some cases, in most cases the Project would not affect delay, or would otherwise reduce delay in comparison with the Year 2020 No Build Alternative. Therefore, under Build Alternatives 1 through 4, the Project would not result in impacts on traffic operations under the opening year scenario.

Table 2.1.4-3. Opening Year Scenario (Year 2020) LOS and Delay Analysis

ID	Study Intersections	Control	Peak Hour	No Build Alternative		Build Alternative 1		Build Alternative 2 (LPA)		Build Alternative 3		Build Alternative 4	
				Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
1	Newell Rd./ Edgewood Dr.	AWSC	AM	8.2	A	11.9	B	8.2	A	8.2	A	8.3	A
			PM	8.9	A	28.3	C	9.0	A	9.0	A	9.1	A
2	Newell Rd./ Channing Ave.	Signal	AM	15.6	B	15.6	B	15.6	B	15.9	B	15.9	B
			PM	15.8	B	15.8	B	15.7	B	16.1	B	16.1	B
3[2]	Newell Rd./ Woodland Ave. (South Leg)	AWSC	AM	7.7	A	6.4	A	7.7	A	7.8	A	8.0	A
			PM	9.7	A	5.3	A	9.8	A	9.8	A	9.8	A
	Newell Rd./ Woodland Ave. (North Leg)	AWSC	AM	8.1	A	24.3	C	8.2	A	8.2	A	-	-
			PM	9.4	A	14.3	B	9.5	A	9.5	A	-	-
4	University Ave./ Woodland Ave.	Signal	AM	38.3	D	38.3	D	38.4	D	38.5	D	38.6	D
			PM	42.4	D	42.4	D	42.6	D	42.8	D	43.2	D
5	University Ave./ E. Crescent Dr.	TWSC	AM	**54.8**	**F**	**54.8**	**F**	**54.3**	**F**	**54.3**	**F**	**53.8**	**F**
			PM	**35.1**	**E**	**35.1**	**E**	34.7	D	34.6	D	34.0	D
6	St. Francis Dr./ Embarcadero Rd.	Signal	AM	28.1	C	28.1	C	28.1	C	28.1	C	28.1	C
			PM	16.8	B	16.8	B	16.8	B	16.8	B	16.8	B
7	W. Bayshore Rd./Newell Rd.	OWSC	AM	10.4	B	10.4	B	10.6	B	10.4	B	10.4	B
			PM	11.6	B	11.6	B	11.6	B	11.6	B	11.6	B

Source: TJKM 2019

[1] Delay: Overall intersection delay in seconds per vehicle for signalized intersections. Delay for minor approach worst movement at unsignalized intersections.

[2] Newell Road/Woodland Avenue is a four-legged intersection for Build Alternative 4.

AWSC = All Way Stop Control; TWSC = Two-Way Stop Control; OWSC = One-Way Stop Control; LOS = level of service; LPA = Locally Preferred Alternative

Table 2.1.4-4. Design Year Scenario (Year 2040) LOS and Delay Analysis

ID	Study Intersections	Control	Peak Hour	No Build Alternative		Build Alternative 1		Build Alternative 2 (LPA)		Build Alternative 3		Build Alternative 4	
				Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
1	Newell Rd./ Edgewood Dr.	AWSC	AM	8.6	A	12.7	B	8.7	A	8.7	A	8.7	A
			PM	9.7	A	32.7	C	9.8	A	9.8	A	9.8	A
2	Newell Rd./ Channing Ave.	Signal	AM	16.5	B	16.5	B	16.0	B	16.5	B	16.0	B
			PM	16.7	B	16.7	B	16.2	B	16.7	B	16.2	B
3[2]	Newell Rd./ Woodland Ave. (South Leg)	AWSC	AM	8.1	A	6.8	A	8.1	A	8.1	A	8.1	A
			PM	11.0	B	6.4	A	11.1	B	11.2	A	11.4	A
	Newell Rd./ Woodland Ave. (North Leg)	AWSC	AM	8.6	A	25.5	C	8.6	A	8.6	A	-	-
			PM	10.7	B	16.2	B	10.8	B	10.9	A	-	-
4	University Ave./ Woodland Ave.	Signal	**AM**	**56.3**	**E**	**56.3**	**E**	**56.5**	**E**	**56.7**	**E**	**56.9**	**E**
			PM	**67.7**	**E**	**67.7**	**E**	**69.8**	**E**	**69.4**	**E**	**70.1**	**E**
5	University Ave./ E. Crescent Dr.	TWSC	**AM**	**110.5**	**F**	**110.5**	**F**	**108.5**	**F**	**108.6**	**F**	**107.4**	**F**
			PM	**66.6**	**F**	**66.6**	**F**	**64.7**	**F**	**64.5**	**F**	**63.2**	**F**
6	St. Francis Dr./ Embarcadero Rd.	Signal	AM	40.7	D	40.7	D	40.7	D	40.7	D	40.7	D
			PM	20.2	C	20.2	C	20.2	C	20.2	C	20.2	C
7	W. Bayshore Rd./Newell Rd.	OWSC	AM	11.1	B	11.1	B	11.1	B	11.1	B	11.1	B
			PM	12.8	B	12.8	B	12.8	B	12.8	B	12.8	B

Source: TJKM 2019

[1] Delay: Overall intersection delay in seconds per vehicle for signalized intersections. Delay for minor approach worst movement at unsignalized intersections.

[2] Newell Road/Woodland Avenue is a four-legged intersection for Build Alternative 4.

AWSC = All Way Stop Control; TWSC = Two-Way Stop Control; OWSC = One-Way Stop Control; LOS = level of service; LPA = Locally Preferred Alternative

Under the design year (Year 2040) scenario, all of the study intersections operate within applicable jurisdictional standards of the City of Palo Alto (LOS D or better) during the a.m. and p.m. peak hours, with the exception of the University Avenue/Woodland Drive and University Avenue/East Crescent Drive intersections. The University Avenue/Woodland Drive and University Avenue/East Crescent Drive intersections operate at LOS E or worse during the a.m. and p.m. peak hours for all study alternatives, including the No Build Alternative. Similar to the Year 2020 scenario, Build Alternative 1 would result in a critical delay of more than 4 seconds at both the Newell Road/Edgewood Drive and the Newell Road/Woodland Avenue (north leg) intersections, causing the LOS to deteriorate during both the a.m. and p.m. peak hours at both of these intersections due to the single lane bi-direction bridge design. However, these intersections would still operate at an acceptable level and, therefore, would not exceed the thresholds identified in Section 2.1.4.2, *Affected Environment*. Under Build Alternatives 2 through 4, the delay could nominally increase at some intersections, but in no case would the project cause a critical delay of more than 4 seconds at any of the study intersections. In most cases the delay would not change in comparison to the No Build Alternative, or would otherwise be reduced in comparison with the Year 2040 No Build Alternative. Therefore, the Project would not result in impacts on traffic operations under the design year scenario.

No Build Alternative

Future traffic conditions for the No Build Alternative are shown in Table 2.1.4-3 for the opening year scenario (Year 2020) and in Table 2.1.4-4 for the design year scenario (Year 2040). Similar to the build alternatives, under the opening year (Year 2020) scenario, all of the study intersections operate at LOS D or better during the a.m. and p.m. peak hours, with the exception of the University Avenue/East Crescent Drive intersection, which operates at LOS F during the a.m. peak hour and LOS E during the p.m. peak hour. Under the design year (Year 2040) scenario, all of the study intersections operate at LOS D or better during the a.m. and p.m. peak hours, with the exception of the University Avenue/Woodland Drive and University Avenue/East Crescent Drive intersections, which operate at LOS E or worse during the a.m. and p.m. peak hours.

Traffic Infusion on Residential Environment Index

Residential areas tend to be especially sensitive to traffic because relatively small increases in traffic can impact the livability of the neighborhood. Traffic Infusion on Residential Environment (TIRE) is the measure of traffic impact on residents along a roadway. TIRE represents the effect of traffic on the safety and comfort of human activities, such as walking, bicycling, and playing on or near a roadway, and on the freedom to maneuver personal autos in and out of residential driveways.

The TIRE index is based on daily traffic conditions and uses average daily traffic (ADT) volumes to determine the amount of daily traffic that could be added to a roadway before residents would perceive the increase in traffic. The amount of daily traffic that can be added before residents would notice directly correlates to the amount of daily traffic already present on the roadway. The TIRE index scale ranges from 0 to 5, depending on daily traffic volume. An index of 0 represents the least infusion of traffic. An index of 5 represents the greatest traffic volume, and thereby the poorest residential environment. A roadway with a TIRE value of 3 or greater is considered to exhibit a significantly impaired residential environment. The projected difference between a pre- and post-project TIRE value is the predicted impact of the project on a residential environment. Any projected change of 0.1 or greater would be noticeable to residents. An increase in index of 0.10 corresponds to an approximate increase in ADT of between 20% and 30%.

Build Alternative

ADT for six roadway segments was collected, as mentioned in Section 2.1.4.2, *Affected Environment*. A TIRE analysis for the Existing Conditions (Year 2016), Opening Year (Year 2020), and Design Year (Year 2040) was conducted for the No Build Alternative and build alternatives. The results of the TIRE analysis for the Existing Conditions (Year 2016) are shown in Table 2.1.4-5, Opening Year (Year 2020) are shown in Table 2.1.4-6, and Design Year (Year 2040) are shown in Table 2.1.4-7. The results indicate that there is no increase on any of the roadways selected for the study under all build alternatives under any scenario. This indicates that reconfiguration of the Newell Road Bridge would not affect the residential homes in the neighborhood under any scenario, as the deviation of traffic on the bridge would not be substantial enough for the residents to notice the change or to affect the livability and environment of the study segments.

No Build Alternative

A TIRE analysis for the Existing Conditions (Year 2016) was conducted for the No Build Alternative. The results of the TIRE analysis for the Existing Conditions (Year 2016) are shown in Table 2.1.4-5. The results indicate that there is no increase on any of the roadways selected for the study under the No Build Alternative.

2.1.4.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the standardized measure (SM) and avoidance and minimization measures (AMM) listed in this section would reduce temporary access, circulation, and parking impacts of the Project caused by potential traffic delays and obstructed access during construction.

However, there is no feasible mitigation available to reduce the increased delay associated with diverted traffic at the East Crescent Drive/University Avenue intersection during construction. It is not feasible to keep the bridge open during construction due to the constricted area surrounding the bridge.

Access and Circulation

- SM-TR-1: A TMP will be prepared by the Project proponent or its contractor, approved by the City of Palo Alto, and will be implemented by the contractor during construction activities. The TMP will contain requirements for public noticing, traffic control implementation, signage, property and business access, parking, and safety during construction. It also will contain information about the construction schedule and detours.
  - Advance notice and coordination with businesses and property owners will be included in the TMP to minimize any potential temporary impacts on commute times.
  - Advance notice and coordination with emergency service providers will be included in the TMP to minimize any potential temporary impacts on response times.
- AMM-TR-1: Access along Edgewood Drive for the southeast resident’s driveway will be maintained by the contractor at all times during construction.

Table 2.1.4-5. Existing Conditions (Year 2016) TIRE Analysis

ID	Roadway	Segment	No Build Alternative and Build Alternative 1		Build Alternative 2 (LPA)		Build Alternative 3		Build Alternative 4		Volume to cause + 0.1 Change in Index	Significant Impact?
			Existing ADT	TIRE Index	Project Trips[1]	TIRE Index	Project Trips[1]	TIRE Index	Project Trips[1]	TIRE Index		
1	Edgewood Dr.	From Newell Rd. to Island	582	2.8	5	2.8	10	2.8	15	2.8	140	No
2	Edgewood Dr.	Between Newell Rd. and Jefferson Dr.	434	2.6	0	2.6	10	2.6	10	2.6	97	No
3	Newell Rd.	Between Edgewood Dr. and Hamilton Ave.	3,425	3.5	60	3.5	95	3.5	150	3.5	825	No
4	Woodland Ave.	Between Cooley Ave. and Newell Rd.	4,144	3.6	60	3.6	95	3.6	155	3.6	1,025	No
5	Newell Rd.	Between Woodland Ave. and W. Bayshore Rd. (East Palo Alto)	1,805	3.3	0	3.3	0	3.3	0	3.3	500	No
6	Woodland Ave.	Between Newell Rd. and Clarke Ave.	1,314	3.1	10	3.1	10	3.1	25	3.1	290	No

Source: TJKM 2019

[1] For Build Alternatives 2, 3, and 4, rerouting of vehicles through Newell Bridge Road has been increased by 3%, 5%, and 2% respectively.

Daily Project Trips = (A.M. + P.M. Peak Hour Trips)*5

ADT = average daily traffic; LPA = Locally Preferred Alternative; TIRE = Traffic Infusion on Residential Environment

Table 2.1.4-6. Opening Year Conditions (Year 2020) TIRE Analysis

			No Build Alternative and Build Alternative 1		Build Alternative 2 (LPA)		Build Alternative 3		Build Alternative 4		Volume to cause + 0.1 Change in Index	
ID	Roadway	Segment	Existing ADT	TIRE Index	Project Trips[1]	TIRE Index	Project Trips[1]	TIRE Index	Project Trips[1]	TIRE Index		Significant Impact?
1	Edgewood Dr.	From Newell Rd. to Island	606	2.8	5	2.8	10	2.8	16	2.8	140	No
2	Edgewood Dr.	Between Newell Rd. and Jefferson Dr.	452	2.7	0	2.7	10	2.7	10	2.7	114	No
3	Newell Rd.	Between Edgewood Dr. and Hamilton Ave.	3,562	3.6	62	3.6	99	3.6	156	3.6	1,025	No
4	Woodland Ave.	Between Cooley Ave. and Newell Rd.	4,312	3.6	62	3.6	99	3.6	161	3.6	1,025	No
5	Newell Rd.	Between Woodland Ave. and W. Bayshore Rd. (East Palo Alto)	1,878	3.3	0	3.3	0	3.3	0	3.3	500	No
6	Woodland Ave.	Between Newell Rd. and Clarke Ave.	1,367	3.1	10	3.1	10	3.1	26	3.1	290	No

Source: TJKM 2019

[1] For Build Alternatives 2, 3, and 4, rerouting of vehicles through Newell Bridge Road has been increased by 3%, 5%, and 2% respectively.

Daily Project Trips = (A.M. + P.M. Peak Hour Trips)*5

ADT = average daily traffic; LPA = Locally Preferred Alternative; TIRE = Traffic Infusion on Residential Environment

Table 2.1.4-7. Design Year Conditions (Year 2040) TIRE Analysis

			No Build Alternative and Build Alternative 1		Build Alternative 2 (LPA)		Build Alternative 3		Build Alternative 4		Volume to cause + 0.1 Change in Index	
ID	Roadway	Segment	Existing ADT	TIRE Index	Project Trips[1]	TIRE Index	Project Trips[1]	TIRE Index	Project Trips[1]	TIRE Index		Significant Impact?
1	Edgewood Dr.	From Newell Rd. to Island	739	2.9	6	2.9	13	2.9	19	2.9	170	No
2	Edgewood Dr.	Between Newell Rd. and Jefferson Dr.	551	2.7	0	2.7	13	2.8	13	2.8	114	No
3	Newell Rd.	Between Edgewood Dr. and Hamilton Ave.	4,346	3.6	76	3.6	121	3.6	190	3.7	1,025	No
4	Woodland Ave.	Between Cooley Ave. and Newell Rd.	5,262	3.7	76	3.7	121	3.7	197	3.7	1,250	No
5	Newell Rd.	Between Woodland Ave. and W. Bayshore Rd. (East Palo Alto)	2,292	3.4	0	3.4	0	3.4	0	3.4	650	No
6	Woodland Ave.	Between Newell Rd. and Clarke Ave.	1,668	3.2	13	3.2	13	3.2	32	3.2	380	No

Source: TJKM 2019
[1] For Build Alternatives 2, 3, and 4, rerouting of vehicles through Newell Bridge Road has been increased by 3%, 5%, and 2% respectively.
Daily Project Trips = (A.M. + P.M. Peak Hour Trips)*5
ADT = average daily traffic; LPA = Locally Preferred Alternative; TIRE = Traffic Infusion on Residential Environment

- AMM-TR-2: On Woodland Avenue, the contractor will maintain one-lane of traffic to assure passage along Woodland Avenue during the majority of construction. When one-lane of traffic is not available, a detour route will be identified. The construction zone will be established such that the maximum amount of existing parking is available in the area during non-construction hours.[3] Access for all residents on Woodland Avenue in the study area will be maintained throughout the construction period.

Parking

- AMM-TR-3: The City of Palo Alto shall coordinate with the City of East Palo Alto to identify nearby locations including private parcels where additional parking accommodations can be provided during construction.
- AMM-TR-4: During stages 2, 3, and 4 of construction, the contractor will make accommodations for nighttime parking during non-construction hours. This would include opening the work zone up for residents to park at night and utilizing head-in (perpendicular) parking rather than parallel parking in these areas.

[3] The allowed hours of construction are Monday through Friday 8AM–6PM, Saturday 9AM–6PM in Palo Alto (Municipal Code 09.10.060) and Monday through Friday 7AM–6PM, Saturday 9AM–5PM in East Palo Alto (Municipal Code 15.04.125). Both jurisdictions prohibit construction activities on Sunday/Holidays.

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2.1.5 Visual/Aesthetics

2.1.5.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). To further emphasize this point, the Federal Highway Administration, in its implementation of NEPA (23 USC 109[h]), directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including, among others, the destruction or disruption of aesthetic values.

The California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of aesthetic, natural, scenic and historic environmental qualities" (California Public Resources Code Section 21001[b]).

2.1.5.2 Affected Environment

The information in this section is from the *Visual Impact Assessment* (April 2018). The Visual Impact Assessment assesses potential visual impacts of the proposed Newell Road Replacement Project (Project) based on guidance outlined in the *Visual Impact Assessment for Highway Projects* published by the Federal Highway Administration (1988).

Project Setting

The Project is located in Santa Clara and San Mateo counties, within the San Francisco Bay Region of California. The landscape in the vicinity is characterized by dense urban and suburban development on valley bottoms and along the San Francisco Bay shoreline, woodlands and grasslands covering the hills and mountains visible from many locations, and large expanses of open water of San Francisco Bay and the Pacific Ocean. The Santa Cruz Mountains form the background beyond the urban area and block views to the ocean and valleys beyond. The flat expanse of San Francisco Bay allows views across it and to the communities and mountains on the opposite side. These landscape views are strongly characteristic of the Silicon Valley and have contributed to the regional identity.

The Project corridor is defined as the area of land that is visible from, adjacent to, and outside the roadway right-of-way (ROW), and is determined by topography, vegetation, and viewing distance. The land use within the corridor is primarily suburban residential, with one story, single-family homes in Palo Alto and mostly two- to three-story, multi-family housing in East Palo Alto. The existing Newell Road Bridge consists of a narrow, one-lane bridge with solid concrete parapets. The portions of the parapets that cross the creek have four rectangular recesses on each side of the bridge that provide some architectural relief to the parapet. However, the parapets are aged; the surfaces varies from being exposed concrete to being painted with two different shades of gray; and they have signs of damage such as cracks, portions of missing concrete, and marks and scrapes from car strikes. The bridge deck is paved with asphalt and there is no roadway striping over the bridge.

The tree canopy dominates many views within the immediate vicinity of the Newell Road Bridge. The trees and landscaping also provide diversity and continuity in views throughout the area, and vary in form, dominance, and scale, depending on the location, distance, and angle of the viewer.

Mature trees along the portion of Newell Road in Palo Alto provide good canopy cover that shades much of the street but younger gingko trees along the north side of the street create a break in the canopy cover resulting in sunny areas along this segment of roadway. The entire bridge is covered by the canopy of mature trees along the creek, resulting in shade and dappled sunlight on the bridge. The portion of Newell Road in East Palo Alto is not as densely vegetated as the Palo Alto side and the street trees are not as mature, resulting in more open, brighter conditions along this segment of roadway. Overall, however, the tree canopy provides a mostly enclosed, pedestrian-scale environment that is visually appealing. In addition to the mature tree canopy, residential landscaping associated with single- and multi-family residences contributes to an attractive project corridor. However, the multi-family housing and associated parking lots and driveway aprons along the project corridor exhibit less vegetative cover. Views provide seasonal interest such as in the winter and spring when vegetation is in active growth and most plants are in bloom versus the summer and fall when vegetation fades, turns color, or provides a display of fruit or seed. In addition, evergreen species provide greenery year-round. From the bridge itself, the creek extends upstream and downstream along Woodland Avenue and provides a natural visual character in contrast to the developed character of the surrounding residences. The creek is seasonally dry in the summer, exposing a dirt and graveled bed, with bank protection made of sacked concrete bags that are overgrown in many places with Himalayan blackberry and ivy. Sidewalks are present within the Project corridor except over the bridge, on the southern side of Woodland Avenue, and on the north side of Woodland Avenue near the Woodlands Newell Apartments Community Center and Clarke Avenue.

Other visible, built elements that contribute to the existing visual environment and character of the project corridor include parking lots and driveway aprons, as well as other human-made elements typically found in residential areas, such as paved roadways, sidewalks, curbs, gutters, signage, utility poles, and street lights. Sacrete retaining walls are located along the banks of the creek. These retaining walls are mostly visible to passing pedestrians because the bridge railing and vegetation along the top of bank limit most views to passing drivers. The retaining walls are weathered and overgrown with vines and moss, so they blend fairly well with the natural creek corridor. On the south side of the Project site, utility lines are underground and not visible. However, vertical utility poles and overhead utility lines are common visual elements found in the landscape within the City of East Palo Alto. Lighting in the project corridor is associated with interior and exterior residential lighting and vehicle headlights. Minimal street lighting is present and is directed downwards towards the roadbed and sidewalks. The project corridor is fairly well-lit, except for open space areas and within the creek.

Development densities and building heights differ on either side of the bridge, detracting slightly from the uniformity of views along the Project corridor; however, the dense, mature tree canopy; residential landscaping; and riparian corridor serve to create more uniformity and intactness and improve views associated with the Project corridor and contribute to a vividness, intactness, and unity that are moderate-high. The resulting existing visual quality is moderate-high.

There are no scenic routes designated in federal or state plans as scenic roadways or corridors worthy of protection for maintaining and enhancing scenic viewsheds (California Department of Transportation 2017). University Avenue, just east of the Project corridor, is a Palo Alto-designated scenic roadway (City of Palo Alto 2017). There are no city-designated scenic routes in East Palo Alto (California Department of Transportation 2017). In addition, there are no scenic vistas because terrain, surrounding development, sound walls, and mature trees and shrubs limit views to the immediate foreground and prevent expansive views out and over the landscape.

Viewer Groups and Viewer Response

Neighbors (people with views *to* the Project area) and *roadway users* (people with views *from* the Project area) would be affected by the proposed Project. For the purposes of this Visual Impact Assessment, *neighbors* include the residents of single and multi-family homes in Palo Alto and East Palo Alto on either side of the Newell Road Bridge within viewing distance of the proposed Project. This includes residents of single and multi-family homes, condominium or apartment dwellers, and others who occupy permanent shelter. They can be owners or renters, tend to be permanent rather than transitory, and are anticipated to have high visual sensitivity because of their familiarity with and proximity to the Project site. Neighbors' views of the Project vary based on location within the landscape and distance from the Project site. Most roadway neighbors do not have immediate and direct views of the Project site (views are limited by development, vegetation, topography, etc.) except for those that are directly adjacent to the affected area. Roadway neighbors have a cumulative moderate degree of exposure. Immediately adjacent residents have high exposure in low numbers, while surrounding residents have moderate exposure in moderate numbers.

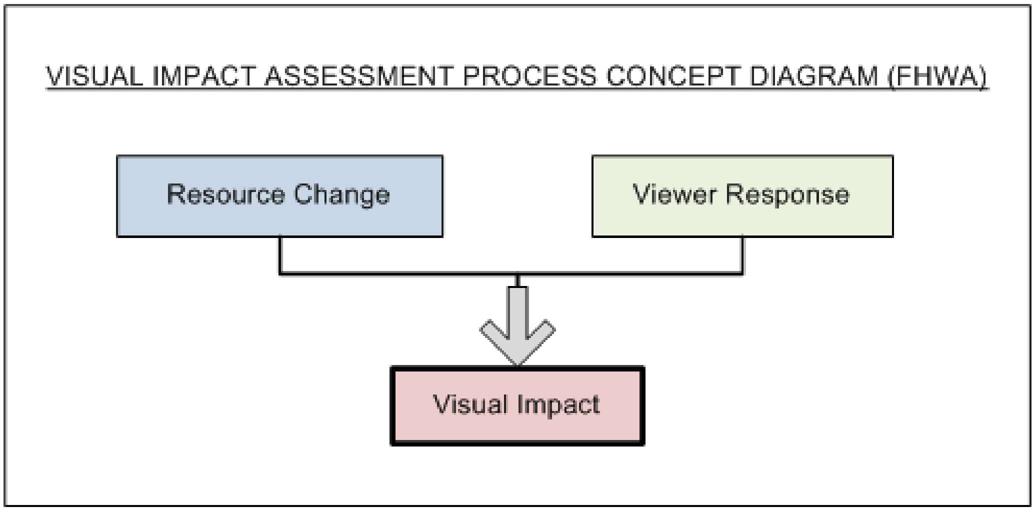
Roadway Users include local commuters traveling to and from work, recreational travelers, pedestrians, cyclists, motorists, and other roadway users that utilize various modes of transportation for commuting, touring, and the shipment and delivery of mail and goods to local residences. Pedestrians use only their feet (or a wheelchair or other device), most often on a sidewalk or trail. Cyclists use bicycles at greater speeds than pedestrian travel, and may use trails, traffic lanes, and sidewalks. Motorists use vehicles with engines (e.g., cars, trucks, buses, motorcycles, mopeds, or any other technology that is not self-propelled, regardless of fuel source). Motorists move at higher speeds than other groups. Depending on speeds, drivers and other roadway travelers are able to take in brief to longer views of the scenery around them. By necessity, the driver of a motor vehicle focuses less on the view outside the vehicle. Although drivers are focused on driving and safety and use trees and familiar landmarks (development, utilities, signage, built elements) as resources for wayfinding, they are likely to enjoy the quality of views provided by the well-kept residential area and the mature tree canopy. Pedestrians are focused on commuting or their associated recreational activity, but tend to take in and enjoy their surroundings. Cyclists pass through the area more quickly, but also enjoy their surroundings. Because most users are intimately familiar with the area, they are considered to have high visual sensitivity over views. It is anticipated that the average response of all viewer groups would be moderate-high, however, due to a lower number of viewers.

2.1.5.3 Environmental Consequences

Visual Resources and Resource Change

Visual resources of the Project setting are defined and identified by assessing *visual character* and *visual quality* in the Project corridor. *Resource change* is assessed by evaluating the visual character and the visual quality of the visual resources within the Project corridor before and after the construction of the proposed Project. Trees along the San Francisquito Creek (creek) corridor, street trees, and residential landscaping form a dense tree canopy within the Project corridor which is captured in the key views selected for the proposed Project and depicted in Key View 1 and Key View 2 in Figure 2.1.5-1.

Visual impacts are determined by assessing changes to visual resources and predicting viewer response to those changes. These impacts can be beneficial or detrimental. A generalized visual impact assessment process is illustrated in the following diagram.



The table below provides a reference for determining levels of visual impact by combining resource change and viewer response.

Table 2.1.5-1. Visual Impact Ratings Using Viewer Response and Resource Change

		Viewer Response (VR)				
		Low (L)	**Moderate-Low (ML)**	**Moderate (M)**	**Moderate-High (MH)**	**High (H)**
Resource Change (RC)	Low (L)	L	ML	ML	M	M
	Moderate-Low (ML)	ML	ML	M	M	MH
	Moderate (M)	ML	M	M	MH	MH
	Moderate-High (MH)	M	M	MH	MH	H
	High (H)	M	MH	MH	H	H

Key views, shown on Figure 2.1.5-1, have been chosen for their representation of views associated with Palo Alto and East Palo Alto and those viewers affected.

Figure 2.1.5-1. Key View Locations

The visual character of the proposed Project would be somewhat compatible with the existing visual character of the corridor.[1] The proposed bridge would be made of the same materials as the existing bridge and would have concrete bridge railings and a paved deck; once these new materials weather, the proposed bridge would have a similar color to the existing bridge. Rectangular openings in the bridge railing would be reminiscent of the rectangular recesses in the existing parapet. The one-lane bridge under Build Alternative 1 would be slightly wider in total width than the existing bridge (26 feet versus 22 feet) even though the travel way on the bridge would be narrower (16 feet versus 18 feet). Build Alternatives 2 through 4 would be nearly twice as wide to accommodate a two-lane bridge (28 feet wide travel way and 38 feet wide with sidewalks). The alignment for Build Alternatives 1 and 2 would remain the same as the existing bridge. The alignment would shift approximately 30 degrees so that the northern abutment would shift westward approximately 30 feet for Build Alternative 3 and be most pronounced and notable, shifting the northern abutment 90 feet to the west from its current location under Build Alternative 4. The sacrete retaining walls along the creek would be removed and replaced with rock slope protection or soil nail walls. This would likely be more visible to passersby due to vegetation removal opening up views toward the creek. The proposed retaining walls along Newell Road North that are needed to accommodate the higher roadway surface of the bridge would create a taller wall surface that hinders views to opposite sides of the road and would be more visually intrusive under Build Alternative 4 than under Build Alternatives 1–3, which propose shorter retaining walls. The new rock slope protection and retaining walls also would increase the amount of hardscape seen along the project corridor.

The texture of the Project corridor would be altered under Build Alternatives 1–3 because all three alternatives would affect the same 23 trees through removals and trimming.[2] The tree canopy would be slightly reduced where trimming occurs, but the remainder of the canopy would not be affected. However, tree removal would completely remove the canopy, remove the shading that canopy provides, remove the aesthetic qualities provided by the impacted trees, make views more open and bright, and slightly increase glare, when seen from both Palo Alto and East Palo Alto. As many as 10 trees could be removed under Build Alternative 1, 12 trees could be removed under Build Alternative 2, and 14 trees could be removed under Build Alternative 3, which would create a more open view corridor from Newell Road in Palo Alto toward the portion of the Woodlands Newell Apartments along Woodland Avenue in East Palo Alto. However, trees and vegetation associated with the Woodlands Newell Apartments facing Newell Road would remain, continuing to provide some amount of tree canopy. The view corridor from East Palo Alto would also become more open due to vegetation removal, but trees beyond the area of impact along the creek would be visible, in addition to trees associated with residential landscaping on the Palo Alto side. Residential structures on the Palo Alto side would not be readily visible from East Palo Alto, though, because the raised bridge would obscure most views of the structures. Tree and vegetation removal would also act to increase the prominence of development and roadway infrastructure because the dense, enclosed tree canopy would no longer be present to reduce their apparent scale through vegetative screening, canopy cover, and shading so that structures recede more into views. Build Alternative 4 would only affect two additional trees. However, a total of 18 trees would be removed and the additional tree removal, coupled with the shifted alignment, would create a more open corridor than Build

[1] Design decisions will be made during final design of the Project and will be approved by the City of Palo Alto Architectural Review Board and City Council.

[2] The total number of trees affected may be slightly more or less than the numbers presented in this analysis based on the final project design.

Alternatives 1–3 because it would allow for additional views from Newell Road in Palo Alto toward portions of the Woodlands Newell Apartments along both Woodland Avenue and Newell Road in East Palo Alto. Build Alternative 4 would reduce shading and increase glare that is present along the Project corridor to a greater degree than Build Alternatives 1–3. The proposed Project would be consistent with the applicable rules, regulations, standards, and policies relating to visual elements and aesthetic quality within the Project area, such as the City of East Palo Alto General Plan and the Palo Alto Comprehensive Plan—Land Use and Community Design. However, as described above, all build alternatives would require tree removal. Therefore, the Project would be required to comply with the City of Palo Alto and City of East Palo Alto tree ordinances. The Palo Alto tree ordinance refers to the City's *Tree Technical Manual* guidance on when tree replacement is required. Tree replacement numbers are based on canopy size (see Table 3-1 in Section 3-4 of the Tree Technical Manual) and are specified by the Director or the Director's designee when protected or designated trees are removed and by the terms of the permit for street trees (City of Palo Alto 2001). Section 18.28.40 of the East Palo Alto Development Code identifies that trees removed will need to be replaced by tree(s) of equivalent value or an in-lieu fee will need to be paid (City of East Palo Alto 2017). In addition, MM-AES-4 would ensure that street trees and trees and shrubs along the tops of the creek's banks are replaced to minimize the visual effects of the project.

Changes to the visual character of Project corridor associated with each build alternative would result in changes to the existing visual quality, which is moderate-high and would be altered to varying degrees by the proposed Project. Views and the visual quality associated with the Project corridor would be somewhat degraded under Build Alternative 1, represented by Key View 1 and Key View 2 (Figures 2.1.5-2 and 2.1.5-3), but are somewhat harmonious because the narrower bridge is visually similar to and in keeping with the existing bridge. Vegetation removal and trimming would affect the tree canopy and open up views down across the bridge and down the roadway corridors under Build Alternative 1. Build Alternative 1 would also require signalization that would introduce traffic lights and vertical utilities into views associated with Palo Alto and East Palo Alto. Views and the visual quality associated with the Project corridor under Build Alternatives 2 and 3 are similar, represented by Key View 1 and Key View 2 (Figures 2.1.5-4 through 2.1.5-7) for each of the build alternatives. Like Build Alternative 1, Build Alternatives 2 and 3 would also be slightly degraded because the two-lane bridges would open up views from Palo Alto to East Palo Alto due to vegetation removal and views to the bridge would be more apparent from East Palo Alto. While there would be slightly more vegetation removal under Build Alternative 3 than under Build Alternative 2, the difference is not visually notable and both build alternatives would have the same degree of visual effect. While views would be slightly more exposed under Build Alternatives 2 and 3 than under Build Alternative 1, Build Alternatives 2 and 3 would not require traffic lights, reducing visual intrusions associated with Build Alternative 1. Therefore, the changes to visual quality are relatively the same under Build Alternatives 1–3. Although the unity would remain much the same, the vividness and intactness would be reduced from moderate-high to moderate, and the resulting visual quality for these build alternatives would also be reduced from moderate-high to moderate. Views and the overall visual quality would be altered the most by Build Alternative 4, represented by Key View 1 and Key View 2 (Figures 2.1.5-8 and 2.1.5-9). The shifted two-lane bridge would require the greatest modification to the roadway alignment and the greatest amount of vegetation removal. This would create a much more open and bright corridor than Build Alternatives 1–3 and would expose views of the Woodlands Newell Apartments along both Woodland Avenue and Newell Road in East Palo Alto. In addition, views toward the bridge and Palo Alto would be more open and bright when seen from East Palo Alto. Therefore, the vividness, intactness, and unity would be reduced from moderate-high to moderate and the overall visual quality would be reduced from moderate-high to moderate-low under Build Alternative 4.

Resource change (changes to visual resources as measured by changes in visual character and visual quality) would be moderate for Build Alternatives 1–3 during the short-term until replacement plantings, specified in Mitigation Measure (MM) AES-4 can mature. As the replacement planting matures and the canopy is replaced, the visual character would regain some of its existing qualities associated with shading and creating an enclosed, intimate streetscape that would result in long-term resource change that is moderate-low. Build Alternative 4 would result in a resource change that is moderate for the short- and long-term because, even with mitigation, the tree canopy would not provide the sense of enclosure because view corridors would remain open and more development would be visible due to the bridge and roadway intersection realignment in East Palo Alto. Primary visual resource changes associated with the proposed Project would be dependent on the Build Alternative selected and would be attributed to the introduction of new vertical utilities and lighting under Build Alternative 1 and vegetation removal and the new replacement bridge (including its revised profile, adjustments to its alignment, overall geometrics, and associated roadway/sidewalk improvements associated with each Build Alternative) under all build alternatives. Other visual changes include the proposed improvements along the Palo Alto and East Palo Alto sides of Newell Road (approximately 500 feet total) and along Woodland Avenue (approximately 350 feet), which would include the construction of retaining walls, potential roadway realignments, sidewalk improvements, roadway striping, and the adjustment/relocation of existing street lights and power poles. These changes, as depicted in the visual simulations, can be accomplished without substantial visual impacts throughout the Project corridor. Thus, Build Alternatives 1–3 would somewhat alter the visual character or quality of views when compared to existing visual conditions and Build Alternative 4 would have a greater affect. Since the visual character of the bridge would be in keeping with the existing visual character of residential areas in Palo Alto and in East Palo Alto that surround the Project corridor, Project activities would not be great enough to constitute a major visual resource change over the long-term for most viewers once mitigation plantings mature even though visual changes would be noticeable.

Construction Impacts

Build Alternatives

Construction of the proposed Project would last approximately 12 months total, with a full road closure of Newell Road Bridge between Edgewood Drive and Woodland Avenue during this time. Therefore, roadway users would be removed from this portion of the Project corridor during construction, but roadway neighbors would still be able to see construction activities. The residence located at 475 Newell Road, which has driveway access to Newell Road in Palo Alto, would continue to have access to their driveway during construction. Roadway neighbors located on the detour route would not see construction activities but would see a temporary increase in local traffic along the detour route. Visual barriers associated with MM-AES-1 would not be installed along detour routes because the visual changes associated with minor traffic increases are not likely to be very noticeable and the introduction of visual barriers would create a negative visual effect along detour routes. Because the proposed Project would take less than 2 years to construct, visual presence of construction activities and detour traffic is considered temporary. Nighttime construction would not occur; therefore, high-intensity lighting for illuminating construction activities would not be needed.

Equipment that would be used for construction includes graders, excavators, backhoes, pavers, compactors, and various types of construction vehicles/trucks. Under all Build Alternatives, general construction activities, construction staging/stockpiling, the storage of building materials, the presence of construction equipment, and temporary traffic barricades would result in temporary visual impacts by altering the composition of the viewsheds throughout the Project corridor. However, construction activities would be temporary in duration and would be governed by city, state, and federal regulations and standards designed to minimize their potential to affect adjacent sensitive uses in significantly adverse ways. Construction activities would comply with the applicable regulations, standards, and policies outlined in guidance documents such as the City of East Palo Alto General Plan and the *Land Use and Community Design Element* of the Palo Alto Comprehensive Plan. Construction staging and laydown areas occurring on Newell Road between Woodland Avenue and Edgewood Drive would be located within the roadway ROW. The residence in the City of Palo Alto that is west of Newell Road is separated from the area that may be used as staging by privacy fencing and dense landscaping, so would not likely be affected by construction staging. However, views seen by the residence in the City of Palo Alto that is east of Newell Road and roadway users and recreationists passing by the intersection of Newell Road and Edgewood Drive would be disrupted by construction staging at this location. In East Palo Alto, residents located in the apartments along Newell Road that are closest to Woodland Avenue and roadway users and recreationists passing by could have disruptive views of staging areas if they are located along this portion of the roadway corridor. MM-AES-1 would ensure that staging areas are screened, minimizing the amount of visual disruption caused by construction staging.

Active construction areas would primarily occur within street ROWs and would have construction signs and barricades to delineate the work zone and partially screen construction activities available to nearby viewers that have unobstructed lines of sight to the Project area. Visual changes due to construction signaling, signage, and surface glare may occur, though they are not considered to be adverse due to their temporary nature. MM-AES-1 would ensure that staging areas are maintained in a clean and orderly manner throughout the construction period. Due to residential/neighboring viewers' familiarity with the existing bridge and thru-traffic, negative visual effects are expected to occur, but because of the temporary nature of construction these effects would be temporary.

Visual changes resulting from the proposed Project are depicted in simulations prepared for the Project, discussed below by build alternative, and shown in Figures 2.1.5-2 through 2.1.5-9. The proposed Project would remove the existing bridge; construct new approaches, and accommodate bicycle and pedestrian travel (including sidewalk and potential road widening for sharrow); add and reconfigure utilities including street lighting; modify street signage; add retaining walls; and stabilize creek bank disturbed by the construction. Construction would also require the removal of trees to accommodate grading to stabilize the creek banks and the widened bridge structure and roadway approaches. This would create a project corridor that is more open and bright. The Project would be required to comply with the City of Palo Alto and City of East Palo Alto tree ordinances, which would specify tree replacement as a condition of the permits. In addition, MM-AES-4 would ensure that street trees and trees and shrubs along the tops of the creek's banks are replaced to minimize the visual effects of the project. Although visual changes resulting from the Project would not be minimized over the short-term, on-site mitigation would ensure that long-term visual changes are minimized as the replacement vegetation matures to largely replace the canopy that would be lost during construction. The sacrete retaining walls along the creek would be removed and replaced with rock slope protection or soil nail walls. This would likely be more visible to passersby due to vegetation removal opening up views toward the creek. Even though this would not be readily visible to many viewers, the proposed bank protection would increase the amount of hardscape seen along the project corridor to those that do see it. Instead of a weathered sacrete wall that is partially covered in moss and vines, a hardscaped surface that is devoid of vegetation would be present. This would change the visual character of the affected segment of creek by creating a more engineered looking creek channel, as opposed to a more naturalized creek channel. Once the proposed bank protection weathers and vegetation colonizes interstices in the bank protection, it would not appear as stark.

The roadway profile of the new bridge would be raised approximately 1.6 feet higher than the existing bridge in order to provide a higher bridge clearance over the creek and improve flood hazard for the adjacent communities. Roadway approach work would be required at each end of the bridge in order to transition from the new bridge profile and geometry to the existing roadway. On the Palo Alto side of the bridge, the residence along the east side of Newell Road that is closest to the bridge, 475 Newell Road, would have a portion of its driveway demolished and reconstructed as a result of the Project. In addition, the sidewalk would be relocated closer to this residence's fence line, requiring the removal of shrubbery lining their fence and planted in between the existing roadway and sidewalk. The fence would not be affected, but removal of the shrubbery would negatively affect this residence and passersby. In addition, formal landscaping planted between the sidewalk and curb and also between the sidewalk and the residential fence line along the west side of Newell Road, which is associated with 1499 Edgewood Drive, would also be affected by construction, slightly reducing the quality of views along this segment of roadway for all viewer groups. MM-AES-2 would relocate or replace affected landscaping, fencing, and other landscape features to the degree possible, reducing visual impacts. The presence of vertical and horizontal hardscape features would also increase due to the railings needed to provide safety barriers at the top of retaining walls, inclusion of sidewalks across the bridge, and taller bridge railings. The railings create the appearance of fencing and the increased presence of the railings would impact existing views by replacing vegetation with fencing and increasing the dominance of fencing in the area. However, the proposed fencing would be largely in keeping with the existing residential fencing and it would have gaps that would allow for vegetation to be seen beyond the proposed fencing, minimizing effects. Bridge surfaces would also slightly increase glare levels along the Project corridor. MM-AES-3 would apply aesthetic treatments to bridge, wall surfaces, and fences, improving Project aesthetics and reducing visual impacts and the potential for glare. Specific aesthetic treatments will be determined during final design and in coordination with the City of Palo Alto Architectural Review Board. Lastly, the plantable area between the roadway and sidewalks would be enlarged on the Palo Alto Side, creating geometrically shaped islands of grass that taper down to meet the existing planter strips. These larger grassy areas could take on a degraded visual appearance if not properly maintained. Therefore, in addition to measures specified in Section 2.3, *Biological Resources*, MM-AES-4 would reduce the apparent scale of vertical features by introducing Project streetscaping that would be planted within the roadside planter strips and would improve Project aesthetic by improving the visual quality of planter strips through landscaping.

On the East Palo Alto side of the bridge, Woodland Avenue would also be raised to meet the higher bridge profile and would require approximately 300 feet to conform to the existing roadway to the east and west of the bridge. The bridge sides would appear more prominent than existing conditions. Safety railing that creates the appearance of fencing would also be needed on the East Palo Alto side of the bridge and increase the prominence of railings on this side of the bridge. In addition, approximately 125 feet of improvements (ramps to apartments, curb and gutter modifications, intersection signalization, etc.) and retaining walls would be required on the east and west sides of Newell Road to limit the ROW needs for the Project. These retaining walls would range from approximately 1 foot to just over 2 feet tall in exposed height and would be taller near Woodland Avenue, decreasing in height as the wall meets existing grade along Newell Road. Residents living in Building 1 of the Woodlands Newell Apartments (1761 Woodland Avenue) and Woodland Park Apartments building at 5 Newell Road would see the short walls, but the walls would not be tall enough to enclose or block existing views.

In addition, the construction of the retaining walls in front of Building 1 of the Woodlands Newell Apartments would require that landscaping be removed in front of the apartments, degrading visual resources at this location. Two entry walks—one leading to a shared entrance patio for two apartments and one leading to a single apartment entrance—associated with the Building 1 apartments would need to be reconstructed to build ramps to provide Americans with Disabilities Act (ADA)-compliant access to the building. Construction of the ramp would require that some of the mulched area on either side of the existing walkway would be converted to a ramp. Plantings are sparse and widely spaced in the mulched bed. However, a small number of individual plants may need to be removed to accommodate the ramp. Retaining walls would also be needed along the north side of Woodland Avenue to support the raised roadway. The tallest portions of this retaining wall segment would be roughly as high as the existing wooden fence that lines the sidewalk in front of the community center, along Woodland Avenue. Raising the grade at this location would elevate the roadway surface so that vehicles on the road would be roughly at eye level, when seen from the community center, making traffic more visible. However, there are no public use spaces (seating or gathering areas) in front of the community center, so the portion of the community center facing Woodland Avenue primarily receives intermittent viewers entering and exiting the community center building through that entrance. The elevated roadway surface would also be visible from the four windows on the southern wall surface of Building 1. Therefore, it is anticipated that only a small number of people would see views from these windows and it is not anticipated that views from these windows serve as primary focal points from within residences. Therefore, it is likely that changes to views from these windows would not be greatly affected by the changes in roadway elevation and the addition of a retaining wall at this location. The paved driveway and entry walk of the Woodlands Newell Apartments Community Center would also need to be reconstructed to build a ramp to provide ADA-compliant access. MM-AES-2 would relocate or replace affected landscaping, fencing, and other landscape features to the degree possible, reducing visual impacts. In addition, MM-AES-3 would apply aesthetic treatments to bridge, wall surfaces, and fencing, improving Project aesthetics and reducing visual impacts and the potential for glare. MM-AES-4 would improve Project aesthetic by improving the visual quality of planter strips along Newell Road through landscaping.

The proposed Project also includes several minor utility relocations, including street light and power poles, and retaining wall improvements. One street light on the Palo Alto side along Newell Road would be impacted by the proposed roadway improvements and would need to be removed and replaced at the same location to meet the new grades. On the East Palo Alto side, street lights are integral with the overhead electrical poles. Therefore, relocation would correspond with the overhead electrical pole work. Overhead street lighting could negatively affect sensitive receptors if the replaced lighting is modified to include light-emitting diode (LED) lighting that is not properly designed. In particular, LED lighting can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if proper shielding is not provided and blue-rich white light lamps are used (American Medical Association 2016; International Dark-Sky Association 2010a, 2010b, 2015). Studies have found that a 4000 Kelvin white LED light causes approximately 2.5 times more pollution than high pressure sodium lighting with the same lumen output, which would affect sensitive receptors, and more than double the perceived brightness of the affected night sky (Aubé et al. 2013; Falchi et al. 2011, 2016). This would result in a substantial source of nighttime light and glare that would adversely affect nighttime views in the area if lighting is not properly designed and shielding is not employed. These improvements, and associated visual changes, are common to all of the Build Alternatives and would not substantially degrade visual resources associated with the Project corridor when factored with the applied MM-AES-5 that would offset negative visual changes associated with modified street lighting resulting from the proposed Project.

The proposed Project elements constructed under all build alternatives would not impede sightlines to the tree canopy, trees, neighboring vegetation in the Project area, or any other visual resources within the Project corridor, such as the creek (if/where visible). Upon completion of Project construction, the visual character and quality of the existing Project corridor and surrounding residential areas in both Palo Alto and East Palo Alto would be reduced to a degree. However, the proposed mitigation measures would ensure the Project impacts are reduced, improving Project aesthetics.

Visual changes resulting from construction that are unique to each build alternative are discussed below. The mitigation measures proposed would be applied to all build alternatives to ensure the Project impacts are reduced, improving Project aesthetics.

Build Alternative 1

Visual changes resulting from Build Alternative 1 are depicted in the simulations for Key View 1 and Key View 2 (Figures 2.1.5-2 and 2.1.5-3). Up to 10 trees would be removed under Build Alternative 1 to accommodate construction. The roadway profile of the new bridge would be raised and the roadway approaches would be modified to transition from the new bridge profile and geometry to the existing roadway. The driveway that would be demolished and reconstructed, sidewalk relocation, and landscaping changes at 475 Newell Road are visible in Key View 1 in Figure 2.1.5-2. As shown in the simulation of Key View 2 in Figure 2.1.5-3, the bridge sides on the East Palo Alto side of the bridge would be fully visible and appear more prominent than existing conditions. As shown in Figures 2.1.5-2 and 2.1.5-3, vegetation removal would completely remove the canopy and shading that street trees and trees and shrubs along the creek corridor provide. This would remove the aesthetic qualities provided by the impacted trees, affecting the intimate nature of views and making views more open and bright, slightly increasing glare, when seen from both Palo Alto and East Palo Alto. Retaining walls on the east and west sides of Newell Road would range from approximately 1 foot to just over 2 feet tall in exposed height and would be taller near Woodland Avenue, decreasing in height as the wall meets existing grade along Newell Road, which would be seen by residents living in Building 1 of the Woodlands Newell Apartments (1761 Woodland Avenue), Woodland Park Apartments building at 5 Newell Road, and by recreationists and roadway users passing by on Newell Road. However, as seen in Figure 2.1.5-2 for Key View 1, the walls would appear to look more like small ramps up and would not be tall enough to enclose or block existing views. Retaining walls along the north side of Woodland Avenue would range from just over just over 4 feet tall, just east of the corner Woodland Avenue intersection with Newell Road, to just over 1.5 feet tall east of the Woodlands Newell Apartments Community Center under Build Alternative 1. As shown in Figure 2.1.5-3 for Key View 2, these walls would not be very prominent when seen from the raised roadway corridor. They would be more prominent when seen from areas near the apartment entrances.

Additionally, Build Alternative 1 would require the signalization of the southern end of the bridge in Palo Alto to control the direction of travel on the bridge, as shown in simulation in Figure 2.1.5-2 for Key View 1. One additional indicator signal would be provided for the sole residential driveway on the Palo Alto side of the bridge to identify the direction of traffic on Newell Road at all times. As shown in Figure 2.1.5-3 for Key View 2, Build Alternative 1 would also require the complete signalization of the intersections of Newell Road with Woodland Avenue in order to control the direction of travel on the bridge and adjacent roadways. Therefore, these signals could result in an increase in lighting and that could potentially degrade visual resources associated with the Project corridor if not properly screened. MM-AES-5 would reduce negative visual changes associated with the traffic signalization resulting from Build Alternative 1.

The proposed Project elements constructed under Build Alternative 1 would not impede sightlines to the tree canopy, trees, neighboring vegetation in the Project area, or any other visual resources within the Project corridor, such as the creek (if/where visible). Changes to visual character and quality would be moderate, and, as mentioned, would be consistent with applicable regulations, standards, and policies outlined in guidance documents. The resource change associated with Build Alternative 1 would be moderate and the average response of all viewer groups would be moderate-high, resulting in a moderate-high visual impact for this alternative during the short-term. The mitigation measures proposed would ensure the Project impacts are reduced, improving Project aesthetics and resulting in impacts that are moderate over the long-term.

Figure 2.1.5-2. Key View 1, Existing View and Build Alternative 1 Simulated Conditions—from Newell Road in Palo Alto looking toward East Palo Alto

Figure 2.1.5-3. Key View 2, Existing View and Build Alternative 1 Simulated Conditions—from Newell Road in East Palo Alto looking toward Palo Alto

Build Alternative 2 (Locally Preferred Alternative)

Visual changes resulting from Build Alternative 2, which would accommodate two-way traffic with a two-lane bridge, are depicted in the simulations for Key View 1 and Key View 2 (Figures 2.1.5-4 and 2.1.5-5). Retaining walls would be the same heights as under Build Alternative 1 along Woodland Avenue, Newell Road North, and Newell Road South. Therefore, under Build Alternative 2, construction impacts would be similar to those described for Build Alternative 1. However, the wider bridge structure would impact additional trees directly adjacent to the existing bridge. Up to two more trees could be removed under Build Alternative 2 compared to Build Alternative 1 and create slightly more open and direct views of the Woodlands Newell Apartments facing Woodland Avenue, making the apartments a more pronounced focal point in Key View 1. Views from East Palo Alto would be similar to Build Alternative 1. However, as shown for Key View 2 in Figure 2.1.5-5, utilities would be slightly reduced under this build alternative because traffic signals would not be present. In addition, even though the bridge would be two lanes, it would not appear much wider from Key View 2 due to the angle of the bridge in relation to the view. From Key View 2, the additional vegetation removal under Build Alternative 2 is not distinguishable compared to Build Alternative 1. Like Build Alternative 1, tree and vegetation removal would also reduce the amount of shading that is present along the Project corridor, making the corridor more open and bright and slightly increasing glare.

The traffic signalization would not be necessary under this alternative, avoiding the visual intrusion of utilities required for Build Alternative 1, as seen in the simulations for Build Alternative 2. Overall, visual impacts under Build Alternative 2 would be very similar to those under Build Alternative 1 and, upon completion of Project construction, the visual character and quality of the existing Project corridor and surrounding residential areas in both Palo Alto and East Palo Alto would be reduced to a degree under Build Alternative 2. The resource change associated with Build Alternative 2 would be moderate and the average response of all viewer groups would be moderate-high, resulting in a moderate-high visual impact for this alternative during the short-term. The mitigation measures proposed would ensure the Project impacts are reduced, improving Project aesthetics and resulting in impacts that are moderate over the long-term.

Figure 2.1.5-4. Key View 1, Existing View and Build Alternative 2 Simulated Conditions—from Newell Road in Palo Alto looking toward East Palo Alto

Figure 2.1.5-5. Key View 2, Existing View and Build Alternative 2 Simulated Conditions—from Newell Road in East Palo Alto looking toward Palo Alto

Build Alternative 3

Visual changes resulting from Build Alternative 3, which would also accommodate two-way traffic with a two-lane bridge, are depicted in the simulations for Key View 1 and Key View 2 (Figures 2.1.5-6 and 2.1.5-7). The retaining walls would mostly be the same heights under Build Alternative 3, as Build Alternatives 1 and 2 along Newell Road South. However, the retaining walls would be several inches shorter along Woodland Avenue and Newell Road North, due to the realignment, which would not be visually discernable compared to Build Alternatives 1 and 2. However, as shown in the Figures 2.1.5-6 and 2.1.5-7, Build Alternative 3 would partially realign the northern end of the Newell Road Bridge by approximately 30 feet to reduce the Newell Road intersection offsets with Woodland Avenue, compared to the existing condition. Up to two more trees could be removed under Build Alternative 3 compared to Build Alternative 2, and four more trees could be removed compared to Build Alternative 1. However, views associated with the Project corridor under Build Alternatives 2 and 3 are similar, represented by Key View 1 and Key View 2 for each of the build alternatives (Figures 2.1.5-6 through 2.1.5-9). Therefore, visual alterations along Newell Road in Palo Alto and East Palo Alto would generally be the same as described for Build Alternative 2 because the realigned, wider bridge structure would also impact trees that are directly adjacent to the existing bridge and the Woodlands Newell Apartments, and like Build Alternative 2, would be more visible than Build Alternative 1 and more of a focal point in Key View 1, as seen in Figure 2.1.5-7. Tree and vegetation removal would also reduce the amount of shading that is present along the Project corridor, making the corridor more open and bright and slightly increasing glare.

Signalization proposed under Build Alternative 1 would not be necessary under Build Alternative 3. This would avoid the visual intrusion of utilities required for Build Alternative 1. Overall, visual impacts under Build Alternative 3 would be similar to those under Build Alternative 2 and, upon completion of Project construction, the visual character and quality of the existing Project corridor and surrounding residential areas in both Palo Alto and East Palo Alto would be decreased to a higher degree under Build Alternative 3 compared to Build Alternatives 1 and 2. The resource change associated with Build Alternative 3 would be moderate and the average response of all viewer groups would be moderate-high, resulting in a moderate-high visual impact for this alternative during the short-term. The mitigation measures proposed would ensure the Project impacts are reduced, improving Project aesthetics and resulting in impacts that are moderate over the long-term.

Figure 2.1.5-6. Key View 1, Existing View and Build Alternative 3 Simulated Conditions—from Newell Road in Palo Alto looking toward East Palo Alto

Figure 2.1.5-7. Key View 2, Existing View and Build Alternative 3 Simulated Conditions—from Newell Road in East Palo Alto looking toward Palo Alto

Build Alternative 4

Visual changes resulting from Build Alternative 4, which would also accommodate two-way traffic, are depicted in the simulations for Key View 1 and Key View 2 (Figures 2.1.5-8 and 2.1.5-9). The retaining walls would mostly be the same heights under Build Alternative 4, as Build Alternatives 1–3 along Newell Road South. However, the retaining walls would be a little over a foot taller at the northeastern corner of the Newell Road and Woodland Avenue intersection and west of the crosswalk at the northwestern corner. The remaining segments of the wall along Woodland Avenue would be the same or several inches shorter than Build Alternatives 1–3, due to the realignment. The most notable difference would be along Newell Road North, where the retaining walls would be approximately 1.5 to 2.3 feet taller than the retaining walls for Build Alternatives 1–3 along the eastern side of Newell Road and approximately 9 inches to just over 1 foot taller than the retaining walls for Build Alternatives 1–3 along the western side of Newell Road. In addition, the sidewalks would be a slightly steeper grade under Build Alternative 4 than the other build alternatives, and the entrance ramp to the Woodland Park Apartments building at 5 Newell Road would need to be increased to meet the new grades along Woodland Avenue. The increased heights along Newell Road North would create a taller wall surface that would serve to hinder views from both sides of the roadway to the opposite side of the road and would be more visually intrusive than the other build alternatives.

In addition, up to four more trees could be removed under Build Alternative 4 compared to Build Alternative 3, six more trees could be removed compared to Build Alternative 2, and eight more trees could be removed compared to Build Alternative 1 and, as shown in Figures 2.1.5-8 and 2.1.5-9, Build Alternative 4 would result in a more substantial realignment of the Newell Road bridge (shifting the northern abutment approximately 90 feet west). This would reduce the Newell Road intersection offsets with Woodland Avenue, compared to the existing condition. Visual alterations along Newell Road in Palo Alto and East Palo Alto would generally be the same as described for Build Alternative 3 because the realigned, wider bridge structure would also impact trees that are directly adjacent to the existing bridge or along the creek. However, the realignment and associated vegetation removal would be greater under Build Alternative 4 and would further increase the availability of views toward development on the opposite side of the bridge, as seen in Figure 2.1.5-8. Build Alternative 4 would reduce shading and increase glare that is present along the project corridor to a greater degree than in Build Alternatives 1–3. Also, as seen in the Simulation for Key View 1, the Woodlands Newell Apartments would be highly visible and much more visible than Build Alternatives 1–3 because portions of the apartments along both Woodland Avenue and Newell Road would be visible, whereas only portions of the apartments along Woodland Avenue are visible under Build Alternatives 1–3. This would make development a more prominent feature in views. Build Alternative 4 would create a much more open view corridor down the Newell Road alignment and a direct visual linkage between the Palo Alto and East Palo Alto sides of the bridge.

Signalization would not be necessary under Build Alternative 4, avoiding the visual intrusion of utilities required for Build Alternative 1. Overall, visual impacts under Build Alternative 4 would be similar to those under Build Alternative 3, but upon completion of Project construction, the visual character and quality of the existing Project corridor and surrounding residential areas in both Palo Alto and East Palo Alto would be decreased to a higher degree under Build Alternative 4 compared to Build Alternatives 1, 2, and 3. The resource change associated with Build Alternative 4 would be moderate and the average response of all viewer groups would be moderate-high, resulting in a moderate-high visual impact for this alternative for both the short- and long-term. The mitigation measures proposed would ensure the Project impacts are reduced, improving Project aesthetics.

Figure 2.1.5-8. Key View 1, Existing View and Build Alternative 4 Simulated Conditions—from Newell Road in Palo Alto looking toward East Palo Alto.

Figure 2.1.5-9. Key View 2, Existing View and Build Alternative 4 Simulated Conditions—from Newell Road in East Palo Alto looking toward Palo Alto.

Conclusion

The proposed Project would not have a negative effect on a scenic vista, damage scenic resources (trees, rock outcroppings, and/or historic buildings within a state scenic highway), or degrade the visual character or quality of the site and its surroundings over the long-term. Similarly, street light adjustments and/or removals would not change ambient illumination levels. Therefore, the proposed Project would not create a new source of substantial light or glare that would negatively affect daytime or nighttime views in the area with mitigation. Under all of the proposed Build Alternatives, the proposed Project would result in a moderate-low resource change for Build Alternatives 1–3 and moderate resource change for Build Alternative 4 (under construction and operation), and the average response of all viewer groups would be moderate-high for all build alternatives. This would result in a moderate visual impact for Build Alternatives 1–3 and a moderate-high visual impact for Build Alternative 4 over the short-term. The mitigation measures proposed would ensure the Project impacts are reduced, improving Project aesthetics and resulting in impacts that are moderate over the long-term for Build Alternatives 1–3. However, impacts under Build Alternative 4 would remain moderate-high over the long-term as well. Mitigation measures have been identified to help lessen visual impacts.

No Build Alternative

Under the No Build Alternative, the Project would not be constructed and there would be no visual impacts on the existing visual character, visual quality, or affected viewer groups as a result of the proposed Project.

Operational Impacts

Build Alternatives

Once in operation, the primary visual changes associated with all build alternatives would be regular roadway maintenance activities that pre-exist and are a common visual element. Traffic may increase slightly over time, causing slight traffic backups on the roadway, increasing the visible presence of traffic congestion due to singular, timed bridge crossings associated with the installation of traffic signals under Build Alternative 1. Operational impacts associated with Build Alternatives 2 through 4 would be similar to Build Alternative 1. However, the visible presence of traffic congestion would be reduced under Build Alternatives 2 through 4 because a traffic signal would not be needed because the bridge would be two lanes and would accommodate multi-directional traffic at the same time. Light and glare during operation would be the same as discussed under *Construction* for all build alternatives.

No Build Alternative

Under the No Build Alternative, the Project would not be constructed and there would be no visual impacts on the existing visual character, visual quality, or affected viewer groups as a result of the proposed Project.

2.1.5.4 Avoidance, Minimization, and/or Mitigation Measures

This section describes mitigation measures to address specific visual impacts. These will be designed and implemented with concurrence of the District Landscape Architect. The following mitigation measures to avoid or minimize visual impacts will be incorporated into the Project.

- **MM-AES-1: Install Visual Barriers between Construction Work Areas and Sensitive Receptors.** The contractor shall install visual barriers to obstruct undesirable views of construction activities and staging areas from sensitive receptors, namely residents and viewers on neighborhood sidewalks and streets, which are located adjacent to the construction site. The visual barrier may be chain link fencing with privacy slats, fencing with windscreen material, wood, or other similar barrier. The visual barrier shall be a minimum of 6 feet high to help to maintain the privacy of residents and block long-term ground-level views toward construction activities. While this visual barrier would introduce a visual intrusion, it would greatly reduce the visual effects associated with visible construction activities and screening construction activities and protecting privacy is deemed desirable by residents. The contractor shall also provide daily visual inspections to ensure the immediate surroundings of construction staging areas are free from construction-related clutter and to maintain the areas in a clean and orderly manner throughout the construction period.
- **MM-AES-2: Replace or Relocate Site Features and Landscaping Affected by the Project.** Where appropriate and to the degree possible, the contractor will relocate, replace, or restore in-kind landscaping and related appurtenances, such as fencing, driveway gates, and similar features that would be removed from private properties as a result of construction to reduce visual impacts and to maintain the quality of views from neighborhood roadways and sidewalks. If the site cannot accommodate this relocation or replacement, then the Project proponent will compensate parcel owners for site features (e.g., fencing, mailboxes, driveway gates) and landscaping that would be removed or damaged as a result of the Project. Replacement of site features and landscaping would be of value at least equal to that of existing features.
- **MM-AES-3: Implement Project Design Aesthetics.** The City of Palo Alto will implement an aesthetic design treatment with a consistent motif for new structures such as retaining walls, bridge sides, fencing, and wing walls. Choosing earth-toned colors for the surfaces would be less distracting to viewers than light or brightly colored surfaces. The shade of the wall will also be carefully considered to complement the project setting. However, studies have shown that structures two to three degrees darker than the color of the general surrounding area have the ability to complement the surrounding vegetation and create less of a visual impact than matching or lighter hues (U.S. Bureau of Land Management 2008). Safety barriers and fencing will be chosen, and could be plastic, powder, or vinyl coated with colors selected using the U.S. Bureau of Land Management selection techniques to make fences to appear more see-through than non-treated, light grey fencing that acts as a visual barrier to a degree.

  The design of the bridge will be reviewed and approved by the City of Palo Alto Architectural Review Board. The Architectural Review Board is a recommending body that reviews projects and provides recommendations to the Director of Planning or Council. The Project would require Architectural Review in accordance with Palo Alto Municipal Code Section 18.76.020. The Architectural Review Board reviews projects for consistency with a series of findings outlined in the municipal code relating to aspects such as compatibility with the immediate environment of the site, compatibility with the design character of the surrounding area, harmonious transitions in scale and character in areas between different designated land uses, internal sense of order, amount and arrangement of open space, integration of natural features, and appropriate materials, textures, colors, and details of construction and plant material. Although some architectural refinements may be expected as the Architectural Review Board process proceeds, such refinements are not expected to change the impact conclusions in this environmental analysis.

