VOLUME 1

I-80/SR 65 Interchange Improvements Project

Final Environmental Impact Report/ Environmental Assessment

Placer County, Interstate 80 and State Route 65

03-PLA-80-PM 1.9 to 6.1

03-PLA-65-PM R4.8 to R7.3

EA 03-4E3200/EFIS 0300000696

Prepared by the State of California Department of Transportation and Placer County Transportation Planning Agency

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

Caltrans

PLACER COUNTY TRANSPORTATION PLANNING AGENCY

August 2016

General Information about This Document

This document contains the Final Environmental Impact Report/Environmental Assessment for the proposed project. Throughout the document, a line in the margin indicates changes (other than small typographical corrections) made since the draft document was circulated.

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SCH#: 2013012003
03-PLA-80-PM 1.9 to 6.1; 03-PLA-65-PM R4.8 to R7.3
EA 03-4E3200/EFIS 0300000696

I-80/SR 65 Interchange Improvements Project

Improve the I-80/SR 65 Interchange on I-80 from the Douglas Boulevard interchange to the Rocklin Road interchange (post miles 1.9–6.1) and on SR 65 from the I-80 separation to the Pleasant Grove Boulevard interchange (post miles R4.8–R7.3) in Placer County

Final
Environmental Impact Report/Environmental Assessment

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2) C

STATE OF CALIFORNIA
Department of Transportation
and the
PLACER COUNTY TRANSPORTATION PLANNING AGENCY

Cooperating Agencies:
U.S. Fish and Wildlife Service
National Marine Fisheries Service
U.S. Army Corps of Engineers

Responsible Agencies:
California Transportation Commission
City of Roseville
City of Rocklin
City of Lincoln
California Department of Fish and Wildlife
Central Valley Flood Protection Board
Central Valley Regional Water Quality Control Board

Approved By: Suzanne Melim Date: 9-8-16
Suzanne Melim, North Regional Environmental Office Chief
California Department of Transportation
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CALIFORNIA DEPARTMENT OF TRANSPORTATION
FINDING OF NO SIGNIFICANT IMPACT (FONSI)

I-80/SR 65 Interchange Improvements Project

FOR

The California Department of Transportation (Caltrans) has determined that Alternative 2—Collector-Distributor (C-D) System Ramps will have no significant impact on the human environment. This FONSI is based on the attached Environmental Assessment (EA) which has been independently evaluated by Caltrans and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. Caltrans takes full responsibility for the accuracy, scope, and content of the attached EA.

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by Caltrans under its assumption of responsibility pursuant to 23 USC 327.

9-8-16
Date

Suzanne Melim
Suzanne Melim, North Regional Environmental Office Chief

Summary

Introduction

The California Department of Transportation (Caltrans), in cooperation with the Placer County Transportation Planning Agency (PCTPA), Placer County, and the Cities of Roseville, Rocklin, and Lincoln, proposes to improve the Interstate 80/State Route 65 (I-80/SR 65) interchange in Placer County, California, to reduce future traffic congestion, improve operations and safety, and comply with current Caltrans and local agency design standards. Caltrans is the lead agency under the National Environmental Policy Act (NEPA). Caltrans is also the lead agency under California Environmental Quality Act (CEQA).

Overview of Project Area

The project is located in Placer County in the cities of Roseville and Rocklin at the I-80/SR 65 interchange (Figure 1-1 in Chapter 1). Land uses in and around the project area include suburban single-family residential development; large-scale office and retail developments with associated surface parking; a variety of public and institutional uses including parks, open space and Class I trails, an electrical substation, a high school, an elementary school, a group of small to mid-sized medical institutions, and several churches. Union Pacific Railroad tracks run parallel to I-80 and Taylor Road/Atlantic Street.

Other Proposed Actions in the Project Vicinity

A number of other transportation and development projects are planned in the vicinity of the proposed project. Major transportation projects planned adjacent to the proposed project include those listed below. See Sections 2.5, "Traffic and Transportation/Pedestrian and Bicycle Facilities" and 2.22, "Cumulative Impacts" for more comprehensive lists of planned projects in the vicinity of the proposed project.

- I-80 Auxiliary Lanes – PCTPA is currently working on the environmental document for improvements on westbound I-80 from Douglas Boulevard to Riverside Avenue and eastbound I-80 from SR 65 to Rocklin Road.
- SR 65 Widening – PCTPA is currently working on the environmental document for improvements from Galleria Boulevard/Stanford Ranch Road to Lincoln Boulevard.
- SR 65/Whitney Ranch Parkway/Placer Parkway Interchange – The City of Rocklin is currently constructing a partial cloverleaf interchange with connections to Whitney Ranch Parkway to the east. Placer County is currently working on the environmental permits for the first segment of Placer Parkway from SR 65 to Foothills Boulevard.
- I-80/Rocklin Road Interchange – The City of Rocklin is proposing improvements to be made to Rocklin Road and the on- and off-ramps at the I-80 interchange.

Purpose and Need

The proposed project would reduce future traffic congestion, improve operations and safety, and bring the roads into compliance with current Caltrans and local agency design standards. Construction of the proposed improvements has independent utility. The project is not dependent on other projects or improvements to meet the purpose and need.

Termini (i.e., limits) for the project were developed through an iterative process involving engineering design and traffic operations analysis. Preliminary design concepts were tested with the traffic operations analysis model to evaluate how lane transitions and vehicle weaving influenced peak-hour conditions. Refinements were made to ensure that mainline lane balance was logical and that transitions did not cause unacceptable traffic operations such as extensive queuing or reduced speeds.

Purpose

The purpose and objectives of the project are listed below.

- Upgrade the I-80/SR 65 interchange and adjacent transportation facilities to reduce no-build traffic congestion.
- Upgrade the I-80/SR 65 interchange and adjacent transportation facilities to comply with current Caltrans and local agency design standards for safer and more efficient traffic operations while maintaining and, if feasible, improving the current level of community access, at a minimum.
- Consider all travel modes and users in developing project alternatives.

Need

The project is needed for the following reasons.

- Recurring morning and evening peak-period demand exceeds the current design capacity of the I-80/SR 65 interchange and adjacent transportation facilities, creating traffic operations and safety issues. These issues result in high delays, wasted fuel, and excessive air pollution and greenhouse gas emissions, all of which will be exacerbated by traffic from future population and employment growth.
- Interchange design features do not comply with current Caltrans design standards for safe and efficient traffic operations and limit the existing community access to nearby land uses.
- Travel choices are limited in the project area because the transportation network does not include facilities for all modes and users consistent with the complete streets policies of Caltrans and local agencies.

Proposed Action

Three build alternatives were considered in the Draft Environmental Impact Report/ Environmental Assessment (EIR/EA) and were designed to satisfy the purpose and need identified above, while avoiding or minimizing environmental impacts.

- Alternative 1—Taylor Road Full Access Interchange
- Alternative 2—Collector–Distributor (C-D) System Ramps
- Alternative 3—Taylor Road Interchange Eliminated

The project limits consist of I-80 from the Douglas Boulevard interchange to the Rocklin Road interchange (post miles 1.9–6.1) and SR 65 from the I-80 separation to the Pleasant Grove Boulevard interchange (post miles R4.8–R7.3) in the cities of Roseville and Rocklin and Placer County. The total length of the project is 2.5 miles along SR 65 and 4.2 miles along I-80. The project area also includes various local roads—specifically, portions of Galleria Boulevard/Stanford Ranch Road, Pleasant Grove Boulevard, Eureka Road/Atlantic Street, East Roseville Parkway, and Taylor Road.

The three build alternatives under consideration would add capacity, a bi-directional high-occupancy vehicle (HOV) system, and high-speed connector ramps. Local and regional circulation and access would be improved, as would vehicle lane-weaving conditions along I-80 between Eureka Road/Atlantic Street and Taylor Road and along SR 65 between the I-80/SR 65 interchange and Galleria Boulevard/Stanford Ranch Road. Other improvements would include widening the East Roseville Viaduct, replacing the Taylor Road overcrossing, and realigning the existing eastbound I-80 to northbound SR 65 loop connector. The project is described in detail in Chapter 1 and Figure 1-1, in that chapter, shows the project vicinity and location.

Alternative 1 (Taylor Road Full Access Interchange) provides for an improved Taylor Road interchange access but has less than desirable effects on I-80 and the system interchange. Alternative 1 is not acceptable to the Federal Highway Administration (FHWA) and Caltrans because it still allows weaving conditions between the Eureka Road/Atlantic Street, Taylor Road, and SR 65 interchanges that result in increased congestion and reduced safety on I-80 eastbound. Alternative 2 would solve this issue by separating the Eureka Road/Atlantic Street and Taylor Road weaving movements from the I-80 freeway, while still maintaining the existing access to Taylor Road.

Alternative 2 would provide eastbound access to Taylor Road at the Atlantic Street/Eureka Road interchange via (Collector-Distributor [C-D] System Ramps) and would restrict local traffic from leaving or entering I-80 mainline until after the critical weave area between Eureka Road and the I-80/SR 65 interchange. The two existing Taylor Road interchange ramps would remain in their current location but would be reconfigured to accommodate the surrounding improvements.

Alternative 3 (Taylor Road Interchange Eliminated) would eliminate the Taylor Road interchange, transferring the local access to the adjacent Eureka Road/Atlantic Street, Galleria Boulevard/Stanford Ranch Road, and Rocklin Road interchanges. Construction of the original I-80/SR 65 interchange and adjacent interchanges has reduced local access to Taylor Road, resulting in a strain on the local roadways, especially Eureka Road/Atlantic Street. Alternative 3 would result in negative impacts to businesses with significant out-of-direction travel that is unacceptable to local agencies. Alternative 2 would solve this issue by maintaining the existing access to Taylor Road.

Substantial contributions from many different disciplines at FHWA and Caltrans assisted the Project Development Team (PDT) in developing the three build alternatives under consideration. As a result of this collaboration, PCTPA and Caltrans have identified a preferred alternative subject to selection after public review and comment, Alternative 2 (Collector–Distributor [C-D] System Ramps). Because the engineering design is limited by the available area in and adjacent to the interchange, the impact footprint of the three build alternatives are not substantially different from each other. Further, Alternative 2 is a solution to the need for the project that is acceptable to the local agencies, Caltrans, and FHWA.

Alternative 2 was found to meet all aspects of the need and purpose, over and above Alternatives 1 and 3, by providing a separation of the ramp and freeway movements on I-80 eastbound, which will reduce traffic congestion, compared to Alternative 1, and maintain the existing Taylor Road ramps, access that would be eliminated under Alternative 3.

Joint California Environmental Quality Act/National Environmental Policy Act Documentation

The proposed project is a joint project by Caltrans and FHWA, and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the lead agency under CEQA and NEPA. In addition, FHWA’s responsibility for environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried-out by Caltrans under its assumption of responsibility pursuant to 23 United States Code (USC) 327.

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, quite often a “lower level” document is prepared for NEPA. One of the most common joint document types is an EIR/EA, which is proposed for this project.

After receiving comments from the public and reviewing agencies, this Final EIR/EA was prepared. This Final EIR/EA includes responses to comments received on the Draft EIR/EA (Appendix G). Caltrans has identified Alternative 2—Collector–Distributor (C-D) System Ramps as the preferred alternative. If the decision is made to approve the project, a Notice of Determination will be published for compliance with CEQA. Caltrans has decided to issue a Finding of No Significant Impact (FONSI) 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.

Potential Environmental Consequence and Avoidance, Minimization and/or Mitigation Measures

Project impacts would occur in the following resource areas: Recreation, Community Impacts, Emergency Services, Traffic and Transportation, Visual/Aesthetics, Cultural Resources, Hydrology, Water Quality, Geology/Soils/Seismic, Paleontology, Hazardous Waste, Air Quality, Noise, and Biology. Significant and unavoidable impacts under CEQA would occur in the following resource areas: Visual/Aesthetics. Project effects under NEPA are discussed fully in Chapter 2. Chapter 3 addresses impacts under CEQA. Table S-2, located at the end of this summary, summarizes the impacts of the project.

Coordination with Other Public Agencies

Notice of Preparation

A Notice of Preparation (NOP) was published on January 2, 2013. It was filed with the State Clearinghouse and sent to the appropriate elected officials, agencies, and interested parties.

A public scoping meeting/community workshop for the EIR/EA was held on January 15, 2013, from 6:00 to 8:00 p.m. at the Maidu Community Center, 1550 Maidu Drive, Roseville, California 95661. The meeting was announced in the NOP and via a news release on December 14, 2012. The purpose of the scoping meeting was to identify concerns of both the public and agencies in order to clearly define the environmental issues and alternatives to be examined in the draft EIR/EA. Maps and other project information displays were available, and Caltrans staff were on hand to answer questions and receive comments regarding the scope and content of the EIR/EA.

Information pertaining to the scoping process and the public open house scoping meeting also appeared on the PCTPA website at http://8065interchange.org.

Necessary Permits and Approvals

The table below shows the permits and approvals that would be required.