- **MM-AES-4: Implement Project Streetscaping and Plantings along Top of Creek Bank.** Streetscaping and planting native vegetation at the tops of the creek's banks will improve the visual quality of the roadway corridor by improving corridor aesthetics. The City of Palo Alto will select street tree species from the Cities' approved list of street trees or will be selected to match existing street trees in close proximity to the Project corridor and in compliance with the Urban Forest Master Plan[3], Palo Alto Tree Technical Manual[4] and East Palo Alto's Development Code (City of East Palo Alto 2017; City of Palo Alto 2001, 2015). Replacement street trees shall have attributes that are at least equivalent to the trees that are removed or that provide a higher degree of aesthetic benefit such as better fall color, interesting bark, or less tree litter. Tree and shrub plantings along the tops of the creek's banks will be installed where space allows and will utilize native plant species that are indigenous to the riparian corridor. Low-lying evergreen and deciduous shrubs and groundcovers, such as *Ceanothus* spp., and an herbaceous understory will also be planted. Plant variety will increase the effectiveness of the streetscape by providing multiple layers, seasonality, and reduced susceptibility to disease. Special attention should be paid to plant choices to prevent driving hazards by obscuring sight distances. Vegetation shall be planted within the first 6 months following Project completion. An irrigation and maintenance program will be implemented during the plant establishment period and carried on, as needed, to ensure plant survival. However, design of the landscaping plan will try to maximize the use of planting zones that are water efficient. The design may also incorporate aesthetic features, such as a cobbling swales or shallow detention areas, which can reduce or eliminate the need for irrigation in certain areas.
- **MM-AES-5: Apply Minimum Lighting Standards.** The contractor and the City of Palo Alto will limit all artificial outdoor lighting to safety and security requirements, designed using Illuminating Engineering Society's design guidelines, and in compliance with International Dark-Sky Association approved fixtures. All lighting is designed to have minimum impact on the surrounding environment and will use downcast, cut-off type fixtures that are shielded and direct the light only towards objects requiring illumination. Therefore, lights will be installed at the lowest allowable height and cast low-angle illumination while minimizing incidental light spill onto adjacent properties, the creek corridor, or backscatter into the nighttime sky. Shielding will also be employed for traffic signals. Light fixtures will have non-glare finishes that will not cause reflective daytime glare. Lighting will be designed for energy efficiency and have daylight sensors or be timed with an on/off program.

  LED lighting will avoid the use of blue-rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin, consistent with the International Dark-Sky Associations Fixture Seal of Approval program (International Dark-Sky Association 2010a, 2010b, 2015). In addition, LED lights will use shielding to ensure nuisance glare and that light spill does not affect sensitive residential viewers.

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[3] Available: https://www.cityofpaloalto.org/civicax/filebank/documents/36187
[4] Available: http://www.cityofpaloalto.org/civicax/filebank/documents/6436

Technologies to reduce light pollution evolve over time and design measures that are currently available may help but may not be the most effective means of controlling light pollution once the project is designed. Therefore, all design measures used to reduce light pollution will employ the technologies available at the time of project design to allow for the highest potential reduction in light pollution.

Lastly, due to the short bridge length, jurisdiction limitations, and in an effort to provide a sidewalk free of obstructions, lighting is not currently proposed on the bridge. On the East Palo Alto side, electrical services are provided by Pacific Gas and Electric and would need to be slightly relocated to accommodate a wider bridge. On the Palo Alto side, an existing light will be replaced along Newell Road, due to the change in grade, in approximately the same location. The relocated light would be less than 80-feet away from the bridge. It is not anticipated that additional lighting would be needed on the bridge. If an additional light is needed in the vicinity, a City standard light could be added on the roadway on the Palo Alto side. This light, if needed, as well as the other lights being replaced would be required to conform to City standards.

2.1.6 Cultural Resources

2.1.6.1 Regulatory Setting

The term “cultural resources,” as used in this document, refers to the “built environment” (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under federal and state laws, cultural resources that meet certain criteria of significance are referred to by various terms including “historic properties,” “historic sites,” “historical resources,” and “tribal cultural resources.” Laws and regulations dealing with cultural resources include the following.

The National Historic Preservation Act of 1966, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 Code of Federal Regulations [CFR] 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the Federal Highway Administration (FHWA), the ACHP, the California State Historic Preservation Officer (SHPO), and the California Department of Transportation (Caltrans) went into effect for Caltrans projects, both state and local, with FHWA involvement. The PA implements the ACHP’s regulations (36 CFR 800), streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The FHWA’s responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Program (23 United States Code 327).

The California Environmental Quality Act (CEQA) requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as “unique” archaeological resources. California Public Resources Code (PRC) Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, thus, a historical resource. Historical resources are defined in PRC Section 5020.1(j). In 2014, Assembly Bill (AB) 52 added the term “tribal cultural resources” to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate effects on them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe. Tribal cultural resources must also meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

2.1.6.2 Affected Environment

The information in this section is from the *Historic Property Survey Report* (October 2017). The study area for cultural resources is referred to as the Area of Potential Effects (APE). The APE was established to include all potential direct and indirect effects on cultural resources that may result from the Project and includes built environment and archaeological resources. The same APE was established for all build alternatives for archaeological resources and the built environment, which may include buildings, structures, objects, and cultural landscapes. The APE was finalized on July 12, 2017, by the Caltrans District 4 Principal Architectural Historian, Principal Investigator-Prehistoric and Historical Archaeology, Caltrans District Local Assistance Engineer, City of Palo Alto Engineer, and City of East Palo Alto Engineer.

The *archaeological* APE consists of both the horizontal and vertical maximum potential extent of direct impacts resulting from the Project. The horizontal APE is bounded by the existing rights-of-way limits surrounding the Project footprint. It encompasses the project footprint and includes those areas of new construction, easements, utilities, retaining walls, and operations-related activities associated with the Project. The vertical APE is the maximum extent of ground disturbance within the horizontal APE (i.e., ground surface to maximum depth of soil disturbance) and varies by Project component. For the vast majority of the Project, the vertical APE ranges from 2 feet to no greater than 6 feet below current ground surface. The vertical APE is an estimate based on a proposed depth for piles or abutments that will need to be installed to support the bridge structure; however, no ground disturbance of native soils is necessary if the new piers or abutments are installed within the existing footprint of the bridge. Proposed retaining walls associated with construction of the new bridge would be excavated to a depth of 6 feet. All proposed staging areas would occur within the archaeological APE.

The *architectural* APE encompasses the maximum extent of potential direct *and* indirect effects on built environment resources that could result from the Project, including the bridge and all parcels being affected by the Project (Assessor's Parcel Numbers [APNs] 003-12-013, 063-515-280, 063-515-380, 063-515-370, 063-513-350, 063-513-440, and 003-11-020). A portion of these parcels would be needed for a proposed temporary construction easement, they border the approaches for the proposed replacement bridge, or their visual setting is altered by the construction of a retaining wall. The APE encompasses the entirety of each of the parcels listed above, even if the Project is only anticipated to affect portions of the parcels, based on Caltrans procedures.

Archaeological Resources

Bibliographic references, such as the California Historical Landmarks and the California Points of Interest inventories, previous survey reports, historic maps, and archaeological site records pertinent to the APE were compiled through a record search of the California Historical Resources Information System (CHRIS) in order to identify prior technical studies and known archaeological resources within a 0.5-mile radius surrounding the Project APE. A total of 40 studies have been conducted within 0.5 mile of the APE. Of those, none have occurred within the APE.

A CHRIS record search was conducted at the Northwest Information Center, Sonoma State University, Rohnert Park, on June 18, 2012. An update to this record search was conducted on October 27, 2016, and in October 2017. These updated searches were completed to determine if any cultural resources were recorded or submitted after the previous search was conducted. The record search area comprised the Project APE and 0.5-mile radius of the surrounding area. No prehistoric or historical archaeological resources were identified through any of the record searches or literature reviews within or adjacent to the APE. Six archaeological resources were identified within 0.5 mile of the APE.

A field survey of the archaeological APE was conducted on June 13, 2012. The entire archaeological APE was inspected for indications of human activity. Areas inspected include both bridge approaches and the areas designated as within the archaeological APE on both sides of the bridge (Figure 2.1.6-1).

At the time of the survey, San Francisquito Creek was dry, with grasses and rocks visible at the bottom, with steep banks partially covered in vegetation leading down to the creek. A focused survey of all visible (40 to 50% visibility) areas on the tops of the banks and the exposed cut banks on both sides of the creek was completed. This close inspection of the creek banks failed to identify any cultural material or paleosols. No cultural resources were observed anywhere in the APE during the field survey.

Built Environment Resources

The architectural APE was surveyed on June 13, 2012, and again on June 12, 2017. On June 18, 2012, a record search was conducted at the Northwest Information Center at Sonoma State University in Rohnert Park. The record search entailed consulting the state's database of previous technical studies, known built environment resources, pertinent historical inventories—such as the NRHP, CRHR, California Historical Landmarks, and California Points of Interest listings—and historic maps specific to the project APE.

An update to this record search was conducted on October 27, 2016. This update searched for any built resources recorded or submitted after 2012. The record search area comprised the project APE. No historic-era built resources were identified through the record search and literature review within or adjacent to the APE.

No previous architectural history studies or reports have specifically covered the APE.

The architectural APE includes the bridge and seven properties. In accordance with Caltrans guidelines for identification and evaluation of potential historic properties, the historical significance of buildings, structures, and objects in the APE that predate 1967 was evaluated. These include single-family and multi-family residences in the APE constructed between 1943 and 1960. The project APE contains five residential properties in San Mateo and Santa Clara Counties which were found not to be eligible for listing in the NRHP, as shown in Table 2.1.6-1. The SHPO concurred on these determinations on November 30, 2017. Per Stipulation VIII.C.1 and Attachment 4 of the Section 106 PA, two additional properties within the APE (1767 Woodland Avenue and 1761 Woodland Avenue) were exempt from evaluation because they were either less than 30 years old or had substantial modifications that altered the property so as to appear less than 30 years old.

Table 2.1.6-1. Properties identified in the Area of Potential Effects as a result of the current study and determined not eligible for the National Register of Historic Places.

Assessor's Parcel Number	Street Address	Year Built	Determination
003-12-013	475 Newell Rd	1943	Not eligible
063-515-280	1773 Woodland Ave	1949	Not eligible
063-513-350	5 Newell Rd	1960	Not eligible
063-513-440	15 Newell Rd	1960	Not eligible
003-11-020	1499 Edgewood Drive	1946	Not eligible

Figure 2.1.6-1. Archaeological Survey Coverage

The evaluation of the Newell Road Bridge (Caltrans Bridge Number 37C0223 – San Francisquito Creek) was administered through the Caltrans Historic Bridge Inventory (2003 and 2015). Through this study, it was determined by Caltrans and the SHPO that the Newell Road Bridge did not meet the criteria for listing in the NRHP (i.e., Category 5). Furthermore, Kathryn Haley, who meets the Professionally Qualified Staff Standards in Section 106 PA Attachment 1 as an Architectural Historian, also reviewed the Caltrans Historic Bridge Inventory documentation regarding the Newell Road Bridge and concluded that the bridge lacks significance and does not meet criteria for listing in the CRHR. As such, the Newell Road Bridge is not considered a historic property under Section 106 and the National Environmental Policy Act (NEPA) nor is it considered a historical resource for the purposes of CEQA.

Consultation

Native American Consultation

The Native American Heritage Commission (NAHC) was contacted on June 20, 2012, to identify any areas of concern within the APE that may be listed in the NAHC's Sacred Lands File. The NAHC responded on July 10, 2012, stating that a search of their files failed to indicate the presence of Native American cultural resources in the immediate APE. The NAHC provided a list of ten Native American contacts that might have information pertinent to this project, or have concerns regarding the proposed actions.

A letter explaining the proposed Project, along with a map depicting the APE, was then sent to nine contacts listed by the NAHC on November 16, 2012. The letter also solicited responses from each of the contacts, should they have any questions, comments, or concerns regarding the Proposed Project. Letters were sent to the following contacts.

- Jakki Kehl
- Valentin Lopez, Chairperson, Amah Mutsun Tribal Band
- Edward Ketchum, Amah Mutsun Tribal Band
- Irene Zwierlein, Chairperson, Amah Mutsun Tribal Band
- Katherine Erolinda Perez
- Jean-Marie Feyling, Amah Mutsun Tribal Band
- Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Costanoan
- Rosemary Cambra, Chairperson, Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- Ramona Garibay, Representative, Trina Marine Ruano Family

Per his request, an e-mail was sent to Andrew Galvan, a representative of the Ohlone Indian Tribe, which provided the same information as contained in the letters that were mailed out. No responses were received for this initial consultation from any of the 10 individuals contacted.

Due to the passage of time, updated letters were sent on September 2, 2015 to all of the contacts listed above. The letters provided project updates and an updated project map to the Native American contacts. No responses were received. Further follow-up communications were conducted via telephone on September 21, 2015, to all 10 individuals listed by the NAHC. Additional phone calls were made on August 28, 2017, and September 5, 2017. Most individuals were unable to be reached and a phone message with project details and a request for a return call was left at the number provided. When contacted, Ms. Sayers stated she did not have any concerns and felt comfortable with any work occurring in the area. Ms. Zweirlein requested that an archaeologist be present if any sensitive material is uncovered during project-related ground disturbance. Ms. Feyling was concerned about possible burials and requested that an archaeologist be present during project construction. Mr. Galvan requested an updated record search. Per Mr. Galvan's request, an additional record search was completed in October 2017. One additional study was noted, but no new or additional previously recorded cultural resources have been submitted to the Northwest Information Center since the last record search was completed in 2016.

Historical Society Consultation

On November 2, 2012, a letter was sent to the following historical societies requesting any information on three potential resources in the Project APE (APN 003-12-013, APN 063-515-280, and APN 063-513-350).

- Palo Alto Historical Association (Palo Alto)
- East Palo Alto Historical and Agricultural Society (East Palo Alto)
- California Historical Society (San Francisco)

The Palo Alto Historical Society confirmed that they do not have any information regarding historic resources within the APE. Follow up phone calls were made to the remaining aforementioned historical societies in November, 2012. The project team was informed by the historical societies that they do not have any information regarding historic resources within the APE. Additional outreach was performed in August 2017 due to the passage of 5 years since the last consultation and after two properties (APN 003-11-020, and APN 063-513-440) were added to the APE. The above three historical societies were contacted on August 28, 2017, by phone to request information pertaining to the two additional properties in the APE and inquire if any new information is available for the three properties in the original project APE. A voicemail was left for the Palo Alto Historical Society and the California Historical Society. The East Palo Alto Historical and Agricultural Society said that they do not have any information regarding historic resources within the APE. The California Historical Society responded on August 31, 2017 stating that they do not have any specific historical information regarding the historical resources in the APE. An additional follow up call was made to the Palo Alto Historical Association on September 6, 2017, and a voicemail was left, but no response was received.

2.1.6.3 Environmental Consequences

Construction Impacts

Build Alternatives

It has been determined that there are no historic properties present in the APE. SHPO concurred with this finding on November 30, 2017. Therefore, there would be no historic properties affected during construction of any of the build alternatives, nor would any Section 4(f) resources be affected.

The APE is located near to and along the steep banks of San Francisquito Creek. These creek banks, do not allow for the preservation of in-situ subsurface archaeological deposits due to rapid erosional forces. However, the cutbank along the creek allows for thorough inspection of a large exposure of the portions of the APE located upslope of the banks. The combination of the bank encompassing a large portion of the APE, and the lack of archaeological material encountered on the ground surface upslope of the banks and in the exposures observed during survey indicates limited archaeological sensitivity within the APE. It is not anticipated that previously unidentified prehistoric or historic archaeological sites are located in the APE.

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find (SM-CUL-1).

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner shall be contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the Caltrans District 4 Office of Local Assistance archaeologist so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable (SM-CUL-2).

No Build Alternative

The No Build Alternative would not affect cultural resources during construction because there would be no ground-disturbing activities.

Operational Impacts

Build Alternatives

It has been determined that there are no historic properties present in the APE. SHPO concurred with this finding on November 30, 2017. Therefore, there would be no historic properties affected during operation of any of the build alternatives, nor would any Section 4(f) resources be affected.

No Build Alternative

The No Build Alternative would not affect cultural resources because no improvements would be implemented.

2.1.6.4 Avoidance, Minimization, and/or Mitigation Measures

The following standardized measures will be implemented during construction of all build alternatives to avoid potential impacts to cultural resources.

- SM-CUL-1: If cultural materials are discovered during construction, the contractor will cease all earth-moving activity within and around the immediate discovery area until a qualified archaeologist can assess the nature and significance of the find and recommend/implement appropriate data collection/recovery activities.
- SM-CUL-2: If human remains are discovered, State Health and Safety Code Section 7050.5 states that the contractor will stop further disturbances and activities in any area or nearby area suspected to overlie remains, and the contractor will contact the County Coroner. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the

coroner will notify the NAHC, which will then notify the MLD. At this time, the person who discovered the remains will contact the Caltrans District 4 Office of Local Assistance archaeologist so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

2.2 Physical Environment

2.2.1 Hydrology and Floodplain

2.2.1.1 Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration requirements for compliance are outlined in 23 Code of Federal Regulations (CFR) 650 Subpart A.

To comply, the following must be analyzed.

- The practicability of alternatives to any longitudinal encroachments.
- Risks of the action.
- Impacts on natural and beneficial floodplain values.
- Support of incompatible floodplain development.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

The base floodplain is defined as "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the base floodplain."

2.2.1.2 Affected Environment

The information in this section is from the *Water Quality Assessment Report* (July 2017), the *Bridge Hydraulics and Evaluation of Proposed Alternatives Technical Memorandum* (August 2012), and the *Location Hydraulic Study* (December 2017).

Watershed Description

The Project site is located within the Lower Peninsula Watershed. Within this watershed, the Project site is within the San Francisquito Creek Subwatershed. Within the Project limits, runoff from the bridge discharges into drainage inlets and into the San Francisquito Creek Pump Station on East Bayshore Road, which discharges into San Francisquito Creek and eventually into San Francisco Bay. Runoff in the Project vicinity remains on the surface through a gutter system with drain inlets along Newell Road and Woodland Avenue. Stormwater runoff converges at these drain inlets, enters the stormwater system and eventually flows into San Francisquito Creek, ultimately discharging to southern San Francisco Bay.

Floodplain Description

The Newell Road Bridge and parts of Woodland Avenue are within the Federal Emergency Management Agency (FEMA) 100-year flood Zone A (Map #06081C0309E, Figure 2.2.1-1). Newell Road is mapped within Flood Zone A and Flood Zone X (unshaded). Zone X is outside the 500-year floodplain. The Zone A floodplain represents areas with a 1% annual chance of flooding. Construction within the Zone A floodplain requires special analysis and engineering to ensure the Project does not increase the base flood elevation by greater than 1 foot. City of Palo Alto Ordinance states that the lowest floor elevation of a structure needs to be at or above the base flood elevation. However, the areas mapped as Zone X (unshaded) would have a less than 0.2% annual chance of flooding; therefore, special engineering issues or restrictions would not be applicable to these parts of the site.

Both the creek and bridges at the lower reach of San Francisquito Creek from downstream of Caltrain Bridge/El Camino Real Bridge to the San Francisco Bay are incapable of carrying the 100-year flow (Nolte Vertical Five 2012, 2017). As of October 2018, the Santa Clara Valley Water District (SCVWD) completed the creek improvement project between East Bayshore Road and the San Francisco Bay, allowing that section of the creek to convey the 1% flow rate. The flow capacity of San Francisquito Creek between the El Camino Real Bridge and West Bayshore Road is up to 6,000 cubic feet per second (cfs) based on the FEMA hydraulic model (Nolte Vertical Five 2017). The SCVWD model revealed that neither the Newell Road Bridge nor the creek channel has adequate capacity to convey the base flood (Nolte Vertical Five 2012, 2017). SCVWD estimated that the 1% flow rate for San Francisquito Creek is 8,150 cfs at Newell Road Bridge. The 2016 SCVWD hydraulic model indicates that the existing bridge opening can convey peak flows of approximately 6,600 cfs. A previous FEMA hydraulic model indicates that the existing bridge opening can convey peak flows of approximately 6,000 cfs. Nonetheless, upstream constraints along the creek currently restrict lower flows. SCVWD is currently developing a separate project that could allow flows of up to approximately 7,500 cfs to pass through the Project site (Nolte Vertical Five 2017).

Under existing conditions, the bridge would be overtopped in the 100-year storm event (Nolte Vertical Five 2012, 2017). The existing roadway profile is set at 31.4 feet and the bridge underside is set at 29.3 feet. The water surface elevation levels (WSELs) for the 50-year and 100-year events are 31.06 feet and 32.03 feet, respectively. It is expected there could be up to 0.63 feet of water on the bridge roadway under existing 100-year storm event conditions (Nolte Vertical Five 2017). The existing channel would also overspill in both 100-year and 50-year flow events (Nolte Vertical Five 2017).

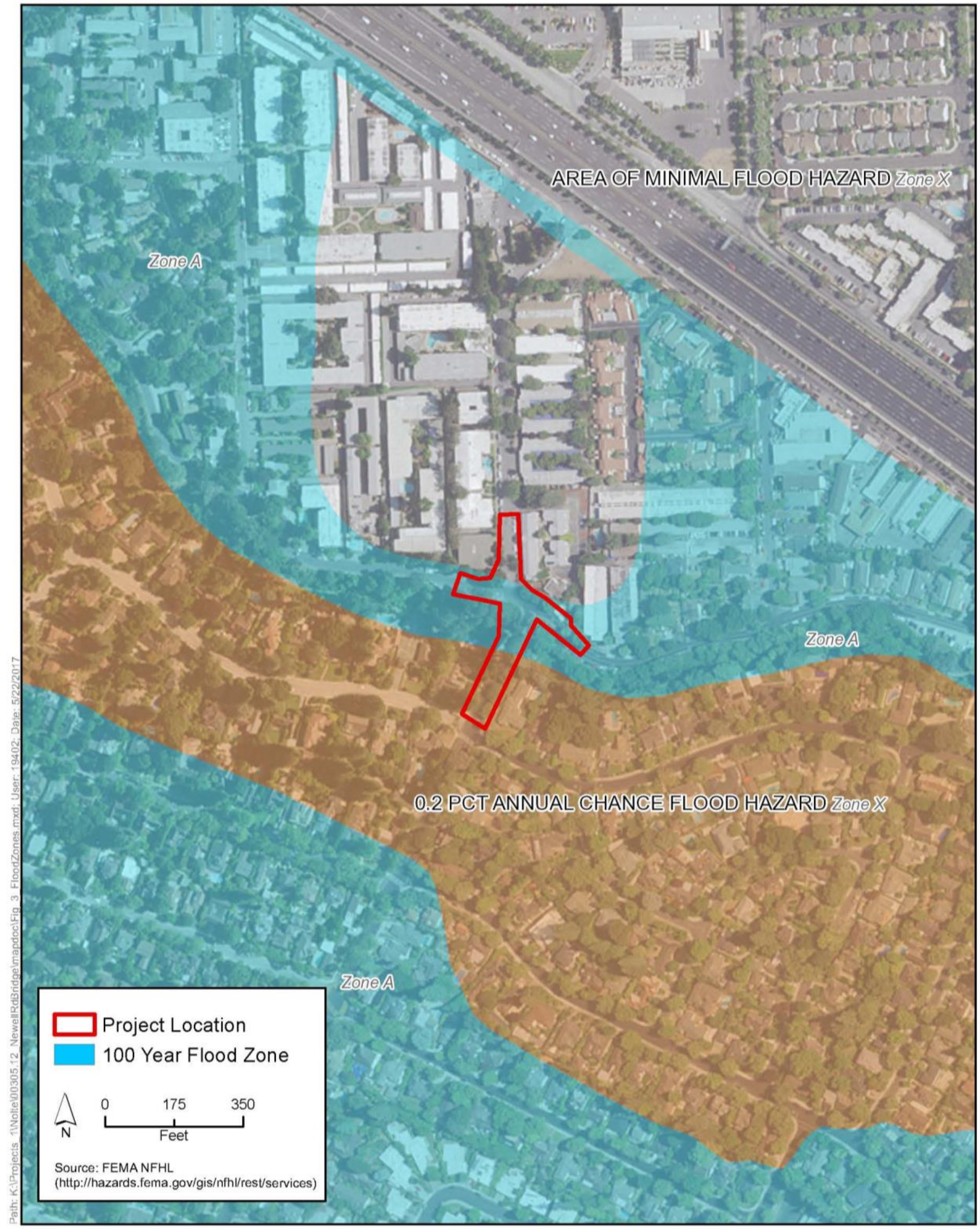

Figure 2.2.1-1. FEMA Flood Zones within the Project Area

2.2.1.3 Environmental Consequences

Construction Impacts

Build Alternatives

The Project includes four build alternatives that result in replacement of Newell Road Bridge over San Francisquito Creek. Heavy construction equipment would be operated along the banks of San Francisquito Creek, but not below the ordinary high water mark. Potential temporary impacts could occur during the widening of the channel, depending on the build alternative, construction of the bridge structure, excavation under the new bridge structure, and reconstruction of the channel banks. Vegetation would be cleared, exposing soil to the potential for erosion and downstream transport of sediments. In addition, during construction, a temporary creek flow diversion method would be installed in San Francisquito Creek to allow for construction activities to take place along the banks of the active creek. Check dams, such as clean gravel dams or any other type of approved California Department of Transportation standard dam, would be installed both upstream and downstream of the construction zone within 50 feet of the bridge, and culvert piping would route surface water flows through the construction zone. Construction of the Project may affect drainage patterns, as well as water volume, depth, and flow rate.

As part of standardized measure SM-WQ-2, under the Construction General Permit, the Project would be required to prepare a Storm Water Pollution Prevention Plan and implement construction Best Management Practices (BMPs) aimed at reducing pollutants of concern in stormwater runoff. The construction BMPs would include Erosion Control, Sediment Control, and Good Housekeeping BMPs designed to minimize erosion, retain sediment on site, and prevent spills. Therefore, the Project would not result in temporary water quality–related impacts on the floodplains of the San Francisquito Creek and construction is not anticipated to impact the natural and beneficial floodplain values of San Francisquito Creek.

No Build Alternative

Under the No Build Alternative, no changes would be made to the existing bridge and approaches. No construction activities would occur, and there would be no direct effect on hydrology and floodplains because construction would not occur.

Operational Impacts

Build Alternatives

The SCVWD model was used to determine the capacity of the existing Newell Road Bridge, as shown in Table 2.2.1-1. Two scenarios were evaluated, one under the bridge removal condition, and one with the bridge soffit at 30 feet. When the existing Newell Road Bridge is removed, both the 50-year and 100-year flows are contained within the bridge cross section and WSELs decrease by 1.65 and 1.87 feet, respectively. The WSELs for the 50-year and 100-year events with the bridge removed are 29.41 feet and 30.16 feet, respectively.

Table 2.2.1-1. Hydraulic Performance of Newell Road Bridge

	Bridge Removal Condition		Bridge Soffit at 30 Feet	
	50-Year Flood	100-Year Flood	50-Year Flood	100-Year Flood
Discharge (cfs)	7,500	8,150	7,500	8,150
WSEL (ft), Existing Condition	31.06	32.03	31.06	32.03
WSEL (ft), Proposed Bridge	29.41	30.16	29.41	30.72
WSEL Decrease (ft)*	-1.65	-1.87	-1.65	-1.31

* The WSEL Decrease (ft) is the difference between the WSEL (ft), Proposed Bridge and the WSEL (ft), Existing Condition.
cfs = cubic feet per second; WSEL = water surface elevation levels; ft = feet
Source: Nolte Vertical Five 2017

The proposed replacement bridge would be a 42-foot-wide by approximately 80-foot-long (for the locally preferred alternative) single-span structure. The new clear span between abutments would address potential flooding risk by increasing the area below the bridge to allow larger flows to pass. In order to provide adequate clearance to convey the required storm flow, the proposed bridge soffit (bridge underside) elevation would need to be raised. To accommodate the larger flows within San Francisquito Creek, the proposed replacement bridge, Newell Road, and Woodland Avenue would all have raised elevations. The new elevations would change slope grades that would extend 500 feet north within Newell Road and 350 feet east and west of the bridge intersection within Woodland Avenue.

The 100-year WSEL with the existing bridge removed was set as the elevation of the soffit (underside) of the proposed bridge with a clear span. As an alternative, the bridge soffit was set at the 50-year WSEL with a clear span. The 50-year WSEL would raise the existing Woodland Avenue vertical alignment to a lesser extent than the 100-year WSEL (Nolte Vertical Five 2017). The bridge soffit was set at 30 feet (less than the 100-year WSEL of 30.16 feet for the bridge removal condition).

As shown in Table 2.2.1-1, under the 100-year WSEL (8,150 cfs) if the soffit is set at 30 feet, the Newell Road Bridge replacement would pass the 100-year flow (30.72 feet WSEL) (Nolte Vertical Five 2017). This is because the upstream constrictions and planned creek improvements limit the flow that would reach Newell Road to the 50-year flow (7,500 cfs). In addition, if the creek is ever enlarged to accommodate the 100-year event, the water surface at Newell Road could be reduced to be below 30 feet with minor downstream creek widening (Nolte Vertical Five 2017). This would result in a decrease of the WSEL over existing conditions by 1.31 feet. However, raising the bridge to be at the 100-year WSEL is not practical due to the severe transition grades that would be required to meet existing grades. Upgrading the bridge to pass a 100-year flow would involve significant excavation of the existing creek or addition of floodwalls to improve the creek capacity. Under 50-year WSEL (7,500), the bridge underside is also set at 30 feet, and the Newell Road Bridge replacement would pass the 50-year flow (29.41 feet WSEL) with no pressure (Nolte Vertical Five 2017). Compared to existing conditions, the proposed 50-year WSEL would decrease by 1.65 feet.

In the proposed Project condition, the base flood elevation would be lowered compared to existing conditions. Further, the existing 50-year and 100-year flood events would be minimized compared to existing conditions (Nolte Vertical Five 2017). Upstream constraints along the creek currently restrict lower flows (i.e., Pope Chaucer Road Bridge limits creek flows downstream to approximately

5,400 cfs), which means increasing the flow at the Newell Road Bridge would not cause flooding elsewhere. Therefore, there would be no increased flood risk and no risk to life or property associated with implementation of the Project. The Project would not support incompatible floodplain development since the areas surrounding the Newell Road Bridge floodplain are already developed. As stated previously, San Francisquito Creek's natural and beneficial floodplain values include, but are not limited to, fish, wildlife, plants, open space, and natural moderation of floods. Construction of the Project would result in additional flow capacity in the Project area. Therefore, operation of the Project is not anticipated to impact the natural and beneficial floodplain values of San Francisquito Creek.

The Project area is not in an area susceptible to inundation by seiche, tsunami, or mudflow; therefore, no impacts would result.

No Build Alternative

The No Build Alternative would have no effect on hydrology and floodplains because construction would not occur. However, in the absence of additional bank stabilization activities, the banks of San Francisquito Creek would be expected to erode further, particularly in response to high discharges. In addition to erosion continuing along some banks and beginning along others, existing structures may degrade and present additional threats to bank stability. Should the supply of sediment in the watershed exceed the transport capacity of San Francisquito Creek, the natural deposition of material may build up on the land surface or in the streambed. Ultimately, the trends of creek bed elevations rising from sedimentation and channel widths increasing from bank instability are likely to continue until a more stable channel form develops. An increase in bed elevation would reduce the sediment transport capacity of San Francisquito Creek and could exacerbate flooding problems (San Francisquito Creek Joint Powers Authority 2004).

Significant Encroachment

"Significant encroachment" as defined at 23 CFR 650.105 is a highway encroachment and any direct support of likely base floodplain development that would involve one or more of the following construction or flood-related impacts.

- A significant potential for interruption or termination of a transportation facility that is needed for emergency vehicles or provides a community's only evacuation route.
- A significant risk (to life or property).
- A significant adverse impact on natural and beneficial floodplain values.

The proposed action does not constitute a significant floodplain encroachment as defined in 23 CFR Section 650.105(q). The implementation of the Project would change the capacity of the San Francisquito Creek to carry water but would provide additional capacity in order to meet existing 50-year flood flows. The Project would not result in a reduction of the floodplain boundaries associated with the San Francisquito Creek. The Project would not result in an increase in the water surface elevation compared to existing conditions. The Project would not result in any significant change in flood risks or damage and does not have significant potential for interruption or termination of emergency service or emergency routes. Construction of the Project would require closing of the existing Newell Road Bridge crossing for all build alternatives. As a result, emergency services would have to use other existing nearby crossings (University Avenue and West Bayshore Road). However, advance notice and coordination with emergency service providers will be included in the Traffic Management Plan to minimize any potential temporary impacts on response times, as discussed in SM-TR-1 and further described in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*. Therefore, the proposed encroachment into the San Francisquito Creek is not significant. The Project would not involve a significant encroachment on a regulatory floodway or substantially increase the base flood elevation.

2.2.1.4 Avoidance, Minimization, and/or Mitigation Measures

The build alternatives would not result in adverse temporary or permanent impacts on floodplain values. The natural and beneficial floodplain values of San Francisquito Creek would not be adversely affected; therefore, the build alternatives would not result in impacts on floodplain values. Therefore, no avoidance, minimization, and/or mitigation measures are required to minimize impacts on the waterway.

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2.2.2 Water Quality and Storm Water Runoff

2.2.2.1 Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States from any point source[1] unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections.

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the United States. Regional Water Quality Control Boards (RWQCBs) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of the USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's (EPA) Section 404 (b)(1) Guidelines (Guidelines) (40 Code of Federal Regulations [CFR] Part 230), and whether the permit approval is in the public interest. The Guidelines were developed by the EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the United States) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging

[1] A point source is any discrete conveyance such as a pipe or a man-made ditch.

practicable alternative to the proposed discharge that would have lesser effects on waters of the United States and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent[2] standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the United States. In addition, every permit from the USACE, even if not subject to the Guidelines, must meet general requirements (33 CFR 320.4). A discussion of the least environmentally damaging practicable alternative determination, if any, for the document is included in the Wetlands and Other Waters section.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state are defined more broadly than waters of the United States, and include some types of groundwater and surface waters not considered waters of the United States. Additionally, the Porter-Cologne Act prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or nonpoint source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, nonpoint, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities.

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[2] The EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

National Pollutant Discharge Elimination System Program

Municipal Separate Storm Sewer Systems

CWA Section 402 mandates permits for municipal stormwater discharges, which are regulated under the NPDES General Permit for MS4s. Phase I MS4 regulations cover municipalities with more than 100,000 residents, certain industrial processes, or construction activities that disturb an area of 5 acres or more. Phase II "small" MS4 regulations require stormwater management plans to be developed by municipalities with fewer than 100,000 residents and construction activities that disturb 1 or more acres of land. The City of Palo Alto is subject to the requirements of the Municipal Regional Stormwater NPDES Permit for Phase I municipalities and agencies in the San Francisco Bay area (Order R2- 2015-0049), also known as the Municipal Regional Permit (MRP), which became effective on January 1, 2016.

Construction of new roads is covered by MRP requirements, but projects related to existing roads and adjoining sidewalks and bike lanes are not regulated unless they include creation of an additional travel lane. Provision C.3.j of the MRP requires Permittees to develop and implement long-term Green Stormwater Infrastructure Plans for the inclusion of low impact development measures into storm drain infrastructure on public and private lands, including streets, roads, storm drains, parking lots, building roofs, and other elements. The Santa Clara Valley Urban Runoff Pollution Prevention Program is an association of 13 cities and towns, including the City of Palo Alto, the County of Santa Clara, and the Santa Clara Valley Water District, which share the MRP to discharge stormwater to South San Francisco Bay.

Construction General Permit

Construction General Permit, Order No. 2009-2009-DWQ (adopted on September 2, 2009, and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14, 2011) and Order No. 2012-0006-DWQ (effective on July 17, 2012). The permit regulates storm water discharges from construction sites that result in a disturbed soil area (DSA) of 1 acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least 1 acre must comply with the provisions of the Construction General Permit. Construction activity that results in soil disturbances of less than 1 acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop Storm Water Pollution Prevention Plans (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. A Water Pollution Control Program is necessary for projects with DSA less than 1 acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the United States must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

2.2.2.2 Affected Environment

The information in this section is from the *Water Quality Assessment Report* (July 2017).

Surface Water

The Project drains to the Lower Peninsula Watershed. Within this watershed, the Project is located within the San Francisquito Creek Subwatershed.

San Francisquito Creek is the main outlet of the San Francisquito Creek watershed, which encompasses an area of approximately 45 square miles extending from the ridge of the Santa Cruz Mountains to the San Francisco Bay. Most of the watershed lies in the Santa Cruz Mountains and foothills northwest of Palo Alto; the remaining 7.5 square miles lie on the San Francisquito alluvial fan near South Bay. San Francisquito Creek is a perennial stream that originates in the largely undeveloped eastern foothills of the Santa Cruz Mountains between Kings Mountain and Russian Ridge, running 13 linear miles from Searsville Dam downstream to the South San Francisco Bay.

Currently, the banks of San Francisquito Creek are subject to erosion, particularly in response to high discharges, where bank instability is present, or where vegetation becomes disturbed. Erosion by surface water flows is most susceptible where slopes are steep. The soil erodibility factor (Kw) for the immediate Project site was unavailable in the Natural Resources Conservation Service soil database. However, both the California Department of Transportation (Caltrans) Water Quality Planning Tool and the State Water Resources Board K Value map estimated a Kw value of 0.32. Generally this equates to a moderate potential for erosion. Topography in the Project area varies in elevation and, therefore, also represents a moderate erosion potential.

Groundwater

The Project is in the San Mateo Groundwater Subbasin, of the larger Santa Clara Valley Groundwater Basin. San Francisco Bay constitutes the eastern boundary of the San Mateo Subbasin, and the Santa Cruz Mountains form the western margin. The Westside Basin bounds it on the north and its southern limit is defined by San Francisquito Creek. Natural recharge within the San Mateo Groundwater Subbasin occurs by infiltration of water from streams that enter the Santa Clara Valley from the upland areas within the drainage basin and by percolation of precipitation that falls directly on the valley floor. A relatively shallow water table aquifer overlies confined and semi-confined aquifers in this lowland area. Most of the wells in the basin draw water from the deeper confined and semi-confined aquifers. Unless designated otherwise by the San Francisco RWQCB, all groundwater is considered suitable, or potentially suitable, for municipal or domestic water supply.

Existing Water Quality

Water quality in the study area is of particular concern because San Francisquito Creek provides habitat for Central California Coast steelhead, a species federally listed as threatened. As designated by the San Francisco RWQCB, the existing beneficial uses for water bodies in the study area include the following: cold freshwater habitat (COLD), warm freshwater habitat (WARM), fish migration (MGR), fish spawning (SPWN), and preservation of rare and endangered species (RARE). Potential beneficial uses include water contact recreation (REC1) and noncontact water recreation (REC2) (California Department of Transportation 2017). San Francisquito Creek is a CWA 303(d)-listed water body for diazinon, sedimentation/siltation, and trash. Other chemical constituents are also of concern within the San Francisquito Creek watershed because of potential or suspected impacts on aquatic life within the creek, or because of their listing as causes of impairment within South San Francisco Bay on the CWA Section 303(d) list. These include chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, dioxin and furan compounds, invasive species, mercury, polychlorinated biphenyl, and selenium.

The San Francisquito Creek watershed includes urban, agricultural, and rural land use areas. Urban areas contribute storm water and urban dry weather runoff that can carry contaminants, including trace metals, industrial chemicals, lawn and garden care chemicals, nutrients, and trash. Urban nonpoint source pollution includes heavy metals, pesticides, bacteria, organics (oil and grease), dirt, and nutrients. Pollutants are usually deposited on the roadway as a result of fuel combustion processes, lubrication system losses, tire and brake wear, transportation load losses, paint from infrastructure, and atmospheric fallout.

CWA Section 303(d) requires all states to identify the waters of the state that do not meet the CWA's national goal of "fishable, swimmable" and to develop TMDLs for such waters, with oversight by the EPA. San Francisquito Creek is included in the Section 303(d) list, indicating that this water body does not meet water quality standards. Table 2.2.2-1 shows Section 303(d)-listed impairments for waterbodies within the Project area based on the 2012 California Integrated Report (California Department of Transportation 2017).

Table 2.2.2-1. Section 303(d) list for Waterbodies in the Project Area

Water Body	Pollutant Stressors	Potential Sources	Estimated Size Affected	TMDL Completion Date
San Francisquito Creek	Diazinon	Urban Runoff/Storm Sewers	12 Miles	2007
	Sedimentation/ Siltation	Nonpoint Source	12 Miles	Est. 2013[1]
	Trash	Illegal dumping and Urban Runoff/Storm Sewers	12 Miles	Est. 2021[1]

TMDL = total maximum daily load

[1] Expected TMDL completion date. Completion has not yet occurred.

Source: California Department of Transportation 2017

Beneficial Uses

The Project lies within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (SFRWQCB). The SFRWQCB is responsible for implementing its Basin Plan and for protecting the beneficial uses of water resources. Beneficial uses represent the services and qualities of a water body (i.e., the reasons the water body is considered valuable). Table 2.2.2-2 identifies and defines the beneficial uses for the surface water within the Project area as designated by the SFRWQCB. San Francisquito Creek is considered a high receiving water risk because it has the beneficial uses of cold freshwater habitat, fish migration, and fish spawning. Natural and beneficial floodplain values include, but are not limited to, fish, wildlife, plants, open space, and natural moderation of floods.

Table 2.2.2-2. Beneficial Uses for San Francisquito Creek

Beneficial Uses	San Francisquito Creek	Definition
Cold Freshwater Habitat (COLD)	E	Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Fish Migration (MGR)	E	Uses of water that support habitats necessary for migration, acclimatization between fresh water and salt water, and protection of aquatic organisms that are temporary inhabitants of waters within the region.
Fish Spawning (SPWN)	E	Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish
Warm Freshwater Habitat (WARM)	E	Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Wildlife Habitat (WILD)	E	Uses of waters that support wildlife habitats, including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.
Water Contact Recreation (REC-1)	E	Uses of water for recreational activities involving body contact with water where ingestion of water is reasonably possible.
Noncontact Water Recreation (REC-2)	E	Uses of water for recreational activities involving proximity to water, but not normally involving contact with water where water ingestion is reasonably possible.

E = Existing beneficial use.
Source: San Francisco Bay Regional Water Quality Control Board 2017.

2.2.2.3 Environmental Consequences

Construction Impacts

Build Alternatives

Short-term or temporary construction impacts on water quality including biological, physical/chemical, and human use constituents have the potential to occur during grading, demolition, and construction related to the proposed Project. All major construction activities involving the use of heavy equipment would occur on the embankment of the creek, above the ordinary high water mark (OHWM). However, some minor construction activities, such as installation of the check dams, such as clean gravel dams or any other type of approved Caltrans standard dam, or Best Management Practices (BMPs), would occur within the creek below the OHWM, and water quality impacts could occur within the creek. Water quality impacts would be associated with above-water and land project activities. Above-water activities include demolition of the existing bridge and construction of the new bridge. Land activities include establishment and use of construction staging area(s), grading and excavation of adjacent roadways, stockpiling, operation of heavy construction equipment (e.g., graders, excavators) alongside the creek, and relocation of drainage facilities.

Substrate

In-creek construction and maintenance activities for the proposed bridge may alter the structure and composition of the river bed (or substrate). Construction work such as cast-in-drilled-holes would disturb sediment on the embankment of San Francisquito Creek, which could remobilize sediments as well as contaminants adsorbed to the sediments and accumulate in the substrate over time. Sedimentation and siltation due to nonpoint sources is also an existing impairment in the creek. The resuspension of contaminants found in bottom substrate can remobilize these contaminants and release them into the water column, which can degrade water quality. In addition, resuspended particulate material could be transported to other locations in San Francisquito Creek as a result of flow patterns, leading to potential degradation of water quality beyond the study area.

Circulation and Drainage

Construction of Project may affect drainage patterns, as well as water volume, depth, and flow rate. During construction, a temporary creek flow diversion method, such as check dams, clean gravel dams, or any other type of approved Caltrans standard dam, will be installed on San Francisquito Creek, to allow for construction activities to take place within the banks of the creek. BMPs will be employed to protect the stream if there are active flows in the creek during construction as a result of any upstream groundwater dewatering project or if hydrant flushing or a water main break brings upstream flows to the project area. In addition, Project in-channel construction activities would occur during periods of low surface flow (dry season).

The existing bridge capacity is 6,600 cubic feet per second (cfs), which can handle the existing flow of 5,400 cfs due to constriction upstream. However, the existing bridge cannot handle the natural creek flow of 7,500 cfs. In addition, there is another project upstream of Newell Road bridge that is proposing to remove the 5,400 cfs constriction and allow the natural creek flow of 7,500 cfs to pass. However, that project cannot occur without replacing the Newell Road bridge first. Due to hydraulics, downstream projects need to be improved prior to making improvements upstream. The Project would widen the channel width beneath the bridge to allow 7,500 cfs conveyance to allow for the 50-year storm event. The new bridge would be designed to accommodate the natural creek flows, allow future upstream projects to occur, and prevent future flooding. In addition, during construction, the City of Palo Alto will not reduce the flood capacity of existing drainage or water conveyance features within the Project study area in a way that causes ponding or flooding during storm events (AMM-WQ-1).

The Project would result in a minimum permanent increase of impervious surfaces. However, the Project would include adding 660 square feet of impervious area under Build Alternative 1; 1,700 square feet under Build Alternative 2 (locally preferred alternative [LPA]); 1,983 square feet under Build Alternative 3; and 2,023 square feet under Build Alternative 4, as shown in Table 2.2.2-2.

Table 2.2.2-3. Area of Impervious Area

Build Alternative	Disturbed Soil Area (square feet)	Total Impervious (square feet) - Existing	Total Impervious (square feet) - Proposed	Added Impervious (square feet)
Build Alternative 1	45,000	30,036	30,702	666
Build Alternative 2 (LPA)	45,000	30,036	31,974	1,700
Build Alternative 3	46,000	30,036	32,019	1,983
Build Alternative 4	55,000	36,277	38,300	2,023
Source: California Department of Transportation 2017				

Runoff from the roadway approaches would use the existing storm water system. The existing storm water system would only need to account for the increase in storm water volume from slope grade changes. Changes within the impervious surfaces are relatively small and would have little effect on runoff volume. Drainage patterns during post-construction conditions would remain unchanged, and would not affect channel erosion or cause hydromodification.

Turbidity

During construction, potential short-term increases in turbidity would result from soil erosion and suspended solids being introduced into San Francisquito Creek from both in-water and land construction activities. As a result, temporary increases in turbidity may occur in the immediate area and potentially downstream. This would violate water quality standards or WDRs related to turbidity since the waterbody is already impaired for sediment, and would have the potential to result in physiological, behavioral, and habitat adverse effects on aquatic life.

In-water construction activities in San Francisquito Creek would directly disturb sediment along the creek bed and result in a temporary increase in turbidity in the immediate area and potentially downstream. As shown in Table 2.2.2-2, Build Alternatives 1 and 2 (LPA) would result in 45,000 square feet of DSA; Build Alternative 3 would result in 46,000 square feet of DSA; and Build Alternative 4 would result in 55,000 square feet of DSA. The potential for disturbance of riverbed sediments and associated increases in sedimentation and turbidity in San Francisquito Creek are anticipated to be greatest during demolition of the abutment walls and installation of cast-in-drilled-holes during in-water work for bridge construction.

Construction activities occurring on land adjacent to the creek, such as demolition and grading, could cause erosion of sediments and soil deposition in the creek, and contribute to short-term increases in turbidity in the creek. Construction of the road adjacent to the creek could also result in debris falling into the creek, which could directly increase trash and turbidity.

Construction of the Project is expected to disturb 1 acre of land. Because the Project is over San Francisquito Creek, implementation of standardized measure SM-WQ-2 requires preparation of a SWPPP and implementation of erosion and sediment control BMPs to ensure that water quality impacts would not occur from construction. Water quality protection measures would be implemented during construction to prevent or minimize sediment and suspended solids from entering the creek (SM-WQ-1 and SM-WQ-2). In addition, the Project design would incorporate post-construction measures and other permanent erosion control elements to ensure that storm water runoff would not cause soil erosion, and to reduce or avoid permanent impacts on water quality.

Oil, Grease, and Chemical Pollutants

The use of heavy construction equipment or construction-related materials can introduce pollutants of concern or toxic chemicals to the Project site, which has the potential to violate water quality standards or WDRs. Pollutants of concern are toxic chemicals from heavy construction equipment or construction-related materials (e.g., concrete, paint, asphalt).

A typical construction site uses many chemicals or compounds including gasoline, oils, grease, solvents, lubricants, and other petroleum products. Many petroleum products contain a variety of toxic compounds and impurities and tend to form oily films on the water surface, altering oxygen diffusion rates. Concrete, soap, trash, and sanitary wastes are other common sources of potentially harmful materials on construction sites. Washwater from equipment and tools and other waste dumped or spilled on the construction site can easily lead to introduction of pollutants into surface waters or seepage into groundwater. Also, construction chemicals may be accidentally spilled into watercourses. The impact of toxic construction-related materials on water quality varies depending on the duration and time of activities. Because of low precipitation, construction occurring in the dry season is less likely to cause soil and channel erosion or runoff of toxic chemicals into a stream. However, low summer flows are less able to dilute pollutants entering a watercourse. Increases in storm water contamination occur during “first flush” rain events.

The construction contractor’s qualified SWPPP practitioner would be required to regularly inspect and maintain the BMPs to ensure they are in good working order, as required in the Construction General Plan SWPPP (SM-WQ-1 and SM-WQ-2). The contractor’s qualified SWPPP practitioner would implement appropriate hazardous material management practices, spill prevention, and other good housekeeping measures to reduce the potential for chemical spills or releases of contaminants, including any non-storm water discharge to drainage channels. Implementation of these measures would minimize the potential for surface and groundwater contamination.

Overall, construction runoff is not expected to have an adverse effect on water quality in San Francisquito Creek.

Aquifer Recharge/Groundwater

Prior to initiation of construction, a temporary surface water diversion would be installed in San Francisquito Creek to allow for construction activities to take place along the banks of the active creek. Check dams, such as clean gravel dams or any other type of approved Caltrans standard dam, would be installed both upstream and downstream of the construction zone within 50 feet of the bridge, and culvert piping would route surface water flows through the construction zone. BMPs would be employed to protect the active stream. There could be temporary sheet piling used to construct the replacement bridge abutments that would be used to support the surrounding soils and control the flow of groundwater, if present. This sheet piling would be installed at the top and within the banks of San Francisquito Creek.

Changes to groundwater occurrence and levels due to Project construction, if groundwater levels are affected at all, would not detrimentally affect regional groundwater production or change the existing water quality. Groundwater dewatering would not be necessary.

Aquatic Organisms

The Project would result in temporary impacts on aquatic habitat area, including rearing, migration, and possibly spawning habitat for Central California Coast steelhead. The Project is not expected to permanently affect this habitat because all construction activities would occur during periods of low surface flow (dry season), outside of the active channel, and above the OHWM. Construction activities associated with the Project that would affect fish habitat include removal of the existing bridge structures and revegetation activities. These activities could result in increased erosion, sedimentation and turbidity, degrading of aquatic habitat, and impacts on fish mortality. Bridge replacement and bank stabilization activities would require removal of vegetation, resulting in temporary loss of vegetative cover and reducing fish habitat complexity. Implementation of the Project is not expected to affect fish habitat directly since vegetation is located above the OHWM; therefore, the Project would not adversely affect steelhead or its habitat.

The standardized measure such as preparing and implementing a SWPPP to address all construction-related activities and materials that have the potential to impact water quality (SM-WQ-2) and the avoidance and minimization measure to limit stream bank construction during the dry season (AMM-WQ-2), would avoid or minimize the potential for construction-related effects on aquatic habitat within the Project area.

No Build Alternative

Under the No Build Alternative, construction activities would not occur, avoiding impacts on water quality from construction.

Operational Impacts

Build Alternatives

Long-term water quality impacts are attributable to the changes in storm water drainage and/or soil disturbance from construction. The Project would increase impervious surfaces in the Project area as a result of road and sidewalk reconstruction. Increases in impervious surfaces change the storm hydrograph by increasing flow velocity, and the peak and quantity of storm runoff due to reduced natural infiltration (groundwater recharge) and uptake from native soils and vegetation. Further, if periodic maintenance of the overcrossing were to require in-water work, there would be the potential for increased turbidity. In addition, after the proposed improvements by the SFCJPA project, the future baseline flow of 7,500 cfs would be greater than the existing flows (5,400 cfs). The increased flow velocity and potential quantity of water would further alter the storm hydrograph, and may result in increased turbidity.

Heavy metals, oil, grease, and polycyclic aromatic hydrocarbons are common pollutants in road runoff, and roadside landscaping can introduce pesticides and fertilizers. These and other contaminants are typically washed off the roadway surfaces by rainfall and enter storm water runoff. Urban runoff from vehicles on bridges can be discharged into streams during rain events, vehicle accidents, and through normal wear and tear. Runoff in substantial quantities occurs only during heavy storms that in turn cause these pollutants to be greatly diluted. These storms cause some high flows in the drainage systems which dilute the pollutants as they are carried from the source. Further, after the proposed improvements by the SFCJPA Project, the future baseline flow of 7,500 cfs would be greater than the existing flows (5,400 cfs), and could potentially further dilute pollutants.

The Project would adhere to the San Mateo County and Santa Clara County SWPPP requirements and ensure that storm water pollution during operation and maintenance of the Project would be minimal by implementing post-construction BMPs to ensure compliance with water quality standards and related regulations (SM-WQ-1 and SM-WQ-2). Standard facilities used to handle storm water on site would be an array of structural elements or facilities that would serve to manage, direct, and convey the storm water. The implementation of post-construction BMPs and routine inspections of BMPs (SM-WQ-1 and SM-WQ-2) would minimize impacts on water quality during long-term operations at the site. In addition, during operation, the City of Palo Alto will not reduce the flood capacity of existing drainage or water conveyance features within the Project study area in a way that causes ponding or flooding during storm events (AMM-WQ-1).

No Build Alternative

Under the No Build (No Action) Alternative, no changes would be made to the existing bridge and approaches. In the absence of additional bank stabilization activities, the banks of San Francisquito Creek would be expected to erode further, particularly in response to high discharges. Where bank instability is already apparent, or where vegetation becomes disturbed, further bank erosion would be expected. Additional erosion hotspots (i.e., bridge abutments) may develop in locations where high stresses occur, and no revetment (i.e., rock protection) is present along the banks. As the channel widens, deposition of sediments on sloping surfaces may also form along the channel in response to decreased stresses along the banks and bed. In addition to erosion continuing along some banks and beginning along others, existing revetments may degrade and present additional threats to bank stability.

2.2.2.4 Avoidance, Minimization, and/or Mitigation Measures

The Project would implement construction BMPs based on guidance from several resources including the *Caltrans Construction Site Best Management Practices Reference Manual* (California Department of Transportation 2011). Implementation of water quality measures (management measures and BMPs) are required to avoid and minimize Project-related water quality impacts during construction, operation, and maintenance of the Project.

Compliance with federal, state, and local requirements for potential short-term (during construction) and long-term (post-construction/maintenance) impacts is required. To avoid and minimize water quality or hydrologic issues from Project construction, the Project will need to comply with requirements from the Municipal Regional Storm water NPDES Permit. In addition, the following standardized measures (SM) and avoidance and minimization measures (AMM) will be implemented.

- **SM-WQ-1: Implement NPDES Permit and Construction General Permit Water Quality Measures**

  The Project will comply with the provisions of the California Regional Water Quality Control Board San Francisco Bay Region *Municipal Regional Storm water NPDES Permit* (Order No. R2-2015-0049-DWQNPDES No. CAS612008) and the *NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit)* Order No. 2009-0009-DWQ, NPDES No. CAS000002 as amended by 2010-0014-DWQ and 2012-0006-DWQ and any subsequent permits in effect at the time of construction. In addition, the Project proponent and/or their construction contractor shall ensure the construction specifications include water quality protection and erosion and sediment control BMPs to minimize construction-related contaminants and mobilization of sediment to San Francisquito Creek. The Project proponent will perform routine inspections of the construction area to verify the BMPs are properly implemented and maintained.

- **SM-WQ-2: Prepare and Implement SWPPP**

  The project will comply with the Construction General Plan by preparing and implementing a SWPPP to address all construction-related activities, equipment, and materials that have the potential to impact water quality for the appropriate risk level. The SWPPP will identify the sources of pollutants that may affect the quality of storm water and include BMPs to control the pollutants, such as sediment control, catch basin inlet protection, construction materials management, and non-storm water BMPs. All work must conform to the construction site BMP requirements specified in the latest edition of the *Caltrans Construction Site Best Management Practices Reference Manual* (California Department of Transportation 2011) to control and minimize the impacts of construction and construction-related activities, materials, and pollutants on the watershed. These include, but are not limited to, temporary sediment control, temporary soil stabilization, scheduling waste management, materials handling, and other non-storm water BMPs. In addition, a temporary creek flow diversion will be installed prior to any construction to prevent sediments from washing downstream. Temporary BMPs will be selected and identified in the SWPPP to protect water bodies, within or near the project limits, from potential storm water runoff resulting from construction activities. Temporary sediment and erosion control measures may include the following.

  - Fiber rolls and/or silt fences.
  - Gravel bag berm.
  - Rolled erosion-control product (e.g., netting).
  - Designated construction entrance/exit.
  - Re-establishment of vegetation or other stabilization measures (hydroseeding, mulch) on DSAs and newly constructed slopes.
  - Wind erosion control.

- **AMM-WQ-1: Flood Capacity**

  The City of Palo Alto will not reduce the flood capacity of existing drainage or water conveyance features within the Project study area during construction or operation in a way that causes ponding or flooding during storm events.

- **AMM-WQ-2: Limit Stream Bank Construction to Dry Season**

  The contractor will limit stream bank construction from June 1 to October 15 in order to avoid the migratory season for adult steelhead and to limit any excess sedimentation and runoff from entering San Francisquito Creek.

  The Project proponent will compensate for temporary construction-related loss of valley foothill riparian habitat by replanting trees in the temporarily disturbed area after completion of the construction activities and before October 15 to minimize erosion and sedimentation into San Francisquito Creek.

  The Project proponent will compensate for the permanent loss of riparian vegetation by planting riparian trees at a minimum ratio of 3:1 (three trees planted for every one tree removed) in the project vicinity as determined appropriate by a qualified biologist and Project proponent. This ratio and the location will be confirmed through coordination with the Project proponent and other agencies as part of the permitting process for the Project.

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2.2.3 Geology/Soils/Seismic/Topography

2.2.3.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under the California Environmental Quality Act (CEQA).

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Structures are designed using the California Department of Transportation's (Caltrans') Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see Caltrans' Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

The City of Palo Alto Comprehensive Plan (City of Palo Alto 2017) includes policies and programs to minimize risk associated with natural hazards, including hazards related to geology, soils, seismicity, and topography.

- POLICY S-2.5: Minimize exposure of people and structures to geologic hazards, including slope stability, subsidence, and expansive soils, and to seismic hazards including groundshaking, fault rupture, liquefaction, and landsliding.
- PROGRAM S2.5.1: Periodically review and update the City's Seismic Hazard Ordinance.
- Program S2.5.2: Continue to provide incentives for seismic retrofits of structures throughout the city, particularly those building types that would affect the most people in the event of an earthquake.

The 2035 East Palo Alto General Plan Safety and Noise chapter (City of East Palo Alto 2012) includes policies to minimize risk associated with natural hazards, including hazards related to geology, soils, seismicity, and topography.

- 1.1 Construction requirements. Apply the proper development engineering and building construction requirements to avoid or minimize risks from seismic and geologic hazards.
- 1.2 Robust seismic guidance. Utilize and enforce the most recent State guidance for seismic and geologic hazards when evaluating development proposals.
- 1.3 Licensed geologist. Require that a state licensed engineering geologist prepare and/or review development proposals involving grading, unstable soils, and other hazardous conditions. Incorporate recommendations of the geologist into design plans, potentially including building modifications and open space easements.

2.2.3.2 Affected Environment

The following sources are the basis for analysis of the affected environment and the Project's potential environmental consequences.

- Preliminary Geotechnical Information Memo, Newell Road Bridge Replacement (Br. No. 37C-0223), Cities of Palo Alto and East Palo Alto, California (Parikh 2012).
- Site-specific soils mapping (Natural Resources Conservation Service 2019).
- State and federal government seismic hazard maps and reports (California Geological Survey 2006a, 2006b; Witter 2006).
- Earthquake probability forecasts (Working Group on California Earthquake Probabilities 2015).

The study area for impacts related to geology, soils, seismicity, and topography is the 1.09-acre Project site.

Regional Geology

The Project area is located in the Coast Ranges geomorphic province, which is characterized by northwest-trending mountain ranges and valleys (California Geological Survey 2006a). The ridges and valleys in the Coast Ranges are controlled by folds and faults that resulted from the collision of the Pacific and North American plates and subsequent strike-slip faulting along the San Andreas fault, Hayward fault, and Calaveras fault. The San Andreas fault includes individual fault strands in a fault zone. Some of the individual strands ruptured to the surface in the 1906 earthquake.

Site Geology

The Project site is primarily underlain by Natural Levee Deposits (Holocene). It is also underlain by Artificial Fill (Historic), Basin Deposits (Holocene), Flood Plain Deposits (Holocene), and Alluvial Fans and Fluvial Deposits (Pleistocene) (Parikh 2012). During boring, groundwater was encountered at approximately 20 feet below ground surface. California Geological Survey (2006a) Seismic Hazard Zone Report 111 shows that the historical groundwater depth is 10 feet below ground surface. Groundwater depth may vary depending on seasonal variations, water level in the creek, ground surface runoff, and other factors.

The Project site is located near several fault systems capable of causing large earthquakes. Table 2.2-3-1 and Figure 2.2-3-1 show the faults within 10 miles of the project site.

Table 2.2.3-1. Faults within 8 Miles of the Project Site

Fault	Symbol	Maximum Moment Magnitude (M_{Max})	Approximate Distance from Project Site (miles)
Cascade fault	92	6.9	3.9
Monte Vista-Shannon fault zone	91	6.7	5.8
Silver Creek fault	152	7.1	6.5
San Andreas fault zone (Peninsula section)	309	7.9	7.1
Source: Parikh 2012			

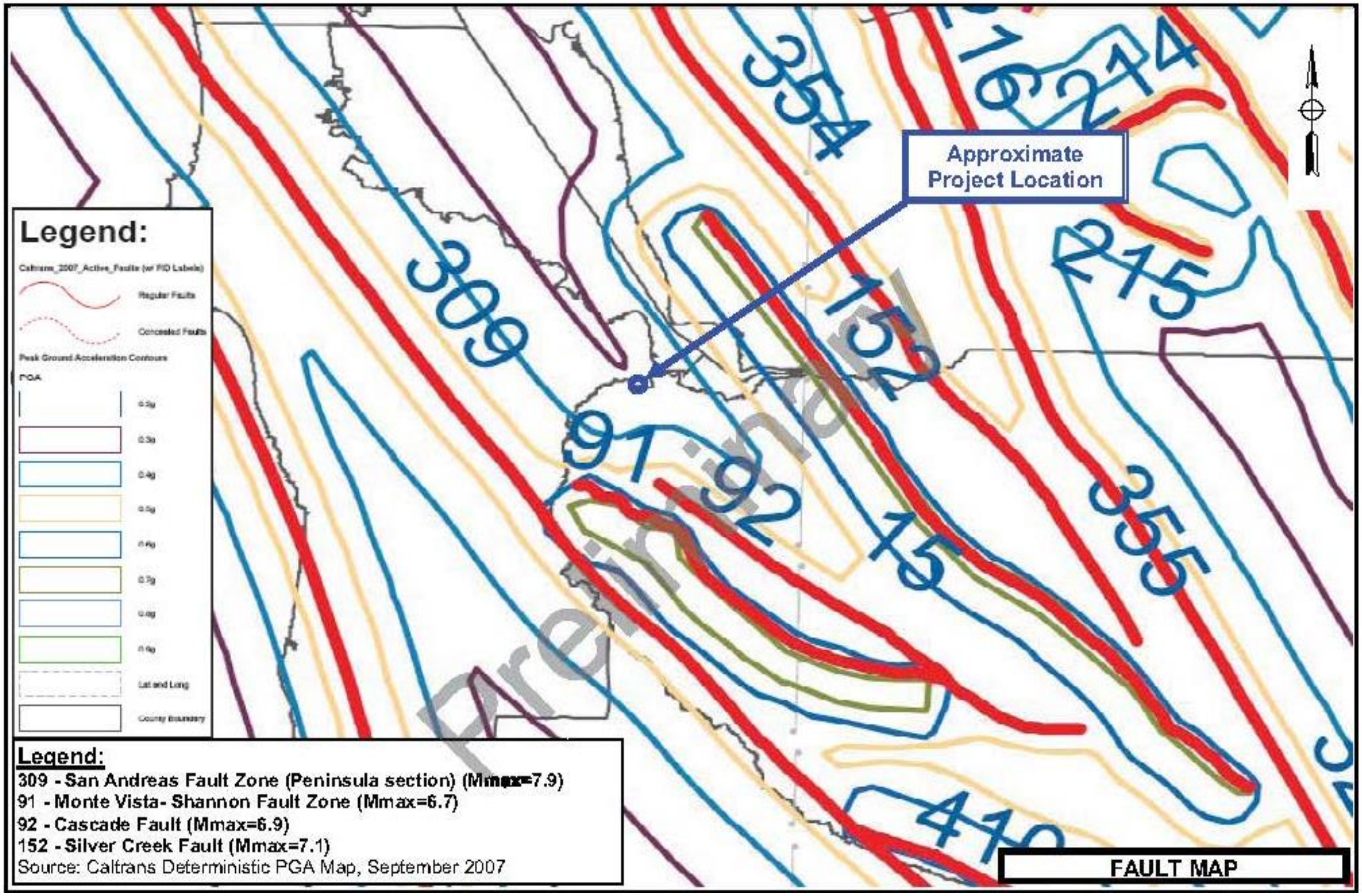

Figure 2.2.3-1. Faults Within 10 Miles of Project Site

Further, there is a 72% likelihood that a magnitude 6.7 earthquake will occur in the Bay Area in the next 30 years (Working Group on California Earthquake Probabilities 2015).

Based on the 2008 U.S. Geological Survey Beta program, the peak ground acceleration for the project site was estimated to be 0.54 g, and the mean maximum moment magnitude was estimated to be 6.9 with a 5% probability of occurrence in 50 years (Parikh 2012).

Geologic Hazards

Fault Rupture

Surface fault rupture is a phenomenon in which fault movement within the earth extends to the earth's surface (U.S. Geological Survey 2016). There is no evidence of active or potentially active faulting at the Project site (Parikh 2012). The site does not lie within a mapped Special Studies Zone under the Alquist-Priolo Earthquake Fault Zoning Act (California Geological Survey 2006b).

Ground Failure

Liquefaction

Liquefaction occurs when saturated cohensionless soils, such as submerged sand or low-plastic, low-density silts, are subjected to a temporary loss of shear strength under cyclic shear stresses such as those associated with earthquake shaking (Parikh 2012). Soils subject to liquefaction, when subjected to sufficient cyclic shaking, lose their ability to bear loads.

The Project site is located in an area with high liquefaction susceptibility, according to mapping by U.S. Geological Survey and California Geological Survey (Witter 2006). Boring studies at the Project site encountered sand above 13 feet below ground surface and thin submerged sand and gravel pockets below this level (Parikh 2012). These submerged pockets have fine content, which generally have only a minor influence on overall soil behavior and thus do not play a role in liquefaction; therefore, local conditions at the Project site have moderate liquefaction susceptibility.[1]

Lateral Spreading

Liquefaction-induced lateral spreading is a phenomenon in which gently sloping ground or ground adjacent to an open face or embankment that overlies a liquefiable underlayer displaces laterally (i.e., spreads horizontally) as a result of ground shaking during an earthquake (Parikh 2012). The upper approximately 13 feet of sandy soils at the Project site are potentially liquefiable, depending on factors such as groundwater level, hydraulic features of the creek, configuration of the creek banks, and other factors.

Slope Failure

Slope failure is the downward movement of rock debris and soil in response to gravitational stress. It can be seismically induced or result from static forces (Keller 1996). Slope failure requires sometimes steep slopes, unconsolidated sediments constituting the slope, and the interplay between driving forces and resisting forces. Specifically, the force driving the downward movement of the rock debris and/or soil overcomes the resisting force holding it in place.

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[1] Precise determination must be made once design is complete.

In California, triggering mechanisms for slope failures that are relevant to the Project area are unconsolidated sediments; saturated soils; steep slopes at the embankment, potentially undermined at the base through scouring by the creek; and ground shaking caused by earthquake (Harden 1998). While the Project site is not located in a zone mapped for landslide hazard and is thus not subject to large-scale landslide (California Geological Survey 2006b), slope failure on a small, local scale during events that disturb embankment soils is possible where slopes are not stabilized.

Site Soils

Soil at the Project site is Urban land-Elpaloalto complex, 0 to 2% slopes. This soil, composed substantially of artificial fill, is not rated for corrosivity, expansiveness, or susceptibility to erosion.

2.2.3.3 Environmental Consequences

Impacts related to geology and soils were analyzed qualitatively, based in part on analysis presented in the preliminary geotechnical report prepared for this Project (Parikh 2012). The analysis was also based on data from peer-reviewed and government reports and mapping, as described in Section 2.2.3.2, *Affected Environment*. The analysis focused on the Project's potential to affect the environment as a result of Project actions.

Construction Impacts

Build Alternatives

Construction period impacts would be the same for all build alternatives. Site preparation and grading associated with Project construction activities would potentially expose bare soil to erosive forces. Because the Project would disturb 1 acre of land, the preparation and implementation of a stormwater pollution prevention plan in accordance with the National Pollutant Discharge Elimination System would be required, as specified in standardized measure SM-WQ-2. The stormwater pollution prevention plan would list best management practices that would be implemented to minimize stormwater runoff, control erosion, and monitor effectiveness. Further, as part of Caltrans' standard practice, the Project would incorporate best management practices that include but are not limited to stabilizing soil through mulching, hydroseeding, use of soil binders, or other means; temporary sediment control measures; and wind erosion control measures (SM-WQ-2).

Once the existing bridge foundation is removed, sandy, steep, unconsolidated soil would be exposed in the stream bed and at the embankment. This fresh embankment could be vulnerable to slope failure during construction if it is not stabilized. However, as part of Caltrans' standard practice, the Project would incorporate standard measures to prevent slope failure (SM-WQ-2).

No Build Alternative

If the Project is not built, the soil would not be exposed to erosive forces and the embankment would not be destabilized.

Operational Impacts

Build Alternatives

Operational impacts would be the same for all build alternatives. Surface fault rupture could cause road surfaces to buckle or separate and damage bridge foundations, including damaging the bridge up to causing the bridge to collapse. However, as discussed in Section 2.2.3.2, *Affected Environment*, under *Fault Rupture*, the Project site is not located in an Alquist-Priolo Earthquake Fault Zone, nor are there active or potentially active faults in the Project area. The nearest known active fault is the Cascade Fault, approximately 3.9 miles from the Project area. Therefore, the potential for surface fault rupture to affect the Project site is extremely low.

The Project area is likely to experience strong ground shaking due to earthquake during the life of the Project. If the bridge foundations are not properly constructed, ground shaking could damage the bridge or cause it to collapse. However, bridge design and construction would adhere to current Caltrans SDC as specified in standardized measure SM-GEO-1. Accordingly, effects from earthquakes would be minimized, and the potential for damage resulting from strong ground shaking due to earthquake is low.

The structures constructed as part of the Project would exacerbate the liquefaction tendencies of soils present at the site, rendering structures and immediately adjacent land subject to seismically induced liquefaction. Liquefaction-induced settlements can induce down-drag loads on subsurface support structures such as piles. Down-drag is a term used to define the forces on piles installed through soil deposits undergoing consolidation. These forces increase the load on piles and result in additional settlement, thereby reducing the usable capacity of the piles. However, bridge design and construction would adhere to current Caltrans SDC (SM-GEO-1). Accordingly, effects from earthquakes would be minimized, and the potential for damage resulting from liquefaction due to earthquake is low.

The potential for lateral spreading in the Project area is high. However, bridge design and construction would adhere to current Caltrans SDC (SM-GEO-1). Accordingly, effects from earthquakes would be minimized, and the potential for damage resulting from lateral spreading due to earthquake-induced liquefaction is low.

The Project area is underlain by silty sand approximately 13.5 feet thick. The silty sand is classified as Urban land-Elpaloalto complex. This Urban land-Elpaloalto complex is not rated for expansive properties; however, sand is not an expansive soil. Underlying the silty sand is lean clay and sandy lean clay, which is not expansive. The likelihood of damage associated with expansive soils is therefore low.

No Build Alternative

If the Project is not built, likelihood of surface fault rupture would not change. The Newell Road Bridge does not suffer from seismic deficiency, so not building the Project is not necessary for seismic safety.

If the Project is not built, it would prevent future upstream improvements from occurring and current flooding risk would not be reduced. The increased flow that can pass from the No Project Alternative would increase the erosive power of the water, leading to increased potential for slope failure.

2.2.3.4 Avoidance, Minimization, and/or Mitigation Measures

The Project will implement the following standard measure (SM) as part of the project description to avoid impacts from geology, soils, and seismicity. No avoidance, minimization, or mitigation measures are required.

- SM-GEO-1: The City of Palo Alto will adhere to current Caltrans SDC for bridge design and construction.

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2.2.4 Paleontology

2.2.4.1 Regulatory Setting

Paleontology is a natural science focused on the study of ancient animal and plant life as it is preserved in the geologic record as fossils. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized projects. 23 United States Code (USC) 1.9(a) requires that the use of Federal-aid funds must be in conformity with all federal and state laws. 23 United States Code (USC) 305 authorizes the appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state, in compliance with 16 USC 431-433 above and state law. Under California law, paleontological resources are protected by the California Environmental Quality Act (CEQA).

2.2.4.2 Affected Environment

The following sources are the basis for analysis of the affected environment and the Project's potential environmental consequences.

- Preliminary Geotechnical Information Memo, Newell Road Bridge Replacement (Br. No. 37C-0223), Cities of Palo Alto and East Palo Alto, California (Parikh 2012).
- Scientific information regarding paleontological resources in the Project area (Maguire and Holroyd 2016).
- Federal geologic mapping and reports (Brabb et al. 2000; Laughlin et al. 2001; Witter 2006).
- Society of Vertebrate Paleontology guidelines for the assessment and mitigation of adverse impacts to paleontological resources (Society of Vertebrate Paleontology 2010).

The study area for impacts related to paleontological resources is the 1.09-acre Project site.

Paleontological Sensitivity

Paleontological sensitivity is an indicator of the likelihood of a geologic unit to yield fossils, and is defined and discussed in Section 2.2.4.3, *Environmental Consequences*. Unlike archaeological sites, which are narrowly defined, paleontological sites are defined by the entire extent (both areal and stratigraphic) of a unit or formation. Once a unit is identified as containing vertebrate fossils, or other rare fossils, the entire unit is a paleontological site (Society of Vertebrate Paleontology 2010). For this reason, the paleontological sensitivity of geologic units is described and analyzed broadly, rather than being limited to county boundaries.

To identify the geologic units in the paleontological study area, geologic mapping for the Bay Area was consulted (Witter 2006; Brabb et al. 2000).

Paleontological sensitivity of the geologic units in the Project area was assessed using the Impact Mitigation Guidelines Revisions Committee's guidance in the Standard Guidelines (Society of Vertebrate Paleontology 2010). The Standard Guidelines include procedures for the investigation, collection, preservation, and cataloguing of fossil-bearing sites. The Standard Guidelines are widely accepted among paleontologists and are followed by most investigators. The Standard Guidelines identify the two key phases of paleontological resource protection as (1) assessment and

(2) implementation. Assessment involves identifying the potential for a project site or area to contain significant nonrenewable paleontological resources that could be damaged or destroyed by project excavation or construction. Implementation involves formulating and applying measures to reduce such adverse effects. The Society of Vertebrate Paleontology defines the level of potential as one of four sensitivity categories for sedimentary rocks: High, Undetermined, Low, and No Potential (Society of Vertebrate Paleontology 2010).

- **High Potential.** Assigned to geologic units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered; and sedimentary rock units suitable for the preservation of fossils ("e.g., middle Holocene and older, fine-grained fluvial sandstones…fine-grained marine sandstones, etc."). Paleontological potential consists of the potential for yielding abundant fossils, a few significant fossils, or "recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data."
- **Undetermined Potential.** Assigned to geologic units "for which little information is available concerning their paleontological content, geologic age, and depositional environment." In cases where no subsurface data already exist, paleontological potential can sometimes be assessed by subsurface site investigations.
- **Low Potential.** Field surveys or paleontological research may allow determination that a geologic unit has low potential for yielding significant fossils, (e.g., basalt flows). Mitigation is generally not required to protect fossils.
- **No Potential.** Some geologic units have no potential to contain significant paleontological resources, such as high-grade metamorphic rocks (e.g., gneisses and schists) and plutonic igneous rocks (e.g., granites and diorites). Mitigation is not required.

Based on data from the scientific literature, each geologic unit in the study area was assigned a paleontological sensitivity according to Society of Vertebrate Paleontology's Standard Guidelines.

The paleontological sensitivity of the geologic units exposed at ground surface in the study area is shown in Table 2.2.4-1. Following Table 2.2.4-1 is a description of geologic units in the study area with the potential to contain fossils.

Table 2.2.4-1. Geologic Units in the Paleontological Study Area

Symbol	Geologic Unit	Epoch	Paleontological Sensitivity	Notes
Qhl	Natural Levee Deposits	Holocene	High	In most areas, units are likely too young to yield fossils.[a] However, recent research suggests that the Quaternary alluvium of the Santa Clara Valley may be more paleontologically sensitive than previously recognized.[b]
Qhfp	Floodplain Deposits	Holocene	High	
Qhb	Basin Deposits	Holocene	High	

Sources: Society of Vertebrate Paleontology 2010; Maguire and Holroyd 2016; Parikh 2012; Laughlin et al. 2001
Notes:
[a] Geologic units younger than 5,000 years old are generally not considered old enough to contain fossils.
[b] Maguire and Holroyd 2016

Quaternary Alluvium of the Santa Clara Valley (Qhl, Qhfp, Qhb)

The Quaternary alluvium of the Santa Clara Valley in the Project area consists of natural levee deposits, floodplain deposits, and basin deposits. Levee deposits are sand, silt, and mud deposited in natural levee settings adjacent to stream channels. Floodplain deposits are sand, silt, mud, and gravel deposited on floodplains of streams that drain into Santa Clara Valley. Basin deposits are mud, silt, and sand that are locally thinly deposited in closed nonmarine depressions and associated lacustrine settings (Laughlin et al. 2001).

Pleistocene vertebrate fossils have been found from multiple localities across Santa Clara Valley, including Lawrence Expressway East, San Jose; Santa Clara Valley Water District lands in the Guadalupe River in San Jose; Sunnyvale Sewer, Sunnyvale; Calabaza Creek, Sunnyvale; and Milpitas, as well as multiple localities farther north. These fossil localities occur in units mapped as surficial Holocene deposits (Maguire and Holroyd 2016). Radiocarbon dating of the mapped Holocene sediments where the Pleistocene remains were found shows Pleistocene age for two of these finds (11 feet and 30 feet below modern ground surface); for the others, no dating was performed. Some of these finds may have washed down from the mountains and been deposited in Holocene waterways, but the two radiocarbon-dated finds likely originated where they were found. These occurrences "demonstrate that older sediments and fossils (>10 thousand years before present) occur at or very near the surface in these areas," particularly because the amount, association, and orientation of the fossils from these localities indicate that the sediments in which they occur had not been reworked through geologic or artificial processes (Maguire and Holroyd 2016). Accordingly, Pleistocene alluvium may be more widespread in the Santa Clara Valley than was previously thought and in many locations is likely at or very near the ground surface. Pleistocene fossil resources found in the Santa Clara Valley in units mapped as Holocene alluvium include extinct species of mammoth, bear, horse, bison, and camel. The Quaternary alluvium of the Santa Clara Valley is therefore considered sensitive for paleontological resources.

2.2.4.3 Environmental Consequences

The fossil-yielding potential of geologic units in a particular area depends on the geologic age and origin of the units, as well as on the processes they have undergone, both geologic and anthropogenic.[1] The methods used to analyze potential impacts on paleontological resources and to develop mitigation for the identified impacts involved the following steps.

- Assess the likelihood that the sediments affected by implementation of the Project's improvements contain scientifically important, nonrenewable paleontological resources that could be directly affected.
- Identify the geologic units in the paleontological study area.
- Evaluate the potential of the identified geologic units to contain significant fossils (their *paleontological sensitivity*).
- Identify the geologic units that would be affected by the Project, based on each improvement's depth of excavation—either at ground surface or below ground surface, defined as at least 5 feet below ground surface.

[1] *Anthropogenic* means caused by human activity.

- Identify and evaluate impacts on paleontologically sensitive geologic units as a result of all construction and operation activities that involve ground disturbance.
- Evaluate impact significance.
- According to the identified degree of sensitivity, formulate and implement measures to mitigate potential impacts.

The potential of the Project's improvements to affect paleontological resources relates to ground disturbance. Ground disturbance caused by the Project would take place during construction phases; therefore, this impact analysis addresses construction impacts.

To identify and evaluate impacts on paleontologically sensitive geologic units as a result of the Project, engineering design drawings were used to identify ground-disturbing activities, including depth of ground disturbance, with respect to the location of geologic units with high potential and undetermined potential.

Construction Impacts

Build Alternatives 1 and 2

Construction of the Project, specifically Build Alternatives 1 and 2 (LPA), would involve excavation for the roadway to a depth of 2 feet from existing grade to remove existing asphalt and base, excavation to a depth of 5 feet for installation of retaining walls, and excavation to a depth of 6 feet for installation of bridge abutments. Because the excavation work is shallow and would proceed within the previously disturbed roadbed (i.e., would not involve excavation in undisturbed soil) any effect on sensitive paleontological resources would be minor. Demolition of the existing bridge would not involve excavation and therefore would not disturb paleontological resources.

Build Alternatives 3 and 4

Similar to Build Alternatives 1 and 2, construction of the Project under Build Alternatives 3 and 4 would involve excavation for the roadway to a depth of 2 feet from existing grade to remove existing asphalt and base, excavation to a depth of 5 feet for installation of retaining walls, and excavation to a depth of 6 feet for installation of bridge abutments. The excavation work is shallow; however, it would involve disturbance of previously undisturbed soil in the area of the road realignment. Because sensitive paleontological resources could occur at depths below 5 feet, it is possible that excavation could encounter sensitive paleontological resources. Implementation of MM-PA-1 under these alternatives would minimize effects on sensitive paleontological resources.

No Build Alternative

The No Build Alternative would have no effect on sensitive paleontological resources because no ground disturbance would occur.

Operational Impacts

Project operation would involve no disturbance below ground surface. There would be no effect on paleontological resources.

2.2.4.4 Avoidance, Minimization, and/or Mitigation Measures

The following mitigation measure (MM) will be implemented during construction for Build Alternative 3 or Build Alternative 4 to reduce potential impacts on paleontological resources.

- **MM-PA-1: Educate Workers, Stop Work in Case of Discovery of Paleontological Resources, and Prepare and Implement a Recovery Plan.** Given the potential for paleontological resources to be present in construction areas at ground surface and at excavation depths below 5 feet in sensitive geologic units in the Project area, the following measures will be undertaken to avoid any potentially significant effect from the improvements on paleontological resources. Before the start of any excavation, the City of Palo Alto will retain a qualified paleontologist, as defined by the Society of Vertebrate Paleontology.

  The qualified paleontologist will make periodic visits during earthmoving in high-sensitivity sites to verify that workers are following the established procedures. If paleontological resources are discovered during earthmoving activities, the construction crew will immediately cease work near the find and notify Caltrans and the City of Palo Alto. Construction work in the affected areas will remain stopped or be diverted to allow recovery of fossil remains in a timely manner. The City of Palo Alto will retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology guidelines (Society of Vertebrate Paleontology 2010). The recovery plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan that are determined by Caltrans and the City of Palo Alto to be necessary and feasible will be implemented before construction activities can resume at the site where the paleontological resources were discovered. Caltrans and the City of Palo Alto will be responsible for ensuring that the paleontologist’s recommendations regarding treatment and reporting are implemented.

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2.2.5 Hazardous Waste/Materials

2.2.5.1 Regulatory Setting

Hazardous materials, including hazardous substances and wastes, are regulated by many state and federal laws. Statutes govern the generation, treatment, storage, and disposal of hazardous materials, substances, and waste, and also the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act of 1980, and the Resource Conservation and Recovery Act (RCRA) of 1976 (RCRA). The purpose of the Comprehensive Environmental Response, Compensation and Liability Act, often referred to as "Superfund," is to identify and cleanup abandoned contaminated sites so that public health and welfare are not compromised. The RCRA provides for "cradle to grave" regulation of hazardous waste generated by operating entities. Other federal laws include the following.

- Community Environmental Response Facilitation Act of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control Standards, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

California regulates hazardous materials, waste, and substances under the authority of the California Health and Safety Code and is also authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and cleanup of contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during Project construction.

2.2.5.2 Affected Environment

The information in this section is from the *Hazardous Materials Technical Memorandum Update* (March 2017). This memorandum includes a review of federal, state, and local regulatory records for reports of hazardous waste, as well as a lead and asbestos survey conducted at the bridge in 2012. The Project vicinity is residential and there are no businesses that would potentially use, store, transport, or dispose of hazardous materials or waste near the Project site. Newell Road is an urban collector roadway with relatively low traffic (currently around 3,300 vehicles per day) and would not have historically accommodated the high traffic volumes associated with aerially deposited lead deposition concerns during the period prior to the 1980s when gasoline in California was permitted to contain tetraethyl lead.

Federal, state, and local databases pertaining to past and present hazardous materials uses and releases on properties at or near the Project site were reviewed. The Project site was not identified in any of the records, including lists of hazardous materials release sites compiled pursuant to Government Code 65962.5. The following three hazardous material release sites were identified within one-quarter mile of the Project site.

- J&J Rentals and Sales, 1800 West Bayshore Road, East Palo Alto
- Willrich Residence, 1452 Hamilton Avenue, Palo Alto
- Wood Residence, 111 Island Drive, Palo Alto

All three of these sites have reported a release of petroleum from a leaking underground storage tank. All three leak cases have been closed by oversight agencies, indicating that remediation is complete or was not necessary.

A lead and asbestos survey was conducted at the Newell Road Bridge in July 2012. Fifteen representative samples of concrete, asphalt, and paint from the bridge structure were collected and analyzed for asbestos content in accordance with industry standards and federal regulations. None of the samples contained asbestos above laboratory reporting limits. Three samples of paint were collected and analyzed for total lead. The lead concentrations from the paint samples are presented in Table 2.2.5-1.

Table 2.2.5-1. Lead Concentrations in Paint Samples

Location	Concentration (milligrams per kilogram)
White paint on concrete structure, near creek	72
White paint on roadway surface	<41
Yellow paint on roadway surface	1,100
Source: BASELINE Environmental Consulting 2017	

Only the yellow roadway paint exceeded the U.S. Consumer Product Safety Commission threshold of 600 milligrams per kilogram for lead-based paint. The survey noted that the paint was in intact condition. The survey did not include an analysis of soils for naturally occurring asbestos; however, as no geologic formations with naturally occurring asbestos have been mapped in the Project vicinity, naturally occurring asbestos would not be expected to affect development of the Project.

2.2.5.3 Environmental Consequences

Construction Impacts

Build Alternatives

Based on the status of the three hazardous material release sites within one-quarter mile of the Project site, none of the hazardous material releases is considered likely to have the potential to affect development of the Project. Asbestos was not found during surveys, and no naturally occurring asbestos has been mapped in the project vicinity; therefore, asbestos and naturally occurring asbestos would not be expected to affect development of the Project, nor could they threaten the public, including worker health and safety.

Impacts from lead contamination from paint could occur where reconstruction of the bridge involves disturbing or removing the existing paint, which could create a hazard to the public or to the environment during routine transport, use, or disposal of hazardous materials or through upset and accident conditions. Direct contact with contaminated paint and subsequent hand-to-mouth activities (e.g., drinking or eating) could result in the inadvertent ingestion of contaminated paint. Lead paint that is adhering to its surface may generally be disposed of as normal construction debris, though additional analyses may be required by the landfill accepting the waste. It is recommended that all paint be treated as lead-containing for the purposes of complying with Division of Occupational Safety and Health worker safety requirements, which apply to all worksites where construction workers may be exposed to lead.

Construction activities could produce dust, which could expose workers or nearby residents and business occupants to lead via inhalation. Because there are no businesses that would potentially use, store, transport, or dispose of hazardous materials or waste near the Project site, impacts are not expected to occur from unreported releases or spills.

There are no existing or proposed schools within 0.25 mile of the Project site; therefore, no impacts related to emissions of hazardous materials within 0.25 mile of a school would occur.

No Build Alternative

The No Build Alternative would have no impact on hazardous waste or materials because ground-disturbing activities would not occur.

Operational Impacts

Build Alternatives

During operation of the Project, the potential for encountering hazardous materials and waste would be low. Remediation of the three hazardous material release sites was completed or was not necessary. The existing lead-based paint would be replaced with paint that does not contain lead, avoiding the chance of users of the area encountering lead in paint. Operation of the Project would not involve the use, storage, or transport of hazardous materials.

The Project is located approximately 1.2 miles from the Palo Alto Airport. The Project would not result in a safety hazard for people residing or working in the Project area because the Project would not change air traffic patterns or otherwise affect airport operations.

The Project is not located in a wildland fire hazard severity zone. In addition, the Project does not involve construction of any buildings that would be at risk of fires. The Project would replace an existing bridge structure, which would not contribute to the risk of wildland fires in urbanized areas.

No Build Alternative

The No Build Alternative would have no impact on hazardous waste or materials because ground-disturbing activities would not occur.

2.2.5.4 Avoidance, Minimization, and/or Mitigation Measures

The following mitigation measures (MM) are recommended to address the potential to encounter hazardous waste during construction.

- **MM-HAZ-1: Properly Dispose of and Abate Potential Lead-Based Paint.** All paint will be treated as lead-containing for the purposes of complying with Division of Occupational Safety and Health worker safety requirements, which apply to all worksites where construction workers may be exposed to lead. The California Department of Transportation (Caltrans) and the City of Palo Alto will have all lead-based paint abated and removed by a licensed lead-based paint contractor. The licensed lead-based paint contractor will dispose of all lead-based paint or coatings at landfills that meet acceptance criteria for the waste being disposed.
- **MM-HAZ-2: Properly Handle and Dispose of Potentially Contaminated Soils and Materials.** Caltrans and the contractor shall stockpile soil generated by construction activities on site in a secure and safe manner. All contaminated soils determined to be hazardous or nonhazardous waste shall be adequately profiled (i.e., sampled and analyzed) prior to acceptable reuse or disposal at an appropriate offsite facility. Specific sampling, handling, and transport procedures for reuse or disposal shall be in accordance with applicable local, state, and federal agencies' laws, in particular the Regional Water Quality Control Board, the Department of Toxic Substances Control, the City of Palo Alto, the City of East Palo Alto, Santa Clara County, and San Mateo County. Material from existing roadway or bridge elements that is removed or modified by the contractor will be handled and disposed of in accordance with all local, state, and federal requirements.

2.2.6 Air Quality

2.2.6.1 Regulatory Setting

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act is its companion state law. These laws, and related regulations by the United States Environmental Protection Agency (EPA) and the California Air Resources Board, set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM)—which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM10) and particles of 2.5 micrometers and smaller (PM2.5)—and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb), and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act (NEPA). In addition to this environmental analysis, a parallel "Conformity" requirement under the FCAA also applies. Under the California Environmental Quality Act (CEQA), federal and state air quality standards are used to determine significance under CEQA with guidelines promulgated by the Bay Area Air Quality Management District (BAAQMD).

Conformity

The conformity requirement is based on FCAA Section 176(c), which prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to State Implementation Plan (SIP) for attaining the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. EPA regulations at 40 Code of Federal Regulations (CFR) 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for CO, NO_2, O_3, particulate matter (PM10 and PM2.5), and in some areas (although not in California), SO_2. California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation

Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization, Federal Highway Administration (FHWA), and Federal Transit Administration make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and FTIP; the project has a design concept and scope[1] that has not changed significantly from those in the RTP and FTIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

2.2.6.2 Affected Environment

The information in this section is from the *Air Quality Technical Memorandum* (November 2017) and *Supplemental Air Quality Technical Memorandum* (October 2018).

Climate, Meteorology, and Topography

The Project lies within the Peninsula region of the San Francisco Bay Area Air Basin. The peninsula region extends from northwest of San Jose to the Golden Gate Bridge. The Santa Cruz Mountains run up the center of the peninsula, with elevations exceeding 2,000 feet at the southern end, decreasing to 500 feet in South San Francisco. Coastal towns experience a high incidence of cool, foggy weather in the summer. Cities in the southeastern peninsula experience warmer temperatures and fewer foggy days because the marine layer is blocked by the ridgeline to the west. San Francisco lies at the northern end of the peninsula. Because most of San Francisco's topography is below 200 feet, marine air is able to flow easily across most of the city, making its climate cool and windy. The blocking effect of the Santa Cruz Mountains results in variations in summertime maximum temperatures in different parts of the peninsula. For example, in coastal areas and San Francisco the mean maximum summer temperatures are in the mid-60s, while in Redwood City the mean maximum summer temperatures are in the low 80s. Mean minimum temperatures during the winter months are in the high 30s to low 40s on the eastern side of the Peninsula and in the low 40s on the coast. Two important gaps in the Santa Cruz Mountains occur on the peninsula. The larger of the two is the San Bruno Gap, extending from Fort Funston on the ocean to the San Francisco Airport. Because the gap is oriented in the same northwest to southeast direction as the prevailing winds, and because the elevations along the gap are less than 200 feet, marine air is easily able to penetrate into the bay. The other gap is the Crystal Springs Gap, between Half Moon Bay and San

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[1] *Design concept* means the type of facility that is proposed, such as a freeway or arterial highway. *Design scope* refers to those aspects of the project that would clearly affect capacity and thus any regional emissions analysis, such as the number of lanes and the length of the project.

Carlos. As the sea breeze strengthens on summer afternoons, the gap permits maritime air to pass across the mountains, and its cooling effect is commonly seen from San Mateo to Redwood City. Annual average wind speeds range from 5 to 10 miles per hour throughout the peninsula, with higher wind speeds usually found along the coast. Winds on the eastern side of the peninsula are often high in certain areas, such as near the San Bruno Gap and the Crystal Springs Gap. The prevailing winds along the peninsula's coast are from the west, although individual sites can show significant differences. For example, Fort Funston in western San Francisco shows a southwest wind pattern while Pillar Point in San Mateo County shows a northwest wind pattern. On the east side of the mountains winds are generally from the west, although wind patterns in this area are often influenced greatly by local topographic features. Air pollution potential is highest along the southeastern portion of the peninsula. This is the area most protected from the high winds and fog of the marine layer. Pollutant transport from upwind sites is common. In the southeastern portion of the peninsula, air pollutant emissions are relatively high due to motor vehicle traffic as well as stationary sources. At the northern end of the peninsula in San Francisco, pollutant emissions are high, especially from motor vehicle congestion. Localized pollutants, such as CO, can build up in "urban canyons." Winds are generally fast enough to carry the pollutants away before they can accumulate.

Air Quality Pollutants of Concern and Attainment Status

Air quality studies generally focus on the five pollutants that are most commonly measured and regulated: CO, O_3, NO_2, SO_2, and suspended particulate matter (i.e., PM10 and PM2.5). The NAAQS and California Ambient Air Quality Standards (CAAQS) have been established for criteria pollutants and are summarized in Table 2.2.6-1. The CAAQS are more stringent than the NAAQS; both are used in the air quality analysis for this project. Health effects, typical sources, and the state and federal attainment status of each criteria pollutant for the project area are also identified in Table 2.2.6-1.

Existing Air Quality Conditions

The existing air quality conditions in the Project area can be characterized by monitoring data collected in the region. The Project is located in northern Santa Clara County and San Mateo County. The nearest monitoring station to the Project is in San Mateo County at the Redwood City station located at 897 Barron Avenue. This station is approximately 4 miles northwest of the Project area and monitors for O_3, PM2.5, and NO_2. The nearest station that monitors for PM10 is the San Jose Jackson Street station. Table 2.2.6-2 summarizes O_3, CO, PM2.5, and NO_2 pollutant levels from the Redwood City station for the last 3 years for which complete data are available (2014–2016), and PM10 from the San Jose Jackson Street station. Air quality concentrations are expressed in terms of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). As shown in Table 2.2.6-2, the monitoring station has experienced one violation of the state and national (2015) 8-hour O_3 standard, and two violations of the national PM10 standard during this time period.

Table 2.2.6-1. State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Ozone (O_3)	1 hour	0.09 ppm[3]	---[4]	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NO_X) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.	Nonattainment	Marginal Nonattainment
	8 hours	0.070 ppm	0.070 ppm (4th highest in 3 years)				
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Attainment	Attainment
	8 hours	9.0 ppm[1]	9 ppm				
	8 hours (Lake Tahoe)	6 ppm	---				
Respirable Particulate Matter (PM10)[3]	24 hours	50 μg/m^3 [6]	150 μg/m^3 (expected number of days above standard < or equal to 1)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic and other aerosol and solid compounds are part of PM10.	Dust- and fume-producing industrial and agricultural operations; combustion smoke and vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	Nonattainment	Attainment
	Annual	20 μg/m^3	---[5]				

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Fine Particulate Matter (PM2.5)[5]	24 hours	---	35 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter—a toxic air contaminant—is in the PM2.5 size range. Many toxic and other aerosol and solid compounds are part of PM2.5.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical and photochemical reactions involving other pollutants including NO_X, sulfur oxides (SO_X), ammonia, and ROG.	Nonattainment	Moderate Nonattainment
	Annual	12 µg/m^3	12.0 µg/m^3				
	24 hours (conformity process[7])	---	65 µg/m^3				
	Secondary Standard (annual; also for conformity process[5])	---	15 µg/m^3 (98th percentile over 3 years)				
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	0.100 ppm[8]	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain and nitrate contamination of stormwater. Part of the "NO_X" group of ozone precursors.	Motor vehicles and other mobile or portable engines, especially diesel; refineries; industrial operations.	Attainment	Attainment
	Annual	0.030 ppm	0.053 ppm				
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	0.075 ppm[9] (99th percentile over 3 years)	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.	Attainment	Attainment
	3 hours	---	0.5 ppm[10]				
	24 hours	0.04 ppm	0.14 ppm (for certain areas)				

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
	Annual	---	0.030 ppm (for certain areas)				
Lead (Pb)[ix]	Monthly	1.5 µg/m³	---	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older gasoline use may exist in soils along major roads.	Attainment	Attainment
	Calendar Quarter	---	1.5 µg/m³ (for certain areas)				
	Rolling 3-month average	---	0.15 µg/m³ [12]				
Sulfate	24 hours	25 µg/m³	---	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	Attainment	No Federal Standard
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	Unclassified	No Federal Standard

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Visibility Reducing Particles	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	---	Reduces visibility. Produces haze. NOTE: not directly related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas. However, some issues and measurement methods are similar.	See particulate matter above. May be related more to aerosols than to solid particles.	Unclassified	No Federal Standard
Vinyl Chloride[11]	24 hours	0.01 ppm	---	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes.	No Information Available	No Federal Standard

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status

Notes:

[1] State standards are "not to exceed" or "not to be equaled or exceeded" unless stated otherwise.

[2] Federal standards are "not to exceed more than once a year" or as described above.

[3] ppm = parts per million

[4] Prior to June 2005, the 1-hour ozone NAAQS was 0.12 ppm. Emission budgets for 1-hour ozone are still be in use in some areas where 8-hour ozone emission budgets have not been developed, such as the San Francisco Bay Area.

[5] Annual PM10 NAAQS revoked October 2006; was 50 µg/m^3. 24-hr. PM2.5 NAAQS tightened October 2006; was 65 µg/m^3. Annual PM2.5 NAAQS tightened from 15 µg/m^3 to 12 µg/m^3 December 2012 and secondary annual standard set at 15 µg/m^3.

[6] µg/m^3 = micrograms per cubic meter

[7] The 65 µg/m^3 PM2.5 (24-hour) NAAQS was not revoked when the 35 µg/m^3 NAAQS was promulgated in 2006. The 15 µg/m^3 annual PM2.5 standard was not revoked when the 12 µg/m^3 standard was promulgated in 2012. The 0.08 ppm 1997 ozone standard is revoked FOR CONFORMITY PURPOSES ONLY when area designations for the 2008 0.75 ppm standard become effective for conformity use (July 20, 2013). Conformity requirements apply for all NAAQS, including revoked NAAQS, until emission budgets for newer NAAQS are found adequate, SIP amendments for the newer NAAQS are approved with an emission budget, EPA specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. SIP-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved SIP amendment. During the "Interim" period prior to availability of emission budgets, conformity tests may include some combination of build vs. no build, build vs. baseline, or compliance with prior emission budgets for the same pollutant.

[8] Final 1-hour NO_2 NAAQS published in the Federal Register on February 9, 2010, effective March 9, 2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause re-designation to nonattainment in some areas after 2016.

[9] EPA finalized a 1-hour SO_2 standard of 75 parts per billion (thousand million) in June 2010.

[10] Secondary standard, set to protect public welfare rather than health. Conformity and environmental analysis address both primary and secondary NAAQS.

[11] The California Air Resources Board has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM10 and, in larger proportion, PM2.5. Both the California Air Resources Board and U.S. EPA have identified lead and various organic compounds that are precursors to ozone and PM2.5 as toxic air contaminants. There are no exposure criteria for adverse health effect due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

[12] Lead NAAQS are not considered in Transportation Conformity analysis.

EPA = U.S. Environmental Protection Agency; CO = carbon monoxide; H_2S = hydrogen sulfide; NAAQS = National Ambient Air Quality Standards; NO_2 = nitrogen dioxide; NO_X = nitrogen oxides; O_3 = ozone; Pb = lead; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; ppm = parts per million; SIP = State Implementation Plan; SO_2 = sulfur dioxide; SO_X = sulfur oxides; VOC = volatile organic compounds

Table 2.2.6-2. Ambient Air Quality Monitoring Data

Pollutant Standards	2014	2015	2016
Ozone (O_3)			
Maximum 1-hour concentration	0.086	0.086	0.075
Maximum 8-hour concentration	0.065	0.071	0.060
4th highest 8-hour concentration	0.064	0.059	0.056
Days state 1-hour standard exceeded (0.09 ppm)	0	0	0
Days state 8-hour standard exceeded (0.070 ppm)	0	1	0
Days 2015 national 8-hour standard exceeded (0.070 ppm)	0	1	0
Days 2008 national 8-hour standard exceeded (0.075 ppm)	0	0	0
Carbon Monoxide (CO)			
Maximum 1-hour concentration	3.2	3.4	2.2
Maximum 8-hour concentration	1.6	1.6	1.1
Days state 1-hour standard exceeded (20 ppm)	--	--	--
Days national 1-hour standard exceeded (35 ppm)	0	0	0
Days state 8-hour standard exceeded (9 ppm)	--	--	--
Days national 8-hour standard exceeded (9 ppm)	0	0	0
Particulate Matter (PM10) (San Jose Jackson Street)			
Maximum state 24-hour concentration	54.7	58.0	41.0
Maximum national 24-hour concentration	56.4	58.8	40.0
Annual average concentration	20.0	21.9	18.3
Days national standard exceeded (expected) (150 $\mu g/m^3$)	1	1	0
Fine Particulate Matter (PM2.5)			
Maximum state 24-hour concentration	35.0	34.6	19.5
Maximum national 24-hour concentration	35.0	34.6	19.5
Annual average concentration	7.1	5.7	8.3
Days national 24-hour standard exceeded (expected) (35 $\mu g/m^3$)	0.0	0.0	0.0
Nitrogen Dioxide (NO_2)			
Maximum 1-hour Concentration	55.2	47.8	45.7
Annual Average Concentration	11	10	9
Days state standard exceeded (0.18 ppm)	0	0	0
Days national standard exceeded (0.100 ppm)	0	0	0

Source: California Department of Transportation 2017

$\mu g/m^3$ = micrograms per cubic meter; -- = no data available; NA = insufficient data available to determine the value; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; ppm = parts per million

Sensitive Receptors

Sensitive receptors are typically defined as facilities that attract children, the elderly, people with illnesses, or others sensitive to the effects of air pollution. Examples of sensitive receptors include residences, hospitals, schools, parks, and places of worship.

The Project area is located in a largely residential area; thus, the primary land uses surrounding the Project area are mostly single- and multi-family residences. The nearest residences are south of the bridge, directly adjacent to the Project site and Newell Road. The nearest residences north of the bridge are on Woodland Avenue, approximately 60 feet from the Project site.

Local air pollutants in the Project area are emitted primarily by vehicular traffic, including trucks, traveling on roadways in the area. U.S. Highway 101 is approximately 960 feet northeast of the Project site.

2.2.6.3 Environmental Consequences

Construction Impacts

Build Alternatives

Ozone Precursors (ROG and NO_X), CO, and PM10

Construction activities associated with the Project would generate short-term emissions of reactive organic gases (ROG), nitrogen oxides (NO_X), CO, PM10, and PM2.5. Emissions would originate from on-road hauling trips, construction worker commute trips, construction site fugitive dust, and off-road construction equipment. Construction-related emissions would vary substantially depending on the level of activity, specific construction operations, and wind and precipitation conditions.

The Sacramento Metropolitan Road Construction Model (version 8.1.0) was used to estimate construction emissions based on Project-specific inputs of the Project size and length, duration of the construction period, soil exported daily, and the maximum amount of area that would be disturbed per day. The Project construction data were provided by the Project's engineering consultant and are assumed to represent the construction activity for all Build Alternatives. Construction equipment defaults from the Road Construction Model, such as emission factors, horsepower, and load factors, were used for the analysis. The default vehicle trip lengths for hauling trucks and workers and the default number and types of construction phases implicit in the Road Construction Model were also used for the analysis.

Table 2.2.6-3 summarizes the maximum daily emissions and the annual emissions for the Project. Project construction is estimated to occur for approximately 12 months. The California Department of Transportation is not required to adopt thresholds of significance established by local air districts in California Department of Transportation documents. However, the City of Palo Alto uses the BAAQMD thresholds to evaluate significance under CEQA. The BAAQMD thresholds are provided in Table 2.2.6-3, and the CEQA significance determinations are provided in Section 3.2.3, *Air Quality*.

Table 2.2.6-3. Summary of Construction Criteria Pollutant Emissions—All Build Alternatives

Daily/Annual Emissions	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total
Maximum Daily Emissions (lbs/day)	7.8	75.7	59.3	5.0	3.9	6.9	1.0	3.6	3.6
Total Emissions (tons/construction period)	0.7	6.8	5.2	0.3	0.4	0.7	0.1	0.3	0.4
BAAQMD Daily Thresholds (lbs/day)	54	54	-	BMPs	82	-	BMPs	54	-

See Appendix A of the Air Quality Technical Memorandum for construction assumptions and Road Construction Model inputs and outputs.

BAAQMD = Bay Area Air Quality Management District; BMPs = best management practices; CO = carbon monoxide; lbs = pounds; NO_X = nitrogen oxides; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; ROG = reactive organic gases

Federal transportation conformity requires the evaluation of construction-related hot-spot emissions if construction activities will last longer than 5 years in one general location. Construction activities will not last for more than 5 years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 CFR 93.123(c)(5)).

Construction activities are subject to requirements found in standardized measure SM-AQ-1, the *Standard Specifications* (California Department of Transportation 2015), Section 14-9.02. This includes specifications relating to air pollution control by complying with air pollution control rules, regulations, ordinances, and statutes that apply to work performed under the contract, including air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code §10231) while standard specification Section 10-5 addresses dust control, soil stabilization, and palliative requirements. Additionally, BAAQMD considers dust impacts to be less than significant through the application of best management practices and recommends that construction contractors implement all basic construction mitigation measures as listed in the Air Quality Guidelines to reduce construction emissions from dust (SC-AQ-2). Implementation of California Department of Transportation standard specification (SM-AQ-1), measures to control dust during construction (SM-AQ-2), and mitigation measure MM-AQ-1 to utilize clean diesel-powered equipment during construction to control construction-related NO_X emissions, would help to minimize air quality impacts from construction activities, further described in Section 2.2.6.4, *Avoidance, Minimization, and/or Mitigation Measures*.

Naturally Occurring Asbestos or Structural Asbestos

Depending on a project's size and geographic location, BAAQMD may require mitigation to address potential impacts from naturally occurring asbestos (NOA). The Project is not located in an area known to contain NOA (California Department of Transportation 2017). Accordingly, the Project is not required to submit NOA notification forms, but must employ the best available dust mitigation measures to reduce and control dust emissions.

Structural asbestos may be released into the air during demolition of a structure if that structure was constructed with asbestos-containing material, such as serpentine rock. As discussed in Section 2.2.5, *Hazardous Materials*, no asbestos above laboratory reporting limits was found in samples of concrete and asphalt collected during surveys conducted at the bridge in 2012. Demolition of the bridge associated with the Project would be subject to the federal National Emission Standards for Hazardous Air Pollutants and BAAQMD Regulation 11, which would require the contractor to inspect the existing bridge for asbestos-containing material, and, if such material is present, to detail the work practices and engineering control procedures for removal and handling of the material. Thus, no asbestos is likely present in the bridge, based on surveys conducted in 2012, but the contractor would nevertheless be required to inspect the existing bridge for asbestos-containing material during demolition. If asbestos-containing materials are present, the contractor would be required to implement asbestos engineering controls and structural asbestos during demolition would be minimized.

Operational Impacts

Build Alternatives

Regional Conformity

Federally funded projects must demonstrate compliance with the SIP through regional and project level conformity analyses. However, not all federally funded projects must complete a conformity analysis. The FCAA lists certain types of highway and roadway transit projects that are exempt from regional conformity requirements but not project-level conformity requirements (40 CFR 93.127). Intersection signalization projects and projects that result in a change in vertical or horizontal alignment are among those listed in the FCAA as exempt from regional conformity. Because all Build Alternatives include signals and/or alignment changes, both of the exemption categories apply to the Project. Consequently, while the proposed Project is federally funded, it may proceed toward implementation without a regional conformity analysis. Since the proposed Project is exempt from the regional transportation conformity analysis per 40 CFR 93.127, an evaluation of inclusion of the proposed Project in the currently conforming RTP and FTIP is not required.

However, the Project is included in the regional emissions analysis conducted by the Metropolitan Transportation Commission (MTC) for the current RTP, Plan Bay Area (RTP ID 240728). The Project is also included in the MTC's financially constrained 2017 TIP (TIP ID VAR170012). FHWA and Federal Transit Administration determined that the TIP conforms to the SIP on December 16, 2016. Thus, although the Project is exempt from regional conformity, its inclusion in the 2017 MTC TIP is discussed here for informational purposes (Metropolitan Transportation Commission 2017).

Project Level Conformity

The Project would be within a nonattainment area for the federal PM2.5 standard. Therefore, per 40 CFR Part 93, a Project-level PM2.5 analysis is required for conformity purposes.

A quantitative hot-spot analysis is only required for projects identified as a project of air quality concern (POAQCs), as defined in 40 CFR 93.123(b)(1). The Project does not match any of the project types considered to be POAQCs by EPA's final rule.

(i) **New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles.**

The EPA has noted in the March 2006 final rule that certain project types would not be considered POAQCs under Section 93.123(b)(1)i and ii. One of these examples of projects that would not be considered a POAQC is consistent with the Project.

- Any new or expanded highway project that primarily services gasoline vehicle traffic (i.e., does not involve a significant number or increase in the number of diesel vehicles), including such projects involving congested intersections operating at level of service (LOS) D, E, or F.

The Project is located in a residential area with anticipated traffic of less than 3,600 vehicles per day in 2020 and less than 4,500 vehicles per day in 2040. Given that the Project has relatively small traffic volumes (less than 4,500 total vehicles per day in 2040) and is simply replacing an existing bridge, it is reasonable to assume that there would not be a significant increase in the number of trucks. Thus, it can be determined that the proposed Project is not a POAQC for section (i).

(ii) **Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project.**

The Project is located in a residential area with relatively small daily traffic volumes. The Project traffic volumes are anticipated to be less than 4,500 vehicles per day over the bridge in 2040, which is substantially less than 125,000 vehicles per day. Truck traffic would be well below 10,000 per day as well. Thus, it can be determined that the proposed Project is not a POAQC for section (ii).

(iii) **New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location.**

The Project does not include new bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location.

(iv) **Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location.**

The Project does not include expanded bus or rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location.

(v) **Projects in or affecting locations, areas, or categories of sites which are identified in the PM2.5 or PM10 applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.**

The application implementation plan, the BAAQMD's 2017 Clean Air Plan, has not identified sites of violations or possible violations.

The Project underwent interagency consultation through MTC's Air Quality Conformity Task Force on May 25, 2017 and on September 10, 2018. Appendix D contains the documentation submitted to the Air Quality Conformity Task Force to support their concurrence on the Project's POAQC determination.

Long Term (Operational) Impacts

Existing year (2016)[2], opening year (2020), and cumulative year (2040) conditions were modeled to evaluate CO concentrations relative to the NAAQS and CAAQS. The two intersections that represent

[2] 2016 was selected as the existing year because it was the year the supplemental traffic analysis was begun.

the worst-case scenario were chosen out of the seven intersections included in the Project traffic report. These intersections were the University Avenue and Woodland Avenue intersection (which has the highest intersection volumes in the AM peak hour for all 3 years) and the University Avenue and Crescent Drive intersection (which has the highest delay and lowest LOS in the AM peak hour for all 3 years) and represent the worst-case scenario of any intersections affected by the Project. Both of these intersections are not located within the Project alignment, however, so a third intersection within the Project alignment was modeled (Newell Road and Woodland Avenue intersection), consistent with the CO Protocol guidelines. Table 2.2.6-4 summarizes the results of the intersection CO modeling and indicates that CO concentrations are not expected to exceed the 1- or 8-hour NAAQS and CAAQS for the worst-case scenario intersections both within and outside of the Project alignment.

Long-term air quality impacts are those associated with motor vehicles operating on the roadway network. Emissions of ROG, NO_X, CO, PM10, and PM2.5 for the existing year (2016), opening year (2020), and design year (2040) conditions were evaluated. Table 2.2.6-5 summarizes the operational emissions by year.

Operation-related emissions of ozone precursors, such as ROG, NO_X, CO, and PM10, would increase very slightly as a result of the Project because of the effect of diverted trips. Table 2.2.6-5 shows the BAAQMD's operational thresholds of significance, which are further discussed in Section 3.2.3, *Air Quality*. The Project would not result in substantial impacts to air quality during operations given the minor increases in emissions from vehicle traffic.

Mobile Source Air Toxics

The FHWA has issued an updated interim guidance using a tiered approach on how mobile source air toxics (MSATs) should be addressed in NEPA documents for highway projects (Federal Highway Administration 2016). Depending on the specific project circumstances, FHWA has identified the following three levels of analysis.

1. No analysis for exempt projects or projects that have no potential for meaningful MSAT effects.
2. Qualitative analysis for projects with low potential MSAT effects.
3. Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

The Project falls under FHWA Category 1, no meaningful MSAT impacts, because it would result in minor additional vehicle miles travelled (VMT) increases and increase traffic volumes only slightly. In 2040, it is anticipated that there would be a maximum increase of 210 vehicles per day as a result of the Build Alternatives, with VMT increasing by a maximum of 275 miles per day. Because of the small magnitude of VMT and volume increases relative to most road and highway projects, these increases are not considered to be meaningful with respect to MSAT impacts. Moreover, because the purpose of the Project is to improve bicycle and pedestrian travel in the corridor, it would cause minimal air quality impacts for FCAA criteria pollutants and would not be linked with any special MSAT concerns. As such, this Project would not result in substantial changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause an increase in MSAT impacts compared to the No Build Alternative.

Table 2.2.6-4. CO Modeling Concentration Results (Parts per Million)

		Worst-Case Intersections				Worst-Case Intersection within Project Alignment	
		University Ave. and Woodland Ave.		University Ave. and Crescent Dr.		Newell Rd. and Woodland Ave.	
Alternative & Year	Receptor[a]	1-hr CO[b]	8-hr CO[c]	1-hr CO[b]	8-hr CO[c]	1-hr CO[b]	8-hr CO[c]
2016							
Existing	1	4.4	2.5	3.8	2.1	3.4	1.8
	2	4.4	2.5	3.8	2.1	3.4	1.8
	3	3.9	2.1	3.8	2.1	3.3	1.7
	4	4.3	2.4	3.8	2.1	3.4	1.8
Build Alternative 1	1	4.4	2.5	3.8	2.1	3.4	1.8
	2	4.4	2.5	3.8	2.1	3.4	1.8
	3	3.9	2.1	3.8	2.1	3.3	1.7
	4	4.3	2.4	3.8	2.1	3.4	1.8
Build Alternative 2 (LPA)	1	4.4	2.5	3.8	2.1	3.4	1.8
	2	4.4	2.5	3.8	2.1	3.4	1.8
	3	3.9	2.1	3.8	2.1	3.3	1.7
	4	4.3	2.4	3.8	2.1	3.4	1.8
Build Alternative 3	1	4.4	2.5	3.8	2.1	3.4	1.8
	2	4.4	2.5	3.8	2.1	3.4	1.8
	3	3.9	2.1	3.8	2.1	3.3	1.7
	4	4.3	2.4	3.8	2.1	3.4	1.8
Build Alternative 4	1	4.4	2.5	3.8	2.1	3.2	1.6
	2	4.4	2.5	3.8	2.1	3.2	1.6
	3	3.9	2.1	3.8	2.1	3.1	1.6
	4	4.3	2.4	3.8	2.1	3.2	1.6

		Worst-Case Intersections				Worst-Case Intersection within Project Alignment	
		University Ave. and Woodland Ave.		University Ave. and Crescent Dr.		Newell Rd. and Woodland Ave.	
Alternative & Year	**Receptor[a]**	**1-hr CO[b]**	**8-hr CO[c]**	**1-hr CO[b]**	**8-hr CO[c]**	**1-hr CO[b]**	**8-hr CO[c]**
2020							
No Build Alternative	1	4.0	2.2	3.6	1.9	3.3	1.7
	2	4.0	2.2	3.6	1.9	3.3	1.7
	3	3.6	1.9	3.6	1.9	3.2	1.6
	4	3.9	2.1	3.5	1.9	3.3	1.7
Build Alternative 1	1	4.0	2.2	3.6	1.9	3.3	1.7
	2	4.0	2.2	3.6	1.9	3.3	1.7
	3	3.6	1.9	3.6	1.9	3.2	1.6
	4	3.9	2.1	3.5	1.9	3.3	1.7
Build Alternative 2 (LPA)	1	4.0	2.2	3.6	1.9	3.3	1.7
	2	4.0	2.2	3.6	1.9	3.3	1.7
	3	3.6	1.9	3.6	1.9	3.2	1.6
	4	3.9	2.1	3.5	1.9	3.3	1.7
Build Alternative 3	1	4.0	2.2	3.6	1.9	3.1	1.6
	2	4.0	2.2	3.6	1.9	3.2	1.6
	3	3.6	1.9	3.5	1.9	3.2	1.6
	4	3.9	2.1	3.5	1.9	3.1	1.6
Build Alternative 4	1	4.0	2.2	3.6	1.9	3.3	1.7
	2	4.0	2.2	3.6	1.9	3.3	1.7
	3	3.6	1.9	3.5	1.9	3.2	1.6
	4	3.9	2.1	3.5	1.9	3.3	1.7

Alternative & Year	Receptor[a]	Worst-Case Intersections: University Ave. and Woodland Ave. 1-hr CO[b]	Worst-Case Intersections: University Ave. and Woodland Ave. 8-hr CO[c]	Worst-Case Intersections: University Ave. and Crescent Dr. 1-hr CO[b]	Worst-Case Intersections: University Ave. and Crescent Dr. 8-hr CO[c]	Worst-Case Intersection within Project Alignment: Newell Rd. and Woodland Ave. 1-hr CO[b]	Worst-Case Intersection within Project Alignment: Newell Rd. and Woodland Ave. 8-hr CO[c]
2040							
No Build Alternative	1	3.8	2.1	3.5	1.9	3.4	1.8
	2	3.8	2.1	3.5	1.9	3.4	1.8
	3	3.5	1.9	3.4	1.8	3.3	1.7
	4	3.7	2.0	3.4	1.8	3.4	1.8
Build Alternative 1	1	3.8	2.1	3.5	1.9	3.4	1.8
	2	3.8	2.1	3.5	1.9	3.4	1.8
	3	3.5	1.9	3.4	1.8	3.3	1.7
	4	3.7	2.0	3.4	1.8	3.4	1.8
Build Alternative 2 (LPA)	1	3.8	2.1	3.5	1.9	3.4	1.8
	2	3.8	2.1	3.5	1.9	3.4	1.8
	3	3.5	1.9	3.4	1.8	3.3	1.7
	4	3.7	2.0	3.4	1.8	3.4	1.8
Build Alternative 3	1	3.8	2.1	3.5	1.9	3.4	1.8
	2	3.8	2.1	3.5	1.9	3.4	1.8
	3	3.5	1.9	3.4	1.8	3.3	1.7
	4	3.7	2.0	3.4	1.8	3.4	1.8
Build Alternative 4	1	3.8	2.1	3.5	1.9	3.2	1.6
	2	3.8	2.1	3.5	1.9	3.2	1.6
	3	3.5	1.9	3.4	1.8	3.1	1.6
	4	3.7	2.0	3.4	1.8	3.2	1.6

[a] Receptors are located at each of the four corners of the intersections and within the mixing zones. All intersections modeled have two intersecting roadways. Each set of receptors is unique to each intersection (i.e., Receptor 1 for the University Ave. and Woodland Ave. intersection is not the same receptor as Receptor 1 for the University Ave. and Crescent Dr. intersection).

[b] Average 1-hour background concentration between 2014 and 2016 was 2.9 ppm (U.S. Environmental Protection Agency 2017).

[c] Average 8-hour background concentration between 2014 and 2016 was 1.4 ppm (U.S. Environmental Protection Agency 2017).

CO = carbon monoxide; ppm = parts per million; LPA = locally preferred alternative

Table 2.2.6-5. Summary of Operational Criteria Pollutant Emissions Increases—Existing Year, Opening Year, and Design Year

Daily/Annual Emissions	ROG	NO_x	CO	PM10	PM2.5
2016					
Build Alternative 1					
Maximum Daily Emissions (lbs/day)	0.01	0.08	0.26	0.01	0.00
Annual Emissions (tons/year) [1]	< 0.01	0.01	0.05	< 0.01	< 0.01
Build Alternative 2 (LPA)					
Maximum Daily Emissions (lbs/day)	0.01	0.08	0.26	0.01	0.00
Annual Emissions (tons/year) [1]	< 0.01	0.01	0.05	< 0.01	< 0.01
Build Alternative 3					
Maximum Daily Emissions (lbs/day)	0.02	0.12	0.39	0.02	0.01
Annual Emissions (tons/year) [1]	< 0.01	0.02	0.07	< 0.01	< 0.01
Build Alternative 4					
Maximum Daily Emissions (lbs/day)	0.03	0.19	0.65	0.03	0.01
Annual Emissions (tons/year) [1]	< 0.01	0.03	0.11	< 0.01	< 0.01
2020					
Build Alternative 1					
Maximum Daily Emissions (lbs/day)	0.01	0.05	0.18	0.01	0.00
Annual Emissions (tons/year) [1]	< 0.01	< 0.01	0.03	< 0.01	< 0.01
Build Alternative 2 (LPA)					
Maximum Daily Emissions (lbs/day)	0.01	0.05	0.18	0.01	0.00
Annual Emissions (tons/year) [1]	< 0.01	< 0.01	0.03	< 0.01	< 0.01
Build Alternative 3					
Maximum Daily Emissions (lbs/day)	0.01	0.08	0.27	0.02	0.01
Annual Emissions (tons/year) [1]	< 0.01	0.01	0.05	< 0.01	< 0.01
Build Alternative 4					
Maximum Daily Emissions (lbs/day)	0.02	0.13	0.45	0.03	0.01
Annual Emissions (tons/year) [1]	< 0.01	0.02	0.08	< 0.01	< 0.01
2040					
Build Alternative 1					
Maximum Daily Emissions (lbs/day)	< 0.01	0.02	0.10	0.01	< 0.01
Annual Emissions (tons/year) [1]	< 0.01	< 0.01	0.02	< 0.01	< 0.01
Build Alternative 2 (LPA)					
Maximum Daily Emissions (lbs/day)	< 0.01	0.02	0.10	0.01	< 0.01
Annual Emissions (tons/year) [1]	< 0.01	< 0.01	0.02	< 0.01	< 0.01
Build Alternative 3					
Maximum Daily Emissions (lbs/day)	0.01	0.03	0.14	0.02	0.01
Annual Emissions (tons/year) [1]	< 0.01	< 0.01	0.03	< 0.01	< 0.01
Build Alternative 4					
Maximum Daily Emissions (lbs/day)	0.01	0.05	0.24	0.03	0.01

Daily/Annual Emissions	ROG	NO_x	CO	PM10	PM2.5
Annual Emissions (tons/year) [1]	< 0.01	< 0.01	0.04	< 0.01	< 0.01
BAAQMD Daily Thresholds (lbs/day)	**54**	**54**	***CAAQS*[2]**	**82**	**54**
BAAQMD Annual Thresholds (tons/year)	**10**	**10**	***CAAQS*[2]**	**15**	**10**

[1] Daily emissions were converted into annual emissions by multiplying by a standard factor of 347 days per year, to account for reduced volumes on weekends.

[2] Violation of a CAAQS.

Emissions were calculated using emission factors from EMFAC2014

BAAQMD = Bay Area Air Quality Management District; CAAQS = California Ambient Air Quality Standards; CO = carbon monoxide; lbs = pounds; NO_X = nitrogen oxides; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; ROG = reactive organic gases; LPA = locally preferred alternative

Moreover, EPA regulations for vehicle engines and fuels would cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES model forecasts a combined reduction of over 90% in the annual emissions for the priority MSAT from 2010 to 2050 while VMT are projected to increase by 45% (Federal Highway Administration 2016). This would both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this Project.

No Build Alternative

The No Build Alternative would not cause an increase in operational criteria pollutant impacts because construction activities would not occur.

2.2.6.4 Avoidance, Minimization, and/or Mitigation Measures

Most of the construction impacts on air quality are short-term in duration and, therefore, would not result in long-term adverse conditions. The following standardized measures (SM) and mitigation measure (MM) will reduce any air quality impacts resulting from construction activities.

- **SM-AQ-1: Implement California Department of Transportation Standard Specifications**
    - The Project applicant will comply with California Department of Transportation Standard Specifications in Section 14-9 Air Quality (2015).
    - Section 14-9.02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.
    - Section 10-5 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are contained in Section 18.
- **SM-AQ-2: Implement BAAQMD Basic Control Measures to Control Construction-Related Dust**
    - In accordance with the BAAQMD's current Air Quality Guidelines (Bay Area Air Quality Management District 2011), the Project applicant will implement the following BAAQMD-recommended control measures to reduce particulate matter emissions from construction activities.

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day by the contractor.
- All haul trucks transporting soil, sand, or other loose material off site will be covered by the contractor.
- All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day by the contractor. The use of dry power sweeping is prohibited.
- The contractor will limit all vehicle speeds on unpaved roads to 15 miles per hour.
- The contractor will complete all roadways, driveways, and sidewalks to be paved as soon as possible.
- The contractor will post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person will respond and take corrective action within 48 hours. BAAQMD's phone number will also be visible to ensure compliance with applicable regulations.

- **MM-AQ-1: Utilize clean diesel-powered equipment during construction to control construction-related NO_X emissions.** The construction contractor will ensure that all off-road diesel-powered equipment used during construction is equipped with EPA Tier 4 Final engines.

2.2.6.5 Climate Change

Neither the EPA nor FHWA has issued explicit guidance or methods to conduct project-level greenhouse gas analysis. FHWA emphasizes concepts of resilience and sustainability in highway planning, project development, design, operations, and maintenance. Because there have been requirements set forth in California legislation and executive orders on climate change, the issue is addressed in Chapter 3, *California Environmental Quality Act Evaluation*. The CEQA analysis may be used to inform the NEPA determination for the Project.

2.2.7 Noise

2.2.7.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analyses and considerations of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

Figure 2.2.7-1 lists the noise levels of common activities to enable readers to compare the predicted noise levels discussed in this section with common activities.

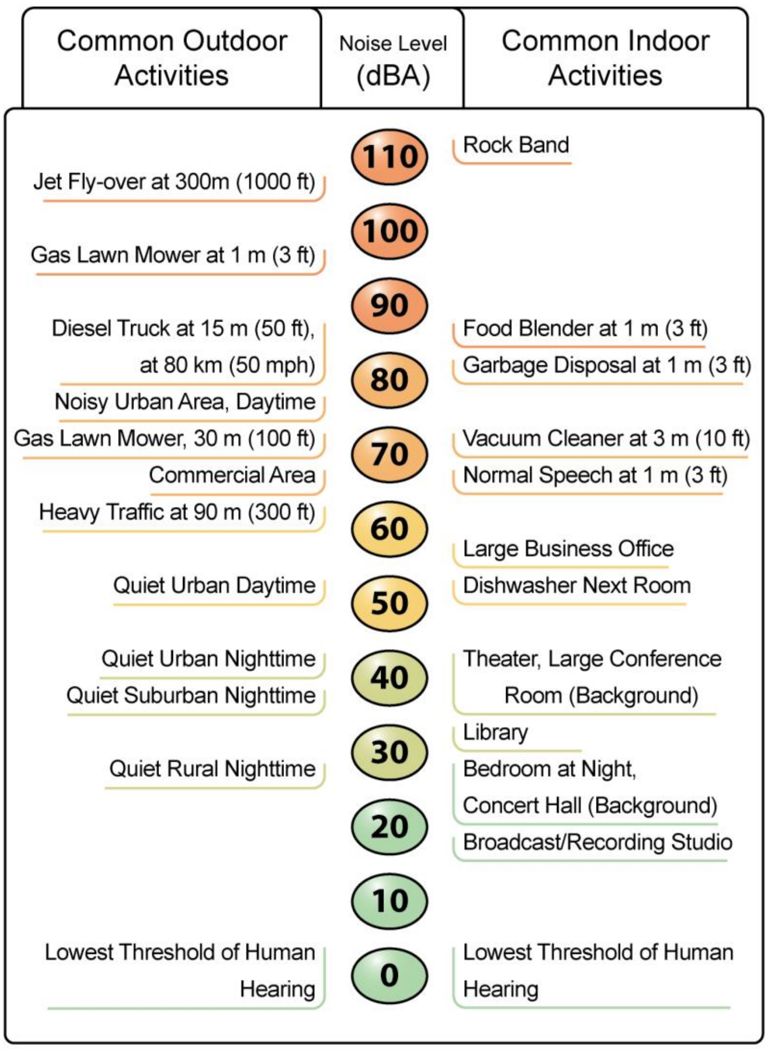

Figure 2.2.7-1. Noise Levels of Common Activities

California Environmental Quality Act

City of Palo Alto Noise Ordinance Section 9.10 dictates noise regulations within the City of Palo Alto and provides noise limits for residential properties, commercial and industrial properties, and public properties. CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless those measures are not feasible. The rest of this section will focus on the NEPA/23 Code of Federal Regulations (CFR) Part 772 (23 CFR 772) noise analysis; please see Chapter 3, *California Environmental Quality Act Evaluation*, for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with Federal Highway Administration involvement (and California Department of Transportation [Caltrans], as assigned), the Federal-Aid Highway Act of 1970 and its implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations include noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA). Table 2.2.7-1 lists the noise abatement criteria for use in the NEPA/23 CFR 772 analysis.

Table 2.2.7-1. Noise Abatement Criteria

Activity Category	NAC, Hourly A- Weighted Noise Level, Leq(h)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[1]	67 (Exterior)	Residential.
C[1]	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.