Table S-1. Permits and Approvals

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service	Coordination and Section 7 consultation regarding threatened and endangered species Amendment to City of Roseville *Open Space Preserve Overarching Management Plan*	Initiated formal consultation for threatened and endangered species on April 24, 2015 Biological Opinion received March 8, 2016
National Marine Fisheries Service	Coordination and Section 7 consultation regarding threatened and endangered species	Informal consultation/ technical assistance initiated August 2014 Submitted documentation on April 24, 2015, requesting agency determination Concurrence letter received August 10, 2015
U.S. Army Corps of Engineers	Section 404 authorization for fill of waters of the United States	Submitted delineation of potential waters of the United States, including wetlands, on March 4, 2015, to support a preliminary jurisdictional determination USACE verified delineation on November 13, 2015 Permit application process not yet initiated
California Department of Fish and Wildlife	Section 1602 Streambed Alteration Agreement	Not yet initiated
Central Valley Regional Water Quality Control Board	Section 401 Water Quality Certification and coverage under the existing Caltrans National Pollutant Discharge Elimination System Permit (Order No. 2012-0011-DWQ); Section 402 coverage under General Order R5-2013-0074 for low threat discharges	Not yet initiated
Central Valley Flood Protection Board	Permit for encroachment into jurisdictional floodway	Not yet initiated
Placer County Air Pollution Control District	Formal notification prior to construction	Not yet initiated

Table S-2. Comparison of Alternatives

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
HUMAN ENVIRONMENT					
2.1—Land Use					
Consistency with City of Roseville General Plan	Consistent	Consistent	Consistent	Consistent	None required
Consistency with City of Rocklin General Plan	Consistent	Consistent	Consistent	Consistent	None required
Placer County Transportation Planning Agency Regional Transportation Plan	Consistent	Consistent	Consistent	Consistent	None required
Limited Access to Miners Ravine Trail During Construction	No effect	No effect	Miners Ravine Trail will require a temporary detour during construction	Same as Alternative 2	The City of Roseville will provide advance notification of the Miners Ravine Trail closure on its websites and trailheads. Notices will include trail closure dates, approximate duration, and description of the detour available during closure. The City of Roseville will post signs at the Miners Ravine Trail trailheads and closure points, depicting the detour
Possible Inadvertent Damage to Antelope Creek or Miners Ravine Trail as a Result of Construction	No effect	Potential damage to trails during construction	Same as Alternative 1	Same as Alternative 1	Area affected will be restored to the condition that existed prior to construction activities or better
2.2—Growth					
Potential to Induce Growth	No effect	Due to developed nature of project area, the project would not be growth-inducing	Same as Alternative 1	Same as Alternative 1	None required

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
2.3—Community Impacts					
Community Character and Cohesion	No effect	No separation or division of an existing neighborhood	Same as Alternative 1	Elimination of Taylor Road would reduce access to businesses and residential areas	None required
Displacement of Residences and Businesses	No effect	No residential or business displacements Right-of-way acquisition of 11.68 acres; strips of open space and commercial land, and parking spaces 8 partial and 2 full property takes necessary	No residential or business displacements Right-of-way acquisitions of 12.56 acres; strips of open space and commercial land, and parking spaces 9 partial and 2 full property takes necessary	No residential or business displacements Right-of-way acquisition of 12.44 acres; strips of open space and commercial land, and parking spaces 9 partial and 2 full property takes necessary	None required
Environmental Justice	No effect	No disproportionate effect to minority or low-income populations	Same as Alternative 1	Same as Alternative 1	None required
2.4—Utilities/Emergency Services					
Potential Effect to Utilities	No effect	Possible impacts on utilities or interruption of service during construction	Same as Alternative 1	Same as Alternative 1	Advance notification and coordination with utility service providers prior to and during construction
Potential Effects on Police, Fire, and Emergency Service Providers during Construction	No effect	Short-term lane closures during construction	Same as Alternative 1	Same as Alternative 1	Prepare Transportation Management Plan (TMP) with input (regarding detours, truck routes, notifications, etc.) from emergency service providers

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
2.5—Traffic and Transportation/Pedestrian and Bicycle Facilities					
Design Year (2040) Network Performance	Would not serve peak-period demand volumes; overall network (highways, roads and streets used for vehicular movement) performance reduced as compared to all build alternatives	Nearly all peak-period demand volumes served; lower delay during p.m. peak period, lower travel times for SOVs and high-occupancy vehicles (HOVs); HOV travel times improved.	Nearly all peak-period demand volumes served; lower delay and higher average speed during a.m. peak period; HOV travel times improved.	Nearly all peak-period demand volumes served; HOV travel times improved.	None required
Construction Year (2020) Network Performance	Overall network performance reduced as compared to all build alternatives; does not serve peak-period demand volume	Would serve all of peak-period demand volumes; improved a.m. and p.m. travel times	Would serve all of peak-period demand volumes; lowest delay and highest average speed during p.m. peak period; a.m. SOV travel time increased from Blue Oaks Blvd. to Antelope Rd.; improved a.m. and p.m. travel times	Would serve all of peak-period demand volumes; slightly lower delays for a.m. peak period; improved a.m. and p.m. travel times	None required
Design Year (2040) Freeway Operations	28 locations operating at unacceptable level of service thresholds (LOS)* *acceptable LOS is defined by each of the jurisdictions in the project area. See Section 2.5.2.3 for more information	30 locations operating at unacceptable LOS and operating worse than the No Build Alternative	29 locations operating at unacceptable LOS and operating worse than the No Build Alternative	28 locations operating at unacceptable LOS and operating worse than the No Build Alternative	Implement regional coordination for transportation improvements as part of current ongoing projects, capital improvement program updates, and traffic impact fee updates

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Design Year (2040) Intersection Operations	17 locations operating at unacceptable LOS	5 locations operating at unacceptable LOS and operating worse than the No Build Alternative	4 locations operating at unacceptable LOS and operating worse than the No Build Alternative	8 locations operating at unacceptable LOS and operating worse than the No Build Alternative	Improve Taylor Road at Stonehouse Court through construction of a new traffic signal that allows eastbound Taylor Road traffic to make a U-turn Implement regional coordination for transportation improvements as part of current ongoing projects, capital improvement program updates, and traffic impact fee updates
Construction Year (2020) Freeway Operations	36 locations operating at unacceptable LOS	8 locations operating at unacceptable LOS and operating worse than the No Build Alternative	7 locations operating at unacceptable LOS and operating worse than the No Build Alternative	6 locations operating at unacceptable LOS and operating worse than the No Build Alternative	Implement regional coordination for transportation improvements as part of current ongoing projects, capital improvement program updates, and traffic impact fee updates
Construction Year (2020) Intersection Operations	10 locations operating at unacceptable LOS	3 locations operating at unacceptable LOS and operating worse than the No Build Alternative	2 locations operating at unacceptable LOS and operating worse than the No Build Alternative	2 locations operating at unacceptable LOS and operating worse than the No Build Alternative	Improve Taylor Road at Stonehouse Court through construction of a new traffic signal that allows eastbound Taylor Road traffic to make a U-turn Implement regional coordination for transportation improvements as part of current ongoing projects, capital improvement program updates, and traffic impact fee updates
Construction Period Disruption of Vehicle Circulation	No effect	Traffic flow disrupted during construction	Same as Alternative 1	Same as Alternative 1	Implement a Transportation Management Plan (TMP)

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Construction Period Disruption of Pedestrian/Bicycle Circulation	No effect	Taylor Road curb, gutter, and sidewalk improvements would benefit pedestrians; minor access change during construction of Antelope Creek Trail realignment	Taylor Road curb, gutter, and sidewalk improvements would benefit pedestrians; minor access change during construction of Antelope Creek Trail realignment; Miners Ravine Trail will require a temporary detour during construction	Taylor Road curb, gutter, and sidewalk improvements would benefit pedestrians; minor access change during construction of Antelope Creek Trail realignment; Miners Ravine Trail will require a temporary detour during construction	Detour provided during construction Falsework construction to be scheduled when least likely to affect users (e.g., weekdays) Traffic control measures used to maintain safety and flow of travel on trails
2.6—Visual/Aesthetic					
Temporary Visual Impacts Caused by Construction Activities	No effect	Construction equipment and personnel, vegetation removal, would result in adverse visual effects; undercrossing would result in slightly more visible construction activities	Construction equipment and personnel, vegetation removal, would result in adverse visual effects; slightly more vegetation removal on northeast side of I-80	Construction equipment and personnel, vegetation removal, would result in adverse visual effects; slightly less construction and vegetation removal than Alternative 2	None required

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Permanent Changes in Visual Quality and Character - I-80 Corridor	No effect	Overall visual quality change moderately low	Visual quality change low to moderate	Same as Alternative 2	Use native grass and wildflower species in erosion control grassland seed mix Implement interchange and slope landscaping and visual barriers Implement project design aesthetics Minimize fugitive light from portable sources used for construction Apply minimum lighting standards Install visual barriers between construction work areas and sensitive receptors
Permanent Changes in Visual Quality and Character – SR 65 Corridor	No effect	Overall visual quality would remain moderate	Same as Alternative 1	Same as Alternative 1	Use native grass and wildflower species in erosion control grassland seed mix Implement interchange and slope landscaping and visual barriers Implement project design aesthetics Minimize fugitive light from portable sources used for construction Apply minimum lighting standards Install visual barriers between construction work areas and sensitive receptors
Permanent Changes in Visual Quality and Character – Open Space	No effect	Overall visual quality slightly reduced but would remain moderate-high	Same as Alternative 1	Same as Alternative 1	Use native grass and wildflower species in erosion control grassland seed mix Implement interchange and slope landscaping and visual barriers Implement project design aesthetics Minimize fugitive light from portable sources used for construction Apply minimum lighting standards Install visual barriers between construction work areas and sensitive receptors

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Permanent Changes in Visual Quality and Character – Residential	No effect	Overall visual quality would decrease from moderate to moderate-low	Same as Alternative 1	Same as Alternative 1	Use native grass and wildflower species in erosion control grassland seed mix Implement interchange and slope landscaping and visual barriers Implement project design aesthetics Minimize fugitive light from portable sources used for construction Apply minimum lighting standards Install visual barriers between construction work areas and sensitive receptors
Permanent Changes in Visual Quality and Character – Commercial/Institutional	No effect	Overall visual quality would decrease from moderate to moderate-low	Same as Alternative 1	Same as Alternative 1	Use native grass and wildflower species in erosion control grassland seed mix Implement interchange and slope landscaping and visual barriers Implement project design aesthetics Minimize fugitive light from portable sources used for construction Apply minimum lighting standards Install visual barriers between construction work areas and sensitive receptors
Short-Term Light and Glare	No effect	Increased light and glare during construction	Same as Alternative 1	Same as Alternative 1	Implement project design aesthetics Minimize fugitive light from portable sources used for construction Apply minimum lighting standards Install visual barriers between construction work areas and sensitive receptors
Permanent Light and Glare	No effect	Increase in visible glare due to the addition/expansion of vertical surfaces (lane barriers, retaining walls); new light placed at a higher elevation	Same as Alternative 1	Same as Alternative 1	Implement project design aesthetics Minimize fugitive light from portable sources used for construction Apply minimum lighting standards Install visual barriers between construction work areas and sensitive receptors

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
2.7—Cultural Resources					
Effects on Known Resources from Construction	No effect	Potential to disturb known buried cultural resources during construction and potential to affect one architectural/built environment resource	Same as Alternative 1	Same as Alternative 1	Flag sensitive area and prepare and ESA Action Plan Conduct mandatory cultural resources awareness Training for construction personnel Retain a qualified archaeologist and a Native American monitor to conduct monitoring during construction in areas sensitive for cultural resources Avoid or proceed with caution in locations determined by investigations to have potential subsurface resources Implement avoidance and notification procedures for cultural resources Conduct Phase III Data Recovery
Effects on Unknown Resources from Construction	No effect	Potential to disturb buried cultural resources during construction	Same as Alternative 1	Same as Alternative 1	Avoid or proceed with caution in locations determined by investigations to have potential subsurface resources Implement avoidance and notification procedures for cultural resources
Discovery of Human Remains during Construction	No effect	Potential to disturb buried human remains during construction	Same as Alternative 1	Same as Alternative 1	Protect human remains if encountered during excavation activities as per State Health and Safety Code Section 7050.5 and Public Resources Code 5097.98

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
PHYSICAL ENVIRONMENT					
2.8—Hydrology and Floodplain					
Increase in Impervious Area	No effect	Increased impervious surface area slightly greater under this alternative and could increase the rate and volume of stormwater runoff with the potential for localized flooding	Increased impervious surface area less than Alternative 1 and associated impacts considered minor	Increased impervious surface area less than Alternative 1 and associated impacts considered minor	None required
Potential for Increased Scour	No effect	Geotechnical analysis at the proposed bridges indicates that soils generally will be resistant to scour	Same as Alternative 1	Same as Alternative 1	None required
2.9—Water Quality					
Potential Water Quality, Erosion and Sediment Control Issues during Construction	No effect	Potential for sediment or pollutants associated with construction to enter waterways during construction	Same as Alternative 1	Same as Alternative 1	Implement Storm Water Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs)
Potential Water Quality, Erosion and Sediment Control Issues during Operations	No effect	Potential for sediment or pollutants associated with operations to enter waterways	Same as Alternative 1	Same as Alternative 1	Implement permanent design pollution prevention BMPs

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
2.10—Geology/Soils/Seismic/Topography					
Risk of Seismic Hazards or Ground Shaking during Operations	No effect	Potential for seismic activity is low; however, slope stability is an issue because weak claystones may be present	Same as Alternative 1	Same as Alternative 1	Compliance with the appropriate building regulations would ensure that the viaduct, roads, walls, and other project features are not damaged as a result of seismic activity. Area will be evaluated for soil stability further during final design
Risk of Landslides or Other Slope Failure during Operations	No effect	Potential for landsliding is low except in eastern portion of the interchange area, where the claystone may be present and could affect slope stability	Same as Alternative 1	Same as Alternative 1	Cut-and-fill slopes in native soils and engineered fill would be designed to have slopes no greater than 2H:1V which is considered stable for the project site conditions. Area will be evaluated for soil stability further during final design
Runoff, Erosion, and Sedimentation from Grading Activities Associated with Construction	No effect	Potential impact during construction activities	Same as Alternative 1	Same as Alternative 1	Implementation of Caltrans' Construction Site BMPs Manual, SWPPP, and Water Pollution Control Program (WPCP) Manual
Risk During Operation as a Result of Development on Expansive Soil during Operations	No effect	Soils in the project area have low-moderate shrink-swell potential	Same as Alternative 1	Same as Alternative 1	Structures will be designed to meet the regulations and standards associated with Uniform Building Code Seismic Hazard/California Building Standards Commission standards, Caltrans standards, and (if applicable) local standards to minimize potential shrink swell hazards on associated project features

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
2.11—Paleontology					
Destruction of Vertebrate or Otherwise Scientifically Significant Paleontological Resources as a Result of Construction Activities	No effect	Excavation in sensitive units could result in the inadvertent destruction of fossil resources	Same as Alternative 1	Same as Alternative 1	Train construction personnel in recognizing fossil material. Stop work and consult with a qualified professional paleontologist if fossil remains are encountered during construction. Add the following Resource Stewardship Measures to the project's standard specification: If paleontological resources are discovered at the job site, do not disturb the material and immediately: 1. Stop all work within a 60-foot radius of the discovery 2. Protect the area 3. Notify the Resident Engineer The project proponent investigates and modifies the dimensions of the protected area if necessary. Do not take paleontological resources from the job site. Do not resume work within the specified radius of the discovery until authorized. A specification alerting the construction contractor that paleontological monitoring will occur during activities that will disturb native sediments will also be added to the project's specifications.
2.12—Hazardous Waste/Materials					
Potential for Exposure of Humans and the Environment to Hazardous Conditions from the Accidental Release of Hazardous Materials as a Result of Construction Activities	No effect	Potential for accidental release of materials associated with construction equipment	Same as Alternative 1	Same as Alternative 1	Implement a Health and Safety Plan

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Potential for Exposure of Unknown Hazardous Materials to Humans or the Environment as a Result of Construction Activities	No effect	Hazardous materials present may include heavy metals, asbestos-containing materials (ACM), lead containing paint (LCP), contaminated soils, aerially deposited lead (ADL), and treated wood waste	Same as Alternative 1	Same as Alternative 1	Additional site assessments will be conducted of Assessor's Parcel Number 015-162-005 and 015-162-007 prior to construction Implement appropriate avoidance or remediation measures according to state and federal regulations Develop a lead abatement plan and an asbestos abatement plan
Potential for Exposure of Known Hazardous Materials to Humans or the Environment as a Result of Construction Activities	No effect	Hazardous materials present may include heavy metals, ACM, LCP, contaminated soils, polychlorinated biphenyls, and ADL	Same as Alternative 1	Same as Alternative 1	Handle, remove, store, and dispose traffic striping according to Health and Safety Plan Conduct soil testing and if contaminated, dispose in accordance with appropriate regulations Coordinate with utility companies for relocation of towers
2.13—Air Quality					
Conformity With the Regional Transportation Plan	No effect	The project is included in the conforming 2016 Metropolitan Transportation Plan (MTP)/Sustainable Communities Strategy (SCS) and 2015-2018 Metropolitan Transportation Improvement Program (MTIP), Amendment #20. FHWA confirmed regional conformity (Appendix F).	Same as Alternative 1	Same as Alternative 1	None required

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Potential Violation of Carbon Monoxide National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS)	Not anticipated to exceed 1- or 8-hour NAAQS or CAAQS	Not anticipated to exceed 1- or 8-hour NAAQS or CAAQS	Same as Alternative 1	Same as Alternative 1	None required
Potential Violation of PM2.5 NAAQS and CAAQS	No effect	Project not considered to be a project of air quality concern and project-level particulate matter conformity determination requirements are satisfied	Same as Alternative 1	Same as Alternative 1	None required
Potential Increase in Roadway Vehicle Emissions	Lower emissions than all alternatives	Increase in criteria pollutants and vehicle emissions due to expanded capacity which would result in reduced travel times and an increased demand and associated vehicle miles travelled (VMT)	Same as Alternative 1	Same as Alternative 1	None required because of traffic operation improvements resulting from the build alternatives
Potential Temporary Increase in Ozone Precursors (reactive organic gases and nitrogen dioxide), carbon monoxide, particles of 10 micrometers or smaller (PM10), particles of 2.5 micrometers or smaller (PM2.5), and carbon dioxide Emissions during Grading and Construction Activities	No effect	Temporary increase in all ozone precursors due to construction	Same as Alternative 1	Same as Alternative 1	Addressed by construction-related emission minimization measures and fugitive dust emissions control in the Caltrans' Standard Specifications Section 14 Implement Measures to reduce exhaust emissions from off-road diesel powered equipment

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Asbestos Emissions During Construction Activities	No effect	Potential asbestos-containing materials released during demolition of structures	Same as Alternative 1	Same as Alternative 1	Demolition of structures containing asbestos will be regulated under Environmental Protection Agency National Emissions Standards for Hazardous Air Pollutants and California Air Resources Board (ARB's) Airborne Toxic Control measures Implement a Health and Safety Plan
Potential Generation of Significant Levels of mobile source air toxics (MSAT) Emissions	Lower MSAT emissions than all alternatives under 2020; slightly higher under 2040 conditions	Slight increase of diesel particulate matter (DPM) under 2020 conditions and benzene and DPM under 2040 conditions; Slight increase in formaldehyde and acetaldehyde emissions under 2040 conditions	Slight increase of DPM under 2020 conditions and benzene and DPM under 2040 conditions	Slight increase of DPM under 2020 conditions and benzene and DPM under 2040 conditions	None required because of traffic operation improvements resulting from the build alternatives
2.14—Noise and Vibration					
Exposure of Noise Sensitive Land Uses to Increased Traffic Noise	Noise levels would increase as traffic congestion increases	Traffic noise levels are predicted to exceed the noise abatement criteria in the project area under design year conditions	Same as Alternative 1	Same as Alternative 1	Project proponent will implement the recommendations of the Noise Abatement Decision Report. The report recommends construction of four noise barriers
Exposure of Noise Sensitive Land Uses to Construction Noise	No effect	Construction equipment would generate noise	Same as Alternative 1	Same as Alternative 1	Addressed by construction related noise minimization measures in Caltrans' Standard Specifications

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
2.15—Energy					
Energy Consumption During Construction and Operations	No effect	During operations, overall network performance compared to no-build conditions would improve increasing fuel efficiency. This balances energy used during construction with energy savings post-construction	Same as Alternative 1	Same as Alternative 1	None required
BIOLOGICAL ENVIRONMENT					
2.16—Natural Communities					
Loss or Disturbance of Non-Wetland Riparian Woodland Resulting from Construction	No effect	Permanent loss of 0.331 acre; temporary disturbance of 1.152 acres	Permanent loss of 0.461 acre; temporary disturbance of 1.039 acres	Permanent loss of 0.540 acre; temporary disturbance of 1.059 acres	Install fencing around the construction area to protect sensitive biological resources to be avoided Conduct environmental awareness training for construction employees Retain a biological monitor to conduct visits during construction in sensitive habitats Compensate for temporary and permanent loss of non-wetland riparian vegetation, including shaded riverine aquatic (SRA) cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Permanent Loss of Oak Woodlands	No effect	Permanent loss of 6.368 acres	Permanent loss of 6.141 acres	Permanent loss of 6.174 acres	Install fencing around the construction area to protect sensitive biological resources to be avoided Conduct environmental awareness training for construction employees Retain a biological monitor to conduct visits during construction in sensitive habitats Compensate for temporary and permanent loss of non-wetland oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin)
2.17—Wetlands and Other Waters					
Loss or Disturbance of Riparian Forest/Scrub Wetland Resulting from Construction	No effect	Permanent loss of 0.004 acre; temporary disturbance of 0.181 acre	Same as Alternative 1	Same as Alternative 1	Install fencing around the construction area to protect sensitive biological resources to be avoided Conduct environmental awareness training for construction employees Retain a biological monitor to conduct visits during construction in sensitive habitats Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Compensate for placement of permanent fill in Waters of the United States/Waters of the State through the purchase of compensatory credits at a USACE-approved mitigation bank

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Loss or Disturbance of Emergent Wetland Resulting from Construction	No effect	Permanent loss of 0.116 acre; temporary disturbance of 0.194 acre	Same as Alternative 1	Same as Alternative 1	Install fencing around the construction area to protect sensitive biological resources to be avoided Conduct environmental awareness training for construction employees Retain a biological monitor to conduct visits during construction in sensitive habitats Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Compensate for placement of permanent fill in Waters of the United States/Waters of the State through the purchase of compensatory credits at a USACE-approved mitigation bank
Loss or Disturbance of Seasonal Wetland Resulting from Construction	No effect	Permanent loss of 0.115 acre; temporary disturbance of 0.066 acre	Same as Alternative 1	Same as Alternative 1	Install fencing around the construction area to protect sensitive biological resources to be avoided Conduct environmental awareness training for construction employees Retain a biological monitor to conduct visits during construction in sensitive habitats Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Compensate for placement of permanent fill in Waters of the United States/Waters of the State through the purchase of compensatory credits at a USACE-approved mitigation bank

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Loss of Vernal Pool Resulting from Construction	No effect	Permanent loss of 0.043 acre	Same as Alternative 1	Same as Alternative 1	Install fencing around the construction area to protect sensitive biological resources to be avoided Conduct environmental awareness training for construction employees Retain a biological monitor to conduct visits during construction in sensitive habitats Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Compensate for placement of permanent fill in Waters of the United States/Waters of the State through the purchase of compensatory credits at a USACE-approved mitigation bank
Loss or Disturbance of Perennial Stream Resulting from Construction	No effect	Permanent loss of 0.034 acre; temporary disturbance of 0.056 acre	Permanent loss of 0.004 acre	Permanent loss of 0.007 acre	Install fencing around the construction area to protect sensitive biological resources to be avoided Conduct environmental awareness training for construction employees Retain a biological monitor to conduct visits during construction in sensitive habitats Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for placement of permanent fill in Waters of the United States/Waters of the State through the purchase of compensatory credits at a USACE-approved mitigation bank

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Loss of Intermittent Stream Resulting from Construction	No effect	Permanent loss of 0.003 acre	Same as Alternative 1	Same as Alternative 1	Install fencing around the construction area to protect sensitive biological resources to be avoided Conduct environmental awareness training for construction employees Retain a biological monitor to conduct visits during construction in sensitive habitats Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for placement of permanent fill in Waters of the United States/Waters of the State through the purchase of compensatory credits at a USACE-approved mitigation bank
2.18—Plant Species					
None	N/A	Special-status plants were not observed within the biological study area (BSA) during appropriately timed botanical surveys; therefore, special-status plants are not expected to occur in the BSA and would not be affected by the proposed project	Same as Alternative 1	Same as Alternative 1	None required
2.19—Animal Species					
Potential Loss or Disturbance of Western Spadefoot and/or Loss of Aquatic Breeding Habitat	No effect	Permanent loss of 0.119 acre; temporary disturbance of 0.308 acre	Same as Alternative 1	Permanent loss of 0.119 acre; temporary disturbance of 0.313 acre	Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
					monitoring during construction in sensitive habitats Compensate for temporary and permanent loss of non-wetland riparian vegetation, including SRA cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed Compensate for temporary and permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin) Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Compensate for placement of permanent fill in Waters of the United States/Waters of the State through the purchase of compensatory credits at a USACE-approved mitigation bank Provide escape ramps for wildlife and inspect pits and trenches daily
Potential Loss or Disturbance of Western Spadefoot and/or Loss of Upland Habitat	No effect	Permanent loss of 0.085 acre; temporary disturbance of 3.901 acres	Same as Alternative 1	Same as Alternative 1	Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct monitoring during construction in sensitive habitats