Activity Category	NAC, Hourly A- Weighted Noise Level, Leq(h)	Description of Activity Category
F	No NAC—reporting only	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical, etc.), and warehousing.
G	No NAC—reporting only	Undeveloped lands that are not permitted.

[1] Includes undeveloped lands permitted for this activity category.
NAC = noise abatement criteria

According to Caltran's *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, May 2011*, a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as an increase of 12 dBA or more) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated into the project.

Caltran's *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5 dBA reduction in future noise levels for all impacted receptors must be achieved for an abatement to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. Additionally, a noise reduction of at least 7 dBA must be achieved at one or more benefited receptors for an abatement measure to be considered reasonable. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include residents' acceptance and the cost per benefited residence.

Title 23, Part 772 of the CFR provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects are provided in. 23 CFR 772. Under Title 23 CFR, Part 772.7 of the CFR, projects are categorized as Type I, Type II, or Type III.

The Federal Highway Administration defines a Type I project as a proposed federal or federal-aid highway project for the construction of a highway on a new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment of the highway. The following projects are also considered to be Type I projects.

- The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a high-occupancy vehicle lane, high-occupancy toll lane, bus lane, or truck climbing lane.
- The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane.

- The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange.
- Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane.
- The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot, or toll plaza.

A Type II project is a noise barrier retrofit project that involves no changes to highway capacity or alignment. A Type III project is a project that does not meet the classifications of a Type I or Type II project. Type III projects do not require a noise analysis. The proposed Project would not add through lanes, nor would it significantly alter the horizontal alignment of the traveled way (generally defined as halving the distance of the traveled way to the nearest receptor). Therefore, the proposed Project is considered to be a Type III project, and an analysis of traffic noise from Project operations is not required. However, anticipated changes in noise levels due to the future distribution of traffic are analyzed in this section based on projections of existing and future traffic volumes.

Overview of Ground-Borne Vibration

The operation of heavy construction equipment, particularly pile-driving equipment and other impact devices (e.g., pavement breakers), creates seismic waves that radiate along the surface of the ground and downward. These surface waves can be felt as ground vibration. Vibration from the operation of this type of equipment can result in effects that range from annoyance for people to damage for structures.

Perceptible ground-borne vibration is generally limited to areas within a few hundred feet of construction activities. As seismic waves travel outward from a vibration source, they cause rock and soil particles to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The velocity (in inches per second) at which these particles move is referred to as peak particle velocity (PPV), the commonly accepted descriptor of vibration amplitude.

Vibration amplitude attenuates (or decreases) over distance. This attenuation is a complex function of how energy is imparted into the ground as well as the soil or rock conditions through which the vibration is traveling (variations in geology can result in different vibration levels).

The following equation is used to estimate the vibration level at a given distance for typical soil conditions (Federal Transit Administration 2018). PPV_{ref} is the reference PPV at 25 feet:

$$PPV = PPV_{ref} \text{ x } (25/\text{distance})^{1.1}$$

Table 2.2.7-2 summarizes typical vibration levels generated by construction equipment at a reference distance of 25 feet and other distances, as determined using the attenuation equation above.

Table 2.2.7-2. Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 Feet	PPV at 50 Feet	PPV at 75 Feet	PPV at 100 Feet	PPV at 175 Feet
Pile driver (vibratory)	0.650	0.3032	0.1941	0.1415	0.0764
Large bulldozer	0.089	0.0415	0.0266	0.0194	0.0105
Loaded trucks	0.076	0.0355	0.0227	0.0165	0.0089
Jackhammer	0.035	0.0163	0.0105	0.0076	0.0041
Small bulldozer	0.003	0.0014	0.0009	0.0007	0.0004

Source: California Department of Transportation 2013.
PPV = peak particle velocity

Tables 2.2.7-3 and 2.2.7-4 summarize the guidelines developed by Caltrans for damage and annoyance from the transient and continuous vibration that is usually associated with construction activity. Impact pile drivers, "pogo stick" compactors (small hand-held soil compactors), crack-and-seat equipment (equipment that breaks and re-seats pavement), excavation equipment, static compaction equipment, tracked vehicles, vehicles on highways, vibratory pile drivers, pile-extraction equipment, and vibratory compaction equipment are typically associated with continuous vibration. The activities that are typically associated with single-impact (transient) or low-rate, repeated impact vibration include blasting and the use of drop balls or dropped metal plates (California Department of Transportation 2013).

Table 2.2.7-3. Vibration Damage Potential, Threshold Criteria Guidelines

	Maximum PPV (in/sec)	
Structure and Condition	Transient Sources	Continuous/ Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation 2013.
Note: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
PPV = peak particle velocity

Table 2.2.7-4. Vibration Annoyance Potential, Criteria Guidelines

Human Response	Maximum PPV (in/sec) Transient Sources	Maximum PPV (in/sec) Continuous/ Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation 2013.

Note: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = peak particle velocity; in/sec = inches per second

2.2.7.2 Affected Environment

The information in this section is from the *Noise Study Report* (August 2017). Land uses in the proposed Project area consist primarily of single-family residences (Activity Category B) and multi-family apartment buildings (Activity Category B), as shown in Figure 2.2.7-2. Existing worst-hour traffic noise levels were calculated to range from 55 to 60 dBA L_{eq}(h) for all receivers.

2.2.7.3 Environmental Consequences

Construction Impacts

Build Alternatives

Construction period impacts would be the same for all build alternatives. Noise from Project construction activities may intermittently dominate the noise environment in the immediate area of construction. Construction activities would include demolition of existing structures, building of new structures, and implementation of detours. Equipment operations associated with demolition and building activities would be a source of noise. Implementation of detours may increase noise in some areas as a result of temporarily diverted traffic. Construction noise is controlled by standardized measure SM-NOI-1, Caltrans Standard Specifications Section 14-8.02, Noise Control, which states the following (California Department of Transportation 2015).

- Control and monitor noise resulting from work activities.
- Do not exceed 86 dBA at 50 feet from the job site activities from 9:00 p.m. to 6:00 a.m.

Table 2.2.7-5 summarizes noise levels produced by construction equipment that is commonly used on roadway construction projects. Construction equipment is expected to generate noise levels ranging from 80 to 96 dB at a distance of 50 feet, which would be reduced over distance at a rate of about 6 dB per doubling of distance.

Table 2.2.7-5. Construction Equipment Noise

Equipment	Maximum Noise Level (dBA at 50 feet)
Scrapers	89
Bulldozers	85
Heavy trucks	88
Backhoe	80
Pneumatic tools	85
Concrete pump	82
Vibratory pile driver	96

Source: Federal Transit Administration 2006

Each piece of construction equipment operates as an individual point source. The composite noise level at the nearest residence would be up to 91 dBA L_{max} during construction improvements that do not include pile driving (at a distance of 50 feet from an active construction area).

In addition to standard construction equipment, bridge construction would require the use of vibratory pile drivers. As shown in Table 2.2.7-5, pile driving generates noise levels up to a maximum of 96 dBA L_{max} at 50 feet, which would be the worst-case construction noise level at the nearest residence.

No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with Caltrans Standard Specifications Section 14-8.02, would include sound-control devices on construction equipment, and would follow applicable local noise standards (SM-NOI-1, SM-NOI-2, and SM-NOI-3). Construction noise would be short-term and intermittent.

The operation of heavy equipment would generate localized ground-borne vibration during construction of the Project. Vibration from non-impact construction activity and truck traffic is typically below the threshold of perception when the activity is more than about 50 feet from the receiver (refer to Tables 2.2.7-2 and 2.2.7-4 for vibration reference levels). Consequently, for construction activities without the use of high-impact equipment where the activity is located more than 50 feet from noise-sensitive land uses, ground-borne vibration impacts are expected to be minor.

For construction activities of the bridge, a pile driver, which is considered to be impact equipment, would be required. The level of vibration generated by pile driving and transmitted to nearby structures would depend on the type of pile driver used and site-specific soil properties. Under “average” soil conditions, an impact pile driver is expected to generate a vibration level of 0.650 and 0.303 inches per second PPV at a distance of 25 feet and 50 feet, respectively (California Department of Transportation 2013). Some existing homes are located 25 to 50 feet from where the pile driver could be operated, and under “average” soil conditions, those homes could be exposed to vibration levels in excess of the 0.3 and 0.4 inches per second PPV thresholds at which vibration may damage older residential structures and be severely perceptible to observers, respectively. Consequently, vibration impacts at homes closest to the bridge would be more substantial.

Vibration impacts may also be more substantial for homes located within approximately 50 feet of the construction site when the use of non-impact construction equipment (i.e., a large bulldozer) occurs. These residences could experience vibration levels as high as 0.089 inches per second PPV, which would exceed the threshold of perceptibility and could cause annoyance.

No Build Alternative

There would be no noise-related construction impacts under the No Build Alternative because construction activities would not occur.

Operational Impacts

Build Alternatives

Table 2.2.7-6 summarizes the traffic noise modeling results for existing conditions and design-year conditions with and without the proposed Project. Calculated design-year traffic noise levels with implementation of the proposed Project are compared with existing conditions as well as design-year no-Project conditions. The comparison with existing conditions is included in the analysis to identify traffic noise impacts under 23 CFR 772. The comparison with no-Project conditions indicates the direct effect of the proposed Project.

Locations of modeled receivers are shown in Figure 2.2.7-2. As shown in Table 2.2.7-6, calculated worst-case traffic noise levels for design-year no-Project conditions range from 55 to 60 dBA L_{eq}(h) at Activity Category B land uses (residential). Calculated worst-case traffic noise levels for design-year build conditions under Build Alternatives 1, 2, 3, and 4 also range from 56 to 61 dBA L_{eq}(h) at Activity Category B land uses. Traffic noise levels are therefore not predicted to approach or exceed the noise abatement criteria for Activity Category B land uses located adjacent to the Project study area limits. The bridge alignment under Build Alternative 4 would result in a slightly higher noise increase at the nearest receivers of up to 2 dB relative to existing conditions, and up to 1 dB under future no-Project conditions. An increase of less than 3 dB would generally not be perceptible. There would be no increase in noise anticipated under Alternatives 1 through 3 in comparison to the future No Build Alternative.

As described in Section 2.2.7.1, *Regulatory Setting*, consideration of noise abatement is not required for Type III projects under 23 CFR 772. The analysis in this section indicates that no noise impacts are predicted to occur due to operation of the Project. Accordingly, noise abatement was not evaluated in this analysis.

No Build Alternative

There would be no change in the noise environment under the No Build Alternative because implementation of the Project would not occur.

Table 2.2.7-6. Predicted Noise Levels under Existing and Future Conditions

Receiver	Location	Existing, dBA Leq	Future No-Build, dBA Leq	Increase vs. Existing, dB	Future Build Alternatives 1, 2 and 3, dBA Leq	Increase vs. Existing, dB	Increase vs. Future No-Build, dB	Future Build Alternative 4, dBA Leq	Increase vs. Existing, dB	Increase vs. Future No-Build, dB	Impact Type by Alternative
R-1	Southwest of Newell Road/Woodland Avenue intersection	58	59	+ 1	59	+ 1	0	60	+ 2	+ 1	None
R-2	Southwest of Newell Road/Woodland Avenue intersection	55	56	+ 1	56	+ 1	0	57	+ 2	+ 1	None
R-3	Southwest of Newell Road/Woodland Avenue intersection	56	57	+ 1	57	+ 1	0	57	+ 1	0	None
R-4	Northwest of Newell Road/Woodland Avenue intersection	58	59	+ 1	59	+ 1	0	59	+ 1	0	None
R-5	Northeast of Newell Road/Woodland Avenue intersection	60	61	+ 1	61	+ 1	0	61	+ 1	0	None
R-6	Northeast of Newell Road/Woodland Avenue intersection	58	59	+ 1	59	+ 1	0	59	+ 1	0	None
R-7	Southeast of Newell Road/Woodland Avenue intersection	58	59	+ 1	59	+ 1	0	59	+ 1	0	None

Source: California Department of Transportation 2017

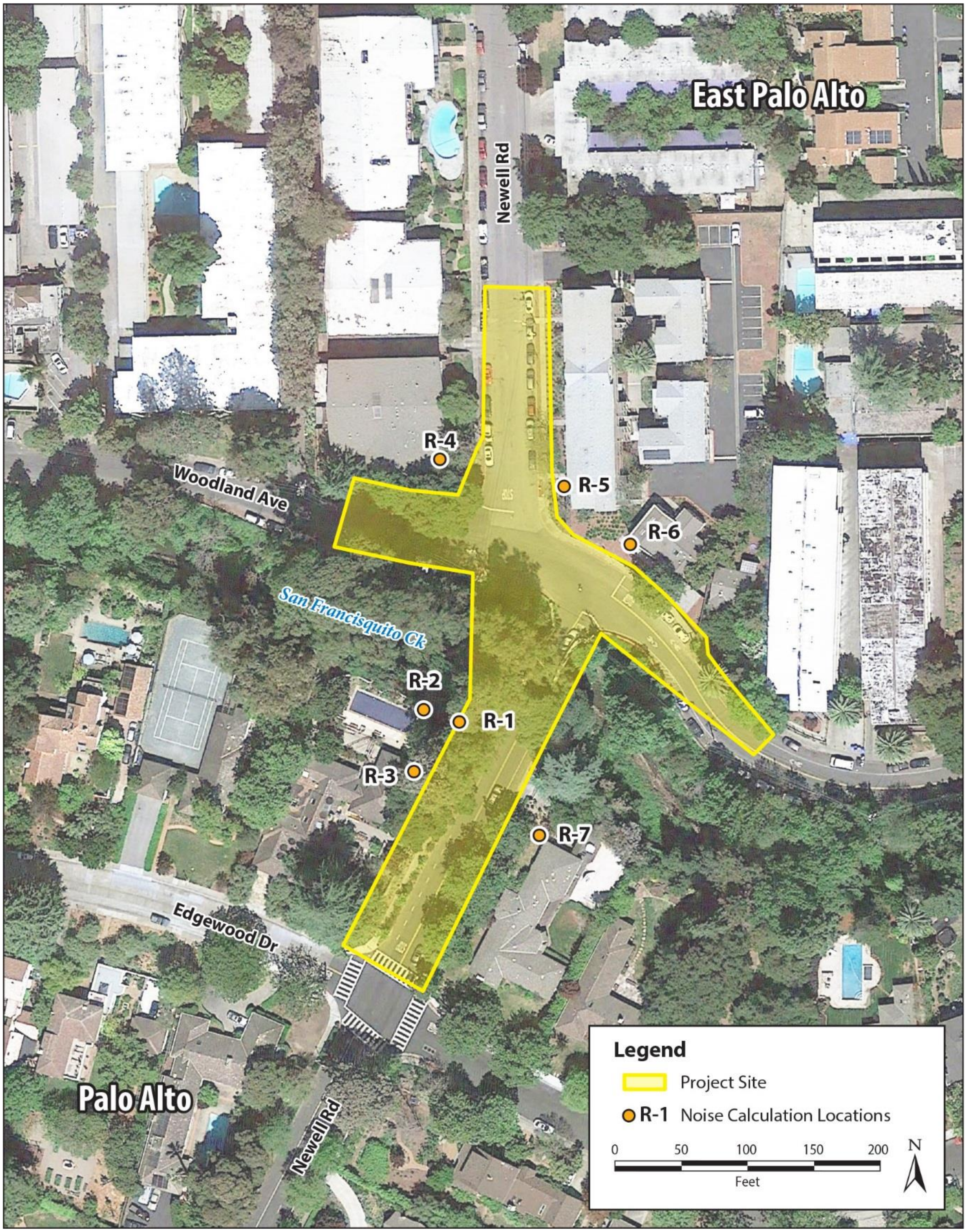

Figure 2.2.7-2. Noise Calculation Locations

2.2.7.4 Avoidance, Minimization, and/or Mitigation Measures

Implementing the following standardized measure (SM) will minimize the temporary noise impacts from construction.

- **SM-NOI-1: The construction contractor must comply with Caltrans Standard Specifications Section 14-8.02, Noise Control, which states the following:**
  - Control and monitor noise resulting from work activities.
  - Do not exceed 86 dBA at 50 feet from the job site activities from 9:00 p.m. to 6:00 a.m.
- **SM-NOI-2: All equipment used by the contractor will have sound-control devices that are no less effective than those provided on the original equipment.** No equipment will have an unmuffled exhaust.
- **SM-NOI-3: The Project proponent and/or their construction contractor will do the following.**
  - Review and ensure that construction activities are conducted in accordance with local noise standards from the cities of Palo Alto and East Palo Alto.
  - Implement additional noise mitigation measures, including changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity to allowed timeframes, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources, as appropriate.

Implementing the following mitigation measures (MM) will reduce the temporary noise and vibration impacts from construction.

- **MM-NOI-1: Provide advance notification of construction schedule and 24-hour hotline to residents.** The construction contractor will provide advance written notification of the proposed construction activities to all residences and other noise-sensitive uses within 750 feet of the construction site. Notification will include a brief overview of the proposed project and its purpose, as well as the proposed construction activities and schedule. It will also include the name and contact information of the project manager at the City of Palo Alto or another City of Palo Alto representative or designee responsible for ensuring that reasonable measures are implemented to address the problem.
- **MM-NOI-2: Designate a noise disturbance coordinator to address resident concerns.** The construction contractor will designate a representative to act as construction noise disturbance coordinator, responsible for resolving construction noise concerns. The disturbance coordinator’s name and contact information will be included in the preconstruction notices sent to area residents, per MM-NOI-1. The coordinator will be available during regular business hours to monitor and respond to concerns; if construction hours are extended, the disturbance coordinator will also be available during the extended hours. In the event a noise complaint is received, she or he will be responsible for determining the cause of the complaint and ensuring that all reasonable measures are implemented to address the problem.
- **MM-NOI-3: Install temporary noise barriers.** As described in MM-NOI-2 and MM-NOI-3, the construction contractor will notify noise-sensitive land uses near the site of upcoming activity before construction begins, will require construction-site noise reduction measures, and will

provide a 24-hour complaint hotline. If a resident or other noise-sensitive person submits a complaint about construction noise and the contractor is unable to reduce noise to a level that does not cause annoyance or disruption to adjacent land uses through other means, the contractor will install temporary noise barriers to reduce noise levels below the applicable construction noise standard. Barriers will be installed as promptly as possible, and work responsible for the disturbance will be suspended or modified until barriers have been installed. The following minimum criteria will be required of the contractor.

- The barrier will be 10 feet tall. It will surround the work area to block the line of sight for all diesel-powered equipment on the ground, as viewed from any private residence or any building.
- The barrier will be constructed of heavyweight plywood (5/8 inch thick) or other material providing a Sound Transmission Classification of at least 25 dBA. Note that 5/8 inch is sufficiently thick to provide optimal noise buffering; increasing the thickness of the barrier above 5/8 inch would not provide a noticeable improvement in noise reduction.
- The barrier will be constructed with no gaps or holes that would allow noise to transmit through the barrier.
- To minimize reflection of noise toward workers at the construction site, the surface of the barrier facing the workers will be covered with a sound-absorbing material meeting a Noise Reduction Coefficient of at least 0.70.

- **MM-NOI-4: Conduct construction vibration monitoring and implement control approach(es).** During periods of construction, the construction contractor will retain a qualified acoustical consultant or engineering firm to conduct vibration monitoring at homes or occupied vibration-sensitive buildings located within 315 feet[1] of pile driving locations and 25 feet of construction sites using other non-impact equipment. If at any point the measured PPV is in excess of 0.3 inches per second, construction activity will cease and alternative methods of construction and excavation will be considered to prevent possible exposure of vibration-sensitive buildings and structures to levels of 0.3 in/sec PPV or higher. Prior to construction activity, and assuming the property owner gives permission, a preconstruction survey will be conducted that documents any existing cracks or structural damage at vibration-sensitive receptors located within the distances identified above by means of color photography or video. Additionally, a designated complaint coordinator will be responsible for handling and responding to any complaints received during such periods of construction. The construction contractor will also implement a reporting program that will be required to document complaints received, actions taken, and the effectiveness of these actions in resolving disputes

[1] Beyond 315 feet, vibration from pile driving would attenuate to less than 0.4 inches per second and thus less than the distinctly perceptible threshold.

2.2.8 Energy

2.2.8.1 Regulatory Setting

The National Environmental Policy Act (NEPA) (42 United States Code Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

The California Environmental Quality Act (CEQA) Guidelines, Appendix F, Energy Conservation, state that Environmental Impact Reports are required to include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

2.2.8.2 Affected Environment

Existing energy consumption in the study area consists of direct energy consumption resulting from automobile operations. Indirect energy involves the one-time, nonrecoverable energy consumption associated with the construction of roadways, structures, and vehicles. In addition to fuel consumption of vehicles involved in the actual construction of different elements of the alternatives, construction energy consumption also includes the energy used in the production of construction materials. Indirect energy also involves the manufacturing and maintenance of vehicles. Permanent direct energy consumption involves the fuel needed by all of the vehicles (automobile or truck) in the Project area.

2.2.8.3 Environmental Consequences

Construction Impacts

Build Alternatives

It is the California Department of Transportation's (Caltrans') and the City of Palo Alto's goal to complete this Project in the least amount of time by planning and staging the work efficiently. Short-term, indirect energy consumption would be associated with the demolition and reconstruction of the bridge and roadway approaches and associated construction equipment. This impact would not be adverse due to the temporary nature of construction activities. Construction vehicles and activities would increase energy consumption at the Project site for approximately 1 year under all build alternatives, and would cease thereafter. Energy consumption would be a one-time, nonrecoverable occurrence related to the production of construction materials (i.e., cement, steel, asphalt), energy needed to produce these materials, and use of diesel, oil, and fuel by construction equipment. The reduced construction time would lead to a low number of construction-related delays and make the benefits of the Project available sooner. Caltrans and the City of Palo Alto are also proposing to reuse and incorporate existing materials into the final product as much as possible. Any pavement and construction debris that is removed would be considered for recycling or reuse. Recycling saves the fuel and materials that would have been required to create new materials.

Overall, the build alternatives would all result in comparable amounts of energy expended during construction, because the durations of the construction periods and the general types of activity are expected to be similar. Build Alternative 4 would require the greatest amount of material and energy, because it would have the longest retaining walls and need the greatest distance for Woodland Avenue to conform to the new bridge height. Build Alternative 1, would likely require the least amount of materials and energy because it would involve a one-lane bridge. Build Alternatives 2 and 3 would require very similar material amounts and thus energy consumption.

With respect to the use of construction equipment, Build Alternative 4 would likely require the greatest amount of fuel and energy consumed by construction equipment and vehicles because it would involve the most realignment relative to the existing bridge. Build Alternative 1 would be expected to result in the least amount of fuel and energy consumed by construction equipment and vehicles because it would involve the construction of a one-lane bridge with no horizontal realignment. Build Alternatives 2 and 3 would both involve the construction of a two-lane bridge, with minor realignment occurring for Alternative 3, and both would likely result in more fuel consumed than for Build Alternative 1 but less than for Build Alternative 4.

Although each build alternative would require a different quantity of materials (e.g., cement, steel, asphalt, traffic signal, signage, etc.) and fuel, the differences between these quantities would not be great enough to result in a substantial difference in energy resources used given the relatively small size of the project. Energy reductions could be achieved through the implementation of project-level greenhouse gas reduction strategies, as discussed in Section 3.3.5.3, *Project-Level GHG Reduction Strategies*, which would include ensuring that construction equipment and vehicles are properly maintained, using energy-efficient lighting, and scheduling and routing traffic to reduce vehicle congestion and idling.

No Build Alternative

There would be no energy impacts under the No Build Alternative because construction activities would not occur.

Operational Impacts

Build Alternatives

The Project's direct use of energy beyond fuel and energy needed during construction activities would be minor. Build Alternative 1 would require nine traffic signals, which would require electricity to operate and necessitate occasional maintenance trips. As such, Build Alternative 1 would result in direct energy consumption from new traffic signals, while the other build alternatives would not. As discussed in Section 2.2.6, *Air Quality*, the Project would result in minor increases in vehicle miles traveled and thus operation-related emissions of criteria pollutants, because of the effect of diverted trips. Some portion of vehicle traffic would take alternate routes instead of the bridge, which may result in slightly greater travel distances. As such, there may be slight indirect increases in vehicle fuel consumption during operation of the Project, but this effect is anticipated to be minor.

Indirectly, the Project would result in minor energy reductions on an on-going basis through the reduced need to maintain and repair flood-damaged roadways. Because one of the Project's goals is to increase flood protection and hydraulic capacity within the San Francisquito Creek watershed, the number of flooding events is expected to decrease in the future, which would lead to decreased damage sustained by roadways and bridges in the cities of Palo Alto and East Palo Alto. With operation of the Project resulting in potentially less flood damage to roads and bridges, there would be a reduced need for trucks and other equipment to expend fuel for maintenance and repair activities. Because of the uncertainty involved in flooding events and the damage sustained by roadways, the decreases in energy expended for maintenance and repair activities cannot be quantified, but the effect is not expected to be substantial. Overall, the Project would not result in an increase of fuel or energy use in large amounts or in a wasteful manner, an increase in the rate of use of any natural resource, or in the substantial depletion of any nonrenewable natural resource Therefore, the Project would not have a substantial effect on energy resources.

No Build Alternative

The indirect energy consumption of the No Build Alternative would only be associated with the manufacturing and maintenance of passenger vehicles and trucks. As discussed in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*, the long-term level of service for traffic under the No Build Alternative would be expected to worsen slightly over existing conditions and delays would increase. Therefore, long-term energy consumption would increase under the No Build Alternative.

2.2.8.4 Avoidance, Minimization, and/or Mitigation Measures

The build alternatives would result in a short-term increase in energy consumption from construction activities, but over the long term would not require avoidance, minimization, or mitigation measures because Project-related impacts would not occur.

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2.3 Biological Environment

2.3.1 Natural Communities

This section discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors, fish passage, and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act (FESA) are discussed in Section 2.3.5, *Threatened and Endangered Species*. Wetlands and other waters are discussed in Section 2.3.2, *Wetlands and Other Waters*.

2.3.1.1 Affected Environment

The information in this section is from the Natural Environment Study (September 2017). The Biological Study Area (BSA), which is the same as the Project area, includes the Project footprint where ground-disturbing construction, staging, or access activities would occur. The BSA encompasses approximately 500 feet along Newell Road Bridge (bridge) spanning San Francisquito Creek (creek), 350 feet along Woodland Avenue, and the adjacent upstream and downstream sections of San Francisquito Creek totaling 1.09 acres. The BSA is the same for all build alternatives.

Biologists visited the BSA in May and December 2012, August 2015, and April 2017. Three land cover types occur in the BSA (also called the Project area): valley foothill riparian, developed, and intermittent stream (Figure 2.3-1). The total area of each land cover type within the BSA is summarized in Table 2.3-1. Only valley foothill riparian and intermittent stream are considered natural communities of special concern.

Table 2.3-1. Land Cover Types in Biological Study Area

Land Cover Type	Acres
Intermittent stream	0.06
Valley foothill riparian	0.13
Developed	0.90
Total	***1.09***

The valley foothill riparian woodland natural community occurs along both banks of San Francisquito Creek. Valley foothill riparian communities typically provide high-value habitat, offering escape cover, forage, and nesting opportunities for many wildlife species and creating shade that controls instream water temperatures. However the riparian community in the Project area has been highly disturbed from channelization and armoring of San Francisquito Creek and development along the top of bank. The west bank of San Francisquito Creek is dominated by non-native blue gum (*Eucalyptus globulus*) trees, but there are some native plant species in the understory. Dominant tree species on the east bank are willows (*Salix lasiolepis, S. laevigata*). Cottonwood (*Populus fremontii* ssp. *fremontii*) and ash (*Fraxinus latifolius*) are less common.

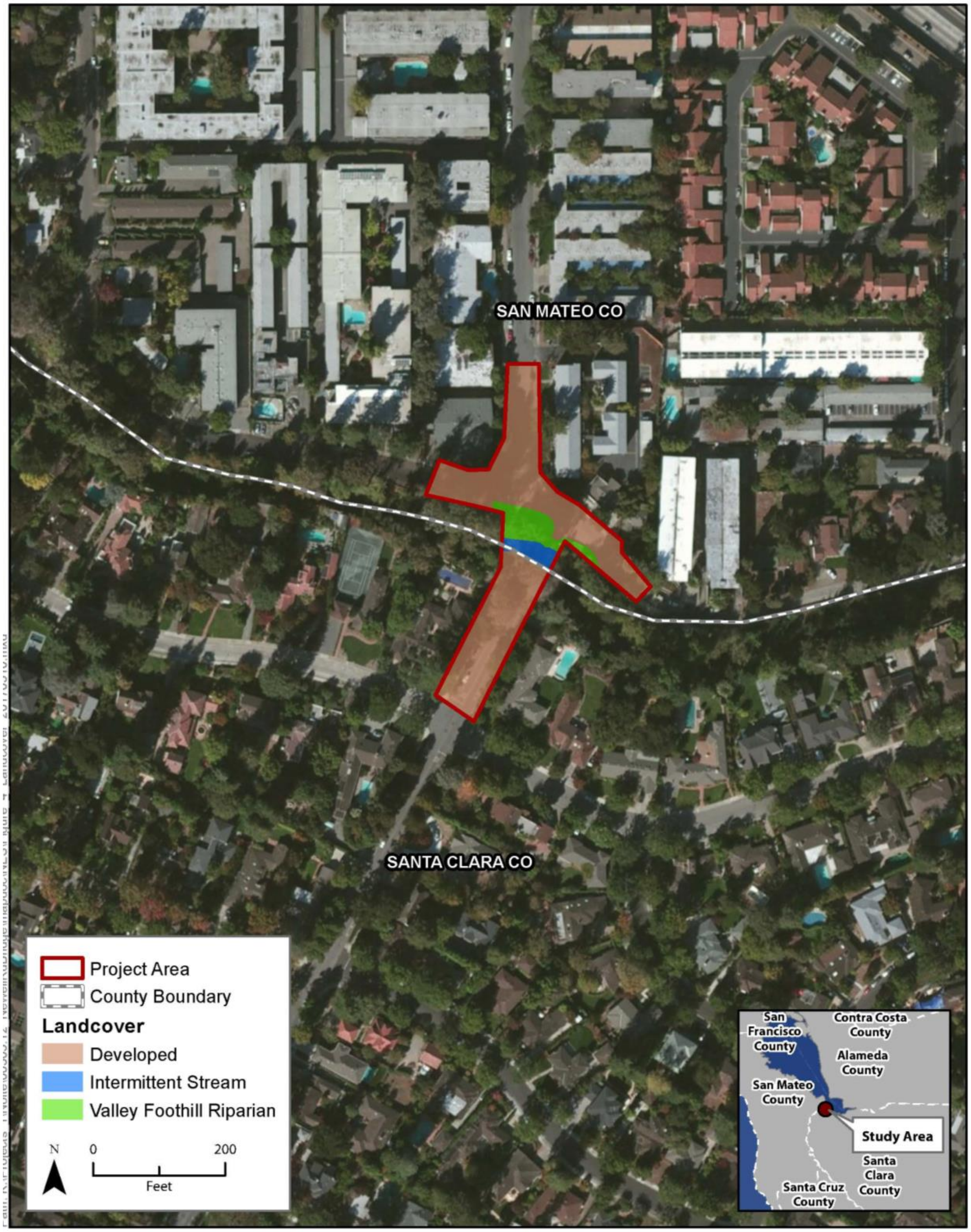

Figure 2.3-1. Land Cover Types in the Biological Study Area

Single native trees of big leaf maple (*Acer macrophyllum*), California black walnut (*Juglans californicus*), and California buckeye (*Aesculus californicus*) occur in the BSA.

The developed land cover type in the BSA includes roads, bridges, paved areas, and residential development surrounding San Francisquito Creek. Vegetation in developed areas is highly variable, ranging from nonexistent in paved areas and along the levees, to mowed grasses, ornamental shrubs, and shade trees associated with residential development. Vegetation on Newell Road and Woodland Avenue is dominated by ornamental trees, shrubs, and perennials. Some native trees (*Quercus agrifolia* and *Sequoia sempervirens*) were probably planted. Manzanita (*Arctostaphylos* sp.) that was planted along Newell Road is most likely a horticultural variety.

The intermittent stream natural community is defined as the creek bed below the ordinary high water mark (OHWM). During the first survey in May 2012, the creek channel was dry except for occasional solitary pools and was characterized by barren, unconsolidated beds of sand, gravel, cobble, or rocky substrates.

There are no Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plan in the project vicinity.

Protected Trees

A tree survey was completed on April 4, 2017. A total of 97 trees were identified within the BSA and consist of both native and non-native species. Planted non-native trees line the neighborhood streets. Blue gum eucalyptus trees line some portions of the upper bank (above the OHWM) on the north bank of San Francisquito Creek. Trees are sparse on the south side of San Francisquito Creek due to the substantial bank modifications and residential development up to the edge of San Francisquito Creek. Native trees are mainly limited to the creek's mid-to lower bank, but some native trees, such as coast live oak (*Quercus agrifolia*) and California buckeye, were probably planted in the adjacent developed areas.

Habitat Connectivity

The channel of San Francisquito Creek provides suitable dispersal habitat for California red-legged frog (*Rana draytonii*) during low flows. Within the BSA, suitable upland habitat and frog dispersal would be limited to the riparian corridor along the creek due to the significant extent of incision of the channel; steep banks; high degree of residential development, landscaping, and roads; relatively frequent traffic conveyed by Woodland Avenue and Edgewood Drive; and further residential and commercial development beyond the Project site. Several ponds were assessed for California red-legged frog habitat suitability near San Francisquito Creek. Movement into and out of the ponds is unlikely due to the high salinity in the lower area of San Francisquito Creek and the degree of isolation from development. Upper San Francisquito Creek (0.6 miles northwest of the Project site and further upstream) provides suitable nonbreeding, dispersal habitat when flows are low. Lower San Francisquito Creek (0.5 miles southwest of the Project site) was also assessed for habitat suitability, but this segment of the creek does not typically offer suitable habitat for the species. When outflow of freshwater pushes the water lower in the drainage, movement by frogs from Lower San Francisquito Creek upstream (or vice versa) could occur within or along the creek.

Currently there are no fish passage issues at the Project site. There are no downstream barriers from the San Francisco Bay to San Francisquito Creek in the BSA. However, San Francisquito Creek in an intermittent stream, the Project site is not subject to tidal influence, and it is dry in the BSA in the summer. This condition would not allow juvenile steelhead rearing. Biological surveys noted stagnant pools in the creek in the summer, but the pools would be unable to support juvenile steelhead through the summer months due to the poor water quality.

2.3.1.2 Environmental Consequences

Construction Impacts

Build Alternatives

Valley Foothill Riparian

Indirect impacts on riparian vegetation could occur from adjacent construction activity. Trees and woody vegetation adjacent to the construction area would not be removed for construction but could sustain damage from equipment. Because this habitat is located adjacent to the river and functions as riparian habitat, a streambed alteration agreement from the California Department of Fish and Wildlife (CDFW) would likely be required for construction activity within the habitat. The loss or disturbance of riparian vegetation is considered adverse because riparian vegetation provides a variety of important ecological functions and values. Implementation of the avoidance and minimization efforts described in Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, would minimize the impacts of the Project on riparian vegetation.

Intermittent Stream

Bridge construction would occur during the low-flow period in summer, and most construction activities associated with removal and replacement of the bridge abutments would be conducted above the OHWM. Construction activities that could occur within the creek include installation of the check dams, such as clean gravel dams or any other type of approved California Department of Transportation (Caltrans) standard dam, and best management practices (BMPs). Excavation for removal of the existing abutments and construction of the new abutments would be accomplished using an excavator located on the existing roadway and no equipment would enter the creek. Pilings will be placed on the banks with a vibratory hammer.

Indirect impacts on intermittent stream habitat could also occur from adjacent construction activity due to erosion and sedimentation and discharge of pollutants into the creek. Implementation of the avoidance and minimization measures would prevent these indirect effects on San Francisquito Creek during construction.

Protected Trees

All build alternatives would have temporary impacts on trees during construction, including minor pruning or trimming of branches and cutting of minor root systems.

Habitat Connectivity

No habitat connectivity impacts due to Project construction are anticipated because most work would be outside of the OHWM. Construction activities that could occur within the creek include installation of the check dams, such as clean gravel dams or any other type of approved Caltrans standard dam, and BMPs.

No Build Alternative

The No Build Alternative would not affect natural communities because no construction activities would occur.

Operational Impacts

Build Alternatives

Valley Foothill Riparian and Intermittent Stream

Permanent impacts on valley foothill riparian and intermittent stream are provided in Table 2.3-2. Construction of the Project on the proposed alignment would result in permanent loss of some riparian vegetation along San Francisquito Creek within the Project footprint. For the purposes of this analysis, it is assumed that all valley foothill riparian vegetation would be removed within the Project footprint. Additionally, loss of native trees within San Francisquito Creek would adversely affect the valley foothill riparian habitat in the Project area. Table 2.3-3 identifies the impacts on all trees per build alternative.

Project construction would have minimal permanent impacts on intermittent stream habitat within San Francisquito Creek, primarily where banks would be excavated to remove old structures and install new pilings and rip rap.

Table 2.3-2. Impacts on Natural Communities of Special Concern

	Permanent Impact Area (acres) by Build Alternative[a]			
Community Type	**Build Alternative 1**	**Build Alternative 2 (LPA)**	**Build Alternative 3**	**Build Alternative 4**
Intermittent Stream	0.020	0.029	0.028	0.023[c]
Valley Foothill Riparian	0.014	0.022	0.022	0.031
Total [b]	***0.034***	***0.031***	***0.050***	***0.054***

[a] None of the alternatives have any temporary impact area

[b] Total impact area does not include the developed land cover type in the biological study area.

[c] The lower impact on under Build Alternative 4 versus the other build alternatives is due to different bridge angles across the stream combined with the creek being narrower in the Build Alternative 4 footprint and wider in Build Alternatives 2 and 3.

LPA = locally preferred alternative

Implementation of the avoidance, minimization, and mitigation measures described in Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, would reduce impacts on valley foothill riparian vegetation and intermittent stream habitat.

Protected Trees

The Project is not anticipated to result in impacts on any redwood trees in Palo Alto as none are located within the permanent impact area. However, a coast live oak with a diameter at breast height of 43.5 inches would be removed under all build alternatives. This tree is protected in accordance with the City of Palo Alto's Tree Preservation Ordinance. Seven other regulated trees, which include trees within the public right-of-way within the City of Palo Alto, would also be removed under all build alternatives. This includes two magnolias, one California Buckeye, and four eucalyptus trees.

Several trees within public right-of-way within East Palo Alto would also be removed. Under Build Alternative 1, two trees—a Freemont's Cottonwood tree and a Coast live oak tree—would be removed in East Palo Alto. Under Build Alternative 2, both these trees would be removed along with a California buckeye and Arroyo Willow. Under Build Alternative 3, six trees would be removed, including all trees under Build Alternative 2, in addition to another coast live oak tree and a California buckeye. Under Build Alternative 4, 10 trees would be removed, including all those under Build Alternative 3, an Arroyo willow and three eucalyptus. Under the City of East Palo Alto's Municipal Code (Section 18.28.040(2)), all of the trees within the City of East Palo Alto are considered protected because they are all within the public right-of-way. The City of Palo Alto will continue to work with the City of East Palo Alto to try to retain as many trees as feasible, including in particular the oak tree at the northwestern corner of Newell Road and Woodland Avenue on the East Palo Alto side. However, for the purposes of this analysis, in order to assume a worst-case-scenario, all of the trees described above, including the oak tree, are identified for removal.

Table 2.3-3 identifies the impacts on all trees per build alternative.

Table 2.3-3. Impacts on Trees per Build Alternative

	Build Alternative 1	Build Alternative 2 (LPA)	Build Alternative 3	Build Alternative 4
Number of Trees Affected	23	24	23	25
Number of Trees Removed	10	12	14	18

LPA = locally preferred alternative

The loss of the protected oak and seven other regulated trees (street trees) within the City of Palo Alto would be an impact. Removal of these trees is allowed in accordance with Palo Alto Municipal Code Section 8.10.050(d)(1). As outlined in the code, replacement for these trees is required in accordance with the Tree Technical Manual, which includes a formula for replacement based on the measured size of the canopy lost. Compliance with the Palo Alto Municipal Code and the Tree Technical Manual, which is incorporated by reference as part of the City's Municipal Code, would help to ensure that impacts associated with removal of the protected and regulated trees within the City of Palo Alto would be reduced. In addition, the City of East Palo Alto requires replacement of trees approved for removal in accordance with the East Palo Alto Municipal Code Section 18.28.040(I). Compliance with the City of East Palo Alto's Municipal Code, including replacement of the canopy, ensures that impacts within the City of East Palo Alto would also be reduced. However, mitigation measures would still be required in the event that trees cannot be replaced on site.

Habitat Connectivity

No habitat connectivity impacts due to the Project are anticipated. The bridge will be replaced with a free span bridge, so no pilings will be located within the intermittent stream channel. Additionally, the abutments and bank stabilization will be placed outside of the OHWM. The channel and habitat surrounding the creek will remain the same.

No Build Alternative

The No Build Alternative would not affect natural communities because no improvements would occur.

2.3.1.3 Avoidance, Minimization, and/or Mitigation Measures

Valley Foothill Riparian

Implementation of the following avoidance, minimization, and mitigation measures would ensure that the proposed Project minimizes effects on valley foothill riparian habitat in and adjacent to the Project construction area.

- **AMM-BIO-1: Install Construction Barrier Fencing around Environmentally Sensitive Areas.** The Project proponent or its contractor will install orange construction barrier fencing to identify environmentally sensitive areas in and adjacent to the construction area. A qualified biologist will identify sensitive biological resources adjacent to the construction area before the final design plans are prepared so that the areas to be fenced can be included in the plans. The area that would generally be required for construction, including staging and access, is shown in Figure 2.3-1. Portions of this area that are to be avoided during construction will be fenced off to avoid disturbance. Sensitive biological resources that occur adjacent to the construction area include sensitive natural communities and protected trees to be retained. Temporary fences around the environmentally sensitive areas will be installed as one of the first orders of work following Caltrans specifications. Before construction, the construction contractor will work with the Project engineer and a resource specialist to identify the locations for the barrier fencing and will place stakes around the sensitive resource sites to indicate these locations. The protected areas will be designated as environmentally sensitive areas and clearly identified on the construction plans. The fencing will be installed before construction activities are initiated, maintained throughout the construction period, and removed after completion of construction.
- **AMM-BIO-2: Prepare Environmental Awareness Program and Conduct Environmental Awareness Training for Construction Employees.** The Project proponent will retain a qualified biologist to develop an environmental awareness program and conduct environmental awareness training for construction employees. The program will explain the importance of on-site biological resources, including sensitive natural communities, protected trees to be retained, and special-status wildlife habitats, and how to avoid take of listed species. The program will include invasive plant identification and the importance of controlling and preventing the spread of invasive plant infestations.

  The environmental awareness program will be provided to all construction personnel to inform them on the life history of special-status species in or adjacent to the Project, the need to avoid impacts on sensitive biological resources, any terms and conditions required by state and federal agencies, and the penalties for not complying with biological mitigation requirements. If new construction personnel are added to the Project, the contractor's superintendent will ensure that the personnel receive the mandatory training before starting work. An environmental awareness handout that describes and illustrates sensitive resources to be avoided during Project construction and identifies all relevant permit conditions will be provided to each person.

- **AMM-BIO-3: Retain a Biological Monitor to Conduct Visits during Construction.** The Project proponent will retain a qualified biologist to conduct construction monitoring in and adjacent to all identified environmentally sensitive areas. The frequency of monitoring will range from daily to weekly depending on the biological resource. The monitor, as part of the overall monitoring duties, will inspect the fencing once a week at a minimum in the construction area along the river and drainages that support woody vegetation; surrounding native trees and woodlands; and special-status plants. The biological monitor will assist the construction crew as needed to comply with all Project implementation restrictions and guidelines. The biological monitor also will be responsible for ensuring that the contractor maintains the staked and flagged perimeters of the construction area and staging areas adjacent to sensitive biological resources.
- **AMM-BIO-4: Avoid and Minimize Potential Disturbance of Valley Foothill Riparian Community.** The Project proponent and its construction contractor will avoid and minimize potential disturbance of the valley foothill riparian community by implementing the following measures.
    - The potential for long-term loss of woody vegetation will be minimized by trimming vegetation rather than removing entire shrubs. Shrubs that need to be trimmed will be cut at least 1 foot above ground level to leave the root systems intact and allow for more rapid regeneration. Cutting will be limited to the minimum area necessary within the construction zone.
    - A certified arborist will be retained to perform any necessary pruning or root cutting of retained trees.
    - The areas that undergo vegetative pruning will be inspected immediately before construction, immediately after construction, and 1 year after construction to determine the amount of pre-Project vegetative cover, cover that has been removed, and cover that regrows. After 1 year, if vegetation in these areas has not regrown sufficiently to return the cover to the pre-Project level, the Project proponent will replant the areas with native species to reestablish the cover to the pre-Project condition.
- **MM-BIO-1: Compensate for Permanent Loss of Valley Foothill Riparian.** The Project proponent will compensate for permanent construction-related loss of valley foothill riparian habitat by replanting trees in the disturbed area after completion of the construction activities. Loss of native riparian trees will be compensated by replanting at a ratio of 3:1 (three native trees planted for every one native tree removed that was at least 4 inches diameter at breast height [approximately 4.5 feet above existing grade]). Loss of non-native riparian trees will be compensated at a ratio of 1:1 (one native tree planted for every one non-native tree removed that was at least 4 inches diameter at breast height). The compensatory ratios and planting locations will be confirmed through coordination with the Project proponent and other agencies as part of the environmental permitting process for the proposed Project.

  The Project proponent will prepare a riparian mitigation planting plan, including a species list and number of each species, planting locations, and maintenance and monitoring requirements. Plantings will consist of cuttings taken from native plants, or plants grown at a plant nursery from local native material obtained within the San Francisquito Creek watershed. Planted species will be similar in structure and stature (at maturity) to those removed from the Project area. Plantings will be monitored annually for 5 years or as required in the Project permits. If 75% of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If this survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected.

Intermittent Stream

Implementation of AMM-BIO-1 through AMM-BIO-4 for valley foothill riparian and avoidance and minimization effort AMM-BIO-5 would ensure that the proposed Project minimizes direct and indirect effects on intermittent stream habitat.

- **AMM-BIO-5. Protect Water Quality and Prevent Erosion and Sedimentation in San Francisquito Creek.** The Project proponent and/or their construction contractor shall ensure the construction specifications include water quality protection and erosion and sediment control BMPs, based on standard Caltrans requirements, to minimize construction-related contaminants and mobilization of sediment to the San Francisquito Creek.

  The BMPs will be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. BMPS are subject to review and approval by the Project proponent. The Project proponent will perform routine inspections of the construction area to verify the BMPs are properly implemented and maintained. The Project proponent will notify contractors immediately if there is a noncompliance issue and will require compliance.

  The BMPs will include, but are not limited to, the following.

  - All earthwork or foundation activities involving San Francisquito Creek and the bridge will occur in the dry season (between June 1 and October 15).
  - A netting and tarp system will be implemented at the bridge site to prevent and minimize debris from entering the river during demolition and construction activities.
  - Equipment used around San Francisquito Creek will be in good working order and free of dripping or leaking engine fluids. All vehicle maintenance will be performed at least 300 feet from all drainages and wetlands. Any necessary equipment washing will be carried out where the water cannot flow into drainages or wetlands.
  - A hazardous material spill prevention control and countermeasure plan will be developed before construction begins that will minimize the potential for and the effects of hazardous or toxic substances spills during construction. The plan will include storage and containment procedures to prevent and respond to spills and will identify the parties responsible for monitoring the spill response. During construction, any spills will be cleaned up immediately according to the spill prevention and countermeasure plan. The Project proponent will review and approve the contractors' toxic materials spill prevention control and countermeasure plan before allowing construction to begin. The following types of materials will be prohibited from being rinsed or washed into the streets, shoulder areas, or gutters: concrete, solvents and adhesives, thinners, paints, fuels, sawdust, dirt, gasoline, asphalt and concrete saw slurry, heavily chlorinated water.
  - Baseline turbidity, pH, specific conductance, and temperatures in the San Francisquito Creek channel will be measured when flow is present. As required by the Regional Water Quality Control Board (RWQCB), water quality standards specified in the Basin Plan standards will not be exceeded over the natural in-situ conditions. If dewatering activities are required, water samples would be taken periodically during construction.

- Any surplus concrete rubble, asphalt, or other rubble from construction will be taken to a local landfill.
- An erosion and sediment control plan will be prepared and implemented for the proposed Project. It will include the following provisions and protocols. The stormwater pollution prevention plan for the Project will detail the applications and type of measures and the allowable exposure of unprotected soils.
- Discharge from dewatering operations, if needed, and runoff from disturbed areas will be made to conform to the water quality requirements of the waste discharge permit issued by the RWQCB.
- Temporary erosion control measures, such as sandbagged silt fences, will be applied throughout construction of the proposed Project and will be removed after the working area is stabilized or as directed by the engineer. Soil exposure will be minimized through use of temporary BMPs, groundcover, and stabilization measures. Exposed dust-producing surfaces will be sprinkled daily, if necessary, until wet; this measure will be controlled to avoid producing runoff. Paved streets will be swept daily following construction activities.
- The contractor will conduct periodic maintenance of erosion and sediment control measures.
- An appropriate seed mix of native species will be planted on disturbed areas upon completion of construction.
- The contractor will cover or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
- The contractor will enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways. Material stockpiles will be located in non-traffic areas only. Side slopes will not be steeper than 2:1. All stockpile areas will be surrounded by a filter fabric fence and interceptor dike.
- Runoff from disturbed areas will be contained and filtered by berms, vegetated filters, silt fencing, straw wattle, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area.
- Other temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary re-vegetation or other ground cover) will be used to control erosion from disturbed areas as necessary.
- The contractor will avoid depositing or placing earth or organic material where it may be directly carried into the channel.

Protected Trees

Implementation of MM-BIO-2 would ensure that construction impacts on protected and regulated trees would be mitigated by ensuring that a suitable location is identified for replacement if replacement cannot be accommodated on the Project site. The City of Palo Alto Tree Technical Manual guidance (see Table 3-1 in Section 3-4 of the Tree Technical Manual) and East Palo Alto

Municipal Code will also be followed for determining the ratio of replacement, dependent on the tree canopy.

- **MM-BIO-2: Tree Replacement Plan.** The applicant shall be required, in accordance with the Tree Protection and Management Regulations (Palo Alto Municipal Code 8.10) and Tree Technical Manual (Palo Alto Municipal Code 8.10.120), to replace the tree canopy for the six protected trees, in accordance with the tree canopy formula identified in the Tree Technical Manual (Tree Technical Manual 3.20). If the tree canopy cannot be replaced on site, the canopy shall be replaced off site as close to the Project site as feasible. If trees are being replaced off site, the applicant must submit a Tree Planting Plan to the Urban Forestry Division and obtain the Urban Forestry Division's approval of the plan prior to issuance of a building permit. The Tree Planting Plan must include the following.
    - The canopy calculation for trees removed and the number of trees planned to replace them, consistent with the formula identified in the Tree Technical Manual.
    - The specific location where the new trees would be planted with specific baseline information about that proposed site (e.g., surrounding vegetation or development).
    - The species of trees to be planted.
    - Specific planting details (e.g., size of sapling, size of containers, irrigation plan).
    - Success criteria.
    - Monitoring and maintenance schedule.

    Replacement tree planting will be monitored by a qualified arborist. To verify the success of replacement trees, monitoring shall occur for two years after initial planting. After the two-year period, the arborist will determine if the trees are capable of surviving without further maintenance.

Habitat Connectivity

Implementation of AMM-BIO-1 through AMM-BIO-5 will decrease impacts on San Francisquito Creek and the surrounding upland habitat. These measures will keep habitat connectivity the same as the existing condition.

2.3.2 Wetlands and Other Waters

2.3.2.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act (CWA) (33 United States Code [USC] 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. The lateral limits of jurisdiction over non-tidal water bodies extend to the OHWM, in the absence of adjacent wetlands. When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (waterloving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (EPA).

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities that are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with EPA's Section 404(b)(1) Guidelines (40 Code of Federal Regulations [CFR] Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines were developed by the EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the United States) only if there is no practicable alternative which would have less adverse effects. The Section 404 (b)(1) Guidelines state that the USACE may not issue a permit if there is a "least environmentally damaging practicable alternative" to the proposed discharge that would have lesser effects on waters of the United States, and not have any other significant adverse environmental consequences.

The Executive Order (EO) for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11990 states that a federal agency, such as the Federal Highway Administration (FHWA) and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Finding must be made.

At the state level, wetlands and waters are regulated primarily by the State Water Resources Control Board, the RWQCBs, and the CDFW. In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600–1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements and may be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certifications for activities which may result in a discharge to waters of the United States. This is most frequently required in tandem with a Section 404 permit request. Section 2.2.2, *Water Quality and Storm Water Runoff*, provides more details on water quality.

2.3.2.2 Affected Environment

The information in this section is from the Natural Environment Study (September 2017) and Wetland Delineation (April 2017). The BSA encompasses approximately 500 feet along Newell Road Bridge spanning San Francisquito Creek, 350 feet along Woodland Avenue, and the adjacent upstream and downstream sections of San Francisquito Creek totaling 1.09 acres. The BSA is the same for all build alternatives. A site visit was conducted on August 24, 2015, to evaluate the BSA.

No jurisdictional wetlands were identified in the BSA. Riparian scrub is present in some areas below the OHWM. In the BSA, this vegetation type is dominated by Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), arroyo willow (*Salix lasiolepis*), floating water primrose (*Ludwigia peploides*), and water knotweed (*Persicaria amphibia*) (all facultative wetland or obligate wetland species). The majority of this vegetation type is located on the outer channel edge at the slope toe and is generally rooted below the OHWM, but does not meet the 5% wetland vegetation cover criterion. There is one elevated gravel bar in the center of the creek on the west side of the bridge, vegetated predominantly by Fremont cottonwood and water knotweed, but this vegetation is located outside of the BSA.

Approximately 0.040 acre (84 linear feet with an average width at OHWM of 21 feet) of non-wetland waters of the United States was mapped and characterized along the creek (Figure 2.3-2). The photos referenced in Figure 2.3-2 are included in Appendix D of the Wetland Delineation. The creek bed was dry at the time of field survey. Conditions in the creek are unlikely to have changed since August 2015 because the creek is a highly modified flood control channel which prevents changes in morphology, width, and slope over time. The creek qualifies as a water of the United States because it supports a defined bed and bank and a well-defined OHWM. Unvegetated areas (less than 5% vegetated) in the channel below the OHWM are considered non-wetland waters of the United States, subject to regulation by USACE.

Figure 2.3-2. Delineation of Waters of the United States

Vegetation is present in some areas below the OHWM. Plant communities in these areas include nonnative riparian, nonnative grassland, and ruderal. Generally, these communities were dominated exclusively by one species: either Himalayan blackberry (*Rubus armeniacus*), English ivy (*Hedera helix*), or Bermuda grass (*Cynodon dactylon*) (facultative upland wetland indicator status). Himalayan blackberry and English ivy grow interspersed with bankside riparian forest both below and above the OHWM. Because the dominant vegetation below the OHWM is not strongly hydrophytic, these areas do not qualify as wetlands; rather, they are considered jurisdictional non-wetland waters.

2.3.2.3 Environmental Consequences

Build Alternatives

No jurisdictional wetlands are present within the BSA; therefore, no impacts from any of the build alternatives would result during construction or operation. Impacts on the creek and intermittent stream habitat is described in Section 2.3.1.2, *Environmental Consequences*.

No Build Alternative

The No Build Alternative would not impact wetlands or other waters of the United States because construction activities would not occur.

2.3.2.4 Avoidance, Minimization, and/or Mitigation Measures

The avoidance and minimization measures AMM-BIO-1 through AMM-BIO-5, described in Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, for intermittent streams would minimize potential impacts on other waters of the United States.

2.3.3 Plant Species

2.3.3.1 Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and CDFW have regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the FESA and/or the California Endangered Species Act (CESA). Section 2.3.5, *Threatened and Endangered Species*, contains detailed information about these species.

This section discusses all other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society rare and endangered plants.

The regulatory requirements for FESA can be found at 16 USC Section 1531, et seq. (see also 50 CFR Part 402). The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code, Section 1900–1913, and the California Environmental Quality Act (CEQA), found at California Public Resources Code, Sections 21000–21177.

2.3.3.2 Affected Environment

The information in this section is from the Natural Environment Study (September 2017). Based on California Natural Diversity Database (CNDDB) search results, the California Native Plant Society Inventory, and the USFWS list for the Project region, 28 special-status plant species were determined to have been documented within the Project region. All of these species occur in habitats or soil types that are not present in the BSA, at elevations exceeding those in the Project area, or outside of the species' geographic range. Floristic surveys have been performed during the blooming period for special-status plant species that could occur in the BSA and none were found. Therefore, there are no sensitive plant species with potential to be present in the Project area.

2.3.3.3 Environmental Consequences

Build Alternatives

None of the build alternatives would affect special-status plant species during construction or operation because none are present in the BSA.

No Build Alternative

The No Build Alternative would not impact special-status plant species.

2.3.3.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.3.4 Animal Species

2.3.4.1 Regulatory Setting

Many state and federal laws regulate impacts on wildlife. USFWS, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service), and CDFW are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the FESA or CESA. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.3.5, *Threatened and Endangered Species*. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries Service candidate species.

Federal laws and regulations relevant to wildlife include the following.

- National Environmental Policy Act (NEPA)
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following.

- CEQA
- Sections 1600–1603 of the California Fish and Game Code
- Sections 4150 and 4152 of the California Fish and Game Code

2.3.4.2 Affected Environment

The information in this section is from the Natural Environment Study (September 2017). Common wildlife species in the BSA include American crow (*Corvus brachyrhynchos*), house finch (*Haemorhous mexicanus*), northern mockingbird (*Mimus polyglottos*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), and western fence lizard (*Sceloporus occidentalis*).

During the May 23, 2012, wildlife survey, species observed included northern mockingbird, California scrub jay (*Aphelocoma californica*), cliff swallow (*Petrochelidon pyrrhonota*), tree swallow (*Tachycineta bicolor*), black phoebe (*Sayornis nigricans*), and American robin (*Turdus migratorius*). A homeowner in the area observed a western tanager (*Piranga ludoviciana*) nesting in the area as well as a red-tailed hawk (*Buteo jamaicensis*) nesting in the eucalyptus trees.

Based on professional judgment and a review of the USFWS and CNDDB lists, 27 special-status species (excluding fish species) were identified as having potential to occur in the Project region, in addition to one special-status fish species. Following a survey of the habitats and characteristics within the BSA, six of these species were determined to have potential to occur within the BSA. Special-status wildlife species with potential to occur in the BSA are California red-legged frog (*Rana draytonii*), western pond turtle (*Emys marmorata*), saltmarsh common yellowthroat (*Geothylpis trichas sinuosa*), pallid bat (*Antrozonous pallidus*), hoary bat (*Lasiurus cinereus*), and snowy egret (*Egretta thula*) rookeries. Special-status fish species with potential to occur in the BSA are Central California Coast steelhead (*Oncorhynchus mykiss*). None of these special-status species was observed during the survey; however, suitable habitat for each occurred within or adjacent to the BSA. California red-legged frog and Central California Coast steelhead are discussed in Section 2.3.5, *Threatened and Endangered Species*.

Western Pond Turtle

Western pond turtle is designated as a state species of special concern. Western pond turtles are thoroughly aquatic, preferring the quiet waters of ponds, reservoirs, and sluggish streams. The species occurs in a wide range of both permanent and intermittent aquatic environments. Western pond turtles also spend time in upland habitats during the spring and summer, frequently moving between aquatic and upland habitats. Western pond turtle could use San Francisquito Creek and its banks as habitat. There is one CNDDB record within 5 miles of the site, but this species has been observed approximately 3.6 miles southwest of the study area.

Pallid Bat and Hoary Bat

Pallid bat, a species of special concern and a Western Bat Working Group high-priority species, and hoary bat, a Western Bat Working Group medium priority species, have potential to occur in the BSA. Both pallid and hoary bat primarily roost in trees and could occur within the valley foothill riparian habitat. Pallid bat can roost on or in bridges and hoary bat may also use bridges as roosting substrate. Both bats could forage throughout the Project area. For pallid bat, there are two CNDDB records within 5 miles of the site, and the nearest CNDDB record is located about 2.2 miles southwest of the BSA and dates to an observation from 1951. There are three CNDDB records of hoary bats within 5 miles of the Project and the nearest record is located about 2 miles from the Project.

Snowy Egret and Saltmarsh Common Yellowthroat

Snowy egret is found on shores of coastal estuaries, fresh and saline emergent wetlands, ponds, slow rivers, irrigation ditches, and wet fields in coastal lowlands and other lowland areas throughout California. This species nests in dense marsh vegetation or at low heights in trees. Snowy egret has been observed several times along the margins of the San Francisco Bay, west of the Project area. This species could use the trees in the valley foothill riparian habitat as nesting substrate, but the herbaceous/shrub layers are too dense to provide foraging habitat in the Project area. There are numerous observations of the species within the vicinity of the BSA.

Saltmarsh common yellowthroat is a passerine that is a state species of special concern. It occurs throughout the San Francisco Bay and is associated with brackish marsh, riparian woodland, salt marsh, freshwater marsh, and occasionally nearby upland habitat. Saltmarsh common yellowthroat builds nests slightly above the ground in substrate including bulrush, cattails, grasses, poison hemlock, and shrubs. This species could use shrubs, poison hemlock, cattails, or bulrush as nesting substrate within valley foothill riparian habitat and sections of the intermittent stream. Saltmarsh common yellowthroat could forage throughout the valley foothill riparian habitat and over the intermittent stream.

2.3.4.3 Environmental Consequences

Construction Impacts

Build Alternatives

Western Pond Turtle

Because suitable aquatic habitat for western pond turtles is present within the BSA, pond turtles could be affected by the proposed Project. Western pond turtles are very sensitive to disturbances and quickly retreat into the water when threatened. If pond turtles are present in the creek channel or along the creek bank during the construction period, they could be injured or killed during construction.

Pallid Bat and Hoary Bat

Potential bat roosting areas that could be directly disturbed during new bridge construction occur in portions of the existing bridge and more mature trees in the BSA. Noise disturbances associated with new bridge construction could disturb day-roosting bats if they are present in the bridge or suitable adjacent trees during construction. Removal of trees could result in direct injury or mortality of bats if present. Nearby construction noise or vibration could disturb roosting bats if present.

Snowy Egret and Saltmarsh Common Yellowthroat

Construction of the proposed Project could result in the loss or abandonment of active nests for special-status raptors and migratory birds.

Tree removal or noise/vibration associated with construction activities could result in the disturbance of nesting raptors or migratory birds if active nests are present in or near the construction area. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests located in or near the BSA. The proposed Project could result in a substantial adverse effect, through loss of eggs or young, to species protected under the Migratory Bird Treaty Act and California Fish and Game Codes 3503 and 3503.5. Implementation of the avoidance and minimization measure AM-BIO-8 would ensure that the proposed Project would not result in take of eggs or young.

No Build Alternative

The No Build Alternative would have no effect on animal species because habitat removal would not occur.

Operational Impacts

Build Alternatives

The removal of large trees within the Project area that may provide suitable roosting or nesting habitat would impact roosting bats and nesting birds. As described in Section 2.3.1, *Natural Communities*, 23 trees would be affected with 10 trees removed under Build Alternative 1, 24 trees would be affected with 12 trees removed under Build Alternative 2, 23 trees would be affected with 14 trees removed under Build Alternative 3, and 25 trees would be affected with 18 trees removed under Build Alternative 4. The on-site replacement of trees would restore potential roosting and nesting habitat over time.

No Build Alternative

The No Build Alternative would have no effect on animal species because habitat removal would not occur.

2.3.4.4 Avoidance, Minimization, and/or Mitigation Measures

Western Pond Turtle

The Project proponent will implement the following measures to minimize and avoid impacts on western pond turtle.

- **AMM-BIO-6: Conduct Preconstruction Surveys for Western Pond Turtles; Relocate if Needed.** A qualified biologist will examine the BSA for western pond turtles and their nests no more than 24 hours before Project activities begin and during any initial removal of vegetation, woody debris, or trees, or other initial ground-disturbing activities. If a western pond turtle is observed at any time before or during Project activities, all activities will cease. If western pond turtles are determined to be absent from the Project footprint, no further action will be required with regard to these species. If any western pond turtles are found within the Project footprint, whenever possible construction work in their vicinity will be avoided until they have moved outside of the Project area of their own volition. If the relocation of western pond turtle is necessary, a relocation plan will be developed and submitted to CDFW for approval. The plan will include subsequent details of monitoring by a CDFW-approved biologist, agency-approved disinfection and handling protocols, animal care while being relocated, suitable deposition locations, and reporting requirements. The CDFW-approved biologist will follow all applicable CDFW disinfection and handling protocols per the relocation plan.

Pallid Bat and Hoary Bat

The Project proponent will implement the following measures to minimize and avoid impacts on pallid and hoary bat.

- **AMM-BIO-7: Conduct Preconstruction Surveys for Pallid and Hoary Bats.** A qualified biologist will examine trees within the BSA for roosting hoary bats no more than 24 hours before any initial removal of vegetation, woody debris, or trees, or other initial ground-disturbing activities. If a bat is observed roosting at any time before or during Project activities, all activities will cease. The Project proponent will coordinate with CDFW to develop and implement avoidance measures before commencing Project activities.

Snowy Egret and Saltmarsh Common Yellowthroat

The Project proponent will implement the following measure to minimize and avoid impacts on active nests for special-status raptors and migratory bird species.

- **AMM-BIO-8: Implement Nesting Bird Impact Avoidance Measures.** The Project proponent and/or their construction contractor will be responsible for avoiding effects on migratory and non-migratory birds including special-status species (e.g., snowy egret, saltmarsh common yellowthroat). Accordingly, the following measures will be implemented.