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
					Compensate for temporary and permanent loss of non-wetland riparian vegetation, including SRA cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed Compensate for temporary and permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin) Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Compensate for placement of permanent fill in Waters of the United States/Waters of the State through the purchase of compensatory credits at a USACE-approved mitigation bank Provide escape ramps for wildlife and inspect pits and trenches daily
Potential Loss or Disturbance of Pacific Pond Turtle and/or Loss of Aquatic Habitat	No effect	Permanent loss of 0.034 acre; temporary disturbance of 0.056 acre	Permanent loss of 0.004 acre	Permanent loss of 0.007 acre	Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Compensate for temporary and permanent loss of non-wetland riparian vegetation, including SRA cover through either mitigation

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
					bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed Compensate for temporary and permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin) Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Compensate for placement of permanent fill in Waters of the United States/Waters of the State through the purchase of compensatory credits at a USACE-approved mitigation bank Provide escape ramps for wildlife and inspect pits and trenches daily Conduct a Pre-Construction Survey for Pacific Pond Turtle and Exclude Turtles from Work Area

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Potential Loss or Disturbance of Pacific Pond Turtle and/or Loss of Upland Habitat	No effect	Permanent loss of 5.070 acres; temporary disturbance of 8.166 acres	Permanent loss of 5.383 acres; temporary disturbance of 8.643 acres	Permanent loss of 5.522 acres; temporary disturbance of 8.636 acres	Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Compensate for temporary and permanent loss of non-wetland riparian vegetation, including SRA cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed Compensate for temporary and permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin) Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Compensate for placement of permanent fill in Waters of the United States/Waters of the State through the purchase of compensatory credits at a USACE-approved mitigation bank Provide escape ramps for wildlife and inspect pits and trenches daily Conduct a Pre-Construction Survey for Pacific Pond Turtle and Exclude Turtles from Work Area

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Potential Loss or Disturbance of Burrowing Owl and/or Loss of Nesting and Foraging Habitat	No effect	Permanent loss of 0.085 acre; temporary disturbance of 2.399 acres	Same as Alternative 1	Same as Alternative 1	Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Compensate for temporary and permanent loss of non-wetland riparian vegetation, including SRA cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed Conduct pre-construction surveys for burrowing owl and establish exclusion zones, if necessary
Potential Loss or Disturbance of White-Tailed Kite and/or Loss of Nesting and Foraging Habitat	No effect	Permanent loss of 5.070 acres; temporary disturbance of 5.265 acres	Permanent loss of 5.383 acres; temporary disturbance of 4.742 acres	Permanent loss of 5.522 acres; temporary disturbance of 4.735 acres	Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Compensate for permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin)

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
					Protect water quality and minimize sedimentation runoff in wetlands and Other Waters through implementation of BMPs and SWPPP Conduct vegetation removal during the non-breeding season and conduct pre-construction surveys for nesting migratory birds and raptors
Potential Loss or Disturbance of Northern Harrier and/or Loss of Nesting and Foraging Habitat	No effect	Permanent loss of 0.201 acre; temporary disturbance of 2.593 acres	Same as Alternative 1	Same as Alternative 1	Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Compensate for permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin) Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Conduct Vegetation Removal during the Non-Breeding Season and Conduct Pre-Construction Surveys for Nesting Migratory Birds and Raptors

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Disturbance of Active Purple Martin or Other Bridge-Nesting Migratory Bird Nest Due to Removal/Modification of Bridge Structures	No effect	New overpass and bridge structures would replace nesting substrate lost due to structure removal.	Same as Alternative 1	Same as Alternative 1	Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Compensate for temporary and permanent loss of non-wetland riparian vegetation, including SRA cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed Compensate for permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin) Remove or modify existing structures during the non-breeding season for purple martin and other structure-nesting migratory birds or implement exclusion measures to deter nesting

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Potential Loss or Disturbance of Roosting Bats Due to Tree removal/Trimming or Bridge Structure Removal or Modification	No effect	Mortality of tree-roosting or structure-roosting bats during the maternity season or hibernation period that results from tree removal/trimming; I-80 bridge structure would not be modified	Same as Alternative 1	Same as Alternative 1	Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Compensate for temporary and permanent loss of non-wetland riparian vegetation, including SRA cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed Compensate for temporary and permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin) Conduct pre-construction surveys for roosting bats, identify and implement appropriate avoidance and protection measures

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Potential Disturbance of Central Valley fall-/late fall–run Chinook Salmon and their Habitat	No effect	Impairment of water quality, disturbance or direct injury and mortality of fish, and temporary loss of habitat due to construction	Same as Alternative 1	Same as Alternative 1	Prepare and implement SWPPP and BMPs Prevent contaminants and hazardous materials from entering creek Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Minimize Impacts on SRA cover through increase in overwater structure Compensate for temporary and permanent loss of non-wetland riparian vegetation, including SRA cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed Compensate for permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin) Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Limit all in-channel construction activities to the June 15 to October 15 period

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Potential Loss of Central Valley fall-/late fall–run Chinook Salmon and their Habitat	No effect	Permanent loss of vegetative cover and potentially undercut banks, reducing habitat complexity	Same as Alternative 1	Same as Alternative 1	Prepare and implement SWPPP and BMPs Prevent contaminants and hazardous materials from entering creek Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Minimize Impacts on SRA cover through increase in overwater structure Compensate for temporary and permanent loss of non-wetland riparian vegetation, including SRA cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed Compensate for permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin) Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Limit all in-channel construction activities to the June 15 to October 15 period

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
2.20—Threatened and Endangered Species					
Potential for Direct and Indirect Impacts on Valley Elderberry Longhorn Beetle (VELB)	No effects	Construction impacts on elderberry shrub(s) that could contain VELB larvae or adults; direct adverse effect on 2 shrubs indirect adverse effect to 3 shrubs	Same as Alternative 1	Same as Alternative 1	A BO was received as part of federal Endangered Species Act (FESA) Section 7 consultation between Caltrans and USFWS to address project impacts on VELB Install Fencing and/or Flagging to Protect Sensitive Biological Resources Conduct Mandatory Environmental Awareness Training for Construction Personnel Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats Establish a Minimum 20-Foot-Wide Buffer around the Elderberry Shrub Transplant Elderberry Shrubs That Cannot Be Avoided or Implement Dust Control Measures during Construction Compensate for Direct Effects on VELB Habitat by purchasing mitigation credits at a USFWS-approved mitigation bank, or an onsite or offsite conservation area depending on USFWS consultation

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Potential for Loss or Disturbance of Vernal Pool Fairy Shrimp (VPFS) and Vernal Pool Tadpole Shrimp (VPTS)	No effects	Permanent or temporary fill or excavation of vernal pools could adversely affect fairy shrimp	Same as Alternative 1	Same as Alternative 1	A BO was received as part of FESA Section 7 consultation between Caltrans and USFWS to address project impacts on VPFS and VPTS Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Avoid and minimize potential indirect impacts on VPFS and VPTS habitat by avoiding ground disturbance within 250 feet of suitable vernal pool fairy shrimp habitat (i.e., vernal pools) from the first day of the first significant rain (1 inch or greater) until June 1; the use of exclusion fencing; and limiting herbicide use within 100 feet of aquatic habitat Compensate for direct and indirect impacts on VPFS and VPTS habitat by purchasing mitigation credits at a USFWS-approved mitigation bank or establish a conservation easement on a parcel(s) containing a sufficient amount of existing and restored vernal pool fairy shrimp habitat and adaptively manage the mitigation lands consistent with the most current information on vernal pool fairy shrimp habitat requirements.

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
Potential for Loss or Disturbance of Swainson's Hawk and Nesting and Foraging Habitat	No effects	Permanent loss 5.070 acres; temporary loss of 5.265 acres	Permanent loss 5.383 acres; temporary loss of 4.742 acres	Permanent loss 5.522 acres; temporary loss of 4.735 acres	Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Conduct vegetation removal during the non-breeding season and conduct pre-construction surveys for nesting migratory birds and raptors
Potential for Loss or Disturbance of Tricolored Blackbird Nesting and Foraging Habitat	No effects	Permanent loss 0.205 acres; temporary loss of 2.774 acres	Same as Alternative 1	Same as Alternative 1	Install fencing and/or flagging to protect sensitive biological resources Conduct mandatory environmental awareness training for construction personnel Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Compensate for temporary and permanent loss of non-wetland riparian vegetation, including SRA cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed
Potential Loss or Disturbance of Central Valley Steelhead and their Habitat	No effects	Adverse effects related to disturbance and direct injury, increased turbidity and sedimentation, potential discharges of contaminants, temporary and permanent loss of SRA cover, and changes to channel morphology and hydraulics	Same as Alternative 1	Same as Alternative 1	A letter of concurrence was received as part of FESA Section 7 consultation between Caltrans and NMFS to address project impacts on Central Valley Steelhead Prepare and Implement SWPPP and BMPs Prevent contaminants and hazardous materials from entering creek by implementation of SWPPP and BMPs Retain a qualified biologist to conduct monitoring during construction in sensitive habitats Minimize impacts on SRA cover through increase in overwater structure Compensate for temporary and permanent

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
					loss of non-wetland riparian vegetation, including SRA cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed Compensate for permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin) Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Limit all in-channel construction activities to the June 15 to October 15 period Prevent temporary lighting from directly radiating on water surfaces of Antelope Creek, Miners Ravine, and Secret Ravine during nighttime construction
Potential Loss of Essential Fish Habitat for Fall-Run Chinook Salmon	No effects	Sedimentation and turbidity, hazardous materials and contaminants could lead to temporary and permanent loss of SRA cover	Same as Alternative 1	Same as Alternative 1	A letter of concurrence was received as part of FESA Section 7 and MSA consultation between Caltrans and NMFS to address project impacts on essential fish habitat Prepare and Implement SWPPP and BMPs Prevent contaminants and hazardous materials from entering creek by implementation of SWPPP and BMPs Retain a qualified biologist to conduct monitoring during construction in sensitive habitats

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
					Minimize impacts on SRA cover through increase in overwater structure Compensate for temporary and permanent loss of non-wetland riparian vegetation, including SRA cover through either mitigation bank credit purchase or onsite/offsite restoration in the Dry Creek Watershed Compensate for permanent loss of oak woodlands at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin) Protect water quality and minimize sedimentation runoff in wetlands and other waters through implementation of BMPs and SWPPP Compensate for temporary and permanent impacts on wetlands through the purchase of mitigation bank credits Limit all in-channel construction activities to the June 15 to October 15 period Prevent temporary lighting from directly radiating on water surfaces of Antelope Creek, Miners Ravine, and Secret Ravine during nighttime construction

Table S-2. Comparison of Alternatives Continued

Impact	No Build	Alternative 1 Taylor Road Full Access Interchange	Alternative 2 Collector–Distributor System Ramps	Alternative 3 Taylor Road Interchange Eliminated	Avoidance, Minimization, and/or Mitigation Measures
2.21—Invasive Species					
Potential Introduction and Spread of Invasive Plant Species Resulting from Construction	No effect	Construction activities have the potential to spread invasive plant species	Same as Alternative 1	Same as Alternative 1	Two or more BMPs listed below will be written into the construction specifications and implemented during project construction to avoid and minimize the spread of invasive plant species. • Retain all fill material onsite • Use a weed-free source for project materials • Prevent invasive plant contamination of project materials during transport and when stockpiling • Use sterile wheatgrass seed and native plant stock during revegetation. • Revegetate and/or mulch disturbed soils within 30 days of completion of ground-disturbing activities to reduce the likelihood of invasive plant establishment. Restore disturbed areas using native species

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List of Abbreviated Terms

°C	degrees Celsius
°F	degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter
AADT	Annual average daily traffic
AAGR	average annual growth rate
AAQS	ambient air quality standards
AB	Assembly Bill
AB 1493	Assembly Bill 1493
AB 32	Assembly Bill 32
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
ADA	Americans with Disabilities Act
ADI	area of direct impact
ADL	aerially deposited lead
AGR	agricultural supply
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
AMR	American Medical Response
amsl	above mean sea level
APCD	Air Pollution Control District
APE	Area of Potential Effects
ARB	California Air Resources Board
AST	aboveground storage tank
ATCMs	Airborne Toxic Control Measures
BA	Biological Assessment
Basin Plan	Central Valley RWQCB's Water Quality Control Plan
BMP	Best Management Practices
BSA	biological study area
CAA	federal Clean Air Act
CAAQS	California ambient air quality standards
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	California Division of Occupational Safety and Health
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
C-D	Collector–Distributor
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
Central Valley Subprovince	Sacramento-San Joaquin Province
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CESA	California Endangered Species Act
CFGC	California Fish and Game Code

CFR	Code of Federal Regulations
CH_4	methane
CHRIS	California Historical Resources Information Center
CIA	Community Impact Assessment
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO-CAT	Coastal Ocean Climate Action Team
CTP	California Transportation Plan
CU	control unit
CWA	Clean Water Act
dBA	A-weighted decibels
dbh	diameter at breast height
DP-30	Caltrans Director's Policy 30
DPM	diesel particulate matter
DPS	distinct population segment
DRP	Data Recovery Plan
DSA	Disturbed Soil Area
EA	Environmental Assessment
EFH	essential fish habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Executive Order
EO 11990	Executive Order for the Protection of Wetlands
ESAs	Environmentally Sensitive Areas
ESU	evolutionarily significant units
F&I	Fatality and injury rate
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FTA	Federal Transit Administration
FTIPs	Federal Transportation Improvement Programs
g	gravity
GHG	greenhouse gas
GSRDs	Gross Solids Removal devices
Guidance document	Guideline for Preparers of Growth-Related, Indirect Impact Analysis
Guidelines	Section 404(b) Guidelines

H:V	horizontal:vertical
H_2S	hydrogen sulfide
HOV	high-occupancy vehicle
HSAs	hydrologic sub-areas
I	Intactness
IND	industrial service supply
I-80	Interstate 80
IPCC	Intergovernmental Panel on Climate Change
ISA	Initial Site Assessment
ITS	Intelligent Transportation Systems
kV	kilovolt
LCFS	Low Carbon Fuel Standard
LCP	lead-containing paint
LEDPA	least environmentally damaging practicable alternative
Leq(h)	A-weighted decibels hourly equivalent sound level
lf	linear feet
LOS	level of service
LSAA	Lake or Streambed Alteration Agreement
LUST	leaking underground storage tank
MAP-21	Moving Ahead for Progress in the 21st Century Act
MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendent
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MS4	municipal separate storm sewer systems
MSA	Magnuson-Stevens Fishery Conservation and Management Act of 1976
MSAT	mobile source air toxics
MTIP	Metropolitan Transportation Improvement Program
MTP	Metropolitan Transportation Plan
MUN	municipal and domestic water supply
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
NCIC	North Central Information Center
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Administration

NOP	Notice of Preparation
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSR	Noise Study Technical Report
NTUs	nephelometric turbidity units
O_3	ozone
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
OSPOMP	Open Space Preserve Overarching Management Plan
OSTP	Office of Science and Technology Policy
PAHs	polycyclic aromatic hydrocarbons
Pb	lead
PCAPCD	Placer County Air Pollution Control District
PCBs	polychlorinated biphenyls
PCFWCD	Placer County Flood Control and Conservation District
PCTPA	Placer County Transportation Planning Agency
PCWA	Placer County Water Agency
PDT	Project Development Team
PEAR	Preliminary Environmental Analysis
PG&E	Pacific Gas and Electric Company
PLCG	Project Level Conformity Group
PM	post mile
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
PRC	Public Resources Code
PRO	industrial process supply
PSR	project study report
RCEM	Roadway Construction Emissions Model
RCRA	Resource Conservation and Recovery Act of 1976
Resources Agency	California Natural Resources Agency
ROG	reactive organic gases
RTP	Regional Transportation Plan
RWQCBs	Regional Water Quality Control Boards
SACOG	Sacramento Area Council of Governments
SB	Senate Bill
SB 375	Senate Bill 375
SB 391	Senate Bill 391
SB 97	Senate Bill 97
SCS	Sustainable Communities Strategy
SDC	Seismic Design Criteria
sec/veh	seconds per vehicle
Section 106 PA	First Amended Programmatic Agreement

SER	Standard Environmental Reference
sf	square foot
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SMUD	Sacramento Municipal Utilities District
SO_2	sulfur dioxide
SOV	single-occupant vehicles
SPMUD	South Placer Municipal Utility District
SR 65	State Route 65
SRA	shaded riverine aquatic
State Water Board	State Water Resources Control Board
STPs	Shovel test probes
STUs	surface transect units
SVAB	Sacramento Valley Air Basin
SWMP	Statewide Storm Water Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TASAS	Caltrans Traffic Accident Surveillance and Analysis System
TDS	total dissolved solids
TMDLs	Total Maximum Daily Loads
TMP	Transportation Management Plan
TNM	Traffic Noise Model
TSM	Transportation System Management
TWG	Technical Working Group
TWW	Treated Wood Waste
U	unity
U.S. EPA	United States Environmental Protection Agency
UAIC	United Auburn Indian Community
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
USTs	underground storage tanks
V	Vividness
VELB	Valley elderberry longhorn beetle
VIA	Visual Impact Assessment
vplpm	vehicles per lane per mile
VMT	vehicle miles traveled
WAPA	Western Area Power Administration
WDRs	Waste Discharge Requirements
WPCP	Water Pollution Control Program
WTP	water treatment plant
WWTPs	wastewater treatment plants
XPI	Extended Phase I testing

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans)—in cooperation with the Placer County Transportation Planning Agency (PCTPA); Placer County; and the Cities of Roseville, Rocklin, and Lincoln—proposes to improve the Interstate 80/State Route 65 (I-80/SR 65) interchange in Placer County, California, to reduce future traffic congestion, improve operations and safety, and comply with current Caltrans and local agency design standards.

The project is subject to state and federal environmental review requirements because the use of federal funds from the Federal Highway Administration (FHWA) is proposed. 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 CEQA and NEPA. The project is included in the Placer County *2035 Regional Transportation Plan* (RTP) and the Sacramento Area Council of Governments (SACOG) *2016 Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS). The project is programmed in the SACOG 2015-2018 Metropolitan Transportation Improvement Program (MTIP), Amendment #20 (SACOG IDs PLA25440, PLA25648, PLA25649, PLA25601, PLA25602, and PLA25603).

1.1.1 Project Location

The project is located in Placer County in the cities of Roseville and Rocklin at the I-80/SR 65 interchange (Figure 1-1). The project limits consist of I-80 from the Douglas Boulevard interchange to the Rocklin Road interchange (post miles 1.9–6.1) and SR 65 from the I-80 separation to the Pleasant Grove Boulevard interchange (post miles R4.8–R7.3). The total length of the project is 2.5 miles along SR 65 and 4.2 miles along I-80. The project area also includes various local roads—specifically, portions of Galleria Boulevard/Stanford Ranch Road, Pleasant Grove Boulevard, Eureka Road/Atlantic Street, East Roseville Parkway, and Taylor Road.

1.1.2 Project Background

Constructed in 1985, the existing I-80/SR 65 interchange is a type F-6[1] freeway-to-freeway interchange (see shape shown in Figure 1-1). It includes a loop connector, a flyover connector, and two slip ramp connectors. The following sections describe I-80 and SR 65 in further detail and explain the most recent Caltrans proposal to improve the freeway interchange.

[1] A Type F-6 interchange is a designation Caltrans uses in its Highway Design Manual. It is also commonly called a "trumpet configuration."

1.1.2.1 Interstate 80

I-80 is the principal east–west route in northern and central California, providing all-weather access across the Sierra Nevada for major goods movement into the Sacramento and San Francisco Bay areas. The interstate accommodates high commute, interregional, and recreational traffic volumes, as well as high levels of truck freight traffic within the greater Sacramento region.

Within Placer County, I-80 begins at the Sacramento County/Placer County line in Roseville as a ten-lane freeway—including two carpool/high-occupancy vehicle (HOV) lanes, one in each direction. It extends east through the Riverside Boulevard interchange, where it changes to nine lanes (five eastbound and four westbound). At the Douglas Boulevard interchange, I-80 returns to a ten-lane freeway and remains this size through the Lead Hill Boulevard overcrossing, the Atlantic Street/Eureka Road interchange, the Roseville Parkway overcrossing, the Taylor Road interchange, and the separation with SR 65.

East of the SR 65 separation, I-80 changes to six lanes, the HOV lanes end, and the highway extends into the city of Rocklin past the Rocklin Road interchange.

1.1.2.2 State Route 65

SR 65 is an important interregional route that serves local and regional traffic. The route serves as a major connector for both automobile and truck traffic originating from the I-80 corridor in the Roseville/Rocklin area to the SR 70/99 corridor in the Marysville/Yuba City area. SR 65 is a vital economic link from residential areas to shopping and employment centers in southern Placer County. It is also an important route for transporting aggregate, lumber, and other commodities.

In the northbound direction, SR 65 begins at the I-80 separation as a three-lane facility that joins the two eastbound I-80 to northbound SR 65 connector ramp lanes with the single-lane westbound I-80 to northbound SR 65 connector ramp. The outside lane immediately ends along the East Roseville Viaduct (bridge number 19 00152L/R, P.M. 5.06) and continues with two lanes through the Galleria Boulevard/Stanford Ranch Road interchange. An auxiliary lane begins prior to the Pleasant Grove Boulevard interchange and ends at the off-ramp. Northbound SR 65 continues as a two-lane facility with occasional auxiliary lanes past the Pleasant Grove Boulevard interchange toward Lincoln.

In the southbound direction, SR 65 has two lanes and occasional auxiliary lanes from Lincoln through the Pleasant Grove Boulevard interchange. A third southbound lane develops under the Galleria Boulevard/Stanford Ranch Road interchange prior to the southbound Galleria Boulevard on-ramp. The three lanes continue across the East Roseville Viaduct and split into four lanes, two serving the southbound SR 65 to westbound I-80 connector ramp, and two serving the southbound SR 65 to eastbound I-80 connector ramp.

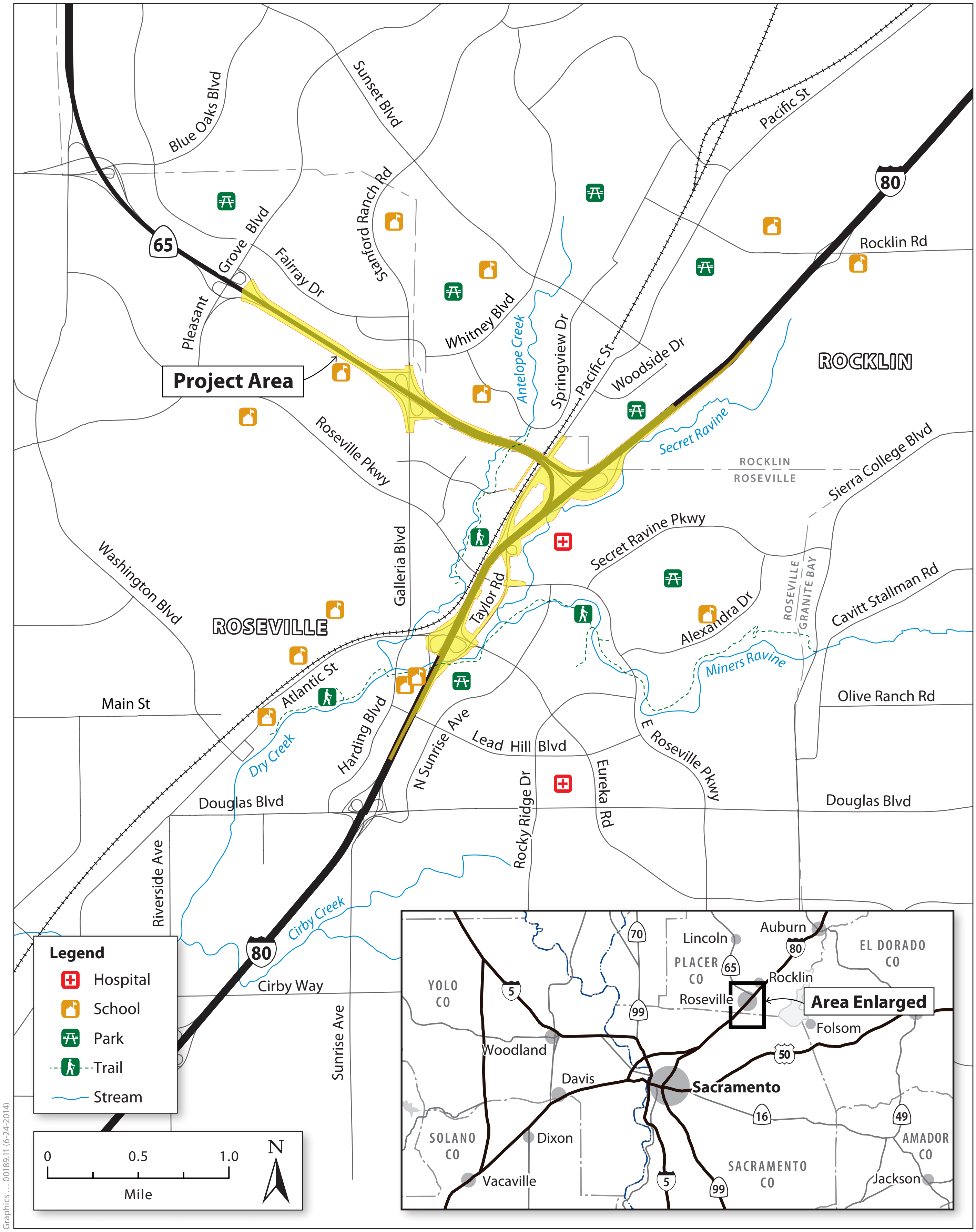

Figure 1-1
Project Location

1.1.2.3 I-80/SR 65 Interchange Project Study Report

In 2009, Caltrans completed a project study report (PSR) for upgrading the interchange to remedy operational problems caused by high peak-period traffic volumes and inefficient geometry. The PSR identified three build alternatives that would add a bi-directional HOV direct connector ramp, replace the existing loop connector, widen the East Roseville Viaduct, replace the Taylor Road overcrossing, and increase capacity on the connector ramps. Other interchanges and local roads within the project area also would be affected to accommodate the proposed upgrades identified in the PSR.