  Vegetation (including trees) trimming or removal will be conducted during the nonbreeding season (September 1 to January 31), to the extent feasible.

  Construction activities will be conducted during the nonbreeding season (September 1 to January 31), to the extent feasible.

  Construction activities will begin during the nonbreeding season (September 1 to January 31) and prior to the nesting season (February 1 to August 31), if feasible. Beginning construction prior to the breeding season will establish a level of noise disturbance that will dissuade noise-sensitive raptors and other birds from attempting to nest within or near the study area.

  Bridge work (including existing bridge expansion and new bridge installation) will be conducted during the nonbreeding season (September 1 to January 31), to the extent feasible. It is recommended that inactive nests be removed from any bridge work location and from any vegetation or structure within the Project area or within 50 feet of where bridge work will take place. In addition, nest exclusion measures (e.g., fine mesh netting, panels, or metal projectors) are recommended to be installed outside of the nesting season, to the extent feasible. If installed, exclusionary devices will be monitored and maintained throughout the breeding season to ensure that they are fully functional (i.e., successful in preventing the birds from accessing cavities or potential nesting sites).

  If construction activities (including vegetation trimming or removal and bridge work) occur within the breeding season (February 1 to August 31), a qualified wildlife biologist with demonstrated nesting bird survey experience will conduct preconstruction surveys for nesting birds. A minimum of three separate surveys will be conducted for migratory birds, including raptors. Surveys will include a search of all suitable nesting habitat (e.g., grassland, bushes, trees, bridges, culverts, overpasses, and structures) in the Project area. In addition, a 300-foot area around the Project area will be surveyed for nesting raptors. When feasible, surveys should occur during the height of the breeding season (March 1 to June 1) with one survey being conducted in each of 2 consecutive months within this peak period and the final survey being conducted within 1 week of the start of construction. If no active nests are detected during these surveys, no additional measures are required.

If a lapse in construction activities of 3 days or longer at a previously surveyed study area occurs, another preconstruction survey will be conducted.

If an active nest is found in the Project area, a no-disturbance buffer (marked with high-visibility fencing, flagging, or pin flags) will be established by a qualified wildlife biologist around the site to avoid disturbance or destruction of the nest until the end of the breeding season (August 31) or until after the biologist determines that the young have fledged and moved out of the Project area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with USFWS and/or CDFW as appropriate. Buffer size will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Buffer size is based on a species' sensitivity to disturbance and planned work activities in the vicinity and has the potential to vary with different species. Typical buffer sizes are 300 feet for raptors and 50 feet for other birds.

2.3.5 Threatened and Endangered Species

2.3.5.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is FESA (16 USC Section 1531, et seq. [see also 50 CFR Part 402]). This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as FHWA (and Caltrans, as assigned), are required to consult with USFWS and NOAA Fisheries Service to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take statement or a Letter of Concurrence (Appendix D). Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, CESA (California Fish and Game Code Section 2050, et seq.). CESA emphasizes early consultation to avoid potential impacts on rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. CDFW is the agency responsible for implementing CESA. Section 2080 of the California Fish and Game Code prohibits “take” of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the California Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFW. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of FESA, the CDFW may also authorize impacts on CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

2.3.5.2 Affected Environment

The information in this section is from the *Natural Environment Study* (September 2017). USFWS, CDFW, and NOAA Fisheries Service are the primary agencies responsible for coordination and review involving special-status species.

The findings summarized in this section were based on extensive research and botanical and wildlife field surveys conducted by Project biologists in May and December 2012, August 2015, and April 2017 for special-status species in the study area and its vicinity. A formal site assessment for California red-legged frog (*Rana draytonii*) was also conducted within 1 mile of the BSA and aquatic habitats on July 27, 2012. In addition to the surveys, record searches of the USFWS and NOAA Fisheries Service species lists and the CNDDB were conducted.

USFWS and NOAA species records were reviewed at the outset of the biological studies for the Project. A copy of the records list is included in Appendix E. Special-status species that could occur in the area include California red-legged frog, Central California Coast steelhead (*Oncorhynchus mykiss*), and essential fish habitat (EFH). Caltrans completed informal consultation with USFWS and NOAA Fisheries Service by submitting a Biological Assessment to USFWS and NOAA Fisheries Service discussing the studies performed to date and potential impacts on listed species.

California Red-Legged Frog

California red-legged frog (*Rana draytonii*) is listed as threatened under the FESA and is a California species of special concern. The study area does not include critical habitat nor is it adjacent to critical habitat for this species. California red-legged frog breeds in lowland and foothill streams and wetlands, including livestock ponds. It may also be found in upland habitats near breeding areas and along intermittent drainages connecting wetlands.

California red-legged frog could use San Francisquito Creek and its banks as movement habitat. There are 3 CNDDB records within 5 miles of the BSA, and the nearest CNDDB record is about 4 miles away from the BSA, on the other side of Palo Alto. This species was not observed during the field survey.

Central California Coast Steelhead

Central California Coast steelhead was listed as threatened by NOAA Fisheries Service on August 18, 1997 (62 Federal Register [FR] 43938). There is no state status. Central California Coast steelhead includes populations from the Russian River to Aptos Creek and the drainages of San Francisco and San Pablo Bays eastward to the Napa River. Historically, runs of steelhead trout were prominent in a number of Santa Clara Basin streams: Guadalupe River, Coyote Creek, San Francisquito Creek, Stevens Creek, and Saratoga Creek. Passage barriers, water diversions, and overall habitat degradation have diminished steelhead populations not only in Santa Clara Basin streams, but also throughout California and the West. Reproducing populations of steelhead are known to exist in Coyote Creek, Guadalupe River, Stevens Creek, and San Francisquito Creek.

Steelhead is the only special-status fish species known to have been historically present in Peninsula watersheds, including San Francisquito Creek. While the present-day hydrology of the San Francisquito Creek watershed has been highly altered, the creek still supports an anadromous run of steelhead up to Searsville Dam, which is the only complete migration barrier in the watershed.

Observations of the BSA indicate that spawning, migration, and rearing habitat is available in the Project area during the winter months. During the survey in May 2012, the channel was dry, with a few solitary pools upstream and downstream of the BSA. If the channel had flow, it would provide spawning, rearing, and migration habitat for steelhead.

Additionally, critical habitat was designated for Central California Coast steelhead by NOAA Fisheries Service (70 FR 52570, September 2, 2005) in the BSA. San Francisquito Creek is included in the Santa Clara Hydrologic Unit. The value of the section of the San Francisquito Creek in the BSA is one of rearing and migration and possibly spawning due to some gravel being present in the channel. However, the creek in the BSA only has flows during large precipitation events and is flashy. High flows would scour out redds and eggs and also transport sediment (i.e. sand) downstream due to residential housing along the banks both in the BSA and upstream and downstream of the bridge. Because the creek is dry in the summer and fall, it does not provide juvenile migratory or rearing habitat throughout the year. For these reasons, critical habitat conditions are poor.

Essential Fish Habitat

Central Valley fall-run and late-fall-run Chinook salmon are a commercially valuable species, and they are managed by the NOAA Fisheries Service under the Magnuson-Stevens Fishery Conservation and Management Act. This act requires that all federal agencies consult with NOAA Fisheries Service on all proposed projects that may adversely affect EFH. EFH is the aquatic habitat (water and substrate) necessary for fish to spawn, breed, feed, or grow to maturity that will allow a level of production needed to support a long-term, sustainable commercial fishery and contribute to a healthy ecosystem. Important components of EFH for spawning, rearing, and migrating include adequate substrate composition; water quality; water quantity, depth, and velocity; channel gradient and stability; food; cover and habitat complexity; space; access and passage; and habitat connectivity. It is unlikely Chinook salmon use the BSA since the creek is dry during the summer months. However, the proposed Project is located within EFH for Pacific salmon. If fall and late fall–run Chinook salmon use the action area, it would be as a migration corridor during upstream (adult) and downstream (juvenile) migration.

2.3.5.3 Environmental Consequences

Construction Impacts

Build Alternatives

California Red-Legged Frog

California red-legged frogs could be directly affected by construction activities occurring in or adjacent to the BSA. If California red-legged frogs are present within the construction work area, they could be inadvertently killed or wounded by construction vehicles, construction personnel, and accidental spill of toxic fluids (e.g., gasoline and other petroleum-based products). If California red-legged frogs must be captured and relocated outside the construction work area, they could be exposed to increased risk of disease, predation, stress, and competition that could result in increased mortality and/or reduced fitness.

Construction activities associated with road and bridge construction in potential California red-legged frog habitat in the Project area could result in indirect effects on water quality downstream from the construction work area. Increased sedimentation could reduce the suitability of California red-legged frog habitat downstream of the construction area by filling in pools and smothering eggs. Accidental spills of toxic fluids also could result in the subsequent mortality of California red-legged frogs if these substances flow downstream from the construction area and California red-legged frogs are present. Implementation of the avoidance and minimization measures identified for California red-legged frog and construction BMPs identified in Section 2.3.5.4, *Avoidance, Minimization, and/or Mitigation Measures* would reduce direct and indirect effects on California red-legged frog and potential habitat impacts that could occur downstream from the construction area.

The Project, with implementation of the avoidance and minimization measures identified in Section 2.3.5.4, *Avoidance, Minimization, and/or Mitigation Measures*, may affect, but is not likely to adversely affect, California red-legged frogs. USFWS concurred with this determination on March 20, 2018 (Appendix D).

Central California Coast Steelhead

The proposed Project could affect habitat conditions for Central California Coast steelhead. Activities associated with bridge removal and reconstruction and revegetation could increase erosional processes, thereby increasing sedimentation and turbidity in downstream waterways. Excessive sediment deposited in or near stream channels can degrade aquatic habitats. Increased turbidity can increase fish mortality, reduce feeding opportunities for fish including rearing steelhead, and cause fish to avoid important habitat. Contaminants include toxic substances such as metals, petroleum products, pesticides, fertilizers, sewage, and uncharacteristically high sediment loading. Construction materials such as concrete, sealants, oil, and paint could adversely affect water quality if accidental spills occurred during Project construction. Increased pollutant concentrations could limit fish production, abundance, and distribution by direct mortality of fish or their prey. Steelhead in the BSA require relatively clean, cold, well-oxygenated water for successful growth, reproduction, and survival and are not well adapted for survival in degraded aquatic habitats.

Implementation of the avoidance and minimization effort AMM-BIO-5 would reduce sedimentation from entering San Francisquito Creek. To further reduce the likelihood of adverse construction effects on steelhead, the City of Palo Alto would limit stream bank construction to the summer low-precipitation period (June 1 to October 15), which would minimize adverse effects on rearing juvenile steelhead and on adult fish migrating to upstream spawning areas.

Construction activities associated with the proposed Project that would affect fish habitat include removal of existing bridge structures, removal of riparian vegetation, and activities related to revegetation. Bridge replacement and bank stabilization activities would require removal of vegetation resulting in loss of vegetative cover and reducing fish habitat complexity. Implementation of the proposed Project may affect fish habitat; therefore, the Project may affect steelhead and its habitat.

Noise, vibrations, artificial light, and other physical disturbances can harass fish, disrupt or delay normal activities, and cause injury or mortality. The potential magnitude of effects depends on a number of factors, including the type and intensity of the disturbance, proximity of the action to the water body, timing of actions relative to the occurrence of sensitive life stages, and frequency and duration of activities. For most activities, the effects on fish would be limited to avoidance behavior in response to movements, noises, and shadows caused by construction personnel and equipment operating adjacent to the water body. However, survival may be altered if a disturbance causes fish to leave protective habitat (increasing their exposure to predators) or is of sufficient duration and magnitude to affect growth and spawning success. Injury or mortality may result from direct and indirect contact with humans and machinery, sound pressure, and physiological stress.

Project actions that cause no direct harm but might temporarily disturb fish include movement of construction equipment and personnel, lighting, removal and disturbance of riparian vegetation, and grading and construction of access roads and staging areas adjacent to the stream.

The proposed Project includes the installation of a maximum of fifty 14-inch precast concrete piles that would be driven with a vibratory driver. The piles would be installed on land about 5 feet outside the OHWM, according to the Project engineer. Vibratory hammers generally produce less sound than impact hammers and are often included in mitigation measures to reduce the adverse effects on fish that result from impact pile driving. There are no established injury criteria for vibration pile driving, and resource agencies in general are not concerned about vibratory pile driving resulting in adverse effects on fish. Therefore, effects on fish from vibratory driving are not expected.

With regards to Central California Coast steelhead critical habitat, bridge construction would occur during the low-flow period in summer, and all construction activities associated with removal and replacement of the bridge abutments would be conducted above the OHWM. Excavation for removal of the existing abutments and construction of the new abutments would be accomplished using an excavator located on the existing roadway and no equipment would enter the creek. Pilings will be placed on the banks with a vibratory hammer. Indirect impacts on critical habitat could also occur from adjacent construction activity due to erosion and sedimentation and discharge of pollutants into the creek. Implementation of the avoidance and minimization measures would prevent these indirect effects on critical habitat during construction.

The Project, with implementation of the avoidance and minimization measures identified in Section 2.3.5.4, *Avoidance, Minimization, and/or Mitigation Measures*, may affect, but is not likely to adversely affect, steelhead and steelhead critical habitat. NOAA Fisheries concurred with this determination on March 29, 2018 (Appendix D).

Essential Fish Habitat

The effects on EFH for Pacific salmon would be same as the effects described for Central California Coast Steelhead. The proposed Project could adversely affect Pacific Salmon EFH through potential, construction-phase effects on the following environmental conditions:

- Noise
- Hazardous materials and contaminants
- Sedimentation and turbidity
- Temporary disturbance and loss of habitat

Based on the effects discussed above for Central California Coast Steelhead, effects on Pacific salmon EFH associated with noise, hazardous materials and contaminants, sedimentation and turbidity, and habitat loss would be minor, localized and temporary. Potential adverse effects on EFH will be avoided or minimized through implementation of the avoidance, minimization, and mitigation measures for riparian vegetation removal. Long-term and permanent effects on EFH from the project would not occur.

The Project, with implementation of the avoidance and minimization measures identified in Section 2.3.5.4, *Avoidance, Minimization, and/or Mitigation Measures*, may affect, but is not likely to adversely affect, Pacific salmon EFH. NOAA Fisheries concurred with this determination on March 29, 2018 (Appendix D).

No Build Alternative

The No Build Alternative would not affect listed species because Project implementation and habitat removal would not occur.

Operational Impacts

Build Alternatives

California Red-Legged Frog

No impacts on California red-legged frog would occur during Project operations.

Central California Coast Steelhead

The proposed Project is not expected to permanently affect the channel because the abutments and bank stabilization will be placed above the OHWM. Therefore, impacts on Central California Coast steelhead critical habitat would be the same as those described under construction impacts for Central California Coast Steelhead (Section 2.3.5.5, *Environmental Consequences*).

Essential Fish Habitat

Permanent impacts on EFH are not expected to occur due to the proposed Project. Additionally, Project implementation will result in improved habitat for Pacific Salmonids through an increase in riparian habitat.

No Build Alternative

The No Build Alternative would not affect listed species because construction activities would not occur.

2.3.5.4 Avoidance, Minimization, and/or Mitigation Measures

California Red-Legged Frog

The avoidance, minimization, and mitigation measures described in Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, (AMM-BIO-1 through AMM-BIO-5 and MM-BIO-1) would minimize potential impacts on California red-legged frog. The Project proponent will also implement the following measures to minimize and avoid impacts on California red-legged frog.

- **AMM-BIO-9: Avoid Work during Active Breeding and Dispersal Period for Special-Status Frogs (October 15 through June 1).** The contractor will conduct site preparation and construction activities that involve earthwork, other ground disturbance, and/or vehicle traffic through frog-sensitive areas (intermittent stream and riparian habitat) outside the period when special-status frogs are actively breeding and dispersing (October 15 through June 1).
- **AMM-BIO-10: Conduct Preconstruction Surveys at Work Sites in and near Frog-Sensitive Areas** (no more than 3 days prior to onset of construction). No more than 3 days prior to the onset of site preparation and construction activity at each site, a qualified wildlife biologist will conduct a preconstruction survey for special-status frogs within the Project footprint. The survey will cover all areas where special-status frogs may be present or concealed, including cracks, burrows, vegetation adjacent to wet areas, and other temporary refugia, as well as any riparian or intermittent stream habitat affected. If special-status frogs are determined to be absent from the Project footprint, no further action will be required with regard to these species. If any special-status amphibians are found within the Project footprint, whenever possible, construction work in their vicinity will be avoided until they have moved outside of the Project area of their own volition.
- **AMM-BIO-11: Provide Construction Worker Awareness Training for Special-Status Frogs.** The City of Palo Alto will provide, or require contractors to provide, worker awareness training for construction personnel to enable them to recognize special-status frogs and other aquatic and riparian wildlife. Trained construction personnel will also understand where sensitive resource areas are within the construction zone so they can minimize their impact on upland (dispersal and aestivation) habitat. Training will be presented by a qualified wildlife biologist experienced in training non-specialists. The training program will include at least the following: a description of the special-status species likely to use the site, and their habitat needs; photographs of these species; an explanation of the legal status of these species and their protection under the FESA and other regulations; a list of measures being taken to reduce effects to these species during Project construction; and distribution of a fact sheet summarizing training content. The City of Palo Alto will also distribute, or require contractors to distribute, the training summary fact sheet to anyone else who may enter the Project. Upon completion of training, employees will sign a form stating that they attended the training and understand all the conservation and protection measures.
- **AMM-BIO-12: Install Exclusion Fencing and Conduct Construction Monitoring for Special-Status Frogs.** Once it has been determined that no special-status frogs are present on the Project site, the contractor will install barrier fencing along the perimeter of the work area where necessary to ensure that frogs do not enter the site during construction. Fencing will be installed promptly (within 3 days) after clearance surveys are performed, to prevent frogs from entering the work area. A qualified biologist will be present during the installation of exclusion fencing, will determine which areas need to be monitored on a daily basis during construction activities to avoid harm to California red-legged frog, and will be responsible for follow-up monitoring as needed. The monitor will inspect and maintain the integrity of the exclusion fencing.

- **AMM-BIO-13: Limit Stream Bank Construction to Dry Season (June 1 through October 15).** The contractor will limit stream bank construction from June 1 to October 15 in order to avoid the migratory season for adult steelhead. This timing will also limit any excess sedimentation and runoff from entering the San Francisquito Creek.

Central California Coast Steelhead

The avoidance, minimization, and mitigation measures described in Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, (AMM-BIO-1 through AMM-BIO-5, and MM-BIO-1) and AMM-BIO-9 through AMM-BIO-13, described above, would also minimize potential impacts on Central California Coast steelhead.

Essential Fish Habitat

The avoidance, minimization, and mitigation measures described in Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, (AMM-BIO-1 through AMM-BIO-5, and MM-BIO-1) and AMM-BIO-9 through AMM-BIO-13, described above, would minimize potential impacts on EFH.

2.3.6 Invasive Species

2.3.6.1 Regulatory Setting

On February 3, 1999, President William J. Clinton signed EO 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. 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.” FHWA guidance issued August 10, 1999, directs the use of the state’s invasive species list, maintained by the California Invasive Species Council to define the invasive species that must be considered as part of NEPA analysis for a proposed project.

2.3.6.2 Affected Environment

The information in this section is from the Natural Environment Study (September 2017). Invasive plant species include those that threaten California’s wildlands and are categorized as non-native invasive plants by the California Invasive Plant Council. Roads, highways, and related construction projects are some of the principal dispersal pathways for invasive plant species. The introduction and spread of invasive plants adversely affects natural plant communities by displacing native plant species that provide shelter and forage for wildlife species. Table 2.3-4 lists invasive plant species identified in the BSA. The infestation of the BSA by these species primarily occurs on streambanks.

Table 2.3-4. Invasive Plant Species Identified in the Biological Study Area

Species	California Invasive Plant Council
Bermuda grass (*Cynodon dactylon*)	Moderate
Bristly ox-tongue (*Helminthotheca echioides*)	Limited
California burclover (*Medicago polymorpha*)	Limited
Cut leaved geranium (*Geranium dissectum*)	Limited
Silverleaf cotoneaster (*Cotoneaster pannosus*)	Moderate

Species	California Invasive Plant Council
Fennel (*Foeniculum vulgare*)	High
Ripgut grass (*Bromus diandrus*)	Moderate
Bull thistle (*Cirsium vulgare*)	Moderate
Italian thistle (*Carduus pycnocephalus*)	Moderate
Shortpod mustard (*Hirschfeldia incana*)	Moderate
English ivy (*Hedera helix*)	High
Cape ivy (*Delairea odorata*)	High
Smilo grass (*Stipa miliacea*)	Limited
Canary Island palm (*Phoenix canariensis*)	Limited
Himalayan blackberry (*Rubus armeniacus* [*discolor*])	High
Periwinkle (*Vinca major*)	Moderate

Notes: The California Invasive Plant Council (Cal-IPC) assigns ratings that reflect Cal-IPC views of the statewide importance of the pest, likelihood that eradication or control efforts would be successful, and present distribution of the pest in the state. These ratings are guidelines that indicate the most appropriate action to take against a pest under general circumstances.

The **Cal-IPC categories** indicated in the table are defined as follows:

High: Species with severe ecological impacts, high rates of dispersal and establishment, and usually widely distributed.

Moderate: Species with substantial and apparent ecological impacts, moderate to high rates of dispersal, establishment dependent on disturbance, and limited to widespread distribution.

Limited: Species with minor ecological impacts, low to moderate rates of invasion, limited distribution, and locally persistent and problematic.

2.3.6.3 Environmental Consequences

Construction Impacts

Build Alternatives

The Project would create additional disturbed areas in the valley foothill riparian habitat for a temporary period when native vegetation is removed/trimmed, but it would mitigate for these impacts with native enhancement as required by MM-BIO-1. Therefore, the Project is not anticipated to increase or decrease the area currently occupied by invasive weeds or the potential for spreading invasive weed species. It is possible, however, that new invasive species could be introduced into San Francisquito Creek during construction.

No Build Alternative

The No Build Alternative would not have the potential to affect or spread invasive species because the Project would not be implemented.

Operational Impacts

Build Alternatives

None of the identified species on the California list of invasive species is currently used by Caltrans or the Cities of Palo Alto and East Palo Alto for erosion control or landscaping in order to stop the spread of invasive species. Avoidance and minimization measures would be implemented to prevent the introduction or spread of invasive species.

No Build Alternative

The No Build Alternative would not have the potential to affect or spread invasive species because the Project would not be implemented.

2.3.6.4 Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measure will be implemented during construction to reduce the potential impacts from the spread of invasive species.

- **AMM-BIO-14: Avoid the Introduction of Invasive Plants.** The Project proponent, or their contractor, will be responsible for avoiding the introduction of new invasive plants and the spread of invasive plants previously documented in the BSA. Accordingly, the following measures will be implemented during construction.
    - Surface disturbance within the construction work area will be minimized to the greatest extent possible.
    - All disturbed areas will be seeded with certified weed-free native mixes and mulched with certified weed-free mulch (rice straw may be used in upland areas).
    - Native, noninvasive species will be used in erosion control plantings to stabilize site conditions and prevent invasive species from colonizing.

2.4 Cumulative Impacts

2.4.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts on resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

The California Environmental Quality Act (CEQA) Guidelines Section 15130 describes when a cumulative impact analysis is necessary and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under the National Environmental Policy Act (NEPA) can be found in 40 Code of Federal Regulations (CFR) Section 1508.7.

2.4.2 Affected Environment

The CEQA Guidelines provide two methods for an adequate analysis of cumulative impacts: the list approach, or the projection approach. The list approach identifies all of the past, present, and probable future transportation or development projects contributing to the cumulative impact. The projection approach bases the cumulative impact analysis on a summary of projections of future development and impacts contained in an adopted general planning or related planning document, or in a prior environmental document that has been certified. This cumulative analysis uses both methods to evaluate cumulative impacts.

To evaluate the potential for cumulative impacts, a list of projects was defined through review of City of Palo Alto and City of East Palo Alto records for transportation and development projects. The Governor's Office of Planning and Research CEQAnet database was also reviewed to identify projects for which notices of preparation or completion of an environmental document were filed with the State Clearinghouse. The study area for the cumulative impacts assessment varies based on the resource affected and considers planned, approved, and recently completed projects.

The projects identified in Table 2.4-1 were considered in the analysis. The analysis is based on the environmental effects of the proposed projects as described in their approved CEQA documents, aerial photograph review, and general knowledge of the project site.

Table 2.4-1. Planned Projects in the Vicinity of the Project

Name	Jurisdiction	Proposed Uses	Status
Homer Avenue-Channing Avenue Enhanced Bikeway	City of Palo Alto	The project proposes enhanced bikeway facilities between Guinda Street and Alma Street.	Planning stage
Greer Road Bicycle Boulevard Project	City of Palo Alto	The proposed Greer Road Bicycle Boulevard will provide a new north-south bicycle route for the community from Edgewood Drive to the north to Louis Road to the south.	Planning stage
Bay Road Phase II and III	City of East Palo Alto	The project consists of three phases of roadway improvements between University Avenue and Cooley Landing. The proposed Phase II/III project will include the design of the roadway to accommodate new sidewalks, bike lanes, Americans with Disabilities Act accessibility, lighting, landscaping, and street furniture.	Construction Summer 2019 through Winter 2020
Highway 101 Pedestrian/Bicycle Overcrossing Project	City of East Palo Alto	The project will consist of constructing a Class I Pedestrian/Bicycle Overcrossing Structure over U.S. Highway 101 between West and East Bayshore Roads, aligned with Clarke Avenue and connecting to West Bayshore Road at Newell Road, to provide a direct connection between the south side and north side of U.S. Highway 101 in East Palo Alto.	Under Construction
Pad D New Municipal Water Well	City of East Palo Alto	Construct a new municipal water supply well at the “Pad D” site, located at the intersection of Clarke Avenue and East Bayshore Road.	Design stage
Route 101/University Avenue (State Route 109) Interchange Modification Project	City of East Palo Alto	Construct safety and traffic operational improvements at the U.S. Highway 101/University Avenue Overcrossing. The project will include widening the overcrossing to accommodate wider sidewalk and class 2 bicycle lanes to fill a missing bicycle gap over U.S. Highway 101 to improve bicycle and pedestrian access and safety along University Avenue.	Design stage
San Francisquito Creek Flood Protection, Ecosystem Restoration, and Recreation Project: Upstream of U.S. 101	San Francisquito Creek Joint Powers Authority	The Upstream of Highway 101 proposed project includes channel widening at five sites, replacement of the Pope-Chaucer Bridge, construction of creekside parks, and enhancement of aquatic habitat. The alternative involves, rather than channel widening at four of the five sites, construction of floodwalls. The project also includes a program-level upstream detention basin that would be constructed adjacent to the channel at one of two potential sites. The Upstream of U.S. 101 project cannot be constructed until the SF Bay to Highway 101 project is completed to accommodate larger flows.	Planning stage

Name	Jurisdiction	Proposed Uses	Status
San Francisquito Creek Flood Protection	San Francisquito Creek Joint Powers Authority	A regional comprehensive plan for both the waters that flow into San Francisquito Creek and on to San Francisco Bay (its watershed) and the waters that threaten our communities from the Creek and from Bay tides (our floodplains).	Planning stage
Source: City of East Palo Alto 2017a, 2017b, 2017c, 2017d, 2017e; City of Palo Alto 2017; San Francisquito Creek Joint Powers Authority 2017; Santa Clara Valley Water District 2018			

In addition to this list of projects, growth projections were used to evaluate cumulative impacts for transportation, air quality, greenhouse gas emissions, and noise. Growth projections are built into the models used to project operational traffic volumes, air quality and greenhouse gas emissions, and noise levels for 2040. These analyses are included in each of their respective resource sections of Chapter 2 or 3, which includes Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*; Section 2.2.6, *Air Quality*; Section 2.2.7, *Noise*; and Section 3.3, *Climate Change*.

2.4.3 Environmental Consequences

The cumulative impacts analysis focuses on the resources that the project may affect. According to the California Department of Transportation eight-step approach for developing a cumulative impact analysis, if the project would not result in impacts on a resource, it could not contribute to a cumulative impact. The build alternatives would only cause impacts requiring mitigation on aesthetics, paleontological resources, hazardous materials (specifically lead contamination), and the natural communities of valley foothill riparian vegetation and protected trees. All other potential impacts will be minimized through the standardized measures and avoidance and minimization measures presented in Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*.

The projects listed in Table 2.4-1 were considered together with the proposed Project for the potential for cumulative impacts. The potential impacts are described by resource area below.

2.4.3.1 Aesthetics

Resource Study Area

The cumulative resource study area (RSA) for aesthetics is the creek corridor and the neighborhoods surrounding Newell Road Bridge, which is defined as the area of land that is visible from, adjacent to, and outside the roadway right-of-way, creek corridor, and surrounding neighborhoods, and is determined by topography, vegetation, and viewing distance. This RSA was chosen because it is sufficiently broad to evaluate potential impacts.

Existing Condition and Historical Context

The land use within the corridor is primarily suburban residential, with one story, single-family homes in Palo Alto and mostly two- to three-story, multi-family housing in East Palo Alto. The existing Newell Road Bridge consists of a narrow, one-lane bridge with solid concrete parapets. The bridge deck is paved with asphalt and there is no roadway striping over the bridge.

The tree canopy dominates many views within the immediate vicinity of the Newell Road Bridge. The trees and landscaping also provide diversity and continuity in views throughout the area, and vary in form, dominance, and scale, depending on the location, distance, and angle of the viewer. Mature trees along the portion of Newell Road in Palo Alto provide good canopy cover that shades much of the street while younger gingko trees along the north side of the street create a break in the canopy cover resulting in sunny areas along this segment of roadway. The entire bridge is covered by the canopy of mature trees along the creek, resulting in shade and dappled sunlight on the bridge. The portion of Newell Road in East Palo Alto is not as densely vegetated as the Palo Alto side and the street trees are not as mature, resulting in more open, brighter conditions along this segment of roadway. Overall, however, the tree canopy provides a mostly enclosed, pedestrian-scale environment that is visually appealing.

In addition to the mature tree canopy, residential landscaping associated with single- and multi-family residences contributes to an attractive project corridor. However, the multi-family housing and associated parking lots and driveway aprons along the project corridor exhibit less vegetative cover. Other visible, built elements that contribute to the existing visual environment and character of the project corridor include parking lots and driveway aprons, as well as other human-made elements typically found in residential areas, such as paved roadways, sidewalks, curbs, gutters, signage, utility poles, and street lights. Sacrete retaining walls are located along the banks of the creek. The retaining walls are weathered and overgrown with vines and moss, so they blend fairly well with the natural creek corridor. Lighting in the project corridor is associated with interior and exterior residential lighting and vehicle headlights. Minimal street lighting is present and is directed downwards towards the roadbed and sidewalks.

Project Impacts

Under all build alternatives, general construction activities, construction staging/stockpiling, the storage of building materials, the presence of construction equipment, and temporary traffic barricades would result in temporary visual impacts by altering the composition of the viewsheds throughout the Project corridor. However, construction activities would be temporary in duration and would be governed by city, state, and federal regulations and standards designed to minimize their potential to affect adjacent sensitive uses.

The proposed Project would remove the existing bridge, construct new approaches, and accommodate bicycle and pedestrian travel (including sidewalk and potential road widening for sharrow); add and reconfigure utilities including street lighting; modify street signage; add retaining walls; and stabilize creek bank disturbed by the construction. The Project would also require the removal of trees to accommodate construction. Resource change (changes to visual resources as measured by changes in visual character and visual quality) would be moderate for Build Alternatives 1–3 during the short-term until replacement plantings can mature. As the replacement plantings mature and the canopy is replaced, the visual character would regain some of its existing qualities associated with shading and creating an enclosed, intimate streetscape that would result in long-term resource change that is moderate-low. The bridge and roadway intersection realignment that would take place in East Palo Alto under Build Alternative 4 would result in a resource change that is moderate for the short- and long-term because the sense of enclosure provided by the tree canopy would be lessened even with mitigation, creating a more open view corridor with more development visible.

In addition, all build alternatives would require utility relocations, including street lights and power poles. Overhead street lighting could negatively affect sensitive receptors if the replaced lighting is modified to include light-emitting diode (LED) lighting that is not properly designed. In particular, LED lighting can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if proper shielding is not provided and blue-rich white light lamps are used.

Cumulative Impacts

Cumulative impacts are those resulting from past, present, and reasonably foreseeable future actions, combined with the potential visual impacts of the Project. The Project includes replacing the existing bridge, which would require the removal of existing trees and vegetation in the study area. Temporary construction impacts associated with the Project would not result in cumulative visual impacts because they would be temporary, especially when compared to other development and transportation projects occurring in the area.

The Project would result in the removal of mature trees, which would change the visual character of the RSA. The projects identified in Table 2.4-1 also have the potential to change the visual character of the area and result in tree removal. It would take several decades for any replacement plantings to reach the same stature as the existing trees, resulting in long-term visual changes to the RSA. However, trees on lands surrounding the Project would not be affected, and mature trees would be retained in the vicinity of the Project. In addition, the City of Palo Alto would ensure that tree removals associated with the projects identified in Table 2.4-1 are replaced and mitigated. Even though mitigation plantings would take a long time to grow, trees would be replanted at a higher rate than they are removed, so the trees would be retained as a scenic resource within the visual landscape for generations to come.

Additionally, projects identified in Table 2.4-1 would add to ambient atmospheric lighting and glare in the area by infilling unlit areas with lit buildings and roadways. The Project would only result in a nominal increase in light and glare from street lights and power poles and would not result in cumulative impacts.

Overall, the Project would not contribute to cumulative impacts related to projects identified in Table 2.4-1 because the build alternatives would not substantially alter the existing visual landscape, degrade the visual quality of the Project area, or alter levels of light and glare after mitigation is implemented. As such, the combined visual effect of the build alternatives with projects identified in Table 2.4-1, recently in construction, or currently in construction would not result in impacts that are cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of the mitigation measures described in Section 2.1.5.4, *Avoidance, Minimization, and/or Mitigation Measures*, would ensure that the proposed Project minimizes effects on aesthetics in and adjacent to the Project area, and avoids a cumulative impact.

- MM-AES-1: Install Visual Barriers between Construction Work Areas and Sensitive Receptors
- MM-AES-2: Replace or Relocate Site Features and Landscaping Affected by the Project
- MM-AES-3: Implement Project Design Aesthetics

- MM-AES-4: Implement Project Streetscaping and Plantings along Top of Creek Bank
- MM-AES-5: Apply Minimum Lighting Standards

2.4.3.2 Paleontology

Resource Study Area

The Santa Clara Valley was identified as the cumulative RSA for paleontological resources. This cumulative RSA was selected to develop a broad, regional consideration of cumulative impacts, and because it captures impacts on paleontological resources associated with construction and operations of the proposed project and regional impacts on paleontological resources associated with development anticipated under reasonably foreseeable future actions.

Existing Condition and Historical Context

The Project area is in the northeastern portion of the Santa Clara Valley. The Quaternary alluvium of the Santa Clara Valley in the Project area consists of natural levee deposits, floodplain deposits, and basin deposits. Pleistocene vertebrate fossils have been found from multiple localities across Santa Clara Valley, including Lawrence Expressway East, San Jose; Santa Clara Valley Water District lands in the Guadalupe River in San Jose; Sunnyvale Sewer, Sunnyvale; Calabaza Creek, Sunnyvale; and Milpitas, as well as multiple localities farther north. These fossil localities occur in units mapped as surficial Holocene deposits (Maguire and Holroyd 2016). Radiocarbon dating of the mapped Holocene sediments where the Pleistocene remains were found shows Pleistocene age for two of these finds (11 feet and 30 feet below modern ground surface); for the others, no dating was performed. Accordingly, Pleistocene alluvium may be more widespread in the Santa Clara Valley than was previously thought and in many locations is likely at or very near the ground surface. Pleistocene fossil resources found in the Santa Clara Valley in units mapped as Holocene alluvium include extinct species of mammoth, bear, horse, bison, and camel. The Quaternary alluvium of the Santa Clara Valley is therefore considered sensitive for paleontological resources. Identifiable fossil remains discovered during project construction could provide a more comprehensive documentation of the diversity of animal and plant life that once existed in Santa Clara County and could result in a more accurate reconstruction of the geologic and paleobiologic history of Northern California.

Project Impacts

Construction of Build Alternatives 1 and 2 would involve excavation for the roadway to a depth of 2 feet from existing grade to remove existing asphalt and base, excavation to a depth of 5 feet for installation of retaining walls, and excavation to a depth of 6 feet for installation of bridge abutments. Because the excavation work is shallow and would proceed within the previously disturbed roadbed (i.e., would not involve excavation in undisturbed soil) any effect on sensitive paleontological resources would be minor.

Similar to Build Alternatives 1 and 2, construction of Build Alternatives 3 and 4 would involve excavation for the roadway to a depth of 2 feet from existing grade to remove existing asphalt and base, excavation to a depth of 5 feet for installation of retaining walls, and excavation to a depth of 6 feet for installation of bridge abutments. The excavation work is shallow; however, it would involve disturbance of previously undisturbed soil in the area of the road realignment. Because sensitive paleontological resources could occur at depths below 5 feet, it is possible that excavation could encounter sensitive paleontological resources. Implementation of MM-PA-1 would minimize effects on sensitive paleontological resources.

Cumulative Impacts

Future projects in the RSA involving ground disturbance during construction would involve geologic units that have produced abundant and diverse fossil resources and are thus considered highly sensitive for paleontological resources (i.e., likely to produce additional similar finds in the future). Construction of planned and future projects in the RSA such as the transportation projects listed in Table 2.4-1 would require ground disturbing work in areas that include Quaternary alluvium; and the construction of other transportation and development projects within the Santa Clara Valley could require ground disturbance in other areas highly sensitive for paleontological resources. These projects would have the potential to cumulatively disturb, damage, or destroy significant (scientifically important) fossil resources. Once lost, such resources cannot be recovered, and impacts are therefore considered permanent. However, regulatory standards and a properly designed and implemented monitoring, collection, and treatment program would minimize impacts on paleontological resources. With these measures in place, construction and operation of planned projects within the cumulative RSA would not result in the widespread destruction of scientifically important fossil resources; therefore, the impact would not be cumulatively significant.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of the mitigation measure described in Section 2.2.4.4, *Avoidance, Minimization, and/or Mitigation Measures*, would ensure that the proposed Project minimizes effects on paleontological resources in and adjacent to the Project construction area, and avoids a cumulative impact.

- MM-PA-1: Educate Workers, Stop Work in Case of Discovery of Paleontological Resources, and Prepare and Implement a Recovery Plan

2.4.3.3 Hazardous Materials and Waste

Resource Study Area

The RSA for the purpose of the hazardous materials and waste cumulative impacts analysis is the creek corridor and the neighborhoods surrounding Newell Road Bridge.

Existing Condition and Historical Context

The Project vicinity is residential and there are no businesses that would potentially use, store, transport, or dispose of hazardous materials or waste near the Project site. Newell Road is an urban collector roadway with relatively low traffic (currently around 3,300 vehicles per day) and would not have historically accommodated the high traffic volumes associated with aerially deposited lead deposition concerns during the period prior to the 1980s when gasoline in California was permitted to contain tetraethyl lead.

A lead and asbestos survey was conducted at the Newell Road Bridge in July 2012. None of the samples contained asbestos above laboratory reporting limits. Of the three samples of paint that were collected and analyzed for lead, only the yellow roadway paint exceeded the U.S. Consumer Product Safety Commission threshold of 600 milligrams per kilogram for lead-based paint.

Project Impacts

Impacts from lead contamination from paint could occur where reconstruction of the bridge involves disturbing or removing the existing paint, which could create a hazard to the public or to the environment during routine transport, use, or disposal of hazardous materials or through upset and accident conditions. It is recommended that all paint be treated as lead-containing for the purposes of complying with Division of Occupational Safety and Health worker safety requirements, which apply to all worksites where construction workers may be exposed to lead. Construction activities could produce dust, which could expose workers or nearby residents and business occupants to lead via inhalation. Operation of the Project would not involve the use, storage, or transport of hazardous materials.

Cumulative Impacts

Planned transportation projects identified in Table 2.4-1 located within the cumulative hazardous materials RSA could contribute to the cumulative release of hazardous substances. The use and release of hazardous materials during construction and operation of the projects identified in Table 2.4-1 is tightly controlled to protect human health and avoid releases. Future and planned development would be required to comply with regulatory requirements that will avoid individual hazardous materials impacts, including the measures listed below under *Avoidance, Minimization, and/or Mitigation Measures*. With such measures and restrictions on the use of hazardous materials in place, the potential for the cumulative accumulation or release of hazardous materials is low. The proposed Project, in combination with the cumulative projects, would not contribute to a cumulative impact related to hazardous materials.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of the mitigation measures described in Section 2.2.5.4, *Avoidance, Minimization, and/or Mitigation Measures*, would ensure that the proposed Project minimizes effects on hazardous materials in and adjacent to the Project area, and avoids a cumulative impact.

- MM-HAZ-1: Properly Dispose of and Abate Potential Lead-Based Paint
- MM-HAZ-2: Properly Handle and Dispose of Potentially Contaminated Soils and Materials

2.4.3.4 Natural Communities

The natural communities with the potential for cumulative impacts are valley foothill riparian and protected trees.

Resource Study Area

The RSA for valley foothill riparian is the creek corridor and the RSA for protected trees is the creek corridor and neighborhoods surrounding the Project.

Existing Condition and Historical Context

Three land cover types occur in the Biological Study Area: valley foothill riparian, developed, and intermittent stream (Figure 2.3-1). The valley foothill riparian woodland natural community occurs along both banks of San Francisquito Creek. Valley foothill riparian communities typically provide high-value habitat, offering escape cover, forage, and nesting opportunities for many wildlife species and creating shade that controls instream water temperatures. However the riparian community in the Project area has been highly disturbed from channelization and armoring of San Francisquito Creek and development along the top of the bank. Valley foothill riparian is considered a natural community of special concern and is subject to state (California Fish and Game Code Section 1602) regulation.

A total of 97 trees were identified within the Biological Study Area and consist of both native and non-native species. Planted non-native trees line the neighborhood streets. Blue gum eucalyptus trees line some portions of the upper bank (above the ordinary high water mark) on the north bank of San Francisquito Creek. Trees are sparse on the south side of San Francisquito Creek due to the substantial bank modifications and residential development up to the edge of San Francisquito Creek. Native trees are mainly limited to the creek's mid-to lower bank, but some native trees, such as coast live oak (*Quercus agrifolia*) and California buckeye (*Aesculus californicus*), were probably planted in the adjacent developed areas.

Project Impacts

Construction of the Project on the proposed alignment would result in permanent loss of some riparian vegetation along San Francisquito Creek within the Project footprint. For the purposes of this analysis, it is assumed that all valley foothill riparian vegetation would be removed within the Project footprint. Build Alternative 1 would affect 0.014 acres, Build Alternative 2 would affect 0.022 acres, Build Alternative 3 would affect 0.022 acres, and Build Alternative 4 would affect 0.031 acres.

Indirect impacts on riparian vegetation could also occur from adjacent construction activity. Trees and woody vegetation adjacent to the construction area would not be removed for construction but could sustain damage from equipment. Because this habitat is located adjacent to the river and functions as riparian habitat, a streambed alteration agreement from the California Department of Fish and Wildlife would likely be required for construction activity within the habitat. The loss or disturbance of riparian vegetation is considered adverse because riparian vegetation provides a variety of important ecological functions and values.

Some of the regulated trees in Palo Alto and East Palo Alto would also be removed as a result of Project implementation. Table 2.4-2 identifies the impacts on all trees per build alternative.

Table 2.4-2. Impacts on Trees per Build Alternative

	Build Alternative 1	Build Alternative 2 (LPA)	Build Alternative 3	Build Alternative 4
Number of Trees Affected	23	24	23	25
Number of Trees Removed	10	12	14	18

LPA = locally preferred alternative

Implementation of the avoidance and minimization efforts described in Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, would minimize the impacts of the Project on valley foothill riparian vegetation and protected trees.

Cumulative Impacts

Cumulative impacts on valley foothill riparian habitat and protected trees could occur if the projects listed in Table 2.4-1 also impacted valley foothill riparian habitat and protected trees. Most of the projects do not pass over or involve San Francisquito Creek and so would not affect valley foothill riparian habitat. The San Francisquito Creek Bridge Replacement Project is not in area that contains any valley foothill riparian, avoiding impacts; however, upland vegetation including Coast live oak woodland would be affected (California Department of Transportation 2011). The San Francisquito Creek Flood Protection, Ecosystem Restoration, and Recreation Project: Upstream of U.S. 101has the potential to impact valley foothill riparian and protected trees along the creek. The Environmental Impact Report for this project is currently under development, so the extent of impact, if any, cannot be verified at this time. Construction of the proposed Project would add to the cumulative loss of valley foothill riparian habitat and protected trees. However, with implementation of the measures prescribed for minimizing impacts and compensating for remaining impacts, the proposed Project's incremental contribution to cumulative impacts would not be cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of the avoidance, minimization, and mitigation measures described in Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, would ensure that the proposed Project minimizes effects on valley foothill riparian habitat and protected trees in and adjacent to the Project construction area, and avoids a cumulative impact.

- AMM-BIO-1: Install Construction Barrier Fencing around Environmentally Sensitive Areas
- AMM-BIO-2: Prepare Environmental Awareness Program and Conduct Environmental Awareness Training for Construction Employees
- AMM-BIO-3: Retain a Biological Monitor to Conduct Visits during Construction
- AMM-BIO-4: Avoid and Minimize Potential Disturbance of Valley Foothill Riparian Community
- MM-BIO-1: Compensate for Permanent Loss of Valley Foothill Riparian
- MM-BIO-2: Tree Replacement Plan

Chapter 3
California Environmental Quality Act Evaluation

3.1 Determining Significance under CEQA

The Project is subject to federal as well as City of Palo Alto and state environmental review requirements because the City of Palo Alto proposes the use of federal funds from the Federal Highway Administration (FHWA) and/or the Project requires an approval from FHWA. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The City of Palo Alto is the Project proponent and the lead agency under CEQA. FHWA's responsibility for environmental review, consultation, and any other actions required by applicable federal environmental laws for this Project are being, or have been, carried out by the California Department of Transportation (Caltrans) pursuant to 23 U.S. Code (USC) Section 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and the California Department of Transportation (Caltrans).

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an Environmental Impact Statement (EIS), or a lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (Project) as a whole has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require the lead agency to identify each "significant effect on the environment" resulting from the Project and ways to mitigate each significant effect. If the Project may have a significant effect on any environmental resource, then an Environmental Impact Report (EIR) must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of "mandatory findings of significance," which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this Project and CEQA significance.

3.2 CEQA Environmental Checklist

This checklist identifies environmental factors that might be affected by the proposed Project. In many cases, background studies performed in connection with the Project will indicate that there are no impacts on a particular resource. A NO IMPACT answer in the last column reflects this determination. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

The annotations to this checklist are summaries of information contained in Chapter 2 in order to provide the reader with the rationale for significance determinations; for a more detailed discussion of the nature and extent of impacts, please see Chapter 2. This checklist incorporates by reference the information contained in Chapters 1 and 2.

3.2.1 Aesthetics

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☒	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐
e) Substantially shadow public open space (other than public streets and adjacent sidewalks) between 9:00 a.m. and 3:00 p.m. from September 21 to March 21?	☐	☐	☐	☒

CEQA Significance Determinations for Aesthetics

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

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

e) Would the project substantially shadow public open space (other than public streets and adjacent sidewalks) between 9:00 a.m. and 3:00 p.m. from September 21 to March 21?

As discussed in Section 2.1.5, *Visual/Aesthetics*, there are no scenic vistas because terrain, surrounding development, sound walls, and mature trees and shrubs limit views to the immediate foreground and prevent expansive views out and over the landscape. In addition, there are no state scenic highways within the vicinity of the Project. The existing bridge would be replaced with the new bridge in the same alignment and would not cast a shadow onto public open space.

Therefore, there would be **no impact** under any of these criteria.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

As discussed in Section 2.1.5, *Visual/Aesthetics*, under all build alternatives, general construction activities, construction staging/stockpiling, the storage of building materials, the presence of construction equipment, and temporary traffic barricades would result in temporary visual impacts by altering the composition of the viewsheds throughout the Project corridor. However, construction activities would be temporary in duration and would be governed by city, state, and federal regulations and standards designed to minimize their potential to affect adjacent sensitive uses.

The proposed Project would remove the existing bridge; construct new approaches, and accommodate bicycle and pedestrian travel (including a sidewalk and potential road widening for sharrows); add and reconfigure utilities including street lighting; modify street signage; add retaining walls; and stabilize creek bank disturbed by the construction. Construction would also require the removal of trees to accommodate construction. Resource change (changes to visual resources as measured by changes in visual character and visual quality) would be moderate for Build Alternatives 1–3 during the short-term until replacement plantings can mature. As the replacement planting matures and the canopy is replaced, the visual character would regain some of its existing qualities associated with shading and creating an enclosed, intimate streetscape that would result in long-term resource change that is moderate-low. Build Alternative 4 would result in a resource change that is moderate for the short- and long-term because, even with mitigation, the tree canopy would not provide the same sense of enclosure; view corridors would remain open and more development would be visible due to the bridge and roadway intersection realignment in East Palo Alto.

Impacts are potentially significant and the following mitigation measures are proposed (see Section 2.1.5.4, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of each mitigation measure).

- MM-AES-1: Install Visual Barriers between Construction Work Areas and Sensitive Receptors
- MM-AES-2: Replace or Relocate Site Features and Landscaping Affected by the Project
- MM-AES-3: Implement Project Design Aesthetics
- MM-AES-4: Implement Project Streetscaping and Plantings along Top of Creek Bank

MM-AES-1 would ensure that staging areas are screened, minimizing the amount of visual disruption caused by construction staging. MM-AES-2 would relocate or replace affected landscaping, fencing, and other landscape features, reducing visual impacts. MM-AES-3 would apply aesthetic treatments to the bridge, wall surfaces, and fencing, improving Project aesthetics and reducing visual impacts and the potential for glare. MM-AES-4 would improve Project aesthetic by improving the visual quality of planter strips along Newell Road through landscaping. With implementation of the above measures, visual impacts related to visual character and quality are **less than significant with mitigation incorporated**.

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

As discussed in Section 2.1.5, *Visual/Aesthetics*, all build alternatives would require utility relocations, including street light and power poles. Overhead street lighting could negatively affect sensitive receptors if the replaced lighting is modified to include light-emitting diode (LED) lighting that is not properly designed. In particular, LED lighting can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if proper shielding is not provided and blue-rich white light lamps are used.

Impacts are potentially significant and the following mitigation measure is proposed (see Section 2.1.5.4, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of this mitigation measure).

- MM-AES-5: Apply Minimum Lighting Standards

This potential impact would be minimized through implementation of MM-AES-5, which would employ the technologies available at the time of project design to allow for the highest potential reduction in light pollution. With implementation of the above measure, visual impacts related to light and glare are **less than significant with mitigation incorporated**.

3.2.2 Agriculture and Forest Resources

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
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))?	☐	☐	☐	☒
d) 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 non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

CEQA Significance Determinations for Agriculture and Forest Resources

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

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

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))?

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

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 non-agricultural use?

Neither the Project site nor adjacent properties are identified as any farmland type under the Farmland Mapping and Monitoring Program or enrolled in Williamson Act contracts, or support forest land or resources (California Department of Transportation 2017b). The Project site is not located on or adjacent to agricultural land or forest land and the project would not involve any development that could result in the conversion of farmland to non-agricultural uses. For these reasons, the project would have **no impact** with respect to conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use; conflict with existing agricultural zoning or Williamson Act contract; result in the loss of forest land or conversion of forest land to non-forest use; or other conversion of farmland to non-agricultural use.

3.2.3 Air Quality

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

CEQA Significance Determinations for Air Quality

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

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

As discussed in Section 2.2.6, *Air Quality*, the Project is located in the San Francisco Bay Area Air Basin and is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The

Project is not a capacity-increasing transportation project and would have no impact on traffic volumes. The Project is included in the regional emissions analysis conducted by the Metropolitan Transportation Commission for the current Regional Transportation Plan (RTP), Plan Bay Area (RTP ID 240728). The Project is also included in the Metropolitan Transportation Commission's financially constrained 2017 Transportation Improvement Program (TIP) (TIP ID VAR170012). FHWA and the Federal Transit Administration determined that the TIP conforms to the State Implementation Plan on December 16, 2016 (Section 2.2.6, *Air Quality*).

Table 2.2.6-3 in Section 2.2.6, *Air Quality*, summarizes construction criteria pollutant emissions for all build alternatives. The City of Palo Alto uses the BAAQMD daily threshold to evaluate impacts under CEQA. Per Table 2.2.6-3, all construction emissions would be less than the BAAQMD daily threshold except for nitrogen oxides (NO_X), which would be higher than the threshold. Impacts are potentially significant and the following mitigation measure and standard measures are proposed (see Section 2.2.6.4, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of these measures).

- MM-AQ-1: Utilize clean diesel-powered equipment during construction to control construction-related NO_X emissions
- SM-AQ-1: Implement California Department of Transportation Standard Specifications
- SM-AQ-2: Implement BAAQMD Basic Control Measures to Control Construction-Related Dust

Construction activities are subject to requirements found in standardized measure SM-AQ-1, the *Standard Specifications* (California Department of Transportation 2015), Section 14-9.02. This includes specifications requiring compliance with air pollution control rules, regulations, ordinances, and statutes that apply to work performed under the contract and provided in Government Code Section 11017 (Public Contract Code §10231), while standard specification Section 10-5 addresses dust control and palliative requirements. Temporary construction activities could also generate fugitive dust from the operation of construction equipment. The Project will comply with construction standards adopted by BAAQMD as well as Caltrans standardized procedures for minimizing air pollutants during construction (SM-AQ-2). In addition, this potential impact would be minimized through implementation of mitigation measure MM-AQ-1, which would require the use of Tier 4 construction equipment during construction. As shown in Table 3.2-1, construction emissions would be below all applicable BAAQMD pollutant thresholds with equipment that meets Tier 4 standards. Therefore, impacts would be **less than significant with mitigation incorporated**.

Table 3.2-1. Mitigated Construction Criteria Pollutant Emissions—All Build Alternatives

Daily/Annual Emissions	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total
Maximum Daily Emissions (lbs/day)	3.2	13.8	65.4	5.0	0.5	5.3	1.0	0.4	1.3
Total Emissions (tons/construction period)	0.3	1.4	5.8	0.3	< 0.1	0.4	< 0.1	< 0.1	0.1
BAAQMD Daily Thresholds (lbs/day)	54	54	-	BMPs	82	-	BMPs	54	-

Daily/Annual Emissions	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total

See Appendix A of the Air Quality Technical Memorandum for construction assumptions and Road Construction Model inputs and outputs.

BAAQMD = Bay Area Air Quality Management District; BMPs = best management practices; CO = carbon monoxide; lbs = pounds; NO_X = nitrogen oxides; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; ROG = reactive organic gases

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

As noted in their CEQA Guidelines, BAAQMD states that:

> In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary.

Consequently, exceedances of the project-level thresholds would be cumulatively considerable. Impacts are potentially significant and the following mitigation measure is proposed (see Section 2.2.6.4, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of this mitigation measure).

- MM-AQ-1: Utilize clean diesel-powered equipment during construction to control construction-related NO_X emissions

Criteria pollutant emissions during construction would not exceed BAAQMD's thresholds for construction with implementation of MM-AQ-1. In addition, Table 2.2.6-5 in Section 2.2.6, *Air Quality*, summarizes operational criteria pollutant emissions for all build alternatives. The City uses the BAAQMD daily threshold to evaluate impacts under CEQA. Per Table 2.2.6-5, none of the operational criteria pollutant emissions would exceed the BAAQMD threshold. Consequently, criteria pollutant emissions would not be cumulatively considerable for any criteria pollutant and would be **less than significant with mitigation incorporated**.

d) Expose sensitive receptors to substantial pollutant concentrations?

Table 2.2.6-4 in Section 2.2.6, *Air Quality*, summarizes the results of the intersection carbon monoxide (CO) modeling and indicates that CO concentrations are not expected to exceed the 1- or 8-hour National Ambient Air Quality Standards and California Ambient Air Quality Standards for the worst-case scenario intersections both within and outside of the Project alignment. As such, sensitive receptors would not be exposed to substantial concentrations of CO.

With respect to toxic air contaminants, nearby sensitive receptors could be exposed to substantial pollutant concentrations such as diesel particulate matter and emissions of particulate matter less than 2.5 microns in diameter (PM2.5) from exhaust sources during construction. Impacts are potentially significant and the following mitigation measure is proposed (see Section 2.2.6.4, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of this mitigation measure).

- MM-AQ-1: Utilize clean diesel-powered equipment during construction to control construction-related NO_X emissions

With implementation of MM-AQ-1, nearby sensitive receptors would not likely be exposed to substantial pollutant concentrations, because toxic air contaminant concentrations during construction, such as concentrations of diesel particulate matter, would be reduced through the requirement to use Tier 4 equipment. Emissions of PM2.5 from exhaust sources would be reduced by nearly 90% with the use of Tier 4 equipment; therefore, there would be limited potential for construction equipment to expose sensitive receptors to substantial concentrations of diesel particulate matter. No other toxic air contaminants are expected to be released in appreciable quantities during construction. Therefore, the Project would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be **less than significant with mitigation incorporated**.

e) Create objectionable odors affecting a substantial number of people?

Table 3-3 in the BAAQMD's 2017 CEQA Guidelines provides odor screening distances for land uses that have the potential to generate substantial odor complaints. The uses in the table include wastewater treatment plants, landfills or transfer stations, refineries, composting facilities, confined animal facilities, food manufacturing, smelting plants, and chemical plants (Bay Area Air Quality Management District 2017b). The Project involves replacement of a bridge over a creek. None of the uses identified in the table would occur within the Project area. The Project would not generate objectionable odors affecting a substantial number of people during operation.

During construction activities, heavy equipment and vehicles would emit odors associated with vehicle and engine exhaust. However, these odors would be temporary and would cease upon completion of construction. Overall, the Project would not generate objectionable odors affecting a substantial number of people. This impact would be **less than significant**. No mitigation is required.

3.2.4 Biological Resources

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

CEQA Significance Determinations for Biological Resources

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

As discussed in Section 2.3.5, *Threatened and Endangered Species*, California red-legged frogs could be directly and indirectly affected by construction activities occurring in or adjacent to the Biological Study Area (BSA). If California red-legged frogs are present within the construction work area, they could be inadvertently killed or wounded by construction vehicles, construction personnel, and accidental spill of toxic fluids. Construction activities associated with road and bridge construction in potential California red-legged frog habitat in the Project area could result in indirect effects on water quality downstream from the construction work area.

The proposed Project could also affect habitat conditions for Central California Coast steelhead, discussed in Section 2.3.5, *Threatened and Endangered Species*. Activities associated with bridge removal and reconstruction and revegetation could increase erosional processes, thereby increasing sedimentation and turbidity in downstream waterways. Excessive sediment deposited in or near stream channels can degrade aquatic habitats. Increased turbidity can increase fish mortality, reduce feeding opportunities for fish including rearing steelhead, and cause fish to avoid important habitat. The effects on essential fish habitat for Pacific salmon would be same as the effects described for Central California Coast steelhead.

Impacts are potentially significant and the following mitigation measure and avoidance and minimization measures are proposed (see Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, and Section 2.3.5.3, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of these measures).

- MM-BIO-1: Compensate for Permanent Loss of Valley Foothill Riparian
- AMM-BIO-1: Install Construction Barrier Fencing around Environmentally Sensitive Areas
- AMM-BIO-2: Prepare Environmental Awareness Program and Conduct Environmental Awareness Training for Construction Employees

- AMM-BIO-3: Retain a Biological Monitor to Conduct Visits during Construction
- AMM-BIO-4: Avoid and Minimize Potential Disturbance of Valley Foothill Riparian Community
- AMM-BIO-5. Protect Water Quality and Prevent Erosion and Sedimentation in San Francisquito Creek
- AMM-BIO-9: Avoid Work during Active Breeding and Dispersal Period for Special-Status Frogs (October 15 through June 1)
- AMM-BIO-10: Conduct Preconstruction Surveys at Work Sites in and near Frog-Sensitive Areas (no more than 3 days prior to onset of construction)
- AMM-BIO-11: Provide Construction Worker Awareness Training for Special-Status Frogs
- AMM-BIO-12: Install Exclusion Fencing and Conduct Construction Monitoring for Special-Status Frogs
- AMM-BIO-13: Limit Stream Bank Construction to Dry Season (June 1 through October 15)

With implementation of these measures, the impacts on California red-legged frog, Central California Coast steelhead, and essential fish habitat are **less than significant with mitigation incorporated**.

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

As discussed in Section 2.3.1, *Natural Communities*, construction of the Project on the proposed alignment would result in permanent loss of some riparian vegetation along San Francisquito Creek within the Project footprint. For the purposes of this analysis, it is assumed that all valley foothill riparian vegetation would be removed within the Project footprint. Project construction would have minimal permanent impacts on intermittent stream habitat within San Francisquito Creek, primarily where banks would be excavated to remove old structures and install new pilings and rip rap. Table 2.3-1 in Section 2.3.12, *Environmental Consequences*, presents the permanent impact area of each build alternative. Impacts are potentially significant and the following mitigation measure and avoidance and minimization measures are proposed.

- MM-BIO-1: Compensate for Permanent Loss of Valley Foothill Riparian (see Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of this mitigation measure)
- AMM-BIO-1: Install Construction Barrier Fencing around Environmentally Sensitive Areas
- AMM-BIO-2: Prepare Environmental Awareness Program and Conduct Environmental Awareness Training for Construction Employees
- AMM-BIO-3: Retain a Biological Monitor to Conduct Visits during Construction
- AMM-BIO-4: Avoid and Minimize Potential Disturbance of Valley Foothill Riparian Community
- AMM-BIO-5. Protect Water Quality and Prevent Erosion and Sedimentation in San Francisquito Creek

Implementation of these measures, which would reduce impacts on valley foothill riparian and require compensation for the permanent loss of valley foothill riparian, would reduce impacts to less than significant. In addition, implementation of these measures would ensure that the proposed

Project minimizes direct and indirect effects on intermittent stream habitat and would therefore reduce impacts on intermittent stream habitat to a less-than-significant level. Therefore, with implementation of the above measures, the impacts on valley foothill riparian vegetation and intermittent stream habitat are **less than significant with mitigation incorporated**.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

As discussed in Section 2.3.2, *Wetlands and Other Waters*, no jurisdictional wetlands are present within the BSA; therefore, no impacts from any of the build alternatives would result during construction or operation. The creek qualifies as a water of the U.S. because it supports a defined bed and bank and a well-defined ordinary high water mark. Construction activities that could occur within the creek include installation of check dams, such as clean gravel dams or any other type of approved Caltrans standard dam, and best management practices (BMPs). Excavation for removal of the existing abutments and construction of the new abutments would be accomplished using an excavator located on the existing roadway and no equipment would enter the creek. Pilings will be placed on the banks with a vibratory hammer.

Indirect impacts on intermittent stream habitat could also occur from adjacent construction activity due to erosion and sedimentation and discharge of pollutants into the creek. Implementation of the avoidance and minimization measures would prevent these indirect effects on San Francisquito Creek during construction.

Table 2.3-1 in Section 2.3.12, *Environmental Consequences*, presents the permanent impact area of each build alternative on intermittent stream habitat. Impacts are potentially significant and the following avoidance and minimization measures are proposed.

- AMM-BIO-1: Install Construction Barrier Fencing around Environmentally Sensitive Areas
- AMM-BIO-2: Prepare Environmental Awareness Program and Conduct Environmental Awareness Training for Construction Employees
- AMM-BIO-3: Retain a Biological Monitor to Conduct Visits during Construction
- AMM-BIO-4: Avoid and Minimize Potential Disturbance of Valley Foothill Riparian Community
- AMM-BIO-5. Protect Water Quality and Prevent Erosion and Sedimentation in San Francisquito Creek

Implementation of AMM-BIO-1 through AMM-BIO-4 for valley foothill riparian and avoidance and minimization effort AMM-BIO-5 in Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, would ensure that the proposed Project minimizes direct and indirect effects on intermittent stream habitat and waters of the U.S. Therefore, impacts would be **less than significant with mitigation incorporated**.

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

As discussed in Section 2.3.1, *Natural Communities,* the project would not result in impacts on habitat connectivity. The bridge will be replaced with a free span bridge, therefore no pilings will be located within the intermittent stream channel. Additionally, the abutments and bank stabilization will be placed outside of the ordinary high water mark. The channel and habitat surrounding the creek will remain the same.

However, activities associated with bridge removal and reconstruction and revegetation could increase erosional processes, thereby increasing sedimentation and turbidity in downstream waterways. Excessive sediment deposited in or near stream channels can degrade aquatic habitats. Increased turbidity can increase fish mortality, reduce feeding opportunities for fish including rearing steelhead, and cause fish to avoid important habitat, causing impacts on migratory fish. Impacts are potentially significant and the following mitigation measure and avoidance and minimization measures are proposed (see Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, and Section 2.3.5.3, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of these measures).

- MM-BIO-1: Compensate for Permanent Loss of Valley Foothill Riparian
- AMM-BIO-1: Install Construction Barrier Fencing around Environmentally Sensitive Areas
- AMM-BIO-2: Prepare Environmental Awareness Program and Conduct Environmental Awareness Training for Construction Employees
- AMM-BIO-3: Retain a Biological Monitor to Conduct Visits during Construction
- AMM-BIO-4: Avoid and Minimize Potential Disturbance of Valley Foothill Riparian Community
- AMM-BIO-5. Protect Water Quality and Prevent Erosion and Sedimentation in San Francisquito Creek
- AMM-BIO-9: Avoid Work during Active Breeding and Dispersal Period for Special-Status Frogs (October 15 through June 1)
- AMM-BIO-10: Conduct Preconstruction Surveys at Work Sites in and near Frog-Sensitive Areas (no more than 3 days prior to onset of construction)
- AMM-BIO-11: Provide Construction Worker Awareness Training for Special-Status Frogs
- AMM-BIO-12: Install Exclusion Fencing and Conduct Construction Monitoring for Special-Status Frogs
- AMM-BIO-13: Limit Stream Bank Construction to Dry Season (June 1 through October 15)

With implementation of these measures, the impacts on migratory fish are **less than significant with mitigation incorporated**.