1.2 Purpose and Need

The proposed project would improve the I-80/SR 65 interchange in Placer County, California, in order to reduce future traffic congestion, improve operations and safety, and comply with current Caltrans and local agency design standards. Construction of the proposed improvements has independent utility. The project is not dependent on other projects or improvements to meet the purpose and need.

Termini (i.e., limits) for the project were developed through an iterative process involving engineering design and traffic operations analysis. Preliminary design concepts were tested with the traffic operations analysis model to evaluate how lane transitions and vehicle weaving influenced peak-hour conditions. Refinements were made to ensure that mainline lane balance was logical and that transitions did not cause unacceptable traffic operations such as extensive queuing or reduced speeds.

1.2.1 Purpose

The purpose and objectives of the project are listed below.

- Upgrade the I-80/SR 65 interchange and adjacent transportation facilities to reduce no-build traffic congestion.
- Upgrade the I-80/SR 65 interchange and adjacent transportation facilities to comply with current Caltrans and local agency design standards for safer and more efficient traffic operations while maintaining and, if feasible, improving the current level of community access, at a minimum.
- Consider all travel modes and users in developing project alternatives.

1.2.2 Need

The project is needed for the following reasons.

- Recurring morning and evening peak-period demand exceeds the current design capacity of the I-80/SR 65 interchange and adjacent transportation facilities, creating traffic operations and safety issues. These issues result in high delays, wasted fuel, and excessive air pollution and greenhouse gas emissions, all of which will be exacerbated by traffic from future population and employment growth.

- Interchange design features do not comply with current Caltrans design standards for safe and efficient traffic operations and limit the existing community access to nearby land uses.
- Travel choices are limited in the project area because the transportation network does not include facilities for all modes and users consistent with the complete streets policies of Caltrans and local agencies.

1.2.2.1 Traffic Operations

The roadway system in the project area currently experiences peak-period congestion, which will worsen in the future according to the traffic volume forecasts summarized in the *Transportation Analysis Report – I-80/SR 65 Interchange Improvements* prepared in August 2014 (Fehr & Peers 2014). Increased capacity at the system interchange and several local roads (Eureka Road/ Atlantic Street, Taylor Road, East Roseville Parkway, and Galleria Boulevard/Stanford Ranch Road) is needed in order to reduce forecasted congestion.

Freeway Operations

Table 1-1 shows average annual daily traffic volumes on the freeway network for existing (2012) and design year (2040) no-build conditions.

Table 1-1. Average Annual Daily Traffic Volume

Freeway	Segment	Existing Conditions (2012)		Design Year No-Build Conditions (2040)	
		Total	Trucks	Total	Trucks
I-80	Douglas Boulevard to Eureka Road	155,000	9,000	197,400	14,200
	Eureka Road to Taylor Road	158,700	9,600	203,800	14,400
	Taylor Road to SR 65	150,000	8,700	194,200	13,900
	SR 65 to Rocklin Road	109,600	6,400	139,500	9,900
SR 65	I-80 to Galleria Boulevard	106,100	3,500	151,500	6,000
	Galleria Boulevard to Pleasant Grove Boulevard	104,400	3,500	159,100	6,600

Source: Fehr & Peers 2014, Table 16.

Table 1-2 summarizes the existing (2012) and design year (2040) no-build freeway operations in the a.m. and p.m. peak hours by listing selected freeway segments representative of the overall conditions. Bold and underlined font indicate level of service (LOS) F (unacceptable) conditions. Conditions at the Eureka Road, Taylor Road, and Galleria Boulevard ramps worsen, as well as conditions at the SR 65 and I-80 merge and diverge ramps. A description of the various LOS for freeways is shown on Figure 1-2.

LEVELS OF SERVICE

for Freeways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. **No delays**
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. **No delays**
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. **Minimal delays**
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. **Minimal delays**
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. **Significant delays**
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. **Considerable delays**

Source: Caltrans Standard Environmental Reference. http://www.dot.ca.gov/ser/forms.htm. Accessed 2-27-2015.

Graphics ... 00189.11 (2-27-2015)

Figure 1-2
Level of Service for Freeways

Local Intersection Operations

Table 1-3 summarizes existing (2012) and design year (2040) no-build conditions of key local intersection operations in the a.m. and p.m. peak hours. The majority of local intersections will operate at an equal or higher (worse) LOS by the design year. The unacceptable conditions highlighted in the table are based on LOS policies in local General Plans: LOS C for signalized intersections in the City of Roseville (adopted May 2010), the City of Rocklin (adopted October 2012), and the City of Lincoln, and LOS D for SR 65 in the City of Lincoln (adopted March 2008).

Table 1-2. Selected Freeway Operations Results

Freeway	Location	Existing Conditions (2012) (LOS/average density)		Design Year No-Build Conditions (2040) (LOS/average density)	
		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
EB I-80	Eureka Road off-ramp	C / 26	**F / 46**	**F / 114**	**F / 149**
	Eureka Road off- to on-ramp	C / 21	C / 23	**F / 138**	**F / 141**
	Eureka Road eastbound on-ramp	B / 19	B / 20	**F / 132**	**F / 96**
	Eureka Road to Taylor Road	C / 23	E / 42	**F / 131**	**F / 142**
	Taylor Road to SR 65	D / 28	E / 42	**F / 123**	**F / 133**
	SR 65 off-ramp	C / 28	**F / 52**	**F / 86**	**F / 65**
WB I-80	SR 65 off-ramp	B / 19	E / 35	C / 27	**F / 114**
	Douglas Boulevard off-ramp	D / 32	C / 26	C / 21	**F / 108**
	Douglas Boulevard westbound on-ramp	E / 36	D / 34	C / 25	C / 20
	Douglas Boulevard eastbound on-ramp	E / 42	E / 37	C / 23	B / 15
	Douglas Boulevard to Riverside Avenue	D / 33	D / 31	D / 28	C / 21
	Riverside Avenue off-ramp	E / 40	E / 36	C / 20	B / 16
NB SR 65	I-80 westbound on-ramp	**F / 53**	**F / 95**	**F / 57**	**F / 84**
	I-80 to Stanford Ranch Road	D / 32	**F / 77**	D / 35	E / 36
	Stanford Ranch Road off-ramp	D / 33	**F / 62**	D / 31	D / 32
SB SR 65	Blue Oaks Boulevard westbound on-ramp	**F / 60**	B / 20	D / 34	C / 28
	Blue Oaks Boulevard to Pleasant Grove Boulevard	**F / 75**	C / 21	D / 29	C / 26
	Pleasant Grove Boulevard off- to on-ramp	**F / 89**	C / 25	D / 32	D / 29
	Pleasant Grove Boulevard westbound on-ramp	**F / 72**	D / 31	C / 28	C / 22
	Pleasant Grove Boulevard eastbound on-ramp	**F / 53**	E / 39	E / 44	D / 29
	Pleasant Grove Boulevard to Galleria Boulevard	E / 36	D / 32	**F / 49**	D / 32
	Galleria Boulevard off-ramp	E / 35	D / 32	**F / 55**	D / 33
	Galleria Boulevard on-ramp	D / 30	C / 24	**F / 77**	E / 39
	I-80 off-ramp	C / 24	C / 22	D / 33	D / 31

Note: **Bold** and underline font indicate LOS F (unacceptable) conditions. LOS and average vehicle density for the study segment are reported. Average vehicle density is the average number of vehicles observed in the studied segment during the peak period.
The improved performance of the No Build Alternative at some of the freeway segment locations is caused in part by different forecast assumptions used for the Build versus No Build Alternatives in the *Transportation Analysis Report*, and in part by upstream congestion that affects downstream operations.
Source: Fehr & Peers 2014, Technical Appendix Part 1.

Table 1-3. Local Intersection Operations

Intersection	Existing Conditions (2012) (LOS/average delay)		Design Year No-Build Conditions (2040) (LOS/average delay)	
	A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
Blue Oaks Boulevard / Washington Boulevard	**D / 43**	C / 33	**F / 136**	**F / >240**
Blue Oaks Boulevard / SR 65 northbound ramps	C / 24	C / 23	**F / 116**	**F / 115**
Stanford Ranch Road / Five Star Boulevard	B / 19	C / 32	**F / 151**	**D / 36**
Stanford Ranch Road / SR 65 northbound ramps	A / 9	B / 15	**F / 127**	D / 36
Galleria Boulevard / SR 65 southbound ramps	B / 13	B / 19	D / 38	C / 29
Galleria Boulevard / Roseville Parkway	C / 30	D / 36	D / 39	**F / 213**
Roseville Parkway / Creekside Ridge Drive	A / 6	B / 17	B / 10	C / 24
Roseville Parkway / Taylor Road	C / 30	C / 28	**F / 98**	D / 48
Atlantic Street / I-80 westbound ramps	A / 7	B / 11	B / 12	**D / 51**
Eureka Road / Taylor Road / I-80 eastbound ramps	C / 26	E / 61	E / 55	**F / 92**
Eureka Road / Sunrise Avenue	C / 24	C / 30	C / 29	**F / 184**
Douglas Boulevard/ Harding Boulevard	B / 19	C / 28	C / 25	**F / >240**
Douglas Boulevard / Sunrise Avenue	C / 26	D / 35	C / 35	**F / >240**
Rocklin Road / Granite Drive	B / 15	D / 37	D / 29	**F / >240**

Note: **Bold** and underline font indicate unacceptable conditions. LOS and average vehicle delay in seconds per vehicle are reported.

Source: Fehr & Peers 2014, Technical Appendix Part 1.

Accident Data

Caltrans Traffic Accident Surveillance and Analysis System (TASAS) traffic collision data for mainline I-80 and SR 65, and the ramp connections were compiled for a 3-year period from April 1, 2009, to March 31, 2012. The data are summarized in Tables 1-4 and 1-5. The data show that the collision rates, as well as the fatality and injury rates, at the majority of intersections within the project area are higher than statewide averages.

Table 1-4. Mainline Accident History (April 1, 2009 – March 31, 2012)

Location/Section	Total Accidents	Total Fatalities	Actual Collision Rate[a]			Average Statewide Collision Rate[a]		
			F	F&I	Total	F	F&I	Total
Eastbound I-80 (PM 2.2 to 4.2): Douglas Boulevard on-ramp to SR 65 off-ramp	256	2	**0.012**	**0.56**	**1.52**	0.004	0.28	0.90
Eastbound I-80 (PM 4.2 to 5.9): SR 65 off-ramp to Rocklin Road off-ramp	52	0	0.000	0.15	0.48	0.004	0.27	0.87
Westbound I-80 (PM 4.3 to 5.9): Rocklin Road on-ramp to SR 65 off-ramp	81	1	**0.010**	**0.34**	0.81	0.004	0.27	0.87
Westbound I-80 (PM 2.2 to 4.3): SR 65 off-ramp to Douglas Boulevard off-ramp	189	1	**0.006**	**0.31**	**1.08**	0.004	0.28	0.90
Northbound SR 65 (PM R4.9 to 6.9): I-80 on-ramp to Pleasant Grove Boulevard off-ramp	55	1	**0.009**	0.15	0.5	0.006	0.33	1.02
Southbound SR 65 (PM R4.9 to 7.1): Pleasant Grove Boulevard westbound on-ramp to I-80 off-ramp	95	0	0.000	0.29	0.77	0.006	0.34	1.04

Notes: The post mile (PM) limits are provided in the first column. **Bold** and underline font indicate actual accident rates that are higher than the statewide average for similar facilities.

[a] The accident rate is accidents per million vehicle-miles. “F” refers to the fatality rate, and “F&I“ refers to the fatality and injury rate. “Total” includes non-injury accidents, which are not listed separately.

Source: Fehr & Peers 2014, Table 9.