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

The City of Palo Alto Tree Ordinance requires permits for any activity that affects trees growing on public property or in a city-owned street right-of-way, and for protected tree species, which include coast live oak (*Quercus agrifolia*) more than 11.5 inches diameter at breast height (dbh) (approximately 4.5 feet above natural grade), valley oak (*Quercus lobata*) more than 11.5 inches dbh, and coast redwood (*Sequoia sempervirens*) more than 18 inches dbh. Heritage trees are designated by the Palo Alto City Council; however, none are located within the Palo Alto portion of the survey area. Trees listed on landscape plans for commercial development are designated trees and require a permit from the Planning Department. The Project is not anticipated to result in impacts on any redwood trees in Palo Alto as none are located within the permanent impact area.

However, a coast live oak with a dbh of 43.5 inches would be removed under all build alternatives. This tree is protected in accordance with the City of Palo Alto's Tree Preservation Ordinance. Seven other regulated trees, which include trees within the public right-of-way within the City of Palo Alto, would also be removed under all build alternatives. This includes two magnolias, one California Buckeye, and four eucalyptus trees.

The City of East Palo Alto Tree Regulation states that any tree—private or in the public right-of-way—with a trunk that measures greater than 2 feet in circumference measured at 40 inches above the natural grade, or any tree regardless of size in the public right-of-way, requires a Tree Removal Permit to remove. Several trees within public right-of-way within East Palo Alto would be removed. Under Build Alternative 1, two trees would be removed in East Palo Alto, a Freemont's Cottonwood tree and a coast live oak tree. Under Build Alternative 2, both these trees would be removed along with a California buckeye and Arroyo Willow. Under Build Alternative 3, six trees would be removed, including all trees under Build Alternative 2, in addition to another coast live oak tree and a California buckeye. Under Build Alternative 4, 10 trees would be removed, including all those under Build Alternative 3, an Arroyo willow and three eucalyptuses. Under the City of East Palo Alto's Municipal Code (Section 18.28.040(2)), all of the trees within the City of East Palo Alto are considered protected because they are all within the public right-of-way. The City of Palo Alto will continue to work with the City of East Palo Alto to try to retain as many trees as feasible, including in particular the oak tree at the northwestern corner of Newell Road and Woodland Avenue on the East Palo Alto side. However, for the purposes of this analysis, in order to assume a worst-case-scenario, all of the trees described above, including the oak tree, are identified for removal.

Table 2.3-3 in Section 2.3.1.2, *Environmental Consequences*, identifies the impacts on all trees per build alternative.

The loss of the protected oak and seven other regulated trees (street trees) within the City of Palo Alto would be an impact. However, removal of these trees is allowed in accordance with Palo Alto Municipal Code Section 8.10.050(d)(1). As outlined in the code, replacement for these trees is required in accordance with the Tree Technical Manual, which includes a formula for replacement based on the measured size of the canopy lost. In addition, the City of East Palo Alto requires replacement of trees approved for removal in accordance with the East Palo Alto Municipal Code Section 18.28.040(I), which similarly requires replacement of the canopy. However, because replacement of these trees in accordance with the Tree Technical Manual may not be feasible within the Project area, impacts are potentially significant and the following mitigation measure is proposed (see Section 2.3.1.3, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of this measure).

- MM-BIO-2: Tree Replacement Plan

Compliance with the East Palo Alto Municipal Code, Palo Alto Municipal Code, and the Tree Technical Manual, which is incorporated by reference as part of the City's Municipal Code as well as implementation of MM BIO-2 for the replacement of any trees off site, which would ensure that if trees cannot be replaced on site, suitable locations will be found off site, would ensure that impacts associated with removal of the protected and regulated trees within the City of Palo Alto would be **less than significant with mitigation incorporated.**

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?

There are no Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plan in the Project vicinity. Therefore, there would be **no impact**. No mitigation is required.

3.2.5 Cultural Resources

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐
e) Directly or indirectly destroy a local cultural resource that is recognized by City Council resolution?	☐	☐	☐	☒

CEQA Significance Determinations for Cultural Resources

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

e) Directly or indirectly destroy a local cultural resource that is recognized by City Council resolution?

As discussed in Section 2.16, *Cultural Resources*, there are no historic resources or properties, as defined in the CEQA Guidelines §15064.5 or recognized by City Council resolution, present in the Area of Potential Effects (APE). Therefore, there would be no historic resources or properties affected during construction or operation of any of the build alternatives, resulting in **no impact**. No mitigation is required.

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

As discussed in Section 2.16, *Cultural Resources*, there is limited archaeological sensitivity within the APE and it is not anticipated that previously unidentified prehistoric or historic archaeological sites are located in the APE (California Department of Transportation 2017c). However, unknown cultural materials could be discovered during construction. Impacts are potentially significant and the following standard measure is proposed.

- SM-CUL-1: If cultural materials are discovered during construction, the contractor will cease all earth-moving activity within and around the immediate discovery area until a qualified archaeologist can assess the nature and significance of the find and recommend/implement appropriate data collection/recovery activities.

With implementation of this standard measure, impacts would be **less than significant with mitigation incorporated**.

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

As discussed in Section 2.2.4, *Paleontology*, construction of Build Alternatives 1 and 2 would involve excavation for the roadway to a depth of 2 feet from existing grade to remove existing asphalt and base, excavation to a depth of 5 feet for installation of retaining walls, and excavation to a depth of 6 feet for installation of bridge abutments. Because the excavation work is shallow and would proceed within the previously disturbed roadbed, any effect on sensitive paleontological resources would be minor.

Similar to Build Alternatives 1 and 2, construction of Build Alternatives 3 and 4 would involve excavation for the roadway to a depth of 2 feet from existing grade to remove existing asphalt and base, excavation to a depth of 5 feet for installation of retaining walls, and excavation to a depth of 6 feet for installation of bridge abutments. The excavation work is shallow; however, it would involve disturbance of previously undisturbed soil in the area of the road realignment. Because sensitive paleontological resources could occur at depths below 5 feet, it is possible that excavation could encounter sensitive paleontological resources. Impacts are potentially significant and the following mitigation measure is proposed.

- MM-PA-1: Educate Workers, Stop Work in Case of Discovery of Paleontological Resources, and Prepare and Implement a Recovery Plan (see Section 2.2.4.4, *Avoidance, Minimization, and/or Mitigation Measures* for the full description of this mitigation measure)

With implementation of the above measure, the impacts on unique paleontological resources are **less than significant with mitigation incorporated**.

d) Disturb any human remains, including those interred outside of formal cemeteries?

As discussed in Section 2.16, *Cultural Resources*, there is limited archaeological sensitivity within the APE and it is not anticipated that previously unidentified prehistoric or historic archaeological sites are located in the APE. However, unknown human remains could be discovered during construction. Impacts are potentially significant and the following standard measure is proposed.

- SM-CUL-2: If human remains are discovered, State Health and Safety Code Section 7050.5 states that the contractor will stop further disturbances and activities in any area or nearby area suspected to overlie remains, and the contractor will contact the County Coroner. Pursuant to Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC), which will then notify the Most Likely Descendant (MLD). At this time, the person who discovered the remains will contact the Caltrans District 4 Office of Local Assistance archaeologist so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

With implementation of this standard measure, impacts would be **less than significant with mitigation incorporated**.

3.2.6 Geology and Soils

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☒	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv) Landslides?	☐	☐	☒	☐
v) Expansive soils?	☐	☐	☒	☐
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) Expose people or property to major geologic hazards that cannot be mitigated through the use of standard engineering design and seismic safety techniques?	☐	☒	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

CEQA Significance Determinations for Geology and Soils

ai) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

As discussed in Section 2.2.3, *Geology/Soils/Seismic/Topography*, the Project site is not located in an Alquist-Priolo Earthquake Fault Zone, nor are there active or potentially active faults in the Project area. Therefore, the potential for surface fault rupture to affect the Project site is extremely low. Impacts would be **less than significant**. No mitigation is required.

aii) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

As discussed in Section 2.2.3, *Geology/Soils/Seismic/Topography*, the Project area is likely to experience strong ground shaking due to earthquake during the life of the Project. Impacts are potentially significant and the following standard measure is proposed.

- SM-GEO-1: The City of Palo Alto will adhere to current Caltrans Seismic Design Criteria (SDC) for bridge design and construction.

With implementation of this standard measure, bridge design and construction would adhere to current Caltrans SDC. Accordingly, effects from earthquakes would be minimized, and the potential for damage resulting from strong ground shaking due to earthquake is low. Impacts would be **less than significant with mitigation incorporated**.

aiii) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

The Project area contains soils that have a risk of liquefaction, which could result in structural damage to the bridge during an earthquake. Impacts are potentially significant and the following standard measure is proposed.

- SM-GEO-1: The City of Palo Alto will adhere to current Caltrans SDC for bridge design and construction.

With proper bridge design that adheres to current Caltrans SDC, the structures constructed as part of the Project would not exacerbate the liquefaction tendencies of soils present at the site. Accordingly, effects from earthquakes would be minimized, and the potential for damage resulting from liquefaction due to earthquake is low. Impacts would be **less than significant with mitigation incorporated**.

aiv) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

As discussed in Section 2.2.3, *Geology/Soils/Seismic/Topography*, the Project site is not located in a zone mapped for landslide hazard and is thus not subject to large-scale landslide. Impacts would be **less than significant**. No mitigation is required.

av) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving expansive soils?

As discussed in Section 2.2.3, *Geology/Soils/Seismic/Topography*, the Project area is underlain by silty sand approximately 13.5 feet thick. The silty sand is classified as Urban land-Elpaloalto complex. This Urban land-Elpaloalto complex is not rated for expansive properties; however, sand is not an expansive soil. Underlying the silty sand is lean clay and sandy lean clay, which is not expansive. The likelihood of damage associated with expansive soils is therefore low. Impacts would be **less than significant**. No mitigation is required.

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

As discussed in Section 2.2.3, *Geology/Soils/Seismic/Topography*, site preparation and grading associated with Project construction activities would potentially expose bare soil to erosive forces. Impacts are potentially significant and the following standard measure is proposed.

- SM-WQ-2: Prepare and Implement Stormwater Pollution Prevention Plan (SWPPP) (see Section 2.2.2.4, *Avoidance, Minimization, and/or Mitigation Measures*, for a full description of this measure).

Preparation and implementation of a SWPPP, which is a requirement under the Construction General Permit, would minimize stormwater runoff, control erosion, and monitor effectiveness. Further, as part of Caltrans' standard practice and included in SM-WQ-2, the Project would incorporate BMPs that include but are not limited to stabilizing soil through mulching, hydroseeding, use of soil binders, or other means; temporary sediment control measures; and wind erosion control measures. Therefore, impacts related to soil erosion would be **less than significant with mitigation incorporated**.

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) Would the project expose people or property to major geologic hazards that cannot be mitigated through the use of standard engineering design and seismic safety techniques?

As discussed in Section 2.2.3, *Geology/Soils/Seismic/Topography*, unstable soils are present in the study area and the potential for lateral spreading in the Project area is high. Impacts are potentially significant and the following standard measure is proposed.

- SM-GEO-1: The City of Palo Alto will adhere to current Caltrans Seismic Design Criteria (SDC) for bridge design and construction.

With implementation of this standard measure, bridge design and construction would adhere to current Caltrans SDC. Accordingly, effects from earthquakes would be minimized, and the potential for damage resulting from unstable soils, lateral spreading due to earthquake-induced liquefaction is low. Impacts would be **less than significant with mitigation incorporated**.

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

The Project does not include the use or installation of septic tanks. Therefore, there is **no impact**. No mitigation is required.

3.2.7 Greenhouse Gas Emissions

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

CEQA Significance Determinations for Greenhouse Gas Emissions

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

Table 3.3.2 in Section 3.6.4, *Construction Emissions*, summarizes estimated greenhouse gas (GHG) emissions generated by on-site construction equipment over the 12-month construction period. It was estimated that the total amount of carbon dioxide (CO_2) produced due to bridge replacement construction would be 1,093 tons annually and for the entire construction period, because the construction duration would be 1 year. The BAAQMD CEQA Guidelines and City of Palo Alto do not suggest a threshold of significance for short-term construction-related GHG emissions. Based on the size of the Project, the amount of ground disturbance and construction-related activities necessary, and implementation of BAAQMD BMPs discussed in Section 2.2.6, *Air Quality*, the construction phase of the project would not generate GHG emissions that would have a significant impact on the environment. Impacts during construction would be **less than significant**. No mitigation is required.

Operational GHG emissions for the Project would occur from the effect of diverted trips. Table 3.3-1 in Section 3.6.3, *Project Analysis*, shows the annual GHG emissions that would occur for the build alternatives. This table shows that there would be a reduction in GHG emissions under all build alternatives between 2016, 2020, and 2040 due to improved operation and accessibility for alternative modes of transportation (e.g., pedestrians and bicyclists). There would be **no impact** during operations and no mitigation is required.

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

The BAAQMD 2017 Clean Air Plan contains control measures, consistent with the state's climate protection goals, aimed at reducing Bay Area GHG emissions to 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050 (Bay Area Air Quality Management District 2017a). The project would be consistent with the Clean Air Plan because the Project expands the bicycle and pedestrian infrastructure in the Project area to encourage other modes of transportation and would reduce GHG emissions between 2016, 2020, and 2040 due to improved operation and accessibility for alternative modes of transportation. The Project is also consistent with, and partially implements, the City of Palo Alto's Sustainability and Climate Action Plan framework strategy T-FAC-1, which calls for expanding the City of Palo Alto's bicycle infrastructure to facilitate non-automobile mobility options (City of Palo Alto 2016). Therefore, development of the Project would not result in an impact related to consistency with or implementation of the 2017 Clean Air Plan or the City of Palo Alto's Sustainability and Climate Action Plan. There would be **no impact** and no mitigation is required.

3.2.8 Hazards and Hazardous Materials

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 it 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 for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

CEQA Significance Determinations for Hazards and Hazardous Materials

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?

As discussed in Section 2.2.5, *Hazardous Waste/Materials*, impacts from lead contamination from paint could occur where reconstruction of the bridge involves disturbing or removing the existing paint, which could create a hazard to the public or to the environment during routine transport, use or disposal of hazardous materials or through upset and accident conditions. It is recommended that all paint be treated as lead-containing for the purposes of complying with Division of Occupational Safety and Health worker safety requirements, which apply to all worksites where construction workers may be exposed to lead. Construction activities could produce dust, which could expose workers or nearby residents and business occupants to lead via inhalation. Operation of the Project would not involve the use, storage, or transport of hazardous materials.

Impacts are potentially significant during construction and the following mitigation measures are proposed.

- MM-HAZ-1: Properly Dispose of and Abate Potential Lead-Based Paint
- MM-HAZ-2: Properly Handle and Dispose of Potentially Contaminated Soils and Materials

See Section 2.2.5.4, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of these mitigation measures. With implementation of the above measures, impacts would be **less than significant with mitigation incorporated**.

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

There are no existing or proposed schools within 0.25 mile of the Project site. Therefore, there would be **no impact**. No mitigation is required.

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

As discussed in Section 2.2.5, *Hazardous Waste/Materials*, the Project site was not identified in any of the records, including lists of hazardous materials release sites compiled pursuant to Government Code 65962.5. Therefore, there would be **no impact**. No mitigation is required.

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

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

The Project is not located in the vicinity of a private airstrip, but the Project is located approximately 1.2 miles from the Palo Alto Airport. The Project would not result in a safety hazard for people residing or working in the project area because the Project would not change air traffic patterns or otherwise affect airport operations. The Project does not include construction of any tall structures that could cause a hazard for air navigation. Therefore, there would be **no impact**. No mitigation is required.

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

As discussed in Section 2.1.3, *Utilities and Emergency Services*, during construction of the Project, the existing Newell Road Bridge would be closed to vehicles, including emergency services. As a result, first responders would have to use other existing nearby crossings (University Avenue and West Bayshore Road). Impacts are potentially significant during construction and the following standard measure is proposed.

- SM-TR-1: A Traffic Management Plan will be prepared by the Project proponent or its contractor, approved by the City of Palo Alto, and will be implemented by the contractor during construction activities (see Section 2.1.4.4, *Avoidance, Minimization, and/or Mitigation Measures*, for a full description of this measure).

With implementation of this measure, advance notice and coordination with emergency service providers will be included in the Traffic Management Plan to minimize any potential temporary impacts on response times. Therefore, impacts would be **less than significant with mitigation incorporated**.

h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The Project is not located in a wildland fire hazard severity zone. In addition, the Project does not involve construction of any buildings that would be at risk of fires. The Project would replace an existing bridge structure, which would not contribute to the risk of wildland fires in urbanized areas. Therefore, there would be **no impact**. No mitigation is required.

3.2.9 Hydrology and Water Quality

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☒	☐	☐

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☒	☐	☐
e) 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?	☐	☒	☐	☐
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒
k) Result in stream bank instability?	☐	☐	☐	☒

CEQA Significance Determinations for Hydrology and Water Quality

a) Violate any water quality standards or waste discharge requirements?

As discussed in Section 2.2.2, *Water Quality and Storm Water Runoff*, during construction, potential short-term increases in turbidity would result from soil erosion and suspended solids being introduced into San Francisquito Creek from both in-water and land construction activities. As a result, temporary increases in turbidity may occur in the immediate area and potentially downstream. This would violate water quality standards or waste discharge requirements related to turbidity since the waterbody is already impaired for sediment, and would have the potential to result in adverse effects on the physiology, behavior, and habitat of aquatic life. Impacts are potentially significant and the following standard measures are proposed (see Section 2.2.2.4, *Avoidance, Minimization, and/or Mitigation Measures*, for a full description of these measures).

- SM-WQ-1: Implement National Pollutant Discharge Elimination System (NPDES) Permit and Construction General Permit Water Quality Measures
- SM-WQ-2: Prepare and Implement SWPPP

With implementation of these measures, water quality protection measures would be implemented during construction to prevent or minimize sediment and suspended solids from entering the creek. In addition, the Project design would incorporate post-construction measures and other permanent erosion control elements to ensure that stormwater runoff would not cause soil erosion, and to reduce or avoid permanent impacts on water quality. Therefore, impacts would be **less than significant with mitigation incorporated**.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

As discussed in Section 2.2.2, *Water Quality and Storm Water Runoff*, changes to groundwater occurrence and levels due to Project construction, if groundwater levels are affected at all, would not detrimentally affect regional groundwater production or change the existing water quality. Therefore, there would be **no impact**. No mitigation is required.

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

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

As discussed in Section 2.2.2, *Water Quality and Storm Water Runoff*, construction activities occurring on land adjacent to the creek could cause erosion of sediments and contribute to short-term increases in turbidity in the creek. Land-disturbing activities (e.g., demolition and grading) could result in erosion and subsequent soil deposition to the creek which would increase turbidity. Long-term water quality impacts are attributable to the changes in stormwater drainage and/or soil disturbance from construction. The Project would increase impervious surfaces in the Project area as a result of road and sidewalk reconstruction. Increases in impervious surfaces change the storm hydrograph by increasing flow velocity, and the peak and quantity of storm runoff due to reduced natural infiltration (groundwater recharge) and uptake from native soils and vegetation. Impacts are potentially significant and the following standard measures are proposed (see Section 2.2.2.4, *Avoidance, Minimization, and/or Mitigation Measures*, for a full description of these measures).

- SM-WQ-1: Implement NPDES Permit and Construction General Permit Water Quality Measures
- SM-WQ-2: Prepare and Implement SWPPP

These measures require preparation of a SWPPP and implementation of erosion and sediment control BMPs to ensure that water quality impacts would not occur from construction. Water quality protection measures would be implemented during construction to prevent or minimize sediment and suspended solids from entering the creek. In addition, the Project design would incorporate post-construction measures and other permanent erosion control elements to ensure that stormwater runoff would not cause soil erosion, and to reduce or avoid permanent impacts on water quality. Therefore, impacts would be **less than significant with mitigation incorporated**.

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

As discussed in Section 2.2.2, *Water Quality and Storm Water Runoff*, the Project would use the existing stormwater system. The existing stormwater system would only need to account for the increase in stormwater volume from slope grade changes. Changes within the impervious surfaces are relatively small and would have little effect on runoff volume. However, the use of heavy construction equipment or construction-related materials can introduce pollutants of concern or toxic chemicals to the Project site through polluted runoff. Impacts are potentially significant and the following standard measures are proposed (see Section 2.2.2.4, *Avoidance, Minimization, and/or Mitigation Measures*, for a full description of these measures).

- SM-WQ-1: Implement NPDES Permit and Construction General Permit Water Quality Measures
- SM-WQ-2: Prepare and Implement SWPPP

With implementation of these measures, the contractor's qualified SWPPP practitioner would implement appropriate hazardous material management practices, spill prevention, and other good housekeeping measures to reduce the potential for chemical spills or releases of contaminants, including any non-stormwater discharge to drainage channels. Implementation of these measures would minimize the potential for surface and groundwater contamination. Impacts would be **less than significant with mitigation incorporated**.

f) Otherwise substantially degrade water quality?

As discussed in Section 2.2.2, *Water Quality and Storm Water Runoff*, sediment and suspended solids could enter the creek during construction and operation, potentially degrading water quality. Impacts are potentially significant and the following standard measures are proposed (see Section 2.2.2.4, *Avoidance, Minimization, and/or Mitigation Measures*, for a full description of these measures).

- SM-WQ-1: Implement NPDES Permit and Construction General Permit Water Quality Measures
- SM-WQ-2: Prepare and Implement SWPPP

With implementation of these measures, water quality protection measures would be implemented during construction to prevent or minimize sediment and suspended solids from entering the creek. In addition, the Project design would incorporate post-construction measures and other permanent erosion control elements to ensure that stormwater runoff would not cause soil erosion, and to reduce or avoid permanent impacts on water quality. Therefore, impacts would be **less than significant with mitigation incorporated**.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

As discussed in Section 2.2.1, *Hydrology and Floodplain*, the Project does not include the placement of housing within a 100-year flood hazard area or the placement of structures within a 100-year flood hazard area structures which would impede or redirect flood flows. The Project would accommodate larger flows within San Francisquito Creek, resulting in additional flow capacity in the Project area. Therefore, there would be **no impact**. No mitigation is required.

i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

As discussed in Section 2.2.1, *Hydrology and Floodplain*, under all build alternatives, the existing 50-year and 100-year flood events would be minimized compared to existing conditions. Therefore, there would be no increased flood risk and no risk to life or property associated with implementation of the Project. There are no levees or dams at risk of failing near the Project area. Therefore, there would be **no impact**. No mitigation is required.

j) Inundation by seiche, tsunami, or mudflow?

As discussed in Section 2.2.1, *Hydrology and Floodplain*, the Project area is not in an area susceptible to inundation by seiche, tsunami, or mudflow. Therefore, there would be **no impact**. No mitigation is required.

k) Result in stream bank instability?

As discussed in Section 2.2.1, *Hydrology and Floodplain*, the banks of San Francisquito Creek are currently subject to erosion, particularly in response to high discharges, where bank instability is present, or where vegetation becomes disturbed. The Project would include bank stabilization measures, such as rock slope protection or soil nail wall, in the portion of San Francisquito Creek disturbed by construction. These measures would be implemented approximately 50 feet upstream and downstream of the bridge. These bank stabilization measures would reduce stream instability during construction and operation of the Project, resulting in a beneficial effect. Therefore, there would be **no impact**. No mitigation is required.

3.2.10 Land Use and Planning

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

CEQA Significance Determinations for Land Use and Planning

a) Physically divide an established community?

As discussed in Section 2.1.2, *Community Impacts*, the Project would not physically divide a community because it would replace an existing bridge that connects two communities, Palo Alto and East Palo Alto, within the same alignment. Construction of the Project would improve access between the two communities by providing a wider, safer bridge for all modes of transportation. The addition of sidewalks and bicycle facilities would provide safer and more direct access, which would also improve connectivity. Therefore, there would be **no impact**. No mitigation is required.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Table 2.1.1-2 in Section 2.1.1.3, *Environmental Consequences*, analyzes the consistency of the Project with the relevant plans and programs. As detailed in Table 2.1.1-2, the Project would not conflict with any goals or policies of relevant plans and programs. Therefore, there would be **no impact**. No mitigation is required.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

There are no applicable habitat conservation plans or natural community conservation plans within the Project limits. Therefore, there would be **no impact**. No mitigation is required.

3.2.11 Mineral Resources

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

CEQA Significance Determinations for Mineral Resources

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?

The Project site and surrounding properties are part of an urbanized area with no current oil or gas extraction. According to the Natural Environment Element of the City's Comprehensive Plan, Palo Alto does not contain mineral deposits of regional significance (City of Palo Alto 2017). No mineral resource activities would be altered or displaced by the Project. Therefore, there would be **no impact**. No mitigation is required.

3.2.12 Noise

Would the project result in:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
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 expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

CEQA Significance Determinations for Noise

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

As discussed in Section 2.2.7, *Noise*, noise from Project construction activities may intermittently dominate the noise environment in the immediate area of construction. Equipment operations associated with demolition and building activities would be a source of noise. Implementation of detours may increase noise in some areas as a result of temporarily diverted traffic. Noise increases during construction could be substantial at nearby residences.

In addition, the operation of heavy equipment would generate localized groundborne vibration during construction of the Project. Vibration from non-impact construction activity and truck traffic is typically below the threshold of perception when the activity is more than about 50 feet from the receiver (refer to Tables 2.2.7-2 and 2.2.7-4 in Section 2.2.7, *Noise*, for vibration reference levels). Consequently, for construction activities without the use of high-impact equipment where the activity is located more than 50 feet from noise-sensitive land uses, ground-borne vibration impacts are expected to be less than significant.

For construction activities of the bridge, a pile driver, which is considered to be impact equipment, would be required. The level of vibration generated by pile driving and transmitted to nearby structures would depend on the type of pile driver used and site-specific soil properties. Under average soil conditions, an impact pile driver is expected to generate a vibration level of 0.650 and 0.303 inches per second peak particle velocity (PPV) at a distance of 25 feet and 50 feet, respectively (California Department of Transportation 2013). Some existing homes are located 25 to 50 feet from where the pile driver could be operated, and under average soil conditions, those homes could be exposed to vibration levels in excess of the 0.3 and 0.4 inches per second PPV thresholds at which vibration may damage older residential structures and be severely perceptible to observers, respectively. Consequently, vibration impacts at homes closest to the bridge would be potentially significant.

Vibration impacts may also be potentially significant for homes located within approximately 50 feet of the construction site when the use of non-impact construction equipment (i.e., a large bulldozer) occurs. These residences could experience vibration levels as high as 0.089 inches per second PPV, which would exceed the threshold of perceptibility and could cause annoyance. Exceedance of this threshold would be a potentially significant impact.

Impacts related to construction noise and vibration are potentially significant and the following standard measures and mitigation measures are proposed (see Section 2.2.7.4, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of these measures).

- SM-NOI-1: The construction contractor must comply with Caltrans Standard Specifications Section 14-8.02, Noise Control, which states the following:
    - Control and monitor noise resulting from work activities.
    - Do not exceed 86 A-weighted decibels (dBA) at 50 feet from the job site activities from 9:00 p.m. to 6:00 a.m.
- SM-NOI-2: All equipment used by the contractor will have sound-control devices that are no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust.
- SM-NOI-3: The Project proponent and/or their construction contractor will do the following.
    - Review and ensure that construction activities are conducted in accordance with local noise standards from the cities of Palo Alto and East Palo Alto.
    - Implement additional noise mitigation measures, including changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity to allowed timeframes, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources, as appropriate.
- MM-NOI-1: Provide advance notification of construction schedule and 24-hour hotline to residents
- MM-NOI-2: Designate a noise disturbance coordinator to address resident concerns

- MM-NOI-3: Install temporary noise barriers
- MM-NOI-4: Conduct construction vibration monitoring and implement control approach(es)

Construction noise is controlled by Caltrans Standard Specifications Section 14-8.02, Noise Control and local noise standards (see SM-NOI-1, SM-NOI-2, and SM-NOI-3 in Section 2.2.7.4, *Avoidance, Minimization, and/or Mitigation Measures*) and with adherence to SM-NOI-1, SM-NOI-2, and SM-NOI-3, these potential impacts would be reduced. This potential impact would be further minimized through implementation of mitigation measures MM-NOI-1, MM-NOI-2, and MM-NOI-3, which would ensure that construction noise does not cause excessive increases in ambient noise levels at any noise-sensitive land uses. These mitigation measures would provide advance notice to nearby residences, designate a disturbance coordinator to handle resident complaints, and install noise barriers to further attenuate noise. The resulting noise level after implementation of these mitigation measures cannot be quantified with certainty, but potential increases in noise that residents find to be disturbing would be mitigated through the advance notification and noise disturbance coordinator.

In addition, implementation of MM-NOI-4 would reduce groundborne vibration impacts to a less-than-significant level by ensuring via vibration monitoring that vibration levels are below the applicable thresholds, and that any vibration-related complaints are addressed. Mitigation Measure MM-NOI-1 would also involve a survey of the existing residences to determine if these structures could be damaged by pile driving activities. If it is determined that structures would be damaged by pile driving, an alternative method of construction would be required.

Therefore, impacts would be **less than significant with mitigation incorporated**.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

As shown in Table 2.2.7-6 in Section 2.2.7, *Noise*, predicted worst-case traffic noise levels for design-year no-Project conditions range from 55 to 60 dBA L_{eq}(h) at residential land uses. Predicted worst-case traffic noise levels for design-year build conditions under Build Alternatives 1, 2, 3, and 4 also range from 56 to 61 dBA L_{eq}(h) at residential land uses. Traffic noise levels are predicted to increase at receptor locations by a maximum of 2 decibels (dB) across all design alternatives. This 2 dBA increase between existing noise levels and the build alternatives would be barely perceptible to the human ear. Additionally, an increase of 1 dB would occur at all receptor locations even in the absence of the Project, because growth in the region would result in increases in vehicle traffic. Therefore, impacts would be **less than significant** as a result of the Project and no mitigation is required.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

The Project is not located in the vicinity of a private airstrip, but the Project is located approximately 1.2 miles from the Palo Alto Airport. Aircraft activity would not expose people residing or working in the project area to excessive noise levels because the airport has only one runway and the Project would not change air traffic patterns or otherwise affect airport operations. Therefore, there would be **no impact**. No mitigation is required.

3.2.13 Population and Housing

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
d) Create a substantial imbalance between employed residents and jobs?	☐	☐	☐	☒

CEQA Significance Determinations for Population and Housing

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

The Project would not induce population growth in an area because, as described in the beginning of Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*, the Project is not growth-inducing. Therefore, there would be **no impact**. Mitigation is not required.

b) Displace substantial amounts of existing housing, necessitating the construction of replacement housing elsewhere?

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The Project would not result in the displacement of any housing or people. Therefore, there would be **no impact**. Mitigation is not required.

d) Create a substantial imbalance between employed residents and jobs?

The Project would not create new housing, residents, or jobs in the study area. The Project is also not growth-inducing, as described in the beginning of Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*. Therefore, the Project would not cause an imbalance between employed residents and jobs, and there would be in **no impact**. Mitigation is not required.

3.2.14 Public Services

a) 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:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

CEQA Significance Determinations for Public Services

a) 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: Fire Protection, Police Protection, Schools, Parks, and Other Public Facilities?

Because the Project is not growth-inducing, the Project would not directly increase the number of people or school-aged children in the area. The Project would not result in the need for new or physically altered school facilities, fire protection, police protection, park, or other public facilities. Therefore, there would be **no impact**. Mitigation is not required.

3.2.15 Recreation

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

CEQA Significance Determinations for Recreation

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

The Project would not increase the use of existing parks or recreational facilities because as described in the beginning of Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*, the Project is not growth-inducing. Therefore, there would be **no impact**. Mitigation is not required.

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?

The Project does not include construction of recreational facilities. Therefore, there would be **no impact**. Mitigation is not required.

3.2.16 Transportation/Traffic

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☒	☐	☐	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☒	☐	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☒	☐	☐
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

CEQA Significance Determinations for Traffic/Transportation

a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

For facilities with a level of service (LOS) E or LOS F under existing, background, or cumulative conditions before the addition of project traffic, a project is said to have a significant impact per CEQA Guidelines Section 15130 if the project will cause LOS to deteriorate by the following amounts.

Signalized Intersections: A project-generated increase in motor vehicle traffic is considered to have significant impact:

- If intersection operations degrade from an acceptable level (LOS D or better) to an unacceptable level (LOS E or F); *or*
- If the critical delay increases by more than 4 seconds **and** the volume-to-capacity ratio increases by 0.01 or more at intersections with unacceptable operations (LOS E or F).

Unsignalized Intersections: LOS D is used as the minimum acceptable operation level at unsignalized intersections. A project-generated increase in traffic is considered to have a significant impact if intersection operations degrade to LOS E or F from acceptable operations **and** the intersection satisfies a peak hour signal warrant from the California Manual on Uniform Traffic Control Devices.

As shown in Table 2.1.4-3 in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities,* under the opening year (Year 2020) scenario, all of the study intersections under the No Build Alternative and all build alternatives operate within applicable jurisdictional standards of the City of Palo Alto (LOS D or better) during the a.m. and p.m. peak hours, with the exception of the University Avenue/East Crescent Drive intersection. Under both the No Build Alternative and all build alternatives, the University Avenue/East Crescent Drive intersection would operate at LOS F during the a.m. peak hour for all study alternatives and LOS E during the p.m. peak hour for Build Alternative 1. However, the delay associated with the build alternatives is either the same as or less than the delay under the No Build scenario and does not exceed either threshold. Therefore, the Project would not result in impacts on traffic operations under the opening year scenario.

As shown in Table 2.1.4-4 in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities,* under the design year (Year 2040) scenario, all of the study intersections operate within applicable jurisdictional standards of the City of Palo Alto (LOS D or better) during the a.m. and p.m. peak hours, with the exception of the University Avenue /Woodland Drive and University Avenue/East Crescent Drive intersections. The University Avenue/Woodland Drive and University Avenue/East Crescent Drive intersections operate at LOS E or worse during the a.m. and p.m. peak hours for all study alternatives. However, the delay associated with the build alternatives is not greater than 4 additional seconds of delay, and is typically either the same as or less than the delay under the No Build scenario. Therefore, the Project would not result in impacts on traffic operations under the design year scenario.

Table 2.1.4-2 shows the LOS and delay for diverted traffic from Newell Road Bridge to University Avenue during construction. The Woodland Avenue/University Avenue intersection would continue to operate at LOS D during the a.m. and p.m. peak periods, resulting in no impact. However, the East Crescent Drive/University Avenue intersection would operate at unacceptable LOS F and E during the a.m. and p.m. peak periods respectively, exceeding the CEQA delay threshold of 4 seconds.

Although this would be a temporary impact, impacts are potentially significant during construction. There is no feasible mitigation to reduce this impact. It is not feasible to keep the bridge open during construction due to the constricted area surrounding the bridge.

Therefore, the impact is **significant and unavoidable**.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

The Project is not located in the vicinity of a private airstrip, but the Project is located approximately 1.2 miles from the Palo Alto Airport. The Project would not result in a change air traffic patterns or otherwise affect airport operations because the Project does not include construction of any tall structures that could cause a hazard for air navigation. Therefore, there would be **no impact**. No mitigation is required.

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

The Project would not increase hazards due to a design feature or incompatible uses because the Project would improve the safety of the functionally obsolete Newell Road Bridge. Therefore, there would be **no impact**. No mitigation is required.

e) Result in inadequate emergency access?

As discussed in Section 2.1.3, *Utilities and Emergency Services*, during construction of the Project, the existing Newell Road Bridge would be closed to vehicles, including emergency services. As a result, first responders would have to use other existing nearby crossings (University Avenue and West Bayshore Road). Impacts are potentially significant during construction and the following standard measure is proposed.

- SM-TR-1: A Traffic Management Plan will be prepared by the Project proponent or its contractor, approved by the City of Palo Alto, and will be implemented by the contractor during construction activities (see Section 2.1.4.4, *Avoidance, Minimization, and/or Mitigation Measures*, for a full description of this measure).

With implementation of this measure, advance notice and coordination with emergency service providers will be included in the Traffic Management Plan to minimize any potential temporary impacts on response times. Impacts would be **less than significant with mitigation incorporated**.

f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

As discussed in Section 2.1.1, *Land Use*, the Project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities. Therefore, there would be **no impact**. No mitigation is required.

3.2.17 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:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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), or	☐	☐	☐	☒
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. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

CEQA Significance Determinations for Tribal Cultural Resources

a) 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: Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

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. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

As discussed in Section 2.1.6, *Cultural Resources*, no tribal cultural resources have been identified within the Project APE. Therefore, there would be **no impact**. No mitigation is required.

3.2.18 Utilities and Service Systems

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) 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?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒
h) Result in a substantial increase in natural gas and electrical service demands that would require the new construction of energy supply facilities and distribution infrastructure or capacity enhancing alterations to existing facilities?	☐	☐	☐	☒

CEQA Significance Determinations for Utilities and Service Systems

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Construction of the build alternatives would generate minor amounts of wastewater, but they would not exceed wastewater treatment requirements of the Regional Water Quality Control Board due to requirements set forth in waste discharge requirements and in the Section 401 Water Quality Certification Permit. Impacts would be **less than significant**. No mitigation is required.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

e) 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?

Because the Project is not growth-inducing, the Project would not result in the construction of new water or wastewater treatment facilities or expansion of existing facilities; existing capacity is sufficient to serve the Project. Therefore, there would be **no impact**. No mitigation is required.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

As discussed in Section 2.2.2, *Water Quality*, the Project would use the existing stormwater system. The existing stormwater system would only need to account for the increase in stormwater volume from slope grade changes. Changes within the impervious surfaces are relatively small and would have little effect on runoff volume. Therefore, there would be **no impact**. No mitigation is required.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Because the Project is not growth-inducing, construction of the Project would not increase demand for potable water. No new or expanded entitlements would be needed to serve the Project. The Project would not result in substantial physical deterioration of public water facilities. Therefore, there would be **no impact**. No mitigation is required.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

The Project would generate small amounts of solid waste during construction. The City of Palo Alto's Construction and Debris Diversion Ordinance requires projects to salvage and/or divert at least 75% of project debris from landfills (City of Palo Alto 2015). The diverted debris would primarily be recycled at Zanker Recycling in San Jose. The remaining waste would go to landfill in which there is sufficient permitted capacity, such as Kirby Canyon Landfill in Morgan Hill or Ox Mountain Landfill in Half Moon Bay. Impacts would be **less than significant**. No mitigation is required.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

The Project would comply with all federal, state, and local statutes and regulations related to solid waste. Therefore, there would be **no impact**. No mitigation is required.

h) Result in a substantial increase in natural gas and electrical service demands that would require the new construction of energy supply facilities and distribution infrastructure or capacity enhancing alterations to existing facilities?

Because the Project is not growth-inducing, construction of the Project would not increase demand for natural gas and electrical services. No new construction of energy facilities or distribution infrastructure or capacity enhancing alterations to existing facilities would be required. Therefore, there would be **no impact**. No mitigation is required.

3.2.19 Mandatory Findings of Significance

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to 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?	☐	☒	☐	☐

CEQA Significance Determinations for Mandatory Findings of Significance

a) Does the project have the potential to 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?

As discussed in Section 2.1.5, *Visual/Aesthetics*, under all build alternatives, general construction activities, construction staging/stockpiling, the storage of building materials, the presence of construction equipment, and temporary traffic barricades would result in temporary visual impacts by altering the composition of the viewsheds throughout the Project corridor. However, construction activities would be temporary in duration and would be governed by city, state, and federal regulations and standards designed to minimize their potential to affect adjacent sensitive uses. In addition, the proposed Project would remove the existing bridge; construct new approaches, and accommodate bicycle and pedestrian travel (including sidewalk and potential road widening for sharrows); add and reconfigure utilities including street lighting; modify street signage; add retaining walls; and stabilize creek bank disturbed by the construction. Construction would also require the removal of trees to accommodate construction. Resource change (changes to visual resources as measured by changes in visual character and visual quality) would be moderate for Build Alternatives 1–3 during the short-term until replacement plantings can mature. As the replacement planting matures and the canopy is replaced, the visual character would regain some of its existing qualities associated with shading and creating an enclosed, intimate streetscape that would result in long-term resource change that is moderate-low. Build Alternative 4 would result in a resource change that is moderate for the short- and long-term because, even with mitigation, the tree canopy would not provide the sense of enclosure because view corridors would remain open and more development would be visible due to the bridge and roadway intersection realignment in East Palo Alto. Finally, overhead street lighting could negatively affect sensitive receptors if the replaced lighting is modified to include LED lighting that is not properly designed. In particular, LED lighting can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if proper shielding is not provided and blue-rich white light lamps are used.

As discussed in Section 2.2.4, *Paleontology*, unique paleontological resources could be affected by the Project because sensitive paleontological resources could occur at depths below 5 feet; therefore, it is possible that excavation could encounter sensitive paleontological resources. Hazardous materials, particularly lead, have the potential to affect the environment if they are released into the environment or not handled properly.

As discussed in Section 2.3, *Biological Resources*, construction of the Project on the proposed alignment would result in permanent loss of some riparian vegetation along San Francisquito Creek within the Project footprint. For the purposes of this analysis, it is assumed that all valley foothill riparian vegetation would be removed within the Project footprint. Protected and regulated trees in the cities of Palo Alto and East Palo Alto would also be removed. California red-legged frogs could be directly and indirectly affected by construction activities occurring in or adjacent to the BSA. If California red-legged frogs are present within the construction work area, they could be inadvertently killed or wounded by construction vehicles, construction personnel, or an accidental spill of toxic fluids. Construction activities associated with road and bridge construction in potential California red-legged frog habitat in the Project area could result in indirect effects on water quality downstream from the construction work area.

The proposed Project could also affect habitat conditions for Central California Coast steelhead. Activities associated with bridge removal and reconstruction and revegetation could increase erosional processes, thereby increasing sedimentation and turbidity in downstream waterways. Excessive sediment deposited in or near stream channels can degrade aquatic habitats. Increased turbidity can increase fish mortality, reduce feeding opportunities for fish including rearing steelhead, and cause fish to avoid important habitat. The effects on essential fish habitat for Pacific salmon would be same as the effects described for Central California Coast steelhead and other migratory fish.

Additionally, the creek qualifies as a water of the U.S. because it supports a defined bed and bank and a well-defined ordinary high water mark. Construction activities that could occur within the creek include installation of check dams, such as clean gravel dams or any other type of approved Caltrans standard dam, and BMPs. Excavation for removal of the existing abutments and construction of the new abutments would be accomplished using an excavator located on the existing roadway and no equipment would enter the creek. Pilings will be placed on the banks with a vibratory hammer. Indirect impacts on intermittent stream habitat could also occur from adjacent construction activity due to erosion and sedimentation and discharge of pollutants into the creek. Implementation of the avoidance and minimization measures would prevent these indirect effects on San Francisquito Creek during construction.

As discussed in Section 2.16, *Cultural Resources*, there is limited archaeological sensitivity within the APE and it is not anticipated that previously unidentified prehistoric or historic archaeological sites are located in the APE (California Department of Transportation 2017c). However, unknown cultural materials or human remains could be discovered during construction.

These impacts are potentially significant and the following mitigation measures are proposed.

- MM-AES-1: Install Visual Barriers between Construction Work Areas and Sensitive Receptors
- MM-AES-2: Replace or Relocate Site Features and Landscaping Affected by the Project
- MM-AES-3: Implement Project Design Aesthetics
- MM-AES-4: Implement Project Streetscaping and Plantings along Top of Creek Bank
- MM-AES-5: Apply Minimum Lighting Standards
- MM-PA-1: Educate workers and stop work in case of discovery of paleontological resources
- MM-HAZ-1: Properly Dispose of and Abate Potential Lead-Based Paint
- MM-HAZ-2: Properly Handle and Dispose of Potentially Contaminated Soils and Materials
- MM-BIO-1: Compensate for Permanent Loss of Valley Foothill Riparian
- MM-BIO-2: Tree Replacement Plan
- AMM-BIO-1: Install Construction Barrier Fencing around Environmentally Sensitive Areas
- AMM-BIO-2: Prepare Environmental Awareness Program and Conduct Environmental Awareness Training for Construction Employees
- AMM-BIO-3: Retain a Biological Monitor to Conduct Visits during Construction
- AMM-BIO-4: Avoid and Minimize Potential Disturbance of Valley Foothill Riparian Community
- AMM-BIO-5. Protect Water Quality and Prevent Erosion and Sedimentation in San Francisquito Creek
- AMM-BIO-9: Avoid Work during Active Breeding and Dispersal Period for Special-Status Frogs (October 15 through June 1)
- AMM-BIO-10: Conduct Preconstruction Surveys at Work Sites in and near Frog-Sensitive Areas (no more than 3 days prior to onset of construction)
- AMM-BIO-11: Provide Construction Worker Awareness Training for Special-Status Frogs
- AMM-BIO-12: Install Exclusion Fencing and Conduct Construction Monitoring for Special-Status Frogs
- AMM-BIO-13: Limit Stream Bank Construction to Dry Season (June 1 through October 15)
- SM-CUL-1: If cultural materials are discovered during construction, the contractor will cease all earth-moving activity within and around the immediate discovery area until a qualified archaeologist can assess the nature and significance of the find and recommend/implement appropriate data collection/recovery activities.
- SM-CUL-2: If human remains are discovered, State Health and Safety Code Section 7050.5 states that the contractor will stop further disturbances and activities in any area or nearby area suspected to overlie remains, and the contractor will contact the County Coroner. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the MLD. At this time, the person who discovered the remains will contact the Caltrans District 4 Office of Local Assistance archaeologist so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

With implementation of the above measures, the impacts on aesthetics, unique paleontological resources, hazardous materials, biological resources, and cultural resources are **less than significant with mitigation incorporated**.

b) Does the project have impacts that are individually limited, but cumulatively considerable?

The Project would not have cumulatively considerable impacts on aesthetics, unique paleontological resources, hazardous materials, and biological resources because avoidance, minimization, and mitigation measures proposed for the Project, identified under Topic (a) above, as well as for other reasonably foreseeable future projects would minimize potential impacts on these resources. Impacts would be **less than significant with mitigation incorporated**.

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

Per Table 2.2.6-3 in Section 2.2.6, *Air Quality*, all construction emissions would be less than the BAAQMD daily threshold except for NO_X, which would be higher than the threshold. With respect to toxic air contaminants, nearby sensitive receptors could be exposed to substantial pollutant concentrations such as diesel particulate matter and emissions of PM2.5 from exhaust sources during construction.

As discussed in Section 2.2.7, *Noise*, noise from Project construction activities may intermittently dominate the noise environment in the immediate area of construction. Equipment operations associated with demolition and building activities would be a source of noise. Implementation of detours may increase noise in some areas as a result of temporarily diverted traffic. Noise increases during construction could be substantial at nearby residences.

Impacts are potentially significant and the following mitigation measures and standard measures are proposed (see Section 2.2.6.4, *Avoidance, Minimization, and/or Mitigation Measures*, and Section 2.2.7.4, *Avoidance, Minimization, and/or Mitigation Measures*, for the full description of these measures).

- MM-AQ-1: Utilize clean diesel-powered equipment during construction to control construction-related NO_X emissions
- SM-AQ-1: Implement California Department of Transportation Standard Specifications
- SM-AQ-2: Implement BAAQMD Basic Control Measures to Control Construction-Related Dust
- SM-NOI-1: The construction contractor must comply with Caltrans Standard Specifications Section 14-8.02, Noise Control, which states the following:
    - Control and monitor noise resulting from work activities.
    - Do not exceed 86 dBA at 50 feet from the job site activities from 9:00 p.m. to 6:00 a.m.
- SM-NOI-2: All equipment used by the contractor will have sound-control devices that are no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust.
- SM-NOI-3: The Project proponent and/or their construction contractor will do the following.
    - Review and ensure that construction activities are conducted in accordance with local noise standards from the cities of Palo Alto and East Palo Alto.

  - Implement additional noise mitigation measures, including changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity to allowed timeframes, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources, as appropriate.
- MM-NOI-1: Provide advance notification of construction schedule and 24-hour hotline to residents
- MM-NOI-2: Designate a noise disturbance coordinator to address resident concerns
- MM-NOI-3: Install temporary noise barriers

With implementation of these measures, construction air quality emissions would be below all applicable BAAQMD pollutant thresholds with equipment that meets Tier 4 standards, nearby sensitive receptors would not likely be exposed to substantial pollutant concentrations, and potential increases in noise that residents find to be disturbing would be mitigated through the advance notification and noise disturbance coordinator. Therefore, impacts would be **less than significant with mitigation incorporated**.

3.3 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to GHG emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), HFC-23 (fluoroform), HFC-134a (s, s, s, 2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles) are the largest contributors of GHG emissions. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

Two terms are typically used when discussing how we address the impacts of climate change: “greenhouse gas mitigation” and “adaptation.” "Greenhouse gas mitigation" is a term for reducing GHG emissions to reduce or "mitigate" the impacts of climate change. “Adaptation" refers to planning for and responding to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).

3.3.1 Regulatory Setting

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

3.3.1.1 Federal

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level.

NEPA (42 USC Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

FHWA recognizes the threats that extreme weather, sea-level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices. This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values—"the triple bottom line of sustainability." Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life. Addressing these factors up front in the planning process will assist in decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision-making.

Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects.

The Energy Policy Act of 1992 (EPACT92, 102nd Congress H.R.776.ENR): With this act, Congress set goals, created mandates, and amended utility laws to increase clean energy use and improve overall energy efficiency in the United States. EPACT92 consists of 27 titles detailing various measures designed to lessen the nation's dependence on imported energy, provide incentives for clean and renewable energy, and promote energy conservation in buildings. Title III of EPACT92 addresses alternative fuels. It gave the U.S. Department of Energy administrative power to regulate the minimum number of light-duty alternative fuel vehicles required in certain federal fleets beginning in fiscal year 1993. The primary goal of the Program is to cut petroleum use in the United States by 2.5 billion gallons per year by 2020.

Energy Policy Act of 2005 (109th Congress H.R.6 (2005–2006): This act sets forth an energy research and development program covering: (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) Indian energy; (6) nuclear matters and security; (7) vehicles and motor fuels, including ethanol; (8) hydrogen; (9) electricity; (10) energy tax incentives; (11) hydropower and geothermal energy; and (12) climate change technology.

Energy Policy and Conservation Act of 1975 (42 USC Section 6201) and Corporate Average Fuel Standards: This act establishes fuel economy standards for on-road motor vehicles sold in the United States. Compliance with federal fuel economy standards is determined through the Corporate Average Fuel Economy (CAFE) program on the basis of each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States.

Executive Order (EO) 13514, Federal Leadership in Environmental, Energy, and Economic Performance, 74 Federal Register 52117 (October 8, 2009): This federal EO set sustainability goals for federal agencies and focuses on making improvements in their environmental, energy, and economic performance. It instituted as policy of the United States that federal agencies measure, report, and reduce their GHG emissions from direct and indirect activities.

EO 13693, Planning for Federal Sustainability in the Next Decade, 80 Federal Register 15869 (March 2015): This EO reaffirms the policy of the United States that federal agencies measure, report, and reduce their GHG emissions from direct and indirect activities. It sets sustainability goals for all agencies to promote energy conservation, efficiency, and management by reducing energy consumption and GHG emissions. It builds on the adaptation and resiliency goals in previous EOs to ensure agency operations and facilities prepare for impacts of climate change. This order revokes EO 13514.

The U.S. Environmental Protection Agency's (EPA's) authority to regulate GHG emissions stems from the U.S. Supreme Court decision in Massachusetts v. EPA (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six GHGs constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and EPA's assessment of the scientific evidence that form the basis for EPA's regulatory actions.

EPA in conjunction with the National Highway Traffic Safety Administration (NHTSA) issued the first of a series of GHG emission standards for new cars and light-duty vehicles in April 2010 and significantly increased the fuel economy of all new passenger cars and light trucks sold in the United States. The standards required these vehicles to meet an average fuel economy of 34.1 miles per gallon by 2016. In August 2012, the federal government adopted the second rule that increases fuel economy for the fleet of passenger cars, light-duty trucks, and medium-duty passenger vehicles for model years 2017 and beyond to average fuel economy of 54.5 miles per gallon by 2025. Because NHTSA cannot set standards beyond model year 2021 due to statutory obligations and the rules' long timeframe, a mid-term evaluation is included in the rule. The Mid-Term Evaluation is the overarching process by which NHTSA, EPA, and the California Air Resources Board (ARB) will decide on CAFE and GHG emissions standard stringency for model years 2022–2025. NHTSA has not formally adopted standards for model years 2022 through 2025. However, the EPA finalized its mid-term review in January 2017, affirming that the target fleet average of at least 54.5 miles per gallon by 2025 was appropriate. In March 2017, President Trump ordered EPA to reopen the review and reconsider the mileage target.

NHTSA and EPA issued a Final Rule for "Phase 2" for medium- and heavy-duty vehicles to improve fuel efficiency and cut carbon pollution in October 2016. The agencies estimate that the standards will save up to 2 billion barrels of oil and reduce CO_2 emissions by up to 1.1 billion metric tons over the lifetimes of model year 2018–2027 vehicles.

Presidential EO 13783, Promoting Energy Independence and Economic Growth, of March 28, 2017, orders all federal agencies to apply cost-benefit analyses to regulations of GHG emissions and evaluations of the social cost of carbon, nitrous oxide, and methane.

3.3.1.2 State

With the passage of legislation including State Senate Bills (SBs) and Assembly Bills (ABs) and EOs, California has been innovative and proactive in addressing GHG emissions and climate change.

AB 1493, Pavley Vehicular Emissions: Greenhouse Gases, 2002: This bill requires ARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year.

EO S-3-05 (June 1, 2005): The goal of this EO is to reduce California's GHG emissions to: (1) year 2000 levels by 2010, (2) year 1990 levels by 2020, and (3) 80% below year 1990 levels by 2050. This goal was further reinforced with the passage of AB 32 in 2006 and SB 32 in 2016.

AB 32, Chapter 488, 2006: Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that ARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code Section 38551(b)). The law requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

EO S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency and state agencies with regard to climate change.

EO S-01-07 (January 18, 2007): This order sets forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10% by the year 2020. ARB re-adopted the low carbon fuel standard regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low-carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG reduction goals.

SB 97, Chapter 185, 2007, Greenhouse Gas Emissions: This bill requires the Governor's Office of Planning and Research to develop recommended amendments to the CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

SB 375, Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets for passenger vehicles. The Metropolitan Planning Organization for each region must then develop a "Sustainable Communities Strategy" that integrates transportation, land-use, and housing policies to plan how it will achieve the emissions target for its region.

SB 391, Chapter 585, 2009, California Transportation Plan: This bill requires the state's long-range transportation plan to meet California's climate change goals under AB 32.

EO B-16-12 (March 2012) orders State entities under the direction of the Governor, including ARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero-emission vehicles. It directs these entities to achieve various benchmarks related to zero-emission vehicles.

EO B-30-15 (April 2015) establishes an interim statewide GHG emission reduction target of 40% below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80% below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent ($MMTCO_2e$). Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy, Safeguarding California, every 3 years, and to ensure that its provisions are fully implemented.

SB 32 Chapter 249, 2016, codifies the GHG reduction targets established in EO B-30-15 to achieve a mid-range goal of 40% below 1990 levels by 2030.

3.3.2 Environmental Setting

In 2006, the Legislature passed the California Global Warming Solutions Act of 2006 (AB 32), which created a comprehensive, multi-year program to reduce GHG emissions in California. AB 32 required ARB to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020. The Scoping Plan was first approved by ARB in 2008 and must be updated every 5 years. ARB approved the First Update to the Climate Change Scoping Plan on May 22, 2014. ARB is moving forward with a discussion draft of an updated Scoping Plan that will reflect the 2030 target established in EO B-30-15 and SB 32.

The AB 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the Draft Scoping Plan, ARB released the GHG inventory for California. ARB is responsible for maintaining and updating California's GHG Inventory per H&SC Section 39607.4. The associated forecast/projection is an estimate of the emissions anticipated to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented.

An emissions projection estimates future emissions based on current emissions, expected regulatory implementation, and other technological, social, economic, and behavioral patterns. The projected 2020 emissions provided in Figure 3.3-1 represent a business-as-usual (BAU) scenario assuming none of the Scoping Plan measures are implemented. The 2020 BAU emissions estimate assists ARB in demonstrating progress toward meeting the 2020 goal of 431 $MMTCO_2e$. The 2017 edition of the GHG emissions inventory (released June 2017) found total California emissions of 440.4 $MMTCO_2e$, showing progress towards meeting the AB 32 goals.

The 2020 BAU emissions projection was revisited in support of the First Update to the Scoping Plan (2014). This projection accounts for updates to the economic forecasts of fuel and energy demand as well as other factors. It also accounts for the effects of the 2008 economic recession and the projected recovery. The total emissions expected in the 2020 BAU scenario include reductions anticipated from Pavley I and the Renewable Electricity Standard (30 $MMTCO_2e$ total). With these reductions in the baseline, estimated 2020 statewide BAU emissions are 509 $MMTCO_2e$.

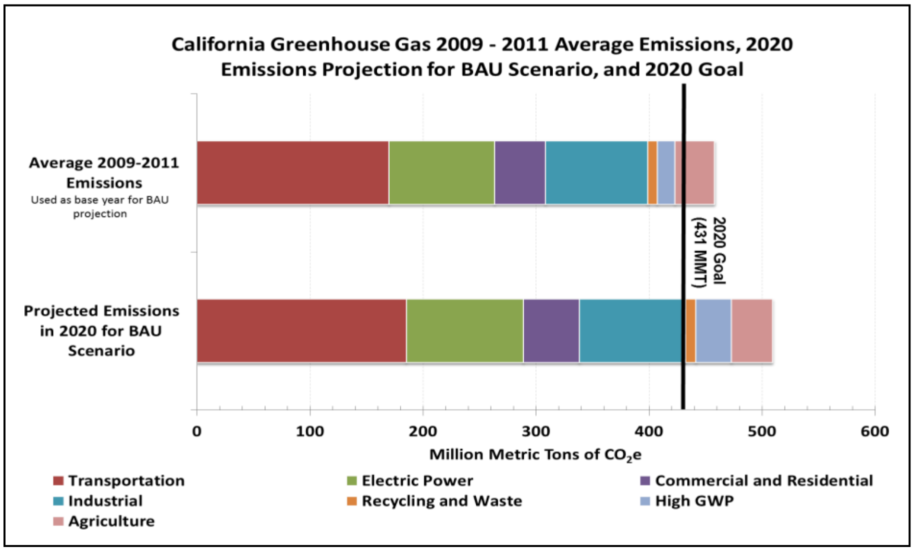

Figure 3.3-1. 2020 Business as Usual (BAU) Emissions Projection 2014 Edition

3.3.3 Project Analysis

An individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may contribute to a potential impact through its incremental change in emissions when combined with the contributions of all other sources of GHG. In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130). To make this determination the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult, if not impossible, task.

GHG emissions for transportation projects can be divided into those produced during operations and those produced during construction. The following represents a best faith effort to describe the potential GHG emissions related to the proposed project.

Four primary strategies can reduce GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity), (3) transitioning to lower GHG-emitting fuels, and (4) improving vehicle technologies/efficiency. To be most effective all four strategies should be pursued concurrently.

FHWA supports these strategies to lessen climate change impacts, which correlate with efforts that the state of California is undertaking to reduce GHG emissions from the transportation sector.

The highest levels of CO_2 from mobile sources such as automobiles occur at stop-and-go speeds (0–25 miles per hour) and speeds over 55 miles per hour; the most severe emissions occur from 0–25 miles per hour (Figure 3.3-2). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.

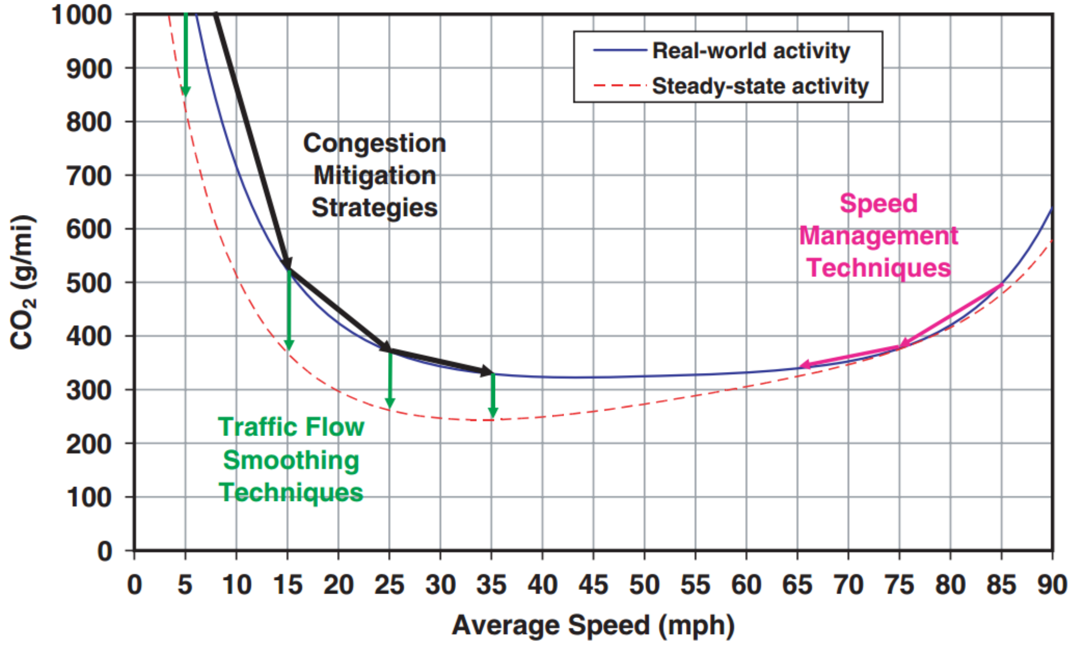

Figure 3.3-2. Possible Effect of Traffic Operation Strategies in Reducing On-Road CO_2 Emission[1]

One of the primary purposes of the Project is to improve the operational safety of the existing bridge. Congestion may worsen or improve depending on the specific alternative that is constructed. For example, a one-way bridge with a traffic signal (Build Alternative 1) may result in increased delay and/or congestion due to the addition of the signal. However, replacing the existing one-way bridge with a two-way bridge (Build Alternatives 2–4) may result in improved congestion. The Project is included in the current RTP, Play Bay Area, but, because the Project is intended to improve safety, it is not necessarily consistent with the RTP's goal of reducing vehicle miles travelled (VMT). It should be noted, however, that replacing the existing bridge with a new bridge would improve bicycle and pedestrian connectivity.

Operational GHG emissions for the Project would occur from the effect of diverted trips. Table 3.3-1 shows the annual GHG emissions that would occur for the Build Alternatives. Currently, there are no federal or state standards set for CO_2 emissions; therefore, the estimated emissions shown in Table 3.3-1 are only useful for a comparison between existing (2016), opening (2020), and design year (2040) conditions. Table 3.3-1 also shows the annual increases in VMT that would occur for each build alternative. This table shows that there would be a reduction in GHG emissions under all build alternatives between 2016, 2020, and 2040 due to improved operation.

As shown in Table 3.3-1, the alternatives would result in different patterns of route diversions, and, consequently, varying increases in VMT and GHG emissions. Increases would be the greatest in 2040 due to the continued growth in population and economic activity in the City of Palo Alto and the surrounding region. Presenting emissions and VMT increases for the existing year, 2020, and 2040 allows for a near- and far-term evaluation of the Project's impacts on climate change.

[1] *Source: Matthew Barth and Kanok Boriboonsomsin, University of California, Riverside, May 2010 (http://uctc.berkeley.edu/research/papers/846.pdf)*

Table 3.3-1. Summary of Operational GHG Emissions Increases—Existing Year, Opening Year and Design Year (metric tons per year)[1]

Year	CO_2	Other[2]	CO_2e	Annual VMT Increase Relative to No Build Conditions
2016				
Build Alternative 1	12	1	13	30,002
Build Alternative 2 (LPA)	12	1	13	30,002
Build Alternative 3	18	1	19	45,002
Build Alternative 4	31	2	32	75,004
2020				
Build Alternative 1	11	1	12	31,202
Build Alternative 2 (LPA)	12	1	12	31,202
Build Alternative 3	17	1	18	46,803
Build Alternative 4	29	1	30	78,004
2040				
Build Alternative 1	9	< 1	10	38,093
Build Alternative 2 (LPA)	9	< 1	10	38,093
Build Alternative 3	14	1	15	57,139
Build Alternative 4	24	1	25	95,232

Source: California Department of Transportation 2018

[1] Daily GHG emissions were converted into annual emissions by multiplying by a standard factor of 347 days per year, to account for reduced volumes on weekends

[2] Includes methane (CH_4), nitrous oxide (N_2O), and other trace GHG emissions emitted by typical passenger vehicles (U.S. Environmental Protection Agency 2014).

CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; GHG = greenhouse gas; LPA = locally preferred alternative; VMT = vehicle miles travelled

While EMFAC has a rigorous scientific foundation and has been vetted through multiple stakeholder reviews, its emission rates are based on tailpipe emission test data. The numbers are estimates of CO_2 emissions and not necessarily the actual CO_2 emissions. The model does not account for factors such as the rate of acceleration and the vehicles' aerodynamics, which would influence CO_2 emissions. To account for CO_2 emissions, ARB's GHG Inventory follows the Intergovernmental Panel on Climate Change guideline by assuming complete fuel combustion, while still using EMFAC data to calculate CH_4 and N_2O emissions. Though EMFAC is currently the best available tool for use in calculating GHG emissions, it is important to note that the CO_2 numbers provided are only useful for a comparison of alternatives.

3.3.4 Construction Emissions

Construction GHG emissions would result from material processing, on-site construction equipment, and traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be offset to some degree by longer intervals between maintenance and rehabilitation activities.