Table 1-5. Ramp Accident History (April 1, 2009 – March 31, 2012)

Location/Section	Total Accidents	Total Fatalities	Actual Collision Rate[a]			Average Collision Rate[a]		
			F	F&I	Total	F	F&I	Total
Eastbound I-80 off-ramp to Eureka Road (PM 2.9)	13	0	0.000	0.16	1.01	0.003	0.34	1.01
Eastbound I-80 on-ramp from eastbound Eureka Road (PM 3.0)	3	0	0.000	**<u>0.37</u>**	**<u>1.10</u>**	0.002	0.21	0.73
Eastbound I-80 on-ramp from westbound Eureka Road (PM 3.2)	6	0	0.000	**<u>0.25</u>**	0.51	0.003	0.18	0.57
Eastbound I-80 off-ramp to Taylor Road (PM 3.6)	7	0	0.000	**<u>0.62</u>**	**<u>1.44</u>**	0.003	0.30	1.03
Eastbound I-80 off-ramp to SR 65 (PM 4.2)	31	0	0.000	**<u>0.29</u>**	**<u>0.98</u>**	0.004	0.20	0.68
Eastbound I-80 on-ramp from SR 65 (PM 4.5)	2	0	0.000	**<u>0.17</u>**	0.17	0.003	0.14	0.41
Westbound I-80 off-ramp to SR 65 (PM 4.3)	9	1	**<u>0.070</u>**	**<u>0.42</u>**	**<u>0.63</u>**	0.005	0.13	0.38
Westbound I-80 on-ramp from SR 65 (PM 4.0)	21	0	0.000	**<u>0.18</u>**	**<u>0.75</u>**	0.003	0.11	0.32
Westbound I-80 on-ramp from Taylor Road (PM 3.6)	3	0	0.000	0.00	0.54	0.003	0.18	0.57
Westbound I-80 off-ramp to westbound Atlantic Street (PM 3.2)	2	0	0.000	0.23	0.46	0.004	0.24	0.75
Westbound I-80 off-ramp to eastbound Atlantic Street (PM 3.0)	0	0	0.000	0.00	0.00	0.003	0.30	1.06
Westbound I-80 on-ramp from Atlantic Street (PM 2.8)	9	0	0.000	**<u>0.32</u>**	**<u>0.71</u>**	0.002	0.22	0.63
Northbound SR 65 off-ramp to Stanford Ranch Road (PM R5.7)	2	0	0.000	0.06	0.11	0.002	0.08	0.25
Northbound SR 65 on-ramp from Stanford Ranch Road (PM R6.2)	22	0	0.000	**<u>0.88</u>**	**<u>2.15</u>**	0.002	0.22	0.63
Southbound SR 65 off-ramp to Galleria Boulevard (PM R6.2)	2	0	0.000	0.09	0.18	0.002	0.08	0.25
Southbound SR 65 on-ramp from Galleria Boulevard (PM R5.7)	16	0	0.000	**<u>0.45</u>**	**<u>0.90</u>**	0.002	0.22	0.63

Notes: The post mile (PM) limits are provided in the first column. **Bold** and <u>underline</u> font indicate actual accident rates that are higher than the statewide average for similar facilities.

[a] The accident rate is accidents per million vehicle-miles. “F” refers to the fatality rate, and “F&I” refers to the fatality and injury rate. “Total” includes non-injury accidents, which are not listed separately.

Source: Fehr & Peers 2014, Table 11.

1.2.2.2 Caltrans Design Standards

The I-80/SR 65 interchange currently does not have standard interchange spacing between the Eureka Road/Atlantic Street and Taylor Road interchanges. The current interchange spacing provides a short weave distance for vehicles entering and exiting I-80, which increases the potential for accidents (see data in Table 1-4). Increasing the interchange spacing would improve weave movements and operations at the ramps.

The existing merge between the westbound I-80 to northbound SR 65 and eastbound I-80 to northbound SR 65 freeway ramp connectors do not have adequate capacity, resulting in a bottleneck and causing traffic to queue back onto the east-to-north loop connector and eastbound I-80.

The existing eastbound I-80 to northbound SR 65 loop connector currently has a posted speed of 25 mph, which causes traffic to slow as they approach the loop. A higher speed connection in this direction of travel is needed to improve operations at the connector and minimize queuing on eastbound I-80.

1.2.2.3 Transportation Network Modes

Currently, a significant portion of Taylor Road within the project limits has no sidewalks or bicycle facilities. There is a gap in the non-motorized network between Roseville Parkway and Plumber Way. Filling in the gap, consistent with the *City of Roseville Bicycle Master Plan,* would provide improved bicycle and pedestrian connections between Roseville and Rocklin, as well as improved access to the Class I trails along Secret Ravine, Miners Ravine, and Antelope Creek.

1.3 Project Description

This section describes the proposed project and the design alternatives. The proposed project is located in Placer County in the cities of Roseville and Rocklin at the I-80/SR 65 interchange. The project limits consist of I-80 from the Douglas Boulevard interchange to the Rocklin Road interchange (post miles 1.9–6.1) and SR 65 from the I-80 separation to the Pleasant Grove Boulevard interchange (post miles R4.8–R7.3). The existing I-80/SR 65 interchange is a type F-6 freeway-to-freeway interchange. The purpose of the project is to reduce future traffic congestion, improve operations and safety, and comply with current Caltrans and local agency design standards. The proposed build and no-build (no-project) alternatives are described below. The purpose of the alternatives analysis is to facilitate meaningful public participation through an informed decision-making process.

1.3.1 Build Alternatives

Three build alternatives are under consideration in this Environmental Impact Report/ Environmental Assessment (EIR/EA) and were designed to satisfy the purpose and need identified above, while avoiding or minimizing environmental impacts.

- Alternative 1—Taylor Road Full Access Interchange
- Alternative 2—Collector–Distributor (C-D) System Ramps
- Alternative 3—Taylor Road Interchange Eliminated

Alternatives 1–3 propose to add capacity, a bi-directional HOV system, and high-speed connector ramps. Local and regional circulation and access would be improved, as would vehicle lane-weaving conditions along I-80 between Eureka Road/Atlantic Street and Taylor Road and along SR 65 between the I-80/SR 65 interchange and Galleria Boulevard/Stanford Ranch Road. Other improvements would include widening the East Roseville Viaduct, replacing the Taylor Road overcrossing, and realigning the existing eastbound I-80 to northbound SR 65 loop connector. All of the build alternatives involve the same or similar improvements on I-80 and

SR 65, except for how access to the existing Taylor Road interchange is addressed. The alternatives will be compared by how well they serve as solutions to the project's purpose and need and how they balance competing demands of design, environmental impact, cost and function.

Figures depicting each build alternative appear at the end of this chapter (Figures 1-3, 1-4, and 1-5). Figures depicting temporary crossings (e.g., Bailey Bridges) and access over Secret Ravine, Miners Ravine, and Antelope Creek are at the end of this chapter (Figures 1-6, 1-7, and 1-8). More detailed engineering figures and detailed maps showing the locations of proposed right-of-way acquisitions are included in Appendix D and Appendix K, respectively, of the *Draft Project Report to Authorize Release of the Draft Environmental Document* prepared for the proposed project (CH2M HILL 2015). The report and its attachments are available on the project website at http://8065interchange.org/.

1.3.1.1 Common Design Features of the Build Alternatives

The build alternatives—Alternatives 1, 2, and 3—include common design features and have similar phasing approaches, staging, storage, and site access. Common design features of the build alternatives are listed below. For alignment and other improvement features that differ between alternative, see the individual alternative descriptions in Section 1.3.1.2, "Unique Features of the Build Alternatives."

- I-80 would be widened from post mile 1.9 to 6.1 to add one or two mixed-flow lanes and one or two auxiliary lanes in each direction of travel, depending on the location within the project limits. A retaining wall would be constructed in the eastbound direction between the Eureka Road interchange and the Roseville Parkway overcrossing (height and length varies by alternative). A tie-back wall[2] (approximately 80 feet long and 15 feet high) would be constructed in the eastbound direction under the Roseville Parkway overcrossing.
- SR 65 would be widened from post mile R4.8 to 7.3 to include one HOV lane, one additional mixed-flow lane, and one or two auxiliary lanes in each direction of travel, depending on the location within the project limits. Widening along SR 65 would occur on both the inside and outside of the existing pavement in both the northbound and southbound directions. The median would be fully paved and would include a concrete barrier. An additional concrete barrier would be added in the northbound direction between the HOV and general purpose lanes to prevent vehicle lane weaving between I-80 and the Galleria Boulevard/Stanford Ranch Road interchange. In the southbound direction, a 4-foot-wide pavement delineation soft barrier would separate the HOV and general purpose lanes to prohibit vehicle lane weaving between the Galleria Boulevard/Stanford Ranch Road on-ramp and the HOV direct connector ramp.
- The SR 65 mainline widening would require reconstruction of the ramp connections for all of the Galleria Boulevard/Stanford Ranch Road interchange ramps. The northbound Stanford Ranch Road slip off-ramp would be widened to two lanes. The southbound Galleria Boulevard/ Stanford Ranch Road on-ramp would be reconstructed to a two-lane ramp plus

[2] A tie-back wall is used to retain a slope. It is similar to a retaining wall but is anchored into the slope to "tie" the wall to the slope.

HOV preferential lane. The southbound Pleasant Grove Boulevard on-ramp also would be adjusted to accommodate the mainline widening. The existing wetland near the Pleasant Grove Boulevard on-ramp would not be affected and would be protected as an environmentally sensitive area (ESA) during construction. Please refer to Section 2.17, "Wetlands and Other Waters," for more information regarding ESAs and wetlands. The widening along SR 65 would occur within the existing right-of-way.

- The East Roseville Viaduct would be widened in the northbound and southbound directions, from post mile R5.0 to R5.5, spanning Antelope Creek, Union Pacific Railroad (UPRR) tracks, and Taylor Road. The existing parallel structures would be widened on both sides and would require additional columns to support the widened structures. Caltrans' bridge design standards require that the widened portion of structures be configured similarly to the existing structure in order to provide consistent performance in regard to structure stiffness, deflection control, and seismic performance. Therefore, the additional columns would be placed parallel to the existing columns along the entire length of the viaduct. The viaduct widening in the northbound direction would shift the edge of deck approximately 33 feet closer to the Hearthstone apartment complex, and the widening in the southbound direction would shift the edge of deck approximately 10 feet closer to the Preserve at Creekside apartment complex.
- All proposed permanent columns, footings, and foundations for the East Roseville Viaduct would be located outside the ordinary high water mark of Antelope Creek, except at two locations. The two locations in Antelope Creek are on the upstream side of the northbound SR 65 widening. Structural stability of the bridge does not allow relocation of the columns.
- Although the viaduct structure is conventional, it is a large structure that will require a full construction season to construct. The proposed design of the structure is configured into smaller portions, or frames, to allow it to be constructed in segments. Building the viaduct in segments allows the contractor to break up the work such that operations can be focused in smaller areas. For instance, the two columns in Antelope Creek can be constructed separately from other elements of the bridge to meet seasonal in-water restrictions and construction windows. With appropriate construction staging, the portion of the viaduct over Antelope Creek would be constructed in approximately 4 months.
- Construction of the column foundations of the East Roseville Viaduct would use large-diameter (8- to 10-foot) steel-cased drilled shafts. The drilled shafts would minimize acoustic disturbance compared to a driven pile foundation. For the two columns affecting Antelope Creek, the steel casing would provide a construction zone similar to a cofferdam, but with less impact on the streambed because all construction activities can be confined inside of the 8- to 10-foot steel casing. The proposed column construction includes the following order of work.
  - Drill the shaft to the desired depth.
  - Auger out the material inside the steel casing and dispose of the materials per best management practices (BMPs).
  - Install reinforcing bar cage inside the casing, and pour the foundation and column. The foundation elevation would remain below the bottom elevation of the creek channel. Therefore, permanent impacts on the creek would consist of the

viaduct column, which is smaller (approximately 5 by 8 feet) than the foundation diameter.

  – Remove the steel casing after foundation construction is complete, or leave it in place and cut-off below the mud line of Antelope Creek.

- The existing eastbound I-80 to northbound SR 65 loop connector would be removed and replaced with a high-speed three-lane flyover. The existing eastbound to northbound and southbound to eastbound connector structures over I-80 would be removed and replaced, including removal of the existing piers and abutments. Approach roadways would be removed, and the areas would be regraded.
- One lane of capacity would be added to each connector ramp by realigning the existing ramps. The westbound to northbound connector ramp would be constructed on fill, with a retaining wall (approximately 1,650 feet long and 20 feet high) along a portion of the outside shoulder; the southbound to eastbound), southbound to westbound and eastbound to northbound connector ramps would consist of a combination of fill, retaining walls, and structures.
- A direct connecting HOV ramp would be added to serve eastbound I-80 to northbound SR 65 and southbound SR 65 to westbound I-80. The HOV connector would be located in the I-80 median and would be retained by mechanically stabilized earth (soil with artificial reinforcement, such as mesh, added for stability) walls before transitioning to a structure over westbound I-80 and other local and/or connector ramps. The HOV connector would transition back to fill with a cast-in-place retaining wall (measuring approximately 150 feet long and 15 feet high) along the shoulder before conforming to the East Roseville Viaduct.
- The existing I-80/Taylor Road ramp connections (eastbound off-ramp and westbound on-ramp) would be modified. The existing access from I-80 to the eastbound Taylor Road off-ramp would be removed and either relocated or reconfigured, depending on the alternative.
- Taylor Road within the project limits would be improved, including replacement of the Taylor Road overcrossing. The structure would be replaced to accommodate the I-80 widening, with a profile correction until conforming to the existing road grade. Taylor Road would be widened to accommodate anticipated traffic volumes, but the number of lanes would vary by alternative. Curb, gutter, and sidewalk would be constructed along the south side of Taylor Road. Driveways also would be modified to conform to the roadway widening.
- Other ramps and intersections of the I-80/Eureka Road/Atlantic Street interchange, the SR 65/Galleria Boulevard/Stanford Ranch Road interchange, and the SR 65/Pleasant Grove Boulevard interchange would be improved.
- The southbound SR 65 to eastbound I-80 connector would be realigned and widened to two lanes; it would begin on fill before transitioning to structure in order to span various roadways and a portion of Secret Ravine. An approximately 400-foot-long by 25 –foot high retaining wall would be required along the outside shoulder, prior to the structure, to separate the southbound SR 65 to eastbound I-80 connector from the southbound SR 65 to westbound I-80 connector. The southbound SR 65 to eastbound I-80 connector would be the top level of the interchange structures, reaching a maximum elevation of approximately 80 feet above the

I-80 mainline, decreasing in elevation as it transitions to eastbound I-80. Structure columns would be placed such that they avoid the Secret Ravine floodway but they may be located within the designated 100-year floodplain. Once back within the existing right-of-way (approximately station 139+00), the southbound SR 65 to eastbound I-80 connector would be constructed in a combination of cut and fill, requiring a retaining wall (approximately 2,000 feet long by 10 feet high) along the outside shoulder before merging with eastbound I-80.