The Sacramento Metropolitan Air Quality Management District's Road Construction Emissions Model was used to estimate CO_2 emissions from construction activities. Table 3.3-2 summarizes estimated GHG emissions generated by on-site construction equipment over the 12-month construction period. Measures that can be implemented to reduce construction emissions include maintenance of construction equipment and vehicles, limiting of construction vehicle idling time, and scheduling and routing of construction traffic to reduce engine emissions.

Table 3.3-2. GHG Emissions from Construction of Project—All Build Alternatives

Construction Equipment and Construction Worker Commute Trips			
CO_2	**CH_4**	**N_2O**	**CO_2e**
1,093 MT	0.2 MT	0.01 MT	1,000 MT CO_2e

Source: California Department of Transportation 2017a

CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent; MT = metric tons

Based on project information available for environmental studies, the construction-related CO_2 emissions were calculated using the Road Construction Emissions Model, version 8.1.0, provided by the Sacramento Metropolitan Air Quality Management District. It was estimated that the total amount of CO_2 produced due to bridge replacement construction would be 1,093 tons annually and for the entire construction period, because the construction duration would be 1 year.

3.3.4.1 CEQA Conclusion

While the build alternatives would result in a slight increase in GHG emissions during construction, it is anticipated that any increase in GHG emissions would be offset by the reduction of GHG emissions from the operational improvements of the build alternatives. Measures to help reduce GHG emissions are outlined in the following section.

3.3.5 Greenhouse Gas Reduction Strategies

3.3.5.1 Statewide Efforts

In an effort to further the vision of California's GHG reduction targets outlined an AB 32 and SB 32, Governor Brown identified key climate change strategy pillars (concepts), as shown in Figure 3.3-3. These pillars highlight the idea that several major areas of the California economy will need to reduce emissions to meet the 2030 GHG emissions target. These pillars are (1) reducing today's petroleum use in cars and trucks by up to 50%; (2) increasing from one-third to 50% our electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived climate pollutants; (5) managing farm and rangelands, forests, and wetlands so they can store carbon; and (6) periodically updating the state's climate adaptation strategy, Safeguarding California.

Figure 3.3-3. The Governor's Climate Change Pillars: 2030 Greenhouse Gas Reduction Goals

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that we build on our past successes in reducing criteria and toxic air pollutants from transportation and goods movement activities. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of vehicle miles traveled. One of Governor Brown's key pillars sets the ambitious goal of reducing today's petroleum use in cars and trucks by up to 50% by 2030.

Governor Brown called for support to manage natural and working lands, including forests, rangelands, farms, wetlands, and soils, so they can store carbon. These lands have the ability to remove carbon dioxide from the atmosphere through biological processes, and to then sequester carbon in above- and below-ground matter.

3.3.5.2 Caltrans Activities

Caltrans continues to be involved on the Governor's Climate Action Team as the ARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set a new interim target to cut GHG emissions to 40% below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

California Transportation Plan (CTP 2040)

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. The CTP defines performance-based goals, policies, and strategies to achieve our collective vision for California's future statewide, integrated, multimodal transportation system. It serves as an umbrella document for all of the other statewide transportation planning documents.

SB 391 (Liu 2009) requires the CTP to meet California's climate change goals under AB 32. Accordingly, the CTP 2040 identifies the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs. While

Metropolitan Planning Organizations have primary responsibility for identifying land use patterns to help reduce GHG emissions, CTP 2040 identifies additional strategies in Pricing, Transportation Alternatives, Mode Shift, and Operational Efficiency.

Caltrans Strategic Management Plan

The Strategic Management Plan, released in 2015, creates a performance-based framework to preserve the environment and reduce GHG emissions, among other goals. Specific performance targets in the plan that will help to reduce GHG emissions include:

- Increasing percentage of non-auto mode share
- Reducing VMT per capita
- Reducing Caltrans' internal operational (buildings, facilities, and fuel) GHG emissions

Funding and Technical Assistance Programs

In addition to developing plans and performance targets to reduce GHG emissions, Caltrans also administers several funding and technical assistance programs that have GHG reduction benefits. These include the Bicycle Transportation Program, Safe Routes to School, Transportation Enhancement Funds, and Transit Planning Grants. A more extensive description of these programs can be found in Caltrans Activities to Address Climate Change (2013).

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) is intended to establish a department policy that will ensure coordinated efforts to incorporate climate change into departmental decisions and activities.

Caltrans Activities to Address Climate Change (April 2013) provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce GHG emissions resulting from agency operations.

3.3.5.3 Project-Level GHG Reduction Strategies

The following measures will also be implemented in the Project to reduce GHG emissions and potential climate change impacts from the Project.

- Landscaping reduces surface warming, and through photosynthesis, decreases carbon dioxide. The Project will include landscaping, as described in Section 2.1.5, *Visual/ Aesthetics*. The landscaping will help to offset potential carbon dioxide emissions.
- The Project will utilize energy-efficient lighting, which will be defined during final design.
- According to the Caltrans Standard Specifications, the contractor must comply with all local Air Pollution Control District's rules, ordinances, and regulations in regards to air quality restrictions, as described in Section 2.2.6, *Air Quality*.
- To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times, as described in Section 2.2.6, *Air Quality*.
- Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by California Code of Regulations Title 17, Section 93114, as described in Section 2.2.6, *Air Quality*.

3.3.5.4 Adaptation Strategies

"Adaptation strategies" refer to how Caltrans and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage—or, put another way, planning and design for resilience. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damage to roadbeds from longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. These types of impacts on the transportation infrastructure may also have economic and strategic ramifications.

Federal Efforts

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the Council on Environmental Quality, the Office of Science and Technology Policy, and the National Oceanic and Atmospheric Administration, released its interagency task force progress report on October 28, 2011, outlining the federal government's progress in expanding and strengthening the nation's capacity to better understand, prepare for, and respond to extreme events and other climate change impacts. The report provided an update on actions in key areas of federal adaptation, including: building resilience in local communities, safeguarding critical natural resources such as fresh water, and providing accessible climate information and tools to help decision-makers manage climate risks.

The federal Department of Transportation (USDOT) issued USDOT Policy Statement on Climate Adaptation in June 2011, committing to "integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of USDOT in order to ensure that taxpayer resources are invested wisely and that transportation infrastructure, services and operations remain effective in current and future climate conditions."

To further the USDOT Policy Statement, in December 15, 2014, FHWA issued order 5520 (Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events). This directive established FHWA policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. The FHWA will work to integrate consideration of these risks into its planning, operations, policies, and programs in order to promote preparedness and resilience; safeguard federal investments; and ensure the safety, reliability, and sustainability of the nation's transportation systems.

FHWA has developed guidance and tools for transportation planning that fosters resilience to climate effects and sustainability at the federal, state, and local levels.

State Efforts

On November 14, 2008, then-Governor Arnold Schwarzenegger signed EO S-13-08, which directed a number of state agencies to address California's vulnerability to sea-level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea-level rise and directed all state agencies planning to construct projects in areas vulnerable to future sea-level rise to consider a range of sea-level rise scenarios for the years 2050 and 2100, assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea-level rise. Sea-level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high water levels, and storm surge and storm wave data.

Governor Schwarzenegger also requested the National Academy of Sciences to prepare an assessment report to recommend how California should plan for future sea-level rise. The final report, Sea-Level Rise for the Coasts of California, Oregon, and Washington (Sea-Level Rise Assessment Report) was released in June 2012 and included relative sea-level rise projections for the three states, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates; and the range of uncertainty in selected sea-level rise projections. It provided a synthesis of existing information on projected sea-level rise impacts on state infrastructure (such as roads, public facilities, and beaches), natural areas, and coastal and marine ecosystems; and a discussion of future research needs regarding sea-level rise.

In response to EO S-13-08, the California Natural Resources Agency (Resources Agency), in coordination with local, regional, state, federal, and public and private entities, developed The California Climate Adaptation Strategy (December 2009), which summarized the best available science on climate change impacts on California, assessed California's vulnerability to the identified impacts, and outlined solutions that can be implemented within and across state agencies to promote resiliency. The adaptation strategy was updated and rebranded in 2014 as Safeguarding California: Reducing Climate Risk (Safeguarding California Plan).

Governor Jerry Brown enhanced the overall adaptation planning effort by signing EO B-30-15 in April 2015, requiring state agencies to factor climate change into all planning and investment decisions. In March 2016, sector-specific Implementation Action Plans that demonstrate how state agencies are implementing EO B-30-15 were added to the Safeguarding California Plan. This effort represents a multi-agency, cross-sector approach to addressing adaptation to climate change-related events statewide.

EO S-13-08 also gave rise to the State of California Sea-Level Rise Interim Guidance Document (SLR Guidance), produced by the Coastal and Ocean Working Group of the California Climate Action Team, of which Caltrans is a member. First published in 2010, the document provided “guidance for incorporating sea-level rise (SLR) projections into planning and decision making for projects in California,” specifically, “information and recommendations to enhance consistency across agencies in their development of approaches to SLR.” The March 2013 update finalizes the SLR Guidance by incorporating findings of the National Academy’s 2012 final Sea-Level Rise Assessment Report; the policy recommendations remain the same as those in the 2010 interim SLR Guidance. The guidance will be updated as necessary in the future to reflect the latest scientific understanding of how the climate is changing and how this change may affect the rates of SLR.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation, and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. Caltrans is actively engaged in in working towards identifying these risks throughout the state and will work to incorporate this information into all planning and investment decisions as directed in EO B-30-15.

The Project is outside the coastal zone and not in an area subject to sea-level rise. Accordingly, direct impacts on transportation facilities due to projected sea-level rise are not expected.

3.4 Environmentally Superior Alternative

The State CEQA Guidelines require that an environmentally superior alternative be identified. The environmentally superior alternative is the alternative that would avoid the environmental impacts associated with a project or lessen them to the greatest extent while feasibly obtaining most of the major project objectives. If the alternative with the least environmental impact is determined to be the No-Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

Table ES-1 in the Summary and the various sections of Chapters 2 and 3 provide a comparison of the environmental impacts of the build alternatives. The No Build Alternative would have less of an environmental impact on almost all environmental resource topics but a slightly greater impact on hydrology and water quality due to the absence of additional bank stabilization activities. Build Alternatives 1 and 2 would require one less Temporary Construction Easement than Build Alternatives 3 and 4. Under 2020 and 2040 traffic scenarios, there is no substantial difference in LOS and delay between the build alternatives, with the exception of Build Alternative 1. Build Alternatives 2, 3, and 4, accounting for the increase in traffic along Newell Road, do not substantially alter the LOS under either of the scenarios. Build Alternative 1, however, results in a higher delay at Newell Road/Woodland Avenue (North Leg) for both scenarios, as compared to Build Alternatives 2, 3, and 4.

Build Alternatives 1, 2, and 3 would result in a moderate visual impact, while Build Alternative 4 would result in a moderate-high visual impact. Build Alternative 1 would result in the least amount of disturbed soil area, added impervious surfaces, and impact on natural communities and trees, while Build Alternative 4 would result in the greatest amount, with Build Alternatives 2 and 3 in the middle. Build Alternatives 3 and 4 could impact sensitive paleontological resources during construction, while Build Alternatives 1 and 2 would not. The bridge alignment under Build Alternative 4 would result in a slightly higher noise increase at the nearest receivers of up to 2 dB relative to existing conditions, and up to 1 dB under future no-Project conditions.

The No Build Alternative would be the environmentally superior alternative among all of the alternatives because it would result in fewer impacts overall. However, because the No Build Alternative would not fulfill the purpose and need of the Project and is required to be included in the EIR by CEQA, another alternative must be identified as the environmentally superior alternative.

Build Alternative 2 would generally result in fewer environmental impacts when compared to the other build alternatives because the existing alignment of the bridge would not change. In addition, Build Alternative 2 would not result in the higher delay at Newell Road/Woodland Avenue (North Leg) that Build Alternative 1 would result in. Therefore, Build Alternative 2 is considered the environmentally superior alternative.

Chapter 4
Comments and Coordination

Early and continuing coordination with the general public and public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation and the level of analysis required, and to identify potential impacts and avoidance, minimization, and/or mitigation measures and related environmental requirements. Agency and tribal consultation and public participation for this Project have been accomplished through a variety of formal and informal methods, including Project Development Team meetings, interagency coordination meetings, letters, phone calls, and meetings with the public. This chapter summarizes the results of the California Department of Transportation's (Caltrans') and the City of Palo Alto's efforts to fully identify, address, and resolve Project-related issues through early and continuing coordination. Copies of agency correspondence are included in Appendix D.

4.1 Scoping Process

The Notice of Preparation, which initiated the scoping process, was released in August 2015 and is included in Appendix C. A scoping meeting was held by the Cities of Palo Alto and East Palo Alto on September 3, 2015, at 6:30 p.m. at the Palo Alto City Hall Council Chambers, 250 Hamilton Avenue, Palo Alto. City and consultant staff presented a PowerPoint presentation that described the Project and the environmental review process. Following the presentation, oral comments were accepted. Attendees were also invited to fill out public comments. A total of 47 public comments were received during the comment period, which lasted from August 12, 2015, through September 14, 2015. The City of Palo Alto recorded the meeting, which can be viewed online at the following link: http://midpenmedia.org/newell-roadsan-francisquito-creek-bridge-replacement-project/.

The main concern raised by commenters was that realigning the bridge would result in an increase in traffic flow, speed, and bad driving behaviors; however, many commenters said that the realignment would increase vehicle, bicycle, and pedestrian safety.

4.2 Agency Consultation

This section summarizes the results of contact and consultation with other public agencies during project development. These include specific consultation with federal, state, and local agencies listed below. Copies of written consultation with agencies are included in Appendix D unless otherwise noted.

4.2.1 U.S. Fish and Wildlife Service

Caltrans conducted informal consultation with the U.S. Fish and Wildlife Service (USFWS). USFWS reviews projects consistent with Section 7 of the Federal Endangered Species Act, focusing on identified or potential impacts to protected plant and wildlife species for the build alternatives as described in Section 2.3.5, *Threatened and Endangered Species*. Consultation with USFWS is also required under the Federal Fish and Wildlife Coordination Act for any impacts to a stream or water body. Caltrans requested informal consultation on the California red-legged frog and sent a letter to USFWS on January 22, 2018. Concurrence from USFWS was received on March 20, 2018. Correspondence with USFWS is contained in Appendix D.

4.2.2 National Marine Fisheries Service

Caltrans conducted informal consultation with the National Oceanic and Atmospheric Administration's National Marine Fisheries Services (NOAA Fisheries Service). NOAA Fisheries Service also reviews projects consistent with Section 7 of the Federal Endangered Species Act, focusing on identified or potential impacts to protected marine species for the build alternatives as described in Section 2.3.5, Threatened and Endangered Species. Caltrans requested informal consultation on the Central California Coast steelhead and essential fish habitat and sent a letter to the NOAA Fisheries Service on January 22, 2018. Concurrence from the NOAA Fisheries Service was received on March 29, 2018. Correspondence with NOAA Fisheries Service is contained in Appendix D.

4.2.3 U.S. Army Corps of Engineers

Any filling of wetlands or impacts to the waters of the United States or navigable waters requires permit review and approval by the U.S. Army Corps of Engineers consistent with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Impacts to wetlands are not anticipated under any of the build alternatives, as described in Section 2.3.2, *Wetlands and Other Waters of the United States*. The *Delineation of Waters of the United States* will be submitted to the U.S. Army Corps of Engineers for their review and verification of the presence of jurisdictional waters prior to completion of the environmental process.

4.2.4 U.S. Environmental Protection Agency

The City of Palo Alto will consult the U.S. Environmental Protection Agency to obtain a Section 402 Clean Water Act permit which controls discharges of Municipal Separate Storm Sewer Systems. This permit will be obtained during final design.

4.2.5 Federal Highway Administration

The Federal Highway Administration's (FHWA's) plans, programs, and projects are required to conform to the applicable State Implementation Plan for achieving National Ambient Air Quality Standards. This applies to transportation plans, transportation improvement programs, and projects funded or approved by FHWA or the Federal Transit Administration in areas that do not meet or previously have not met air quality standards for ozone (O_3), carbon monoxide (CO), particulate matter, or nitrogen dioxide (NO_2). The Project area is exempt from regional conformity analysis requirements, as described in Section 2.2.6, *Air Quality*. Caltrans will request that FHWA issue a project-level conformity determination for this Project prior to completion of the environmental process, confirming that the project conforms to the purpose of the State Implementation Plan for achieving the National Ambient Air Quality Standards.

4.2.6 State Historic Preservation Officer

Federally funded transportation projects must follow FHWA and Caltrans procedures for historic preservation. A Programmatic Agreement for compliance with Section 106 of the National Historic

Preservation Act would apply to this Project. No resources in the Project area were identified as being eligible for the National Register of Historic Places. A letter was sent to the State Historic Preservation Officer on October 27, 2017, to confirm the eligibility determinations of the properties in the area of potential effects. On November 30, 2017, they concurred with the findings that the properties evaluated are not eligible for the National Register of Historic Places. Correspondence with the State Historic Preservation Officer is contained in Appendix D.

4.2.7 State Water Resources Control Board

Projects that disturb 1 acre or more of land must obtain coverage under the statewide Construction General Permit (State Water Resources Control Board Order No. 2009-0009-DWQ, amended by 2010-0014-DWQ and 2012-0006-DWQ). To obtain coverage, a Notice of Intent and a Stormwater Pollution Prevention Plan will be filed with the State Water Resources Control Board prior to the commencement of construction.

4.2.8 San Francisco Bay Regional Water Quality Control Board

The Project will obtain a Section 401 permit from the San Francisco Bay Regional Water Quality Control Board during the final design phase of the Project. Under Section 401 of the Clean Water Act, any project requiring a federal license or permit that may result in a discharge to a water of the United States must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards.

4.2.9 California Department of Fish and Wildlife

The Project will initiate consultation with the California Department of Fish and Wildlife (CDFW). All four build alternatives proposed would modify the creek and riparian vegetation in a manner that would require Notification of Lake or Streambed Alteration from CDFW. The City of Palo Alto will consult with CDFW during final design to obtain this permit.

4.2.10 Santa Clara Valley Water District

Work within the floodwalls adjacent to San Francisquito Creek would require a District Well Ordinance Permit (per Santa Clara Valley Water District Ordinance 90-1) for excavation that intersects a groundwater aquifer, an Encroachment Permit for activities within Santa Clara Valley Water District fee title property or easements, and a Water Resources Protection Ordinance Permit for activities that may impact Santa Clara Valley Water District facilities, or activities located within Santa Clara Valley Water District fee title property or easements.

4.3 Tribal Consultation

The Native American Heritage Commission (NAHC) was contacted on June 20, 2012, to identify any areas of concern within the area of potential effect (APE) that may be listed in the NAHC's Sacred Lands File. The NAHC responded on July 10, 2012, stating that a search of their files failed to indicate the presence of Native American cultural resources in the immediate APE. The NAHC provided a list of nine Native American contacts that might have information pertinent to this project, or have concerns regarding the proposed actions.

A letter explaining the proposed Project, along with a map depicting the APE, was then sent to the contacts listed by the NAHC on November 16, 2012, in addition to one representative who requested the information, for a total of 10. The letter also solicited responses from each of the contacts, should they have any questions, comments, or concerns regarding the proposed Project. Due to the passage of time, updated letters were sent on September 2, 2015, to all of the contacts. The letters provided project updates and an updated project map to the Native American contacts. Further follow-up communications were conducted via telephone on September 21, 2015, to all 10 individuals. Additional phone calls were made on August 28, 2017, and September 5, 2017.

Most individuals were unable to be reached and a phone message with project details and a request for a return call was left at the number provided. Among those who responded, concerns included a request that an archaeologist be present in case any sensitive material or possible burials are uncovered during project-related ground disturbance, and a request for an updated record search. Per this request, an additional record search was completed in October 2017. One additional study was noted, but no new or additional previously recorded cultural resources have been submitted to the Northwest Information Center since the last record search was completed in 2016.

4.4 Public Participation

4.4.1 Community-Based Organizations

A public open house was held by the City of Palo Alto on June 27, 2012, at the Community Room of the East Palo Alto Family YMCA (550 Bell Street). Attendees of the meeting could view Project information and graphics and interact with Project staff. The City of Palo Alto gave a PowerPoint presentation of an overview of the Project, purpose, and alternatives; after the presentation, the attendees were invited to ask questions and fill out comment cards. Written comments were accepted for 2 weeks after the public meeting.

The main concern raised by commenters was that realigning the bridge would result in an increase in traffic flow; however, many commenters said that the realignment would increase vehicle, bicycle, and pedestrian safety.

4.4.2 Public Hearing

A public hearing will be conducted for the release of the Draft Environmental Impact Report/Environmental Assessment. The public hearing will be held on July 18, 2019, at the Palo Alto City Hall Council Chambers at 250 Hamilton Avenue, Palo Alto, CA 94301, at 8:30 a.m. Caltrans and City of Palo Alto staff will be present to discuss the Project's design features and environmental aspects and to answer questions.

Members of the public will have the opportunity to comment on the Project during public circulation of the Draft Environmental Impact Report/Environmental Assessment. Comments can be submitted via post mail to Michel Jeremias at the City of Palo Alto, Department of Public Works, 250 Hamilton Ave 6th Floor, Palo Alto, CA 94301, or via email to Michel.Jeremias@CityofPaloAlto.org. Comments must be submitted by July 30, 2019.

Chapter 5
List of Preparers

The following City staff, Caltrans staff and consultants contributed to the preparation of this EIR/EA.

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Nolte Vertical 5

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Chapter 6
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Chapter 1 Proposed Project

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2.2.1 Hydrology and Floodplain

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2.2.4 Paleontology

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Appendix A
Title VI Policy Statement

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
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Making Conservation a California Way of Life.

April 2018

**NON-DISCRIMINATION
POLICY STATEMENT**

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964, ensures *"No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."*

Related federal statutes and state law further those protections to include sex, disability, religion, sexual orientation, and age.

For information or guidance on how to file a complaint, please visit the following web page: http://www.dot.ca.gov/hq/bep/title_vi/t6_violated.htm.

To obtain this information in an alternate format such as Braille or in a language other than English, please contact the California Department of Transportation, Office of Business and Economic Opportunity, 1823 14th Street, MS-79, Sacramento, CA 95811. Telephone (916) 324-8379, TTY 711, email Title.VI@dot.ca.gov, or visit the website www.dot.ca.gov.

LAURIE BERMAN
Director

"Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability"

Appendix B
Avoidance, Minimization, and/or Mitigation Summary

In order to be sure that all of the environmental measures identified in this document are executed at the appropriate times, the following mitigation program (as articulated on the proposed Environmental Commitments Record [ECR] which follows) would be implemented. During project design, avoidance, minimization, and /or mitigation measures will be incorporated into the project's final plans, specifications, and cost estimates, as appropriate. All permits will be obtained prior to implementation of the project. During construction, environmental and construction/engineering staff will ensure that the commitments contained in this ECR are fulfilled. Following construction and appropriate phases of project delivery, long-term mitigation maintenance and monitoring will take place, as applicable. As the following ECR is a draft, some fields have not been completed, and will be filled out as each of the measures is implemented. Note: Some measures may apply to more than one resource area. Duplicative or redundant measures have not been included in this ECR. Standardized measures are coded as SM, avoidance and minimization measures are coded as AMM, and mitigation measures are coded as MM.

Community Impacts
AMM-COM-1: The contractor will provide bilingual notification of construction activities including any utility disruptions will be provided to the local residents and businesses.
AMM-COM-2: The contractor will maintain ongoing coordination with the Orthodox Jewish Community will be ongoing during pre-construction and construction of the Project. In the event that the poles supporting the eruv over Newell Road require moving during any period of construction when the bridge structure is in place and accessible to pedestrians, the contractor will take the following steps to ensure a temporary eruv is in place prior to any Friday evening. • The existing poles must be dug out completely so that they may be reused. • Temporary replacement shall be installed consisting of 20-foot conduits to be fastened to nearby structures. • Fishing line, or other unobtrusive wire, shall be fastened to the conduits to maintain the eruv alignment.
AMM-COM-3: Access to all properties for property owners and users will be maintained by the contractor during construction.
Utilities/Emergency Services
SM-UT-1: The contractor will provide bilingual notification of construction activities including any utility disruptions will be provided to the local residents and businesses.
Traffic and Transportation/Pedestrian and Bicycle Facilities
SM-TR-1: A TMP will be prepared by the Project proponent or its contractor, approved by the City of Palo Alto, and will be implemented by the contractor during construction activities. The TMP will contain requirements for public noticing, traffic control implementation, signage, property and business access, parking, and safety during construction. It also will contain information about the construction schedule and detours. • Advance notice and coordination with businesses and property owners will be included in the TMP to minimize any potential temporary impacts on commute times. • Advance notice and coordination with emergency service providers will be included in the TMP to minimize any potential temporary impacts on response times.

• Advance notice and coordination with emergency service providers will be included in the TMP to minimize any potential temporary impacts on response times.
AMM-TR-1: Access along Edgewood Drive for the southeast resident's driveway will be maintained by the contractor at all times during construction.
AMM-TR-2: On Woodland Avenue, the contractor will maintain one-lane of traffic to assure passage along Woodland Avenue during the majority of construction. When one-lane of traffic is not available a detour route will be identified. The construction zone will be established such that the maximum amount of existing parking is available in the area during non-construction hours.[1] Access for all residents on Woodland Avenue in the study area will be maintained throughout the construction period.
AMM-TR-3: The City of Palo Alto shall coordinate with the City of East Palo Alto to identify nearby locations including private parcels where additional parking accommodations can be provided during construction.
AMM-TR-4: During stages 2, 3, and 4 of construction, the contractor will make accommodations for nighttime parking during non-construction hours. This would include opening the work zone up for residents to park at night and utilizing head-in (perpendicular) parking rather than parallel parking in these areas.
Visual/Aesthetics
MM-AES-1: Install Visual Barriers between Construction Work Areas and Sensitive Receptors. The contractor shall install visual barriers to obstruct undesirable views of construction activities and staging areas from sensitive receptors, namely residents and viewers on neighborhood sidewalks and streets, which are located adjacent to the construction site. The visual barrier may be chain link fencing with privacy slats, fencing with windscreen material, wood, or other similar barrier. The visual barrier shall be a minimum of six (6) feet high to help to maintain the privacy of residents and block long-term ground-level views toward construction activities. While this visual barrier would introduce a visual intrusion, it would greatly reduce the visual effects associated with visible construction activities and screening construction activities and protecting privacy is deemed desirable by residents. The contractor shall also provide daily visual inspections to ensure the immediate surroundings of construction staging areas are free from construction-related clutter and to maintain the areas in a clean and orderly manner throughout the construction period.
MM-AES-2: Replace or Relocate Site Features and Landscaping Affected by the Project. Where appropriate and to the degree possible, the contractor will relocate, replace, or restore in kind landscaping and related appurtenances, such as fencing, driveway gates, and similar features that would be removed from private properties as a result of construction to reduce visual impacts and to maintain the quality of views from neighborhood roadways and sidewalks. If the site cannot accommodate this relocation or replacement, then the Project proponent will compensate parcel owners for site features (e.g., fencing, mailboxes, driveway gates) and landscaping that would be removed or damaged as a result of the Project. Replacement of site features and landscaping would be of value at least equal to that of existing features.
MM-AES-3: Implement Project Design Aesthetics. The City of Palo Alto will implement an aesthetic design treatment with a consistent motif for new structures such as retaining walls, bridge sides, fencing, and wing walls. Choosing earth-toned colors for the surfaces would be less distracting to viewers than light or brightly colored surfaces. The shade of the wall will also be carefully considered to complement the project setting. However, studies have shown that structures two (2) to three (3)

[1] The allowed hours of construction are M-F 8-6PM, Sat 9AM-6PM in Palo Alto (Municipal Code 09.10.060) and M-F 7AM-6PM, Sat 9AM-5PM in East Palo Alto (Municipal Code 15.04.125), and both jurisdictions prohibit construction activities on Sunday/Holidays,

degrees darker than the color of the general surrounding area have the ability to complement the surrounding vegetation and create less of a visual impact than matching or lighter hues (U.S. Bureau of Land Management 2008). Safety barriers and fencing will be chosen, and could be plastic, powder, or vinyl coated with colors selected using the U.S. Bureau of Land Management selection techniques to make fences to appear more see-through than non-treated, light grey fencing that acts as a visual barrier to a degree. The design of the bridge will be reviewed and approved by the City of Palo Alto Architectural Review Board. The Architectural Review Board is a recommending body that reviews projects and provides recommendations to the Director of Planning or Council. The Project would require Architectural Review in accordance with Palo Alto Municipal Code Section 18.76.020. The Architectural Review Board reviews the project for consistency with a series of findings outlined in the municipal code relating to aspects such as compatibility with the immediate environment of the site; compatibility with the design character of the surrounding area; harmonious transitions in scale and character in areas between different designated land uses; internal sense of order; amount and arrangement of open space; integration of natural features; and appropriate materials, textures, colors and details of construction and plant material. Although some architectural refinements may be expected as the Architectural Review Board process proceeds, such refinements are not expected to change the impact conclusions in this environmental analysis.
MM-AES-4: Implement Project Streetscaping and Plantings along Top of Creek Bank. Streetscaping and planting native vegetation at the tops of the creek's banks will improve the visual quality of the roadway corridor by improving corridor aesthetics. The City of Palo Alto will select street tree species from the Cities' approved list of street trees or will be selected to match existing street trees in close proximity to the Project corridor and in compliance with the Urban Forest Master Plan[2], Palo Alto Tree Technical Manual[3] and East Palo Alto's Development Code. Replacement street trees shall have attributes that are at least equivalent to the trees that are removed or that provide a higher degree of aesthetic benefit such as better fall color, interesting bark, or less tree litter. Tree and shrub plantings along the tops of the creek's banks will be installed where space allows and will utilize native plant species that are indigenous to the riparian corridor. Low-lying evergreen and deciduous shrubs and groundcovers, such as *Ceanothus* spp., and an herbaceous understory will also be planted. Plant variety will increase the effectiveness of the streetscape by providing multiple layers, seasonality, and reduced susceptibility to disease. Special attention should be paid to plant choices to prevent driving hazards by obscuring site distances. Vegetation shall be planted within the first six (6) months following Project completion. An irrigation and maintenance program will be implemented during the plant establishment period and carried on, as needed, to ensure plant survival. However, design of the landscaping plan will try to maximize the use of planting zones that are water efficient. The design may also incorporate aesthetic features, such as a cobbling swales or shallow detention areas, which can reduce or eliminate the need for irrigation in certain areas.
MM-AES-5: Apply minimum lighting standards. The contractor and the City of Palo Alto will limit all artificial outdoor lighting to safety and security requirements, designed using Illuminating Engineering Society's design guidelines, and in compliance with International Dark-Sky Association approved fixtures. All lighting is designed to have minimum impact on the surrounding environment and will use downcast, cut-off type fixtures that are shielded and direct the light only towards objects requiring illumination. Therefore, lights will be installed at the lowest allowable height and cast low-angle illumination while minimizing incidental light spill onto adjacent properties, the creek corridor, or backscatter into the nighttime sky. Shielding will also be employed for traffic signals. Light fixtures will

[2] Available: https://www.cityofpaloalto.org/civicax/filebank/documents/36187

[3] Available: http://www.cityofpaloalto.org/civicax/filebank/documents/6436

have non-glare finishes that will not cause reflective daytime glare. Lighting will be designed for energy efficiency and have daylight sensors or be timed with an on/off program. LED lighting will avoid the use of blue-rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin, consistent with the International Dark-Sky Associations Fixture Seal of Approval program (International Dark-Sky Association 2010a, 2010b, 2015). In addition, LED lights will use shielding to ensure nuisance glare and that light spill does not affect sensitive residential viewers. Technologies to reduce light pollution evolve over time and design measures that are currently available may help but may not be the most effective means of controlling light pollution once the project is designed. Therefore, all design measures used to reduce light pollution will employ the technologies available at the time of project design to allow for the highest potential reduction in light pollution. Lastly, due to the short bridge length, jurisdiction limitations, and in an effort to provide a sidewalk free of obstructions, lighting is not currently proposed on the bridge. On the East Palo Alto side, electrical services are provided by Pacific Gas and Electric and would need to be slightly relocated to accommodate a wider bridge. On the Palo Alto side, an existing light will be replaced along Newell Road, due to the change in grade, in approximately the same location. The relocated light would be less than 80-feet away from the bridge. It is not anticipated that additional lighting would be needed on the bridge. If an additional light is needed in the vicinity, a City standard light could be added on the roadway on the Palo Alto side. This light, if needed, as well as the other lights being replaced would be required to conform to City standards.
Cultural Resources
SM-CUL-1: If cultural materials are discovered during construction, the contractor will cease all earth-moving activity within and around the immediate discovery area until a qualified archaeologist can assess the nature and significance of the find and recommend/implement appropriate data collection/recovery activities.
SM-CUL-2: If human remains are discovered, State Health and Safety Code Section 7050.5 states that the contractor will stop further disturbances and activities in any area or nearby area suspected to overlie remains, and the contractor will contact the County Coroner. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the MLD. At this time, the person who discovered the remains will contact the District 4 Cultural Resources Studies Office so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.
Water Quality and Storm Water Runoff
SM-WQ-1: Implement NPDES Permit and Construction General Permit Water Quality Measures. The Project will comply with the provisions of the California Regional Water Quality Control Board San Francisco Bay Region Municipal Regional Storm water NPDES Permit (Order No. R2-2015-0049-DWQNPDES No. CAS612008) and the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) Order No. 2009-0009-DWQ, NPDES No. CAS000002 as amended by 2010-0014-DWQ and 2012-0006-DWQ and any subsequent permits in effect at the time of construction. In addition, the Project proponent and/or their construction contractor shall ensure the construction specifications include water quality protection and erosion and sediment control BMPs to minimize construction-related contaminants and mobilization of sediment to San Francisquito Creek. The Project proponent will perform routine inspections of the construction area to verify the BMPs are properly implemented and maintained.

SM-WQ-2: Prepare and Implement SWPPP. The project will comply with the Construction General Plan by preparing and implementing a SWPPP to address all construction-related activities, equipment, and materials that have the potential to impact water quality for the appropriate risk level. The SWPPP will identify the sources of pollutants that may affect the quality of storm water and include BMPs to control the pollutants, such as sediment control, catch basin inlet protection, construction materials management, and non-storm water BMPs. All work must conform to the construction site BMP requirements specified in the latest edition of the Caltrans Construction Site Best Management Practices Reference Manual (California Department of Transportation 2011) to control and minimize the impacts of construction and construction-related activities, materials, and pollutants on the watershed. These include, but are not limited to, temporary sediment control, temporary soil stabilization, scheduling waste management, materials handling, and other non-storm water BMPs. In addition, a temporary creek flow diversion will be installed prior to any construction to prevent sediments from washing downstream. Temporary BMPs will be selected and identified in the SWPPP to protect water bodies, within or near the project limits, from potential storm water runoff resulting from construction activities. Temporary sediment and erosion control measures may include the following. • Fiber rolls and/or silt fences. • Gravel bag berm. • Rolled erosion-control product (e.g., netting). • Designated construction entrance/exit. • Re-establishment of vegetation or other stabilization measures (hydroseeding, mulch) on DSAs and newly constructed slopes. • Wind erosion control.
AMM-WQ-1: Flood Capacity. The City of Palo Alto will not reduce the flood capacity of existing drainage or water conveyance features within the Project study area during construction or operation in a way that causes ponding or flooding during storm events.
AMM-WQ-2: Limit Stream Bank Construction to Dry Season. The contractor will limit stream bank construction from June 1 to October 15 in order to avoid the migratory season for adult steelhead and to limit any excess sedimentation and runoff from entering San Francisquito Creek. The Project proponent will compensate for temporary construction-related loss of valley foothill riparian habitat by replanting trees in the temporarily disturbed area after completion of the construction activities and before October 15 to minimize erosion and sedimentation into San Francisquito Creek. The Project proponent will compensate for the permanent loss of riparian vegetation by planting riparian trees at a minimum ratio of 3:1 (three trees planted for every one tree removed) in the project vicinity as determined appropriate by a qualified biologist and Project proponent. This ratio and the location will be confirmed through coordination with the Project proponent and other agencies as part of the permitting process for the Project.
Geology/Soils/Seismic/Topography
SM-GEO-1: The City of Palo Alto will adhere to current Caltrans SDC for bridge design and construction.
Paleontology
MM-PA-1: Educate workers, stop work in case of discovery of paleontological resources, and Prepare and Implement a Recovery Plan. Given the potential for paleontological resources to be present in construction areas at ground surface and at excavation depths below 5 feet in sensitive geologic units in the Project area, the following measures will be undertaken to avoid any potentially significant effect from the improvements on paleontological resources. Before the start of any excavation, the California Department of Transportation (Caltrans) and the City of Palo Alto will retain a qualified paleontologist, as defined by the Society of Vertebrate Paleontology. If paleontological

resources are discovered during earthmoving activities, the construction crew will immediately cease work near the find and notify Caltrans and the City of Palo Alto. Construction work in the affected areas will remain stopped or be diverted to allow recovery of fossil remains in a timely manner. Caltrans and the City of Palo Alto will retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology guidelines (Society of Vertebrate Paleontology 2010). The recovery plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan that are determined by Caltrans and the City of Palo Alto to be necessary and feasible will be implemented before construction activities can resume at the site where the paleontological resources were discovered. Caltrans and the City of Palo Alto will be responsible for ensuring that the paleontologist's recommendations regarding treatment and reporting are implemented.
Hazardous Waste/Materials
MM-HAZ-1: All paint will be treated as lead-containing for the purposes of complying with Division of Occupational Safety and Health worker safety requirements, which apply to all worksites where construction workers may be exposed to lead. The California Department of Transportation (Caltrans) and the City of Palo Alto will have all lead-based paint abated and removed by a licensed lead-based paint contractor. The licensed lead-based paint contractor shall dispose of all lead-based paint or coatings at landfills that meet acceptance criteria for the waste being disposed.
MM-HAZ-2: Caltrans and the contractor shall stockpile soil generated by construction activities on site in a secure and safe manner. All contaminated soils determined to be hazardous or nonhazardous waste shall be adequately profiled (i.e., sampled and analyzed) prior to acceptable reuse or disposal at an appropriate offsite facility. Specific sampling, handling, and transport procedures for reuse or disposal shall be in accordance with applicable local, state, and federal agencies' laws, in particular the Regional Water Quality Control Board, the Department of Toxic Substances Control, the City of Palo Alto, the City of East Palo Alto, Santa Clara County, and San Mateo County. Material from existing roadway or bridge elements that is removed or modified by the Contractor will be handled and disposed of in accordance with all local, state, and federal requirements.
Air Quality
SM-AQ-1: Implement California Department of Transportation Standard Specifications • The Project applicant will comply with California Department of Transportation Standard Specifications in Section 14-9 Air Quality (2010). • Section 14-9.02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances. • Section 14-9.03 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are contained in Section 18.
SM-AQ-2: Implement BAAQMD Basic Control Measures to Control Construction-Related Dust • In accordance with the BAAQMD's current Air Quality Guidelines (Bay Area Air Quality Management District 2011), the Project applicant will implement the following BAAQMD-recommended control measures to reduce particulate matter emissions from construction activities. • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day by the contractor. • All haul trucks transporting soil, sand, or other loose material off site will be covered by the contractor. • All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day by the contractor. The use of dry power sweeping is prohibited.

• The contractor will limit all vehicle speeds on unpaved roads to 15 miles per hour. • The contractor will complete all roadways, driveways, and sidewalks to be paved as soon as possible. • The contractor will post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The Air District's phone number will also be visible to ensure compliance with applicable regulations.
MM-AQ-1: Utilize clean diesel-powered equipment during construction to control construction-related NOx emissions. The construction contractor will ensure that all off-road diesel-powered equipment used during construction is equipped with EPA Tier 4 Final engines.
Noise
SM-NOI-1: The construction contractor must comply with Caltrans Standard Specifications Section 14-8.02, Noise Control, which states the following: • Control and monitor noise resulting from work activities. • Do not exceed 86 dBA at 50 feet from the job site activities from 9:00 p.m. to 6:00 a.m.
SM-NOI-2: All equipment used by the contractor will have sound-control devices that are no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust.
SM-NOI-3: The Project proponent and/or their construction contractor will do the following. • Review and ensure that construction activities are conducted in accordance with local noise standards from the cities of Palo Alto and East Palo Alto. • Implement additional noise mitigation measures, including changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity to allowed timeframes, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources, as appropriate.
MM-NOI-1: Provide advance notification of construction schedule and 24-hour hotline to residents The construction contractor will provide advance written notification of the proposed construction activities to all residences and other noise-sensitive uses within 750 feet of the construction site. Notification will include a brief overview of the proposed project and its purpose, as well as the proposed construction activities and schedule. It will also include the name and contact information of the project manager at the City of Palo Alto or another City of Palo Alto representative or designee responsible for ensuring that reasonable measures are implemented to address the problem.
MM-NOI-2: Designate a noise disturbance coordinator to address resident concerns The construction contractor will designate a representative to act as construction noise disturbance coordinator, responsible for resolving construction noise concerns. The disturbance coordinator's name and contact information will be included in the preconstruction notices sent to area residents, per MM-NOI-1. The coordinator will be available during regular business hours to monitor and respond to concerns; if construction hours are extended, the disturbance coordinator will also be available during the extended hours. In the event a noise complaint is received, she or he will be responsible for determining the cause of the complaint and ensuring that all reasonable measures are implemented to address the problem.
MM-NOI-3: Install temporary noise barriers. As described in MM-NOI-1 and MM-NOI-2, the construction contractor will notify noise-sensitive land uses near the site of upcoming activity before construction begins, will require construction-site noise reduction measures, and will provide a 24-hour complaint hotline. If a resident or other noise-sensitive person submits a complaint about construction noise and the contractor is unable to reduce noise to a level that does not cause annoyance or disruption to adjacent land uses through other means, the contractor will install temporary noise barriers to reduce noise levels below the applicable construction noise standard.

Barriers will be installed as promptly as possible, and work responsible for the disturbance will be suspended or modified until barriers have been installed. The following minimum criteria will be required of the contractor. • The barrier will be 10 feet tall. It will surround the work area to block the line of sight for all diesel-powered equipment on the ground, as viewed from any private residence or any building. • The barrier will be constructed of heavyweight plywood (5/8 inch thick) or other material providing a Sound Transmission Classification of at least 25 dBA. Note that 5/8 inch is sufficiently thick to provide optimal noise buffering; increasing the thickness of the barrier above 5/8 inch would not provide a noticeable improvement in noise reduction. • The barrier will be constructed with no gaps or holes that would allow noise to transmit through the barrier. To minimize reflection of noise toward workers at the construction site, the surface of the barrier facing the workers will be covered with a sound-absorbing material meeting a Noise Reduction Coefficient of at least 0.70.
MM-NOI-4: Conduct construction vibration monitoring and implement control approach(es). During periods of construction, the construction contractor will retain a qualified acoustical consultant or engineering firm to conduct vibration monitoring at homes or occupied vibration-sensitive buildings located within 315 feet[4] of pile driving locations and 25 feet of construction sites using other non-impact equipment. If at any point the measured PPV is in excess of 0.3 in/sec, construction activity will cease and alternative methods of construction and excavation will be considered to prevent possible exposure of vibration-sensitive buildings and structures to levels of 0.3 in/sec PPV or higher. Prior to construction activity, and assuming the property owner gives permission, a preconstruction survey will be conducted that documents any existing cracks or structural damage at vibration-sensitive receptors located within the distances identified above by means of color photography or video. Additionally, a designated complaint coordinator will be responsible for handling and responding to any complaints received during such periods of construction. The construction contractor will also implement a reporting program that will be required to document complaints received, actions taken, and the effectiveness of these actions in resolving disputes
Natural Communities
Valley Foothill Riparian
AMM-BIO-1: Install Construction Barrier Fencing around Environmentally Sensitive Areas. The Project proponent or its contractor will install orange construction barrier fencing to identify environmentally sensitive areas in and adjacent to the construction area. A qualified biologist will identify sensitive biological resources adjacent to the construction area before the final design plans are prepared so that the areas to be fenced can be included in the plans. The area that would generally be required for construction, including staging and access, is shown in Figure 2.3-1. Portions of this area that are to be avoided during construction will be fenced off to avoid disturbance. Sensitive biological resources that occur adjacent to the construction area include sensitive natural communities and protected trees to be retained. Temporary fences around the environmentally sensitive areas will be installed as one of the first orders of work following California Department of Transportation (Caltrans) specifications. Before construction, the construction contractor will work with the Project engineer and a resource specialist to identify the locations for the barrier fencing and will place stakes around the sensitive resource sites to indicate these locations. The protected areas will be designated as environmentally sensitive areas and clearly identified on the construction plans. The fencing will be

[4] Beyond 315 feet, vibration from pile driving would attenuate to less than 0.4 inches per second and thus less than the distinctly perceptible threshold.

installed before construction activities are initiated, maintained throughout the construction period, and removed after completion of construction.
AMM-BIO-2: Prepare Environmental Awareness Program and Conduct Environmental Awareness Training for Construction Employees. The Project proponent will retain a qualified biologist to develop an environmental awareness program and conduct environmental awareness training for construction employees. The program will explain the importance of on-site biological resources, including sensitive natural communities, protected trees to be retained, and special-status wildlife habitats, and how to avoid take of listed species. The program will include invasive plant identification and the importance of controlling and preventing the spread of invasive plant infestations. The environmental awareness program will be provided to all construction personnel to inform them on the life history of special-status species in or adjacent to the Project, the need to avoid impacts on sensitive biological resources, any terms and conditions required by state and federal agencies, and the penalties for not complying with biological mitigation requirements. If new construction personnel are added to the Project, the contractor's superintendent will ensure that the personnel receive the mandatory training before starting work. An environmental awareness handout that describes and illustrates sensitive resources to be avoided during Project construction and identifies all relevant permit conditions will be provided to each person.
AMM-BIO-3: Retain a Biological Monitor to Conduct Visits during Construction. The Project proponent will retain a qualified biologist to conduct construction monitoring in and adjacent to all identified environmentally sensitive areas. The frequency of monitoring will range from daily to weekly depending on the biological resource. The monitor, as part of the overall monitoring duties, will inspect the fencing once a week at a minimum in the construction area along the river and drainages that support woody vegetation; surrounding native trees and woodlands; and special-status plants. The biological monitor will assist the construction crew as needed to comply with all Project implementation restrictions and guidelines. The biological monitor also will be responsible for ensuring that the contractor maintains the staked and flagged perimeters of the construction area and staging areas adjacent to sensitive biological resources.
AMM-BIO-4: Avoid and Minimize Potential Disturbance of Valley Foothill Riparian Community. The Project proponent and its construction contractor will avoid and minimize potential disturbance of the valley foothill riparian community by implementing the following measures. • The potential for long-term loss of woody vegetation will be minimized by trimming vegetation rather than removing entire shrubs. Shrubs that need to be trimmed will be cut at least 1 foot above ground level to leave the root systems intact and allow for more rapid regeneration. Cutting will be limited to the minimum area necessary within the construction zone. • A certified arborist will be retained to perform any necessary pruning or root cutting of retained trees. • The areas that undergo vegetative pruning will be inspected immediately before construction, immediately after construction, and 1 year after construction to determine the amount of pre-Project vegetative cover, cover that has been removed, and cover that regrows. After 1 year, if vegetation in these areas has not regrown sufficiently to return the cover to the pre-Project level, the Project proponent will replant the areas with native species to reestablish the cover to the pre-Project condition.
MM-BIO-1: Compensate for Permanent Loss of Valley Foothill Riparian. The Project proponent will compensate for permanent construction-related loss of valley foothill riparian habitat by replanting trees in the disturbed area after completion of the construction activities. Loss of native riparian trees will be compensated by replanting at a ratio of 3:1 (three native trees planted for every one native tree removed that was at least 4 inches diameter at breast height [approximately 4.5 feet above existing grade]). Loss of non-native riparian trees will be compensated at a ratio of 1:1 (one native tree planted for every one non-native tree removed that was at least 4 inches diameter at breast height). The compensatory ratios and planting locations will be confirmed through coordination with

the Project proponent and other agencies as part of the environmental permitting process for the proposed Project. The Project proponent will prepare a riparian mitigation planting plan, including a species list and number of each species, planting locations, and maintenance and monitoring requirements. Plantings will consist of cuttings taken from native plants, or plants grown at a plant nursery from local native material obtained within the San Francisquito Creek watershed. Planted species will be similar in structure and stature (at maturity) to those removed from the Project area. Plantings will be monitored annually for 5 years or as required in the Project permits. If 75% of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If this survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected.
Intermittent Stream
AMM-BIO-1 through **AMM-BIO-4.**
AMM-BIO-5. Protect Water Quality and Prevent Erosion and Sedimentation in San Francisquito Creek. The Project proponent and/or their construction contractor shall ensure the construction specifications include water quality protection and erosion and sediment control BMPs), based on standard Caltrans requirements, to minimize construction-related contaminants and mobilization of sediment to the San Francisquito Creek. The BMPs will be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. BMPS are subject to review and approval by the Project proponent. The Project proponent will perform routine inspections of the construction area to verify the BMPs are properly implemented and maintained. The Project proponent will notify contractors immediately if there is a noncompliance issue and will require compliance. The BMPs will include, but are not limited to, the following. • All earthwork or foundation activities involving San Francisquito Creek and the bridge will occur in the dry season (between June 1 and October 15). • A netting and tarp system will be implemented at the bridge site to prevent and minimize debris from entering the river during demolition and construction activities. • Equipment used around San Francisquito Creek will be in good working order and free of dripping or leaking engine fluids. All vehicle maintenance will be performed at least 300 feet from all drainages and wetlands. Any necessary equipment washing will be carried out where the water cannot flow into drainages or wetlands. • A hazardous material spill prevention control and countermeasure plan will be developed before construction begins that will minimize the potential for and the effects of hazardous or toxic substances spills during construction. The plan will include storage and containment procedures to prevent and respond to spills and will identify the parties responsible for monitoring the spill response. During construction, any spills will be cleaned up immediately according to the spill prevention and countermeasure plan. The Project proponent will review and approve the contractors' toxic materials spill prevention control and countermeasure plan before allowing construction to begin. The following types of materials will be prohibited from being rinsed or washed into the streets, shoulder areas, or gutters: concrete, solvents and adhesives, thinners, paints, fuels, sawdust, dirt, gasoline, asphalt and concrete saw slurry, heavily chlorinated water. • Baseline turbidity, pH, specific conductance, and temperatures in the San Francisquito Creek channel will be measured when flow is present. As required by the Regional Water Quality Control Board (RWQCB), water quality standards specified in the Basin Plan standards will not be exceeded over the natural in-situ conditions. If dewatering activities are required, water samples would be taken periodically during construction. • Any surplus concrete rubble, asphalt, or other rubble from construction will be taken to a local landfill.

- An erosion and sediment control plan will be prepared and implemented for the proposed Project. It will include the following provisions and protocols. The stormwater pollution prevention plan for the Project will detail the applications and type of measures and the allowable exposure of unprotected soils.
    - Discharge from dewatering operations, if needed, and runoff from disturbed areas will be made to conform to the water quality requirements of the waste discharge permit issued by the RWQCB.
    - Temporary erosion control measures, such as sandbagged silt fences, will be applied throughout construction of the proposed Project and will be removed after the working area is stabilized or as directed by the engineer. Soil exposure will be minimized through use of temporary BMPs, groundcover, and stabilization measures. Exposed dust-producing surfaces will be sprinkled daily, if necessary, until wet; this measure will be controlled to avoid producing runoff. Paved streets will be swept daily following construction activities.
    - The contractor will conduct periodic maintenance of erosion and sediment control measures.
    - An appropriate seed mix of native species will be planted on disturbed areas upon completion of construction.
    - The contractor will cover or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
    - The contractor will enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways. Material stockpiles will be located in non-traffic areas only. Side slopes will not be steeper than 2:1. All stockpile areas will be surrounded by a filter fabric fence and interceptor dike.
    - Runoff from disturbed areas will be contained and filtered by berms, vegetated filters, silt fencing, straw wattle, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area.
    - Other temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary re-vegetation or other ground cover) will be used to control erosion from disturbed areas as necessary.
    - The contractor will avoid depositing or placing earth or organic material where it may be directly carried into the channel.

Protected Trees

MM-BIO-2: Tree Replacement Plan. The applicant shall be required, in accordance with the Tree Protection and Management Regulations (Palo Alto Municipal Code 8.10) and Tree Technical Manual (Palo Alto Municipal Code 8.10.120), to replace the tree canopy for the six protected trees, in accordance with the tree canopy formula identified in the Tree Technical Manual (Tree Technical Manual, 3.20). If the tree canopy cannot be replaced on-site, the canopy shall be replaced off-site as close to the Project site as feasible. If trees are being replaced off-site, the applicant must submit a Tree Planting Plan to the Urban Forestry Division and obtain the Urban Forestry Division's approval of the plan prior to issuance of a building permit. The Tree Planting Plan must include the following:

- The canopy calculation for trees removed and the number of trees planned to replace them, consistent with the formula identified in the Tree Technical Manual
- The specific location where the new trees would be planted with specific baseline information about that proposed site (e.g., surrounding vegetation or development)
- The species of trees to be planted
- Specific planting details (e.g., size of sapling, size of containers, irrigation plan)
- Success criteria
- Monitoring and maintenance schedule

Replacement tree planting will be monitored by a qualified arborist. To verify the success of replacement trees, monitoring shall occur for two years after initial planting. After the two-year period, the arborist will determine if the trees are capable of surviving without further maintenance.
Habitat Connectivity
AMM-BIO-1 through **AMM-BIO-5**
Wetlands and Other Waters of the U.S.
AMM-BIO-1 through **AMM-BIO-5.**
Animal Species
Western Pond Turtle
AMM-BIO-6: Conduct Preconstruction Surveys for Western Pond Turtles; Relocate if Needed. A qualified biologist will examine the BSA for western pond turtles and their nests no more than 24 hours before Project activities begin and during any initial removal of vegetation, woody debris, or trees, or other initial ground-disturbing activities. If a western pond turtle is observed at any time before or during Project activities, all activities will cease. If western pond turtles are determined to be absent from the Project footprint, no further action will be required with regard to these species. If any western pond turtles are found within the Project footprint, whenever possible construction work in their vicinity will be avoided until they have moved outside of the Project area of their own volition. If the relocation of western pond turtle is necessary, a relocation plan will be developed and submitted to CDFW for approval. The plan will include subsequent details of monitoring by a CDFW-approved biologist, agency-approved disinfection and handling protocols, animal care while being relocated, suitable deposition locations, and reporting requirements. The CDFW-approved biologist will follow all applicable CDFW disinfection and handling protocols per the relocation plan.
Pallid Bat and Hoary Bat
AMM-BIO-7: Conduct Preconstruction Surveys for Pallid and Hoary Bats. A qualified biologist will examine trees within the BSA for roosting hoary bats no more than 24 hours before any initial removal of vegetation, woody debris, or trees, or other initial ground-disturbing activities. If a bat is observed roosting at any time before or during Project activities, all activities will cease. The Project proponent will coordinate with CDFW to develop and implement avoidance measures before commencing Project activities.
Snowy Egret and Saltmarsh Common Yellowthroat
AMM-BIO-8: Implement Nesting Bird Impact Avoidance Measures. The Project proponent and/or their construction contractor will be responsible for avoiding effects on migratory and non-migratory birds including special-status species (e.g., snowy egret, saltmarsh common yellowthroat). Accordingly, the following measures will be implemented. • Vegetation (including trees) trimming or removal will be conducted during the nonbreeding season (September 1 to January 31), to the extent feasible. • Construction activities will be conducted during the nonbreeding season (September 1 to January 31), to the extent feasible. • Construction activities will begin during the nonbreeding season (September 1 to January 31) and prior to the nesting season (February 1 to August 31), if feasible. Beginning construction prior to the breeding season will establish a level of noise disturbance that will dissuade noise-sensitive raptors and other birds from attempting to nest within or near the study area. • Bridge work (including existing bridge expansion and new bridge installation) will be conducted during the nonbreeding season (September 1 to January 31), to the extent feasible. It is recommended that inactive nests be removed from any bridge work location and from any vegetation or structure within the Project area or within 50 feet of where bridge work will take place. In addition, nest exclusion measures (e.g., fine mesh netting, panels, or metal projectors) are recommended to be installed outside of the nesting season, to the extent feasible. If installed, exclusionary devices will be monitored and maintained throughout the breeding season to ensure

that they are fully functional (i.e., successful in preventing the birds from accessing cavities or potential nesting sites). • If construction activities (including vegetation trimming or removal and bridge work) occur within the breeding season (February 1 to August 31), a qualified wildlife biologist with demonstrated nesting bird survey experience will conduct preconstruction surveys for nesting birds. A minimum of three separate surveys will be conducted for migratory birds, including raptors. Surveys will include a search of all suitable nesting habitat (e.g., grassland, bushes, trees, bridges, culverts, overpasses, and structures) in the Project area. In addition, a 300-foot area around the Project area will be surveyed for nesting raptors. When feasible, surveys should occur during the height of the breeding season (March 1 to June 1) with one survey being conducted in each of 2 consecutive months within this peak period and the final survey being conducted within 1 week of the start of construction. If no active nests are detected during these surveys, no additional measures are required. • If a lapse in construction activities of 3 days or longer at a previously surveyed study area occurs, another preconstruction survey will be conducted. • If an active nest is found in the Project area, a no-disturbance buffer (marked with high-visibility fencing, flagging, or pin flags) will be established by a qualified wildlife biologist around the site to avoid disturbance or destruction of the nest until the end of the breeding season (August 31) or until after the biologist determines that the young have fledged and moved out of the Project area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with USFWS and/or CDFW as appropriate. Buffer size will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Buffer size is based on a species' sensitivity to disturbance and planned work activities in the vicinity and has the potential to vary with different species. Typical buffer sizes are 300 feet for raptors and 50 feet for other birds.
Threatened and Endangered Species
California Red-Legged Frog
AMM-BIO-1 through **AMM-BIO-5, MM-BIO-1**
AMM-BIO-9: Avoid Work during Active Breeding and Dispersal Period for Special-Status Frogs. The contractor will conduct site preparation and construction activities that involve earthwork, other ground disturbance, and/or vehicle traffic through frog-sensitive areas (intermittent stream and riparian habitat) outside the period when special-status frogs are actively breeding and dispersing (October 15 through June 1).
AMM-BIO-10: Conduct Preconstruction Surveys at Work Sites in and near Frog-Sensitive Areas. No more than 3 days prior to the onset of site preparation and construction activity at each site, a qualified wildlife biologist will conduct a preconstruction survey for special-status frogs within the Project footprint. The survey will cover all areas where special-status frogs may be present or concealed, including cracks, burrows, vegetation adjacent to wet areas, and other temporary refugia, as well as any riparian or intermittent stream habitat affected. If special-status frogs are determined to be absent from the Project footprint, no further action will be required with regard to these species. If any special-status amphibians are found within the Project footprint, whenever possible, construction work in their vicinity will be avoided until they have moved outside of the Project area of their own volition.

AMM-BIO-11: Provide Construction Worker Awareness Training for Special-Status Frogs. The City of Palo Alto will provide, or require contractors to provide, worker awareness training for construction personnel to enable them to recognize special-status frogs and other aquatic and riparian wildlife. Trained construction personnel will also understand where sensitive resource areas are within the construction zone so they can minimize their impact on upland (dispersal and aestivation) habitat. Training will be presented by a qualified wildlife biologist experienced in training non-specialists. The training program will include at least the following: a description of the special-status species likely to use the site, and their habitat needs; photographs of these species; an explanation of the legal status of these species and their protection under the ESA and other regulations; a list of measures being taken to reduce effects to these species during Project construction; and distribution of a fact sheet summarizing training content. The City of Palo Alto will also distribute, or require contractors to distribute, the training summary fact sheet to anyone else who may enter the Project. Upon completion of training, employees will sign a form stating that they attended the training and understand all the conservation and protection measures.
AMM-BIO-12: Install Exclusion Fencing and Conduct Construction Monitoring for Special-Status Frogs. Once it has been determined that no special-status frogs are present on the Project site, the contractor will install barrier fencing along the perimeter of the work area where necessary to ensure that frogs do not enter the site during construction. Fencing will be installed promptly (within 3 days) after clearance surveys are performed, to prevent frogs from entering the work area. A qualified biologist will be present during the installation of exclusion fencing, will determine which areas need to be monitored on a daily basis during construction activities to avoid harm to California red-legged frog, and will be responsible for follow-up monitoring as needed. The monitor will inspect and maintain the integrity of the exclusion fencing.
AMM-BIO-13: Limit Stream Bank Construction to Dry Season. The contractor will limit stream bank construction from June 1 to October 15 in order to avoid the migratory season for adult steelhead. This timing will also limit any excess sedimentation and runoff from entering the San Francisquito Creek.
Central California Coast Steelhead
AMM-BIO-1 through **AMM-BIO-5, AMM-BIO-9 through AMM-BIO-13, MM-BIO-1**
Essential Fish Habitat
AMM-BIO-1 through **AMM-BIO-5, AMM-BIO-13**
Invasive Species
AMM-BIO-14: Avoid the Introduction of Invasive Plants. The Project proponent, or their contractor, will be responsible for avoiding the introduction of new invasive plants and the spread of invasive plants previously documented in the BSA. Accordingly, the following measures will be implemented during construction. • Surface disturbance within the construction work area will be minimized to the greatest extent possible. • All disturbed areas will be seeded with certified weed-free native mixes and mulched with certified weed-free mulch (rice straw may be used in upland areas). • Native, noninvasive species will be used in erosion control plantings to stabilize site conditions and prevent invasive species from colonizing.

Appendix C

Notice of Preparation

Notice of Preparation of an Environmental Impact Report/ Environmental Assessment

Date: August 12, 2015
To: Agencies, Organizations, and Interested Parties
From: City of Palo Alto Public Works Department
Project Title: Newell Road at San Francisquito Creek Bridge Replacement Project

The City of Palo Alto (City), as the Lead Agency under the California Environmental Quality Act (CEQA), will prepare an Environmental Impact Report (EIR) for the proposed **Newell Road/San Francisquito Creek Bridge Replacement Project** (herein referred to as the "Project")**.** Under assignment[1] from the Federal Highway Administration (FHWA), the California Department of Transportation (Caltrans, District 4 Office of Local Assistance acting for the FHWA) is the Lead Agency under the National Environmental Policy Act (NEPA) and will prepare an Environmental Assessment (EA) as a joint document with the EIR (an EIR/EA). The purpose of this Notice of Preparation (NOP) is to notify agencies, organizations, and interested parties about the proposed Project and to request input on the environmental analysis to be performed. From public agencies, we are requesting comments on the scope and content of the environmental information, which is germane to each agency's statutory responsibilities with regard to the proposed Project. Agencies may need to use the EIR/EA prepared when considering permitting or other approvals for the proposed Project.

Due to the time limits mandated by state law, responses must be sent at the earliest possible date, but not later than 30 days after receipt of this notice or **Monday, September 14, 2015**, whichever is sooner.

Please send your comments to:

City of Palo Alto
Public Works Department
Attention: Joe Teresi, Senior Engineer
RE: Newell Road Bridge
250 Hamilton Avenue
Palo Alto, California 94301

Project Vicinity and Location:

Newell Road Bridge at San Francisquito Creek, Palo Alto, CA (refer to Figures 1 and 2).

Project History:

During the 1998 El Niño storms, the banks of the San Francisquito Creek failed damaging approximately 1,700 properties in the cities of Palo Alto, Menlo Park, and East Palo Alto. As a result,

[1] Title 23 USC 327: NEPA Assignment Memorandum of Understanding (MOU), between FHWA and Caltrans, effective October 1, 2012.

the San Francisquito Creek Joint Powers Authority (SFCJPA) was established in 1999 to address flooding issues affecting the several jurisdictions within the San Francisquito Creek watershed. After the 45-year flood in 1998, the SFCJPA and the affected jurisdictions identified the need to replace the Newell Road Bridge (herein referred to as the "bridge").

The City has conducted a number of public meetings beginning in June 2012, to provide preliminary information about the proposed Project and solicit comments and questions from members of the public. Concurrently, the City has been collecting information and conducting technical analyses to assess the feasibility of implementing the proposed Project. During this early planning period, the City conducted an alternatives screening analysis (including a detailed traffic study) and ultimately identified four (4) potentially feasible alternatives for replacement of the bridge. The identified alternatives are further discussed under *Project Alternatives,* below.

Project Description:

The City proposes to replace the existing Newell Road Bridge[2] which crosses San Francisquito Creek to safely accommodate vehicle, bicycle, and pedestrian traffic. The proposed Project would also incorporate channel improvements to widen a bottleneck segment of San Francisquito Creek along the northern bank that stretches approximately 900 feet downstream of the bridge (Figure 2).

The bridge is within the SFCJPA study area for proposed channel and bridge improvements that would provide increased flood protection and hydraulic capacity. Previous technical studies conducted by the SFCJPA have determined that the bridge constrains streamflow in San Francisquito Creek. The bridge would need to be reconstructed in order to accommodate the estimated 1% flow rate[3] for San Francisquito Creek at Newell Road and to allow for SFCJPA's planned reconstruction of the upstream bridge at Pope Street/Chaucer Street (the Pope-Chaucer Street Bridge). The height of the bridge would be designed to meet Caltrans' standards for accommodating the 1% flow rate and freeboard[4] requirements. The profile of the replacement bridge would be approximately one to two feet higher than the existing bridge, which would require the construction of retaining walls along the edges of the roadway approaches to the bridge.

The existing bridge provides access across San Francisquito Creek between the City of Palo Alto and the City of East Palo Alto. In East Palo Alto, Newell Road connects to Woodland Avenue which provides access to University Avenue and United States Highway 101 (US 101). In Palo Alto, Newell Road connects to Edgewood Drive and main thoroughfares including Channing Avenue and Embarcadero Road. Newell Road is a two (2)-lane roadway facility, but the width of the existing bridge is currently too narrow to safely accommodate two (2) lanes of vehicle traffic. In addition, the existing bridge does not provide safe access for bicycle and pedestrian traffic access across San

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[2] Newell Road Bridge is Bridge #37C-0223.

[3] A 1% flow rate (also informally referred to as the 100-year flow rate) is the creek flow rate that has a 1% chance of being equaled or exceeded in any given year.

[4] Freeboard, expressed as the construction of a barrier above a predicted flood level, provides a factor of safety and compensates for the many unknown factors that could contribute to flood heights greater than the height predicted for a selected size flood.

Francisquito Creek. As a result, the existing bridge is classified by Caltrans as being Functionally Obsolete (FO).[5] The FO status of the existing bridge along with its low sufficiency rating[6] of 40.9 makes the existing bridge eligible for replacement under the Federal Highway Bridge Program (HBP).

The creek widening, would increase the capacity of the creek downstream of the bridge, and allow a lower profile for the bridge and reduce impacts on the roadway approaches to the bridge. The creek widening design would utilize a retaining wall or bank stabilization system that could be planted with native vegetation to stabilize the banks of the widened creek channel.

For all Federal HBP funded projects, such as this one, Caltrans has project oversight authority and manages the project financing. The proposed Project falls within the jurisdiction of Caltrans, District 4 Office of Local Assistance. As a result Caltrans will provide review and approval of the following documents prepared for the proposed Project including: environmental technical studies, engineering technical reports, and construction documents.

Purpose and Need:

The purpose of the proposed Project is to:

- Protect adjacent communities from flood hazards by accommodating the 1% flow rate of San Francisquito Creek at Newell Road.
- Maintain connections for vehicular, bicycle, and pedestrian transportation across San Francisquito Creek at Newell Road while avoiding the following:
    - diversion of a significant number of vehicles to adjacent streets;
    - a significant increase in the number of vehicles using Newell Road; and,
    - an increase in average vehicle speed on Newell Road.
- Improve pedestrian and bicycle access across San Francisquito Creek at Newell Road.
- Improve safety for all modes of transportation across San Francisquito Creek at Newell Road.

The Project need is demonstrated by the following deficient conditions:

- The existing bridge is hydraulically deficient and results in flooding at high-flow levels.
- The existing bridge is classified as Functionally Obsolete (FO) because:
    - it does not safely accommodate two (2)-way vehicular traffic;
    - it does not provide safe access for pedestrians or bicyclists; and,

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[5] "Functionally obsolete (FO)" describes a bridge that is not suitable for its current use, such as a lack of safety shoulders.

[6] "Sufficiency rating" is a 0-100 score (100 percent would represent an entirely structurally-sufficient bridge and zero percent would represent an entirely structurally insufficient or deficient bridge).

- it provides poor drivability for vehicular traffic due to substandard sight distances and vertical profile.

EIR/EA Scope:

The EIR/EA will address the following environmental issues:

- Aesthetics;
- Air Quality and Greenhouse Gas Emissions;
- Biological Resources;
- Cultural Resources;
- Geology and Soils;
- Hazardous Materials;
- Hydrology and Water Quality;
- Land Use and Planning (including Parks and Recreation Facilities);
- Community Impacts;
- Noise and Vibration;
- Population and Housing;
- Public Services and Utilities;
- Traffic and Transportation; as well as,
- Cumulative Impacts, Alternatives to the Project, and Growth-inducing Impacts.

The cumulative impacts analysis in the EIR/EA will consider the potential impacts of the Project and Project alternatives in combination with planned growth and other capital improvement projects in the San Francisquito Creek corridor area.

Project Alternatives:

In accordance with CEQA and NEPA, the EIR/EA will evaluate a reasonable range of alternatives to the proposed Project and a “No-Build”/”No Action” alternative (Figures 3a and 3b). Alternatives will be identified based on their feasibility to meet most of the Project objectives and reduce or avoid significant environmental impacts.

In 2014, the City prepared an Alternatives Screening Analysis Report[7] (ASAR), which evaluated a total of eight (8) alternatives including alternatives to remove the existing bridge and construct a bicycle/pedestrian-only bridge, as well as various alternatives that would maintain vehicular use on different horizontal alignments. The ASAR evaluated the alternatives taking public input collected to date into account.

[7] Available at: <http://www.cityofpaloalto.org/civicax/filebank/documents/39192>.

Considering the information in the ASAR which took agency and public input into account, the City has since identified the following four (4) Build Alternatives as potentially feasible and that meet the Project purpose and need, and are appropriate to carry through the EIR/EA analysis:

- Build Alternatives (all presume construction of a new bridge)
  - Alternative 1: A one (1)-lane bridge with two (2)-way traffic (under signal control) on the existing alignment of Newell Road (ASAR #5).
  - Alternative 2: A two (2)-lane bridge on the existing alignment of Newell Road (ASAR #6).
  - Alternative 3: A two (2)-lane bridge on a partial realignment of Newell Road (ASAR #7).
  - Alternative 4: A two (2)-lane bridge on a full realignment of Newell Road (ASAR #8).
- No-Build/No Action Alternative (keep existing bridge) proposes to leave the facility as it currently exists (ASAR #1).

The City will consider public and agency input on the scope of the EIR/EA in response to this NOP, including comments on potential alternatives, before making a final decision as to the alternatives to be analyzed in the EIR.

Probable Environmental Effects:

Based on a preliminary review of the Project site and in consideration of the proposed Project activities, the City has determined that potential direct and indirect impacts related to aesthetics; biological resources; cultural resources; hydrology and water quality; land use and planning; community impacts; traffic and transportation; and cumulative impacts as a result of planned, programmed, and reasonably foreseeable growth in the area and including capital improvement projects in the San Francisquito Creek corridor, may occur as a result of Project implementation. The City will prepare a Draft EIR pursuant to Section 15060(d) of the State CEQA Guidelines. An EA will be prepared as a joint document with the EIR (an EIR/EA), in accordance with NEPA, as Caltrans has determined that the significance of environmental impacts is not clearly established.

Notice of Scoping Meeting:

Pursuant to CEQA Guidelines section 15082(c) (Notice of Preparation and Determination of Scope of EIR), the City will conduct a scoping meeting for the purpose of soliciting input on the scope of the analysis in the EIR from bordering cities, responsible agencies, agencies with jurisdiction by law, trustee agencies, interested parties requesting notice, and interested members of the public, concerning the appropriate scope and content of the EIR. Although there is no formal scoping requirements for an EA under NEPA, comments received on the scope and content of the EIR for the proposed Project will be incorporated into the joint EIR/EA environmental document.

The scoping meeting will be held on **Thursday, September 3, 2015, at 6:30 p.m.** in the Palo Alto City Hall Council Chambers, 250 Hamilton Avenue, Palo Alto.

For further information, please contact the City at the address below or visit the Project website provided below:

Address:	**OR**	**Project Website:**
City of Palo Alto Public Works Department Attention: Joe Teresi, Senior Engineer *RE: Newell Road Bridge* 250 Hamilton Avenue Palo Alto, California 94301		http://www.cityofpaloalto.org/news/displaynews.asp?NewsID=1964&TargetID=145

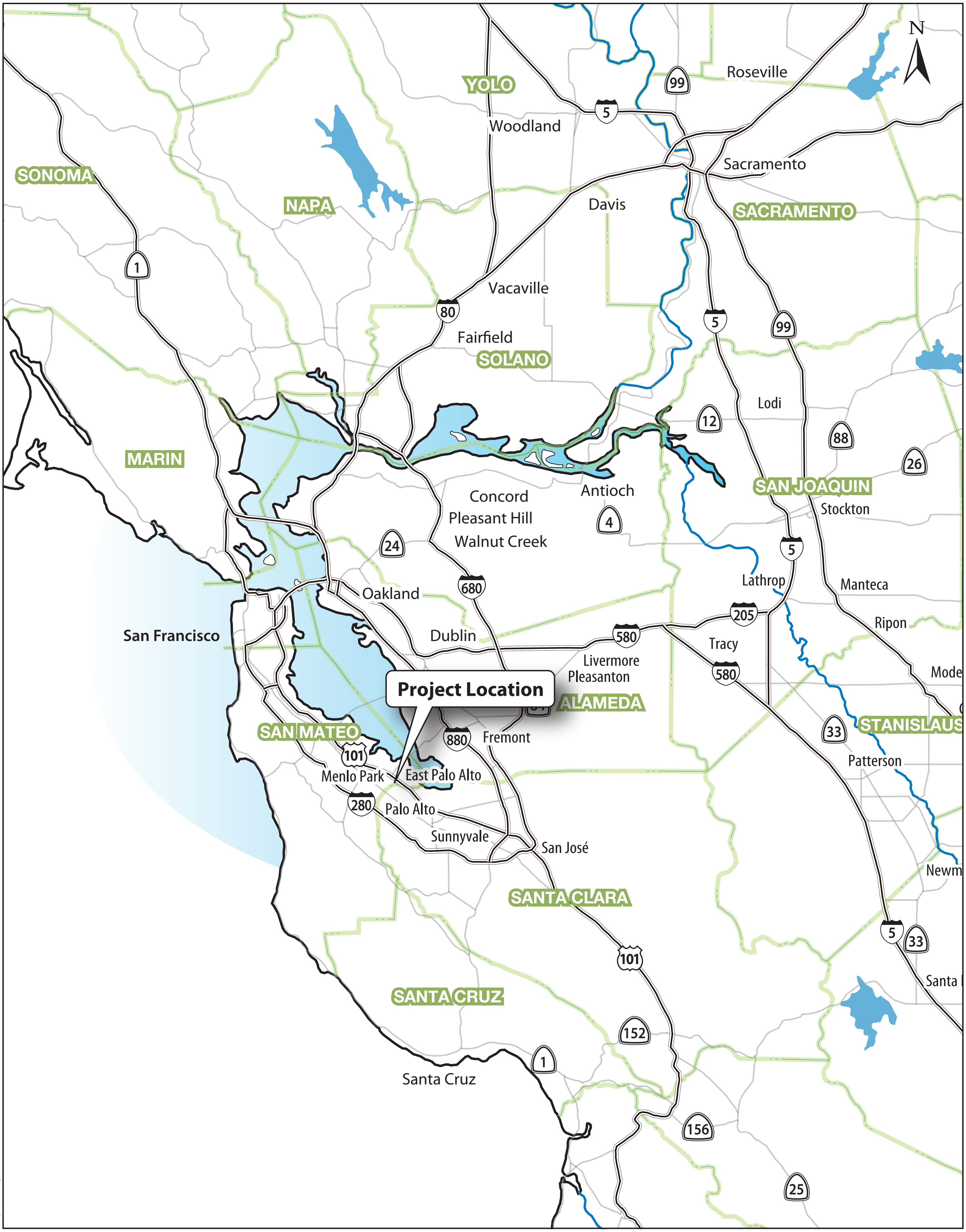
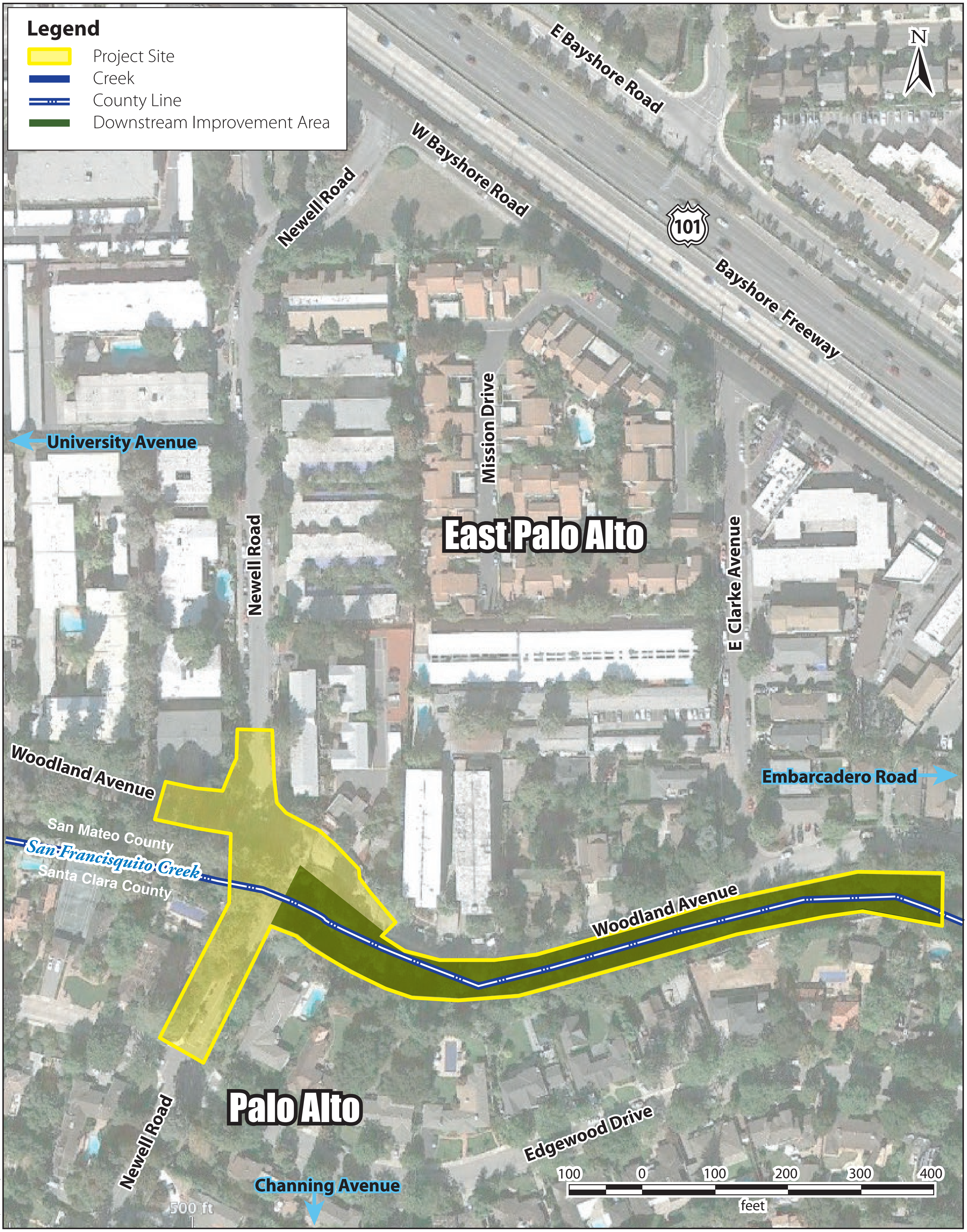


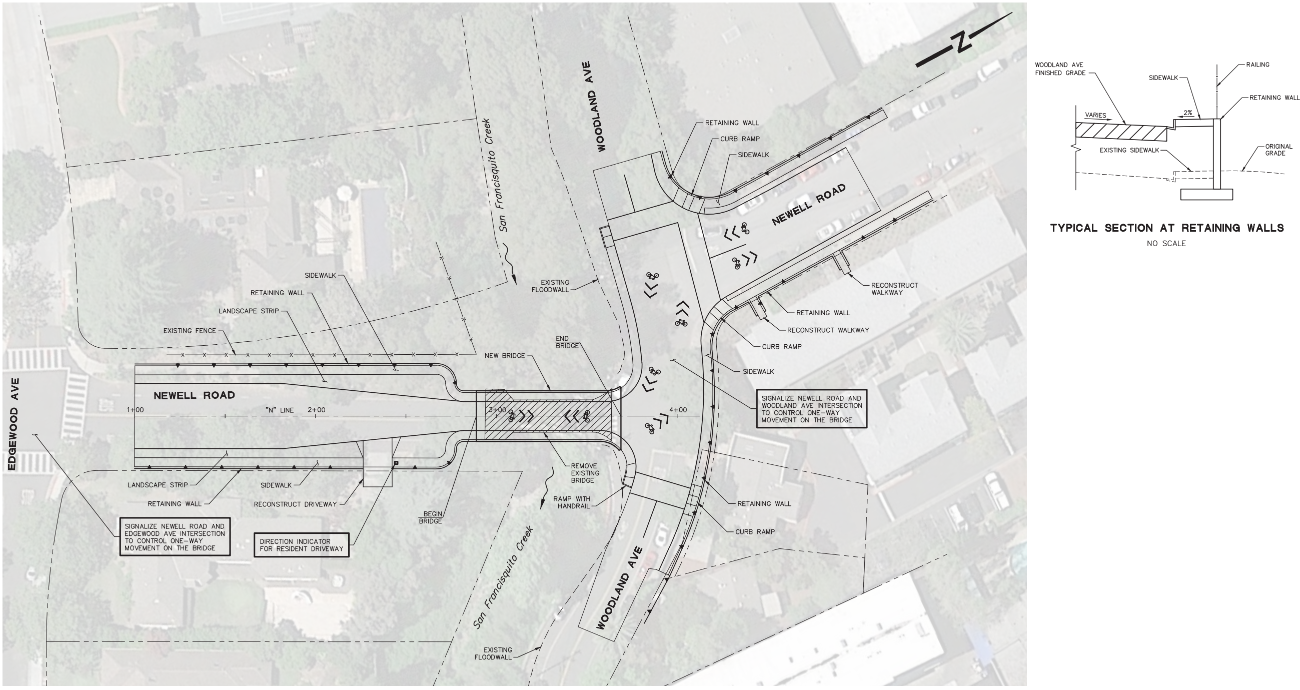
Figure 1
Project Vicinity Map
Newell Road Bridge Replacement Project



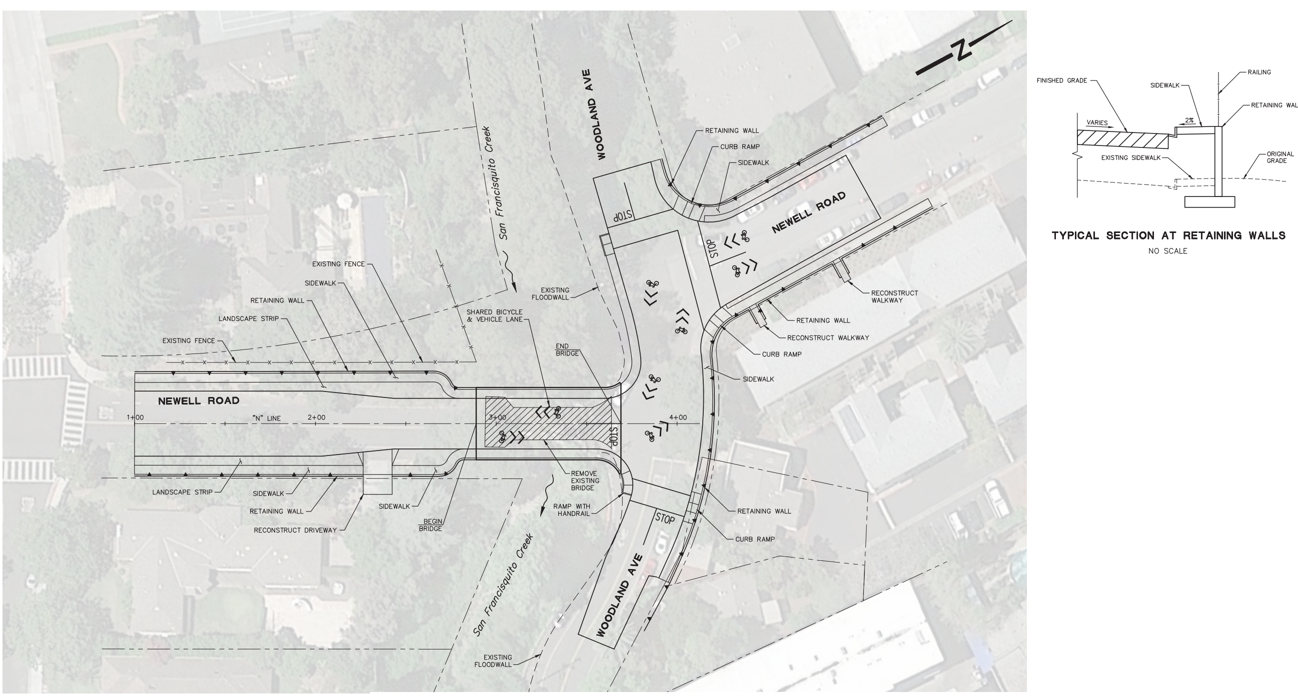
Graphics\Projects\00305.12, Task #0C2 (07-2015) SS

ICF INTERNATIONAL

Figure 2
Project Location Map
Newell Road Bridge Replacement Project



Alternative 1: A one-lane bridge with two-way traffic (under signal control) on the existing alignment of Newell Road.

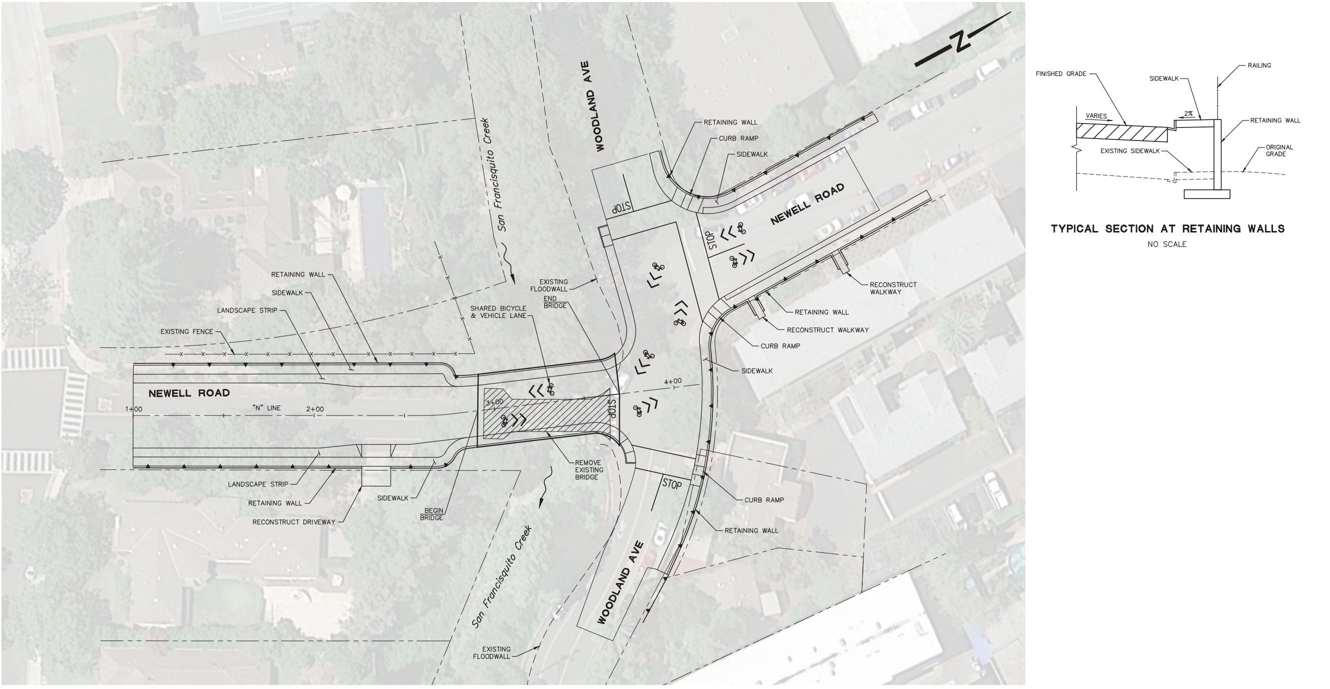


Alternative 2: A two-lane bridge on the existing alignment of Newell Road.

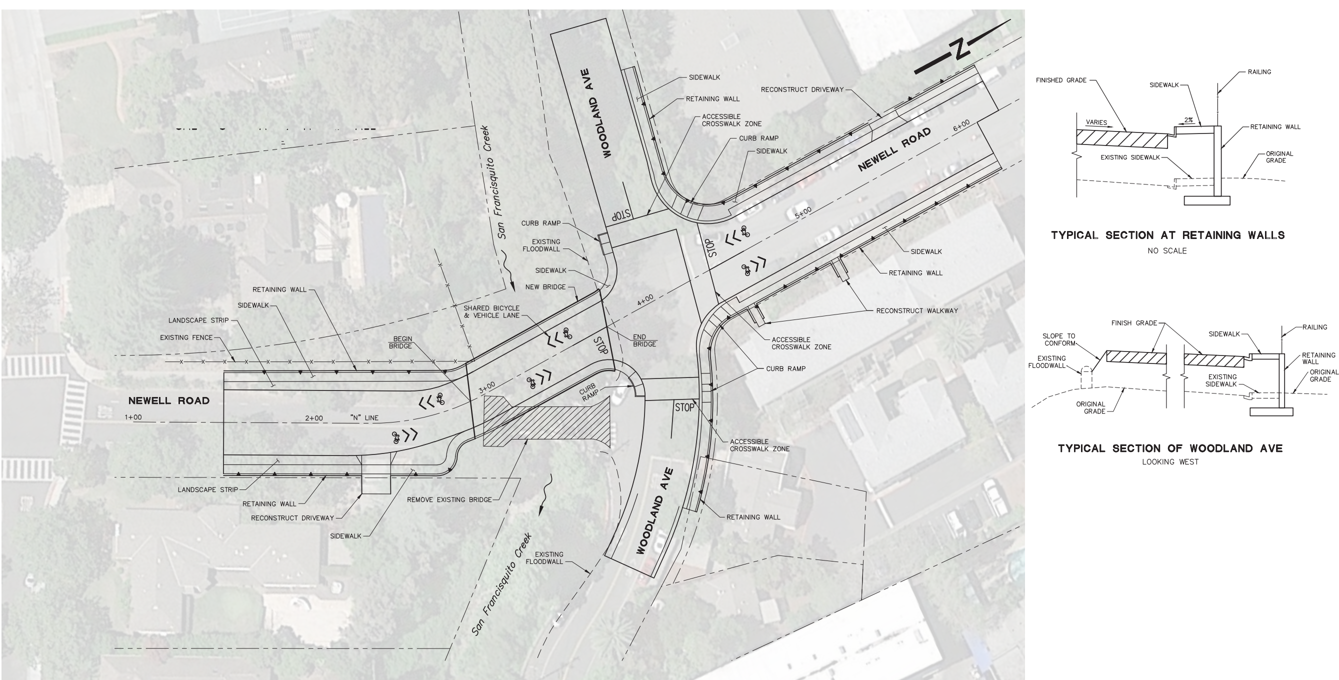
Source: NV5, 2014.

ICF INTERNATIONAL

Figure 3a
Build Alternatives 1 and 2



Alternative 3: A two-lane bridge on a partial realignment of Newell Road.



Alternative 4: A two-lane bridge on a full realignment of Newell Road.

Source: NV5, 2014.

Graphics\Projects\00305.12 NOP (08-15) SS

Figure 3b
Build Alternatives 3 and 4

Appendix D

Correspondence

From:	Fund Management System
To:	rajeev.hada@cityofpaloalto.org; reanna.tong@cityofpaloalto.org
Cc:	Fund Management System; Harold Brazil
Subject:	FMS POAQC Project TIP ID SCL170018 (37C0223 - Newell Rd Bridge over San FrancisquitoCr) update: Project is a not a POAQC
Date:	Thursday, October 12, 2017 9:27:41 AM

Dear Project Sponsor

Based on the recent interagency consultation with the Air Quality Conformity Task force, Project TIP ID SCL170018 (FMS ID:6694.00) does not fit the definition of a project of air quality concern as defined by 40 CFR 93.123(b)(1) or 40 CFR 93.128 and therefore is not subject to PM2.5 project level conformity requirement. Please save this email as documentation confirming the project has undergone and completed the interagency consultation requirement for PM2.5 project level conformity. Note project sponsors are required to undergo a proactive public involvement process which provides opportunity for public review as outlined by 40 CFR 93.105(e). For projects that are not of air quality concern, a comment period is only required for project level conformity determinations if such a comment period would have been required under NEPA. For more information, please see FHWA PM2.5 Project Level Conformity Frequently Asked Questions (FAQ):
http://www.fhwa.dot.gov/environment/air_quality/conformity/reference/faqs/pm25faqs.cfm

If you have any questions, please direct them to Harold Brazil at hbrazil@bayareametro.gov or by phone at 415-778-6747

Please note that this email shows a different TIP ID (SCL170018) from the TIP ID in the group listing (VAR170012) in Section 2.2.6, Air Quality of this EIR/EA. TIP ID SCL170018 was created solely for the purpose of PM2.5 consultation and it is not a new TIP ID for the project.

DEPARTMENT OF TRANSPORTATION
DISTRICT 4
OFFICE OF LOCAL ASSISTANCE
111 GRAND AVENUE-MS 10B
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5530
FAX (510) 286-5229
TTY 711
www.dot.ca.gov

Making Conservation a California Way of Life.

October 27, 2017

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Subject: Eligibility Determinations for the Proposed Newell Road over San Francisquito Creek Bridge (Bridge No. 37C-0223) Replacement Project in the Cities of Palo Alto and East Palo Alto in Santa Clara and San Mateo Counties.

Dear Ms. Polanco,

The California Department of Transportation (Caltrans) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding the proposed Newell Road over San Francisquito Creek Bridge (Bridge No. 37C-0223) replacement project (Undertaking). Caltrans, on behalf of the City of Palo Alto, is proposing the undertaking. A full project description can be found on Page 1 of the enclosed Historic Property Survey Report (HPSR).

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 January 2014 *First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, 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).

Enclosed you will find an HPSR, Historic Resource Evaluation Report (HRER), and an Archaeological Survey Report (ASR) for the proposed Undertaking. In accordance with Stipulation VIII.C.6 of the PA, Caltrans is requesting SHPO's concurrence on the National Register of Historic Places (NRHP) eligibility of the following built resources, which were recorded and evaluated on the attached DPR forms.

The following properties has been determined ***not eligible*** for inclusion in the NRHP as a result of this study:

Address

- 475 Newell Road, Palo Alto, Santa Clara County (APN: 003-12-013)
- 1499 Edgewood Drive, Palo Alto, Santa Clara County (APN: 003-11-020)
- 1773 Woodland Avenue, East Palo Alto, San Mateo County (APN: 063-515-280)
- 5 Newell Road, East Palo Alto, San Mateo County (APN: 063-513-350)
- 15 Newell Road, East Palo Alto, San Mateo County (APN: 063-513-440)

The following property has previously been determined ***not eligible*** for inclusion in the NRHP:

Newell Road over San Francisquito Creek Bridge (Bridge No. 37C-0223)

No archaeological resources have been previously recorded in the Undertaking's Area of Potential Effect (APE), nor were any observed during the archaeological identification efforts. The archaeological APE consists of steep creek banks with frequent and regular soil erosion events which prevent stable ground surfaces to build. This inability for ground surfaces to form does not allow for the deposition of prehistoric resources as prehistoric peoples would have conducted activies on stable landforms. Additionally, historic-era archival research did not indicate that historic-era resources would have been deposited within the propose undertaking's APE. Due to these circumstances, it has been determined that there is a low potential for intact buried prehistoric or historic-era archaeological resources within the project's Area of Direct Impacts (ADI).

We would appreciate receiving the SHPO's concurrence on the determination of eligibility within 30 days of your receipt of this submittal. If you have any questions, please contact Carrie Reichardt, Senior Environmental Planner, Office of Local Assistance, at 510-286-5530 or via email sent to karen.reichardt@dot.ca.gov.

Thank you for your assistance with this undertaking.

Sincerely,

Karen

KAREN (CARRIE) REICHARDT
Senior Environmental Planner (Cultural Resources)
Office of Local Assistance
California Department of Transportation, District 4

Enclosures

(1) Historic Property Survey Report for the Newell Road over San Francisquito Creek Bridge (Bridge No. 37C-0223) Replacement Project in the Cities of Palo Alto and East Palo Alto in Santa Clara and San Mateo Counties.

(2) Historical Resources Evaluation Report for the Newell Road over San Francisquito Creek Bridge (Bridge No. 37C-0223) Replacement Project in the Cities of Palo Alto and East Palo Alto in Santa Clara and San Mateo Counties.

(3) Archaeological Survey Report for the Newell Road over San Francisquito Creek Bridge (Bridge No. 37C-0223) Replacement Project in the Cities of Palo Alto and East Palo Alto in Santa Clara and San Mateo Counties.

CC: Emily Castano, Branch Chief, Section 106 Coordination; OLA files.

State of California • Natural Resources Agency Edmund G. Brown Jr., *Governor*

DEPARTMENT OF PARKS AND RECREATION Lisa Ann L. Mangat, *Director*
OFFICE OF HISTORIC PRESERVATION
Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

November 30, 2017

VIA EMAIL

In reply refer to: FHWA_2017_1101_001

Ms. Karen Reichardt, Senior Environmental Planner
Office of Local Assistance
Caltrans District 4
111 Grand Avenue, MS-8A
Oakland, CA 94612

Subject: Determinations of Eligibility for the Proposed Newell Road over San Francisquito Creek Bridge (Bridge No. 37C-0223) Replacement Project, Palo Alto and East Palo Alto, Santa Clara and San Mateo Counties, CA

Dear Ms. Reichardt:

Caltrans is initiating consultation for the above project in accordance with the January 1, 2014 *First Amended Programmatic Agreement Among the Federal Highway Administration (FHWA), the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, 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* (PA).

Caltrans, in cooperation with the City of Palo Alto, proposes to replace the Newell Road Bridge and roadway approaches across San Francisquito Creek. The bridge was constructed in 1911 and is classified as functionally obsolete. In addition to replacing the bridge, the project includes raising the bridge profile as well as the intersection of Newell Road and Woodland Avenue. A full project description is located on Page 1 of the Historic Property Survey Report. As part of the submittal Caltrans also submitted a Historic Resource Evaluation Report and an Archaeological Survey Report.

Caltrans determined that the following properties are not eligible for the National Register of Historic Places (NRHP):

- 475 Newell Road, Palo Alto, CA
- 1499 Edgewood Drive, Palo Alto, CA
- 1773 Woodland Avenue, East Palo Alto, CA
- 5 Newell Road, East Palo Alto, CA
- 15 Newell Road, East Palo Alto, CA

Based on my review of the submitted documentation, I concur.

Thank you for considering historic properties during project planning. If you have any questions, please contact Natalie Lindquist of my staff at (916) 445-7014 with e-mail at natalie.lindquist@parks.ca.gov or Alicia Perez at (916) 445-7020 with e-mail at alicia.perez@parks.ca.gov .

Sincerely,

Julianne Polanco
State Historic Preservation Officer

DEPARTMENT OF TRANSPORTATION
DISTRICT 4
OFFICE OF LOCAL ASSISTANCE
P.O. BOX 23660, MS–10B
OAKLAND, CA 94623-0660
PHONE (510) 286-6371
FAX (510) 286-5229
TTY 711
www.dot.ca.gov

Serious drought.
Help save water!

January 22, 2018

Ms. Lisa Van Atta
Assistant Regional Administrator
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, CA 94504

Initiation of Informal Consultation under Section 7 of the Endangered Species Act for the Newell Road Bridge Replacement Project in the Cities of Palo Alto and East Palo Alto, BRLS-5100 (017)

Dear Ms. Van Atta:

The California Department of Transportation (Caltrans) is initiating *informal* consultation for the Newell Road Bridge Replacement project acting as the National Environmental Policy Act (NEPA) lead agency under direction of the December 2016 *Memorandum of Understanding (MOU)* on the Surface Transportation Project Delivery Program (23 U.S.C. 327) between Caltrans and the Federal Highway Administration. As assigned by the *MOU*, Caltrans is responsible for the environmental review, consultation, and coordination on this project.

Caltrans, acting as the designated federal representative, and the City of Palo Alto, the project proponent, are proposing to replace the Newell Road Bridge across San Francisquito Creek. The project consists removing the existing bridge, constructing new approaches and accommodation for bicycle and pedestrian travel, potential addition and reconfiguration of utilities including street lighting, modification to street signage or new traffic signals, addition of retaining walls, and bank stabilization measures in the portion of San Francisquito Creek disturbed by construction. Further detail is in the enclosed Biological Assessment.

The action area contains designated critical habitat for one federally listed species: the Steelhead Central California Coast (CCC) DPS. As identified in the enclosed document, with the implementation of avoidance, minimization, and mitigation measures, it is considered that the proposed project **may affect, but is not likely to adversely affect** Steelhead CCC DPS (*Oncorhynchus mykiss*), and its critical habitat.

The action area also contains Essential Fish Habitat (EFH) for Pacific salmon (Central Valley fall-run and late fall-run Chinook salmon). It is considered that the proposed project would **not adversely affect EFH.**

We respectfully request your concurrence with the above findings on the impacts to the federally listed species and its designated critical habitat, and to EFH. Please provide confirmation within 30 days of receipt of this letter that all the required information needed for your concurrence has been provided.

Please contact Dan Rivas at Caltrans District 4, Office of Local Assistance, 111 Grand Avenue, MS-10B, Oakland, CA 94612; via email at dan.rivas@dot.ca.gov; or via telephone at 510-286-5743 with any questions about this request.

Sincerely,

T Holstein

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

Attachment: *Biological Assessment* (January 2018)

DEPARTMENT OF TRANSPORTATION
DISTRICT 4
OFFICE OF LOCAL ASSISTANCE
P.O. BOX 23660, MS–10B
OAKLAND, CA 94623-0660
PHONE (510) 286-6371
FAX (510) 286-5229
TTY 711
www.dot.ca.gov

Making Conservation
a California Way of Life.

January 22, 2018

Mr. Ryan Olah
U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
2800 Cottage Way, W-2605
Sacramento, CA 95825-1846

Initiation of Informal Consultation under Section 7 of the Endangered Species Act for the Newell Road Bridge Replacement Project in the Cities of Palo Alto and East Palo Alto, BRLS-5100 (017)

Dear Mr. Olah:

The California Department of Transportation (Caltrans) is initiating *informal* consultation for the Newell Road Bridge Replacement project acting as the National Environmental Policy Act (NEPA) lead agency under direction of the December 2016 *Memorandum of Understanding (MOU)* on the Surface Transportation Project Delivery Program (23 U.S.C. 327) between Caltrans and the Federal Highway Administration. As assigned by the *MOU*, Caltrans is responsible for the environmental review, consultation, and coordination on this project.

Caltrans, acting as the designated federal representative, and the City of Palo Alto, the project proponent, are proposing to replace the Newell Road Bridge across San Francisquito Creek. The project consists removing the existing bridge, constructing new approaches and accommodation for bicycle and pedestrian travel, potential addition and reconfiguration of utilities including street lighting, modification to street signage or new traffic signals, addition of retaining walls, and bank stabilization measures in the portion of San Francisquito Creek disturbed by construction. Further detail is in the enclosed Biological Assessment.

The project is not located within any critical habitat for species under the jurisdiction of the U.S. Fish and Wildlife Service. However, as identified in the enclosed document, with the implementation of avoidance, minimization, and mitigation measures, it is considered that the proposed project **may affect, but is not likely to adversely affect** California red-legged frog (*Rana draytonii*).

We respectfully request your concurrence with the above findings on the impacts to the federally listed species. Please provide confirmation within 30 days of receipt of this letter that all the required information needed for your concurrence has been provided.

Please contact Dan Rivas at Caltrans District 4, Office of Local Assistance, 111 Grand Avenue, MS-10B, Oakland, CA 94612; via email at dan.rivas@dot.ca.gov; or via telephone at 510-286-5743 with any questions about this request.

Sincerely,

T. Holstein

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

Attachment: *Biological Assessment* (January 2018)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

In Reply Refer to:
08ESMF00-
2018-I-1118

MAR 20 2018

Tom Holstein
Attn: Dan Rivas
California Department of Transportation
District 4, Office of Local Assistance
P.O. Box 23660, MS-10B
Oakland, California 94623-0660

Subject: Informal Consultation on the Newell Road Bridge Replacement Project in the Cities of Palo Alto and East Palo Alto, Santa Clara and San Mateo Counties, California, California Department of Transportation (Caltrans) file number BRLS-5100(017)

Dear Mr. Holstein:

This letter is in response to Caltrans' January 22, 2018, request for initiation of informal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Newell Road Bridge Replacement Project (proposed project) in the cities of Palo Alto and East Palo Alto in Santa Clara and San Mateo Counties, California, Caltrans file number BRLS-5100(017). Your request was received by the Service on January 29, 2018. The Service received from Caltrans the revised project description on March 12, 2018. At issue are the proposed project's effects on the federally threatened California red-legged frog (*Rana draytonii*). Critical habitat has been designated for the California red-legged frog but does not occur within the action area for the proposed project. This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is Caltrans, acting as the designated federal representative, and the City of Palo Alto, the project proponent, are proposing to replace the Newell Road Bridge across San Francisquito Creek. Pursuant to 50 CFR 402.12(j), you submitted a biological assessment and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect, but is not likely to adversely affect the California red-legged frog.

In considering your request, we based our evaluation on the following: (1) your letter requesting the initiation of informal consultation dated January 22, 2018; (2) the January 2018 *Newell Road Bridge Replacement Project Biological Assessment and Essential Fish Habitat Assessment* (Caltrans 2018); and (3) other information available to the Service.

The proposed project includes removal of the existing bridge; construction of new approaches, a two standard lane bridge and accommodation for bicycle and pedestrian travel (including sidewalk and potential road widening for shared right-of-way for bicyclists); potential addition and reconfiguration of utilities including street lighting; modification to street signage; addition of retaining walls; bank stabilization measures in the portion of San Francisquito Creek disturbed by the construction; a bridge that accommodates increased flows related to San Francisquito Creek improvements to address anticipated flooding risk; and upgrading the channel width beneath the bridge to allow 7,500 cubic feet per second conveyance. The action area encompasses approximately 500 feet along Newell Road Bridge spanning San Francisquito Creek, 350 feet along Woodland Avenue, and the adjacent upstream (100 feet) and downstream (200 feet) sections of San Francisquito Creek totaling 1.09 acres.

Prior to initiation of construction, a temporary surface water diversion will be installed in San Francisquito Creek to allow for construction activities to take place along the banks of the active creek. Clean gravel dams will be installed both upstream and downstream of the construction zone, and culvert piping will route surface water flows through the construction zone. Best management practices (BMPs) will be employed to protect the active stream. The existing bridge will be removed by jackhammers, cranes, and excavators. All reasonable methods available will be used to catch the broken concrete from the bridge and to protect the channel slopes from erosion. If any concrete falls into the creek, it would be removed. Construction staging/laydown would likely occur on Newell Road between the creek, Edgewood Drive, and Woodland Avenue within the roadway right-of-way. The final location of staging/laydown areas would be determined during the design phase.

The anticipated construction period would be 250 working days or approximately 12 months. Construction of the proposed project is expected to begin in March 2019 and ultimately conclude in March 2020, spanning one dry-season work window. In-channel construction would occur during the dry season (June to October).

<u>Conservation Measures</u>

Caltrans, the City of Palo Alto, and their contractors will implement the following conservation measures and BMPs to avoid and minimize the effects of the proposed project on the California red-legged frog and its habitats and other sensitive wildlife species:

1. Measure 1. Install Construction Barrier Fencing around Environmentally Sensitive Areas;

2. Measure 2. Prepare Environmental Awareness Program and Conduct Environmental Awareness Training for Construction Employees;

3. Measure 3. Retain a Biological Monitor to Conduct Visits during Construction;

4. Measure 4. Avoid and Minimize Potential Disturbance of Valley Foothill Riparian Community;

5. Measure 5. Protect Water Quality and Prevent Erosion and Sedimentation in San Francisquito Creek;

6. Measure 6. Avoid Work during Active Breeding and Dispersal Period for California Red-legged Frogs (October 15 through June 1);

7. Measure 7. Conduct Preconstruction Surveys at Work Sites in and near California Red-legged Frog-Sensitive Areas;

8. Measure 8. Provide Construction Worker Awareness Training for California Red-legged Frogs;

9. Measure 9. Install Exclusion Fencing and Conduct Construction Monitoring for California Red-legged Frogs;

10. Measure 10. Compensate for Permanent Loss of Valley Foothill Riparian Habitat; and

11. Measure 11. Limit In-Channel Construction to the Dry Season.

The action area for the proposed project occurs within a highly urbanized residential environment. Habitats within the 1.09-acre action area include 0.06 acre of intermittent stream, 0.13 acre of valley foothill riparian habitat, and 0.90 acre of developed areas. The portion of San Francisquito Creek within the action area provides suitable non-breeding aquatic foraging and dispersal habitat for the California red-legged frog. There are three California Natural Diversity Database (CNDDB) occurrences of the California red-legged frog within 5 miles of the action area, and the nearest CNDDB occurrence is approximately 4 miles away from the action area (California Department of Fish and Wildlife 2018). The California red-legged frog has a low potential to occur within the action area due to the highly urbanized setting and the lack of suitable breeding habitat and known occurrences of the frog within the frog's 2-mile dispersal distance.

The Service concurs that the proposed project is not likely to adversely affect the California red-legged frog because: (1) the California red-legged frog has a low potential to occur within the action area; (2) a qualified biologist will conduct pre-construction surveys, train the construction crew in the identification of the California red-legged frog and the conservation measures, and conduct construction monitoring; (3) the implementation of water quality BMPs will minimize the potential for the degradation of aquatic habitat; (4) construction will occur outside of the California red-legged frog's breeding and dispersal periods; and (5) exclusion fencing will prevent California red-legged frogs from entering the work area.

Therefore, unless new information reveals effects of the proposed project that may affect listed species in a manner or to an extent not considered, or a new species is listed, no further action pursuant to the Act is necessary for the proposed project.

If you have any questions regarding this letter, please contact Joseph Terry (joseph_terry@fws.gov), Senior Biologist, or Ryan Olah (ryan_olah@fws.gov), Coast/Bay Division Chief, at the letterhead address, or telephone (916) 943-6721 or (916) 414-6623.

Sincerely,

Ryan Olah
Coast/Bay Division Chief

LITERATURE CITED

California Department of Fish and Wildlife. 2018. California Natural Diversity Database. RareFind version 5. Natural Heritage Division. Sacramento, California.

California Department of Transportation (Caltrans). 2018. Newell Road Bridge Replacement Project Biological Assessment and Essential Fish Habitat Assessment, Palo Alto and East Palo, California. 04-SCI-0-PA. BRLS 5100(017). January. Prepared by ICF, San Francisco, California, for the California Department of Transportation, Office of Local Assistance, District 4, Oakland, California. 7-1 pp. plus appendices.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

March 29, 2018 **Refer to NMFS No:** WCR-2018-8833

Tom Holstein
Environmental Branch Chief
California Department of Transportation, District 4
Office of Local Assistance
P.O. Box 23660, MS-10B
Oakland, California 94623

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Newell Road Bridge Replacement Project in the Cities of Palo Alto and East Palo Alto, California

Dear Mr. Holstein:

On January 29, 2018, NOAA's National Marine Fisheries Service (NMFS) received California Department of Transportation's (Caltrans)[1] request for a written concurrence with Caltrans' determination that the proposed Newell Road Bridge Replacement Project (Project) is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA, implementing regulations at 50 CFR 402, and agency guidance for preparations of letters of concurrence.

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation. In this case, NMFS concluded the action would not adversely affect EFH. Thus, consultation under the MSA is not required for this action.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554).

[1] Pursuant to 23 USC 327, and through a series of Memorandum of Understandings beginning June 7, 2007, the Federal Highway Administration (FHWA) assigned and Caltrans assumed responsibility for compliance with Section 7 of the federal Endangered Species Act (ESA) and the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for federally-funded highway projects in California. Therefore, Caltrans is considered the federal action agency for consultations with NMFS for federally funded projects involving FHWA.

The concurrence letter will be available through NMFS' Public Consultation Tracking System (https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts).[2] A complete record of this consultation is on file at NMFS California Coastal Area Office, Santa Rosa, California.

Proposed Action and Action Area

The City of Palo Alto (City), in coordination with Caltrans, proposes to replace the Newell Road Bridge over San Francisquito Creek connecting the Cities of Palo Alto and East Palo Alto, California. The City will complete the construction of this project while Caltrans will complete environmental review, consultation, coordination, and administering of funds for this project. The project is located in the Cities of Palo Alto (Santa Clara County) and East Palo Alto (San Mateo County), California. The project site is located approximately 930 feet south of the West Bayshore Road/Newell Road intersection and is approximately 0.79 mile from the Embarcadero Road/Newell Road intersection.

The purpose of the project is to maintain connections for vehicular, bicycle, and pedestrian transportation across San Francisquito Creek, improve safety for all modes of transportation across the creek, and expand the channel's conveyance capacity under the bridge to accommodate high flow events and address potential flooding risk. Construction of the entire project is anticipated to be completed within a period of approximately 12 months. In-channel construction would be limited to the low-precipitation period of summer and fall between June 1 and October 15.

The proposed action includes project elements that will occur directly within the San Francisquito Creek channel and elements that will occur outside the creek channel. Within the channel, the existing Newell Road bridge will be demolished along with the existing abutments on the bank of the channel. Temporary falsework (scaffolding made of steel and timber) will be erected to facilitate construction of the replacement bridge. The new bridge will be a clear span over the stream channel with two footing supports placed on either side of the creek and wing walls along the banks. A maximum of 50, 14-inch piles will be driven or drilled on the creek banks to support the new bridge structure. A vibratory hammer, operated from an upland location, will be used to install the piles. The new bridge abutments will be backfilled with earthen materials and drainage structure. Riprap rock slope protection or soil nail walls will be installed for bank stabilization along the channel extending approximately 50 feet upstream and downstream of the bridge. During construction, no heavy equipment will be operated within the creek channel.

San Francisquito Creek is typically dry at this location during the summer (*i.e.* June 1 through October 15). Fish handling is not proposed as part of this effort as little to no surface flow is anticipated to be present in the creek during the in-channel construction period. However, the City proposes to be prepared for an unexpected emergency such as a water line break or fire hydrant release by installing cofferdams and a water diversion system at the in-channel work site. If water does arrive at the work site during construction via the stream channel, equipment shall be in place for a temporary surface water diversion. Clean, gravel-filled bags wrapped in plastic sheeting will be used to construct cofferdams upstream and downstream of the construction zone and a temporary culvert pipe will extend through the work site to allow surface flow to bypass the construction zone.

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[2] Once on the PCTS homepage, use the following PCTS tracking number within the Quick Search column: WCR-2018-8833.

To facilitate equipment and worker access to the in-channel work areas, riparian herbaceous understory will be cleared and trees trimmed (leaving roots intact) along the banks immediately adjacent to and beneath the bridge. Loss of native riparian trees will be mitigated through the replanting of native trees at a ratio of 3:1 (three native trees planted for every one native tree, greater than 4-inches diameter at breast height, removed). Loss of non-native riparian trees will be compensated at a ratio of 1:1 (one native tree planted for every one non-native tree removed, greater than 4-inches diameter at breast height). The potential loss of up to 0.031 acre of riparian vegetation will be fully mitigated by the planting of replacement native vegetation at the site, and the removal of the existing non-native vegetation is proposed to improve riparian habitat functions. An appropriate seed mix of native species will be planted on disturbed areas upon completion of construction.

The project elements outside the channel (approximately 5 feet above the ordinary high water mark [OHWM]) of San Francisquito Creek include sanitary sewer manhole replacement, fire hydrant assembly replacement, utility pole relocation, street light replacement, temporary relocation of electrical conduits, survey monument adjustment on Woodland Avenue, street sign modification, and removal of a water quality sampling station owned and operated by the City of Palo Alto. Demolition equipment including jackhammers, cranes, and excavators will be staged and operated from an adjacent upland location outside of the creek.

Avoidance and minimization of direct and indirect effects will be achieved using Best Management Practices (BMPs) described below:

- In-channel work will be limited to the period between June 1 and October 15;
- A netting and tarp system will be utilized to prevent and minimize debris from entering the creek during demolition and construction activities;
- Equipment used around San Francisquito Creek will be in good working order and free of dripping or leaking engine fluids. All vehicle maintenance will be performed at least 300 feet from all drainages and wetlands. Any necessary equipment washing will be carried out where the water cannot flow into drainages or wetlands;
- Any surplus concrete rubble, asphalt, or other rubble from construction will be taken to a local landfill;
- Install construction barrier fencing secured with sandbags around environmentally sensitive areas;
- Exposed dust-producing surfaces will be wetted, daily, where necessary;
- Daily street sweeping;
- Periodic maintenance and monitoring of erosion and sediment control measures;
- The contractor will cover or apply non-toxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways;
- The contractor will enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways. Materials stockpiles will be located in non-traffic areas only. Side slopes will not be steeper than 2:1. All stockpile areas will be surrounded by a filter fabric fence and interceptor dike;

- Runoff from disturbed areas will be contained and filtered by berms, vegetated filters, silt fencing, straw wattle, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area;
- The contractor will avoid depositing or placing earth or organic material where is may be directly carried into the channel;
- Conduct environmental awareness training for construction employees; and
- Oversight by a qualified biologist to ensure that fish (and other wildlife) are not harmed and habitat is not altered during scaffolding placement and removal.

There are no interrelated or interdependent activities associated with the proposed action.

The project's action area encompasses approximately 500 feet along the Newell Road including the bridge spanning San Francisquito Creek, 350 feet along Woodland Avenue, and 300 linear feet of the San Francisquito Creek channel (100 feet upstream of the existing bridge to 200 feet downstream of the existing bridge) totaling 1.09 acres. This area includes all locations where ground disturbance, staging, and access would occur on Newell Road between San Francisquito Creek, Edgewood Drive, and Woodland Avenue within the roadway right-of-way. It also includes all areas where direct and indirect effects on listed fish and designated critical habitat are anticipated. Within the action area, San Francisquito Creek is intermittent and seasonally flowing through the suburban eastern portions of the Cities of Palo Alto and East Palo Alto prior to discharging into South San Francisco Bay. The creek banks in many areas of the action area have been hardened with sack-crete (concrete filled bags secured to the creek bank) and riprap in an effort to stabilize the banks. The action area supports the migration of steelhead between the upper San Francisquito Creek watershed and San Francisco Bay during the winter and spring months. However, due to seasonally low and dry streamflow conditions, the action area does not support summer and fall rearing of juvenile steelhead. The creek bed, within this reach, is characterized by largely unvegetated, unconsolidated beds of sand, gravel, cobble, and rocky substrates absent of large woody debris. Riparian vegetation is present along the top of the banks upstream and downstream of the bridge and consists of eucalyptus (*Eucalyptus globulus*), willows *(Salix lasiolepis*, *S. laevigata*), Himalayan blackberry (*Rubus armeniacus*), Cape ivy (*Delairea odorata*), and English ivy (*Hedera helix*).

Action Agency's Effects Determination
Caltrans has determined that the project may affect, but is not likely to adversely affect (NLAA) listed species and their critical habitat. Caltrans' determination is based on the incorporation of measures to avoid and minimize effects.

Available information indicates the following listed species (Evolutionarily Significant Units [ESU]) or (Distinct Population Segments [DPS]) under the jurisdiction of NMFS may be affected by the proposed project:

Central California Coast (CCC) steelhead DPS (*Oncorhynchus mykiss*)
threatened (71 FR 834; January 5, 2006)
critical habitat (70 FR 52488; September 2, 2005).

The life history of steelhead is summarized in Busby *et al.* (1996). Central California Coast (CCC) steelhead use San Francisco Bay as a migration corridor and pass through the greater San Francisco Bay on their way to the ocean to rear as juveniles or to upstream areas to spawn as adults. Their migrations generally take place in the winter and spring months. Steelhead migrate to the ocean as smolts from January through May and migrate upstream from the ocean as adults to spawn from December through April (Fukushima and Lesh 1998).

The action area is located within designated critical habitat for CCC steelhead. The designation of critical habitat for CCC steelhead uses the term primary constituent element (PCE) or essential features. The new critical habitat regulations (81 FR 7414) replace this term with physical or biological features (PBFs). This shift in terminology does not change the approach used in conducting our analysis, whether the original designation identified primary constituent elements, physical or biological features, or essential features.

The PBFs of designated critical habitat for CCC steelhead in freshwater include those sites and habitat components that support spawning, rearing, and migration. The action area primarily supports migration of CCC steelhead and PBFs for migration consist of corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival. Within the action area, the PBFs for migration are in fair to good condition, while those supporting adult spawning and juvenile rearing are poor.

Consultation History
By letter dated January 22, 2018, Caltrans transmitted the biological assessment for the Project (Caltrans 2018) and requested initiation of informal consultation with NMFS. Electronic mail (email) correspondence between NMFS and Caltrans occurred between March 1 and March 7, 2018 clarifying timing of in-channel work and construction elements of the cofferdams. Sufficient information was provided to NMFS to initiate consultation on March 8, 2018. Additional correspondence (email) between NMFS and Caltrans occurred between March 21 and March 26, 2018 clarifying the purpose of the temporary cofferdam and water diversion pipe.

Effects of the Action
Under the ESA, "effects of the action" means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is not likely to adversely affect listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

The effects of the proposed action are reasonably likely to include temporary degradation of water quality and temporary impacts to riparian vegetation. By restricting construction activities to the period between June 1 and October 15, the Project's construction schedule avoids the migration seasons of adult and juvenile CCC steelhead in San Francisquito Creek. During the summer and fall, there is typically no surface flow within the action area thereby limiting use of this reach of creek by steelhead to winter and spring months. Thus, NMFS anticipates no CCC steelhead will be present in the action area during the in-channel construction period. As presented below, impacts associated with construction are expected to be temporary and fully dissipate when construction activities cease.

Water quality in San Francisquito Creek may be affected by workers, equipment, and installation of the cofferdams disturbing and mobilizing sediment along the creek bed and bank during construction. The City has proposed sediment control devices, such as barrier/silt fences, dust suppression, a netting and tarp system to prevent debris from falling into the creek, and stockpile management to avoid or minimize the discharge of materials. NMFS expects these proposed control measures will effectively prevent sediment from entering San Francisquito Creek and becoming a source of water pollution. In most summer and fall months San Francisquito Creek, within the project area, has no surface flow. With steelhead unlikely to be within the work area during construction and elevated turbidity/suspended sediments expected to be minor, localized, and short-term during construction, the potential effects of project construction on water quality are expected to be insignificant.

Between June 1 and October 15, cofferdams will be constructed in the channel with a bypass culvert to manage unanticipated water intrusion into the creek resulting from an emergency water main break, damage to a hydrant, or similar. For construction of cofferdams, sand bags will be filled with clean gravel and wrapped in heavy plastic sheeting. Since San Francisquito Creek in the action area is expected to be dry during the in-channel construction period, dewatering or fish relocation is not anticipated to be necessary for installation of cofferdams. With a low probability of surface water flow, no steelhead are expected to be present and installation of the cofferdams are not anticipated to entrap threatened steelhead or imped migration. All cofferdams and other equipment shall be removed from the channel by October 15 which will be prior to the next season's upstream migration of adults.

For installation of 14-inch diameter piles to support the new bridge, a vibratory hammer will be used. Hydroacoustic data collected from various projects within the San Francisco Bay region (Buehler *et al.* 2015) indicates vibratory hammers generate elevated levels of underwater sound; however, elevated levels do not rise to the threshold of physical injury or mortality to fish. Furthermore, this reach of San Francisquito Creek is expected to be dry during the in-channel work period when a vibratory hammer may be operated. Thus, steelhead will not be present in the action area during the operation of a vibratory hammer and the effects of pile driving by this project are anticipated to be discountable.

Some vegetation removal is proposed for equipment access to the channel and to allow for the new alignment of the bridge. The potential loss of up to 0.031 acre of riparian vegetation is expected to be fully mitigated by the planting of replacement native vegetation at the site, and the removal of the existing non-native vegetation is expected to improve riparian habitat functions.

The action area is located within designated critical habitat for CCC steelhead. During project activities, critical habitat will be temporarily affected by potential effects to water quality. As described above, effects to water quality are expected to be minor, localized, and short-term. The City has proposed several control measures to avoid the discharge of contaminants and prevent sediment from entering the creek. Post-construction, the project will increase the conveyance capacity of San Francisquito Creek flood flows under the bridge and the project's replacement of existing non-native vegetation with native riparian species will benefit the action area by improving the condition of the riparian community. Based on the above, the potential effects of this project are considered insignificant and are not expected to degrade PBFs in the action area or result in adverse impacts to designated critical habitat.

Conclusion
Based on this analysis, NMFS concurs with Caltrans that the proposed action is not likely to adversely affect the subject listed species and designated critical habitats.

Reinitiation of Consultation
Reinitiation of consultation is required and shall be requested by Caltrans or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter; or if (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16).

Please direct questions regarding this letter to Gwen Santos, North-Central Coast Office in Santa Rosa, California at (707) 575-6077, or via email at gwen.santos@noaa.gov.

Sincerely,

FOR

Barry A. Thom
Regional Administrator

cc: Dan Rivas, California Dept of Transportation, Office of Local Assistance, Oakland
Copy to ARN File # 151422WCR2018SR00022
Copy to Chron File

Literature Cited

71 FR 834. 2006. Endangered and threatened species: final listing determinations for 10 distinct Population segments of West Coast steelhead. Federal Register 71:834-862.

Buehler, D., R. Oestman, J. Reyff, K. Pommerenck, and B. Mitchell. 2015 Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Prepared for California Department of Transportation, 1120 N Street, Sacramento, California 95814. November 2015.

Busby, P.J., T.C. Wainwright, G.J. Bryant, L. Lierheimer, R.S. Waples, F.W. Waknitz, and I.V. Lagomarsino. 1996. Status review of West Coast steelhead from Washington, Idaho, Oregon and California. United States Department of Commerce, National Oceanic and Atmospheric Administration Technical Memorandum NMFS-NWFSC-27. 261 pages. [Document available at: http://www.westcoast.fisheries.noaa.gov/publications /statusreviews/salmon steelhead/ steelhead/sr 1997-steelhead.pdf.

Caltrans (California Department of Transportation). 2018. Biological Assessment and Essential Fish Habitat Assessment Palo Alto and East Palo Alto, California (04-SCI-0-PA) at the Newell Road Bridge Replacement Project.

Fukushima, L., and E.W. Lesh. 1998. Adult and juvenile anadromous salmonid migration timing in California streams. California Fish and Game 84: 133-145.

Appendix E

Species Lists

Maniscalco, Donna

From:	NMFSWCRCA Specieslist - NOAA Service Account <nmfswcrca.specieslist+canned.response@noaa.gov>
Sent:	Friday, February 08, 2019 11:30 AM
To:	Maniscalco, Donna
Subject:	Re: Caltrans - Newell Road Bridge Replacement project

Receipt of this message confirms that NMFS has received your email to nmfswcrca.specieslist@noaa.gov. If you are a federal agency (or representative) and have followed the steps outlined on the California Species List Tools web page (http://www.westcoast.fisheries.noaa.gov/maps_data/california_species_list_tools.html), you have generated an official Endangered Species Act species list.

Messages sent to this email address are not responded to directly. For project specific questions, please contact your local NMFS office.

Northern California/Klamath (Arcata) 707-822-7201

North-Central Coast (Santa Rosa) 707-387-0737

Southern California (Long Beach) 562-980-4000

California Central Valley (Sacramento) 916-930-3600

Maniscalco, Donna

From:	Maniscalco, Donna
Sent:	Friday, February 08, 2019 11:30 AM
To:	'nmfswcrca.specieslist@noaa.gov'
Cc:	Andersen, Jennifer
Subject:	Caltrans - Newell Road Bridge Replacement project

To whom it may concern,

Below are the search results for the Palo Alto quadrangle which falls within the project site. Please confirm receipt.

Thanks! Donna Maniscalco

Quad Name **Palo Alto**
Quad Number **37122-D2**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) - **X**
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat - **X**
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -

CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat - **X**

Essential Fish Habitat

Coho EFH -	**X**
Chinook Salmon EFH -	**X**
Groundfish EFH -	**X**
Coastal Pelagics EFH -	**X**
Highly Migratory Species EFH -	

Federal agency and address
Dan Rivas
Caltrans District 4
510-286-5743

Non-federal agency name and address
Michel Jeremias
City of Palo Alto
250 Hamilton Ave.
Palo Alto, CA 94301
650-329-2129

Point of contact, email and phone number.
Donna Maniscalco
Donna.maniscalco@icf.com
408-216-2802

DONNA MANISCALCO | Biologist | 408 216 2802| donna.maniscalco@icf.com
ICF | 75 E Santa Clara St. Suite 300, San Jose, CA 95112| 530.219.9595 mobile

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: February 08, 2019
Consultation Code: 08ESMF00-2015-SLI-0809
Event Code: 08ESMF00-2019-E-03030
Project Name: Newell Street Bridge Replacement Project

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/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, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) 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 Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

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 ECOS-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 ECOS-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:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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 Tracking Number 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

Consultation Code: 08ESMF00-2015-SLI-0809

Event Code: 08ESMF00-2019-E-03030

Project Name: Newell Street Bridge Replacement Project

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: Located in a residential area of the cities of Palo Alto, and East Palo Alto in the southeast part of San Mateo County, southwest of U.S. Highway 101 (US 101) and east of State Route 82 (El Camino Real). The Project site is located on Newell Road between Edgewood Drive in Palo Alto and Woodland Avenue in East Palo Alto. Single span cast-in-place pre-stressed slab bridge 86 feet in length, 45.5 width. Possible construction 2016.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.45426263060122N122.13668689979386W

Counties: San Mateo, CA | Santa Clara, CA

Endangered Species Act Species

There is a total of 17 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 Clapper Rail *Rallus longirostris obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
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 is outside 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 **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
San Francisco Garter Snake *Thamnophis sirtalis tetrataenia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5956	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Bay Checkerspot Butterfly *Euphydryas editha bayensis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2320	Threatened
San Bruno Elfin Butterfly *Callophrys mossii bayensis* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3394	Endangered

Flowering Plants

NAME	STATUS
Fountain Thistle *Cirsium fontinale var. fontinale* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7939	Endangered
Marin Dwarf-flax *Hesperolinon congestum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5363	Threatened
San Mateo Thornmint *Acanthomintha obovata ssp. duttonii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2038	Endangered
Showy Indian Clover *Trifolium amoenum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6459	Endangered

Critical habitats

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

Appendix F
List of Technical Studies

Many technical studies were used to analyze the impacts of the proposed build alternatives and the No Build Alternative. These studies include:

- Air Quality Technical Memorandum, November 2017
- Supplemental Air Quality Technical Memorandum, October 2018
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