- The southbound SR 65 to eastbound I-80 connector is proposed to be constructed with cast-in-place concrete; this will require the use of temporary falsework and supports approximately every 60 feet, which would create both permanent and temporary disturbance areas in the Olympus Pointe Open Space Preserve.
- Although all three build alternatives do not directly affect the Edwin Purdy House, a stonehouse on parcel 015-162-007, the entire parcel may be acquired due to the large percentage of the parcel that would be disturbed under each alternative. See Section 2.7, "Cultural Resources," for more discussion of the Edwin Purdy House. Additionally, the build alternatives would affect the Cattlemens restaurant parking lot. The area of impact varies by alternative.
- Construction is expected to require the use of earthmovers, bulldozers, paving machines, water trucks, dump trucks, concrete trucks, rollers, and pickup trucks.
- To avoid potential impacts on fish, pile driving would not be used as a construction method in or immediately adjacent to Secret Ravine, Miners Ravine, or Antelope Creek. No columns or other project elements would be permanently constructed in Secret Ravine or Miners Ravine. Up to two temporary crossings (e.g., Bailey bridges) of Secret Ravine, above the ordinary high water mark, and one temporary crossing of Antelope Creek may be necessary during construction.
- Temporary falsework platforms are required to construct the cast-in-place structures at Miners Ravine, Secret Ravine, and Antelope Creek. The platforms would be constructed outside the limits of the ordinary high water.
- Transportation system management (TSM) features would be incorporated into the build alternatives. (See Section 1.3.4.1, "Alternative 4—Transportation System Management.") The following TSM features are common to each build alternative.
  - Freeway auxiliary lanes in both direction on SR 65 between I-80 and the Galleria Boulevard/Stanford Ranch Road interchange.
  - Ramp widening for storage and HOV bypass lane on the southbound Galleria Boulevard on-ramp.

Project Phasing

For constructability purposes and to ease maintenance of traffic during construction, the following phasing approach is proposed for the project and would be similar for all three build alternatives. Under current funding assumptions, project construction would begin in 2020 and would be divided into four major phases with eight subphases, ending in the year 2036. Phases are assumed to occur consecutively. Individual phases would consist of new road construction, road widening, and/or bridge/overpass construction. The phases below are preliminary and may change based on available funding, transportation improvement needs, and other considerations. The project may be built in more or less phases or all at one time.

Phase 1—SR 65

- Construct the inside widening of the East Roseville Viaduct and shift northbound traffic to the inside.
- Realign and widen the westbound I-80 to northbound SR 65 connector and widen westbound I-80 near the connector approach. Widen the outside northbound East Roseville Viaduct and perform northbound SR 65 widening. Modify the northbound Galleria Boulevard/Stanford Ranch Road ramps to accommodate the mainline widening. Shift northbound traffic to the outside portion of the East Roseville Viaduct.
- Shift southbound traffic to the inside of the East Roseville Viaduct. Widen the outside southbound East Roseville Viaduct and perform southbound SR 65 mainline widening. Modify the southbound Galleria Boulevard/Stanford Ranch Road interchange ramps and southbound Pleasant Grove Boulevard on-ramp to accommodate the mainline widening.

Phase 2—Southbound to Eastbound and Eastbound to Northbound Connector Ramps

- Construct the southbound SR 65 to eastbound I-80 connector ramp. Shift traffic onto the new connector to allow removal of the existing southbound SR 65 to eastbound I-80 connector, including existing abutments, piers, and roadway approaches.
- Construct the eastbound I-80 to northbound SR 65 connector ramp with temporary conforms to eastbound I-80. Shift traffic onto the new flyover structure to allow removal or reconfiguration of the existing eastbound I-80 to northbound SR 65 loop connector. Remove the existing eastbound I-80 to northbound SR 65 structure, including existing abutments, columns, and roadway approaches.

Phase 3—I-80 Mainline

- Construct the western portion of the new Taylor Road overcrossing and temporary conforms along Taylor Road at each approach roadway, as well as ramps to maintain traffic at all times on Taylor Road. Shift traffic onto the new portion of the bridge and remove the existing overcrossing. Construct the remaining portion of the Taylor Road overcrossing and open the entire bridge to traffic.
- Perform I-80 mainline widening and associated retaining walls. Realign and widen the southbound SR 65 to westbound I-80 connector ramp and modify the Eureka Road/Atlantic Street interchange ramps to accommodate mainline widening. Perform Taylor Road roadway improvements and modify Taylor Road ramps according to each particular alternative. Remove any existing pavement not used for the realignment and regrade the area.

Phase 4—HOV Connector

- Construct the HOV direct connector ramp and conform to future SR 65 Capacity and Operational Improvements Project.

Staging, Storage, and Proposed Access during Construction

The following staging, storage, and access are proposed for the project and would be similar for all three build alternatives.

Phase 1—SR 65

- During construction of Phase 1, areas along SR 65 within the Caltrans right-of-way would be used for staging and access.
- The East Roseville Viaduct widening is proposed to be constructed with cast-in-place concrete; this will require the use of temporary falsework. To minimize impacts on the streambed, temporary falsework construction platforms will be necessary. These platforms, which are spaced approximately every 60 feet, would be constructed to span across Antelope Creek so that construction can take place without any temporary construction features encroaching within the limits of ordinary high water. The platforms would remain in place until the portion of the viaduct construction being supported by each platform is complete and stable. When viaduct work is complete the entire falsework system, including platforms, would be removed.
- For the northbound viaduct widening, construction access is proposed from the Preserve at Creekside apartment complex at the terminus of Antelope Creek Drive, within a 50-foot-wide swath behind the apartment complex fence line, along the southbound East Roseville Viaduct, and from the Galleria Boulevard/Stanford Ranch Road interchange. To minimize impacts on undeveloped land, construction vehicles would use an approximately four hundred foot section of the existing bike path adjacent to Antelope Creek. Where access is required across Antelope Creek to construct the temporary falsework and permanent columns, a temporary bridge (e.g., a Bailey bridge) is proposed. As with the falsework platforms, the temporary bridge crossing has been sited to occur outside the limits of ordinary high water.
- For the southbound viaduct widening, temporary construction access is proposed from two directions: the Preserve at Creekside apartment complex from the south, and Caltrans right-of-way adjacent to SR 65 from the north. This will enable construction of the southbound viaduct without requiring a temporary crossing of Antelope Creek.
- Netting or other containment devices would be used to contain construction debris within the limits of the falsework and to prevent debris from falling into the ravine or onto the bike path.
- One of the proposed northbound viaduct columns would permanently impact a portion of the existing bike path. The extent of encroachment will require a permanent shift in the trail's alignment to avoid the column and meet current standards. Access to the bike path located under the viaduct would be maintained during construction of Phase 1. Only brief closures are anticipated to erect falsework and to shift the affected portion of trail. Falsework construction and trail closures would be scheduled to occur during times (e.g., weekdays) that would minimize impacts on trail users, or temporary rerouting of the trail around the construction area would be provided. Appropriate traffic control measures (signs and flaggers) would be used as necessary to maintain the safety and flow of travel on the trail.

- For construction of the westbound I-80 to northbound SR 65 connector, the area would be accessed from the north side of I-80 (i.e., from the westbound outside shoulder or from Taylor Road and the interior footprint of the system interchange).

Phase 2—Southbound to Eastbound and Eastbound to Northbound Connector Ramps

- During construction of Phase 2, areas along SR 65, within the Caltrans right-of-way, would be used for staging and access.
- For viaduct construction, crews would be able to access the area via the Preserve at Creekside apartment complex at the terminus of Antelope Creek Drive.
- Access and staging for the southbound SR 65 to eastbound I-80 connector ramp would use the infield of the system interchange, accessed from both directions on I-80 or Taylor Road. Temporary access roads from the existing system ramps and under the structures may be required for construction of the bridge columns.
- Construction of the eastbound I-80 to northbound SR 65 connector ramp can be accessed from the existing eastbound Taylor Road loop off-ramp. The interior of the loop can be used for staging. The contractor may construct up to two temporary access bridges (e.g., Bailey bridges) across Secret Ravine, above the limits of ordinary high water, during construction of the bridge columns. Westbound I-80 and Taylor Road may be used to construct the portion of the eastbound I-80 to northbound SR 65 connector ramp located north of I-80.

Phase 3—I-80 Mainline

- During construction of Phase 3, the areas along SR 65 within the Caltrans right-of-way would be used for staging and access.
- Crews would be able to access the area adjacent to the Preserve at Creekside apartment complex at the terminus of Antelope Creek Drive.
- Construction of the I-80 mainline widening would use non-roadway areas within the highway limits for staging and would be accessed from the I-80 mainline or Taylor Road.

Phase 4—HOV Connector

- Construction of the HOV direct connector ramp would use the infield areas for staging and would be accessed from the I-80 mainline or Taylor Road.

Utility Relocations

Potential utility relocations are common to all three of the build alternatives. Utility impacts and relocations unique to each build alternative are described in Section 1.4.1.2, “Unique Features of the Build Alternatives” and in Section 2.4 “Utilities/Emergency Service.”

Consolidated Communications (Formerly Surewest)

A Consolidated Communications line is located within the existing Taylor Road overcrossing. This facility would need to be relocated and replaced along the proposed Taylor Road alignment.

A Consolidated Communications line east of the I-80/SR 65 interchange also may be affected by the mainline widening.

Placer County Water Agency

Placer County Water Agency underground water lines run along the existing Taylor Road. Depending on the depth of improvements on Taylor Road, underground water facilities may be avoided, may be protected in place, or may require relocation.

Pacific Gas and Electric

Pacific Gas and Electric Company (PG&E) underground gas lines run along existing Taylor Road. Depending on the depth of improvements on Taylor Road, underground gas facilities may be avoided, may be protected in place, or may require relocation. PG&E also owns a 60 kV overhead electrical facility that crosses over SR 65 near the south abutment of the East Roseville Viaduct. Although the elevation of the viaduct will not change, clearance conflicts during construction may require temporary or permanent relocation of the lines.

Sacramento Municipal Utilities District and Western Area Power Administration

In addition to PG&E, the Sacramento Municipal Utilities District (SMUD) and Western Area Power Administration (WAPA) own and operate electric overhead utilities across I-80 that would require protection from equipment during construction.

1.3.1.2 Unique Features of the Build Alternatives

Figures depicting each build alternative appear at the end of this chapter (Figures 1-3, 1-4, and 1-5). More detailed engineering figures and detailed maps showing the locations of proposed right-of-way acquisitions are included in Appendix D and Appendix K, respectively, of the *Draft Project Report to Authorize Release of the Draft Environmental Document* prepared for the proposed project (CH2M HILL 2015). The report and its attachments are available on the project website at http://8065interchange.org/. Property acquisitions are discussed in more detail in Section 2.3.2, “Relocations and Real Property Acquisitions.”

Alternative 1—Taylor Road Full Access Interchange

Alternative 1 would improve spacing and vehicle lane-weaving movements between interchanges on I-80. The two existing Taylor Road interchange ramps would be relocated to the east and reconstructed in a compact diamond/trumpet configuration (Type L-1/L-12 interchange), providing two additional ramp connections and improving access between the existing local streets and freeway system. The interchange would be positioned within the current I-80/SR 65 interchange footprint and would use portions of the existing eastbound I-80 to northbound SR 65 loop connector and the existing southbound SR 65 to eastbound I-80 connector. The existing Taylor Road interchange ramps would be removed, and the area would be regraded.

Roadway Improvements

I-80 Mainline Improvements

Alternative 1 includes a 2-foot-wide pavement delineation soft barrier between the HOV lanes and general purpose lanes to prohibit vehicles from weaving between the HOV lanes and the Eureka Road/Atlantic Street interchange. This soft barrier is proposed in both the eastbound and westbound directions for Alternative 1. The widening and retaining wall improvements along I-80 would not affect parcels 015-450-059 (Hilton Garden Inn). The retaining wall would be approximately 1,700 feet long and 20 feet high.

Eastbound I-80 to Northbound SR 65 Connector

The eastbound I-80 to northbound SR 65 connector would be realigned into a flyover and widened to three lanes for each alternative. Alternative 1 would consist of a three-lane diverge from eastbound I-80, and approximately 750-fot-long by 25-foot-high retaining walls would be constructed on each side of the connector to minimize right-of-way acquisitions and impacts on Secret Ravine. The eastbound I-80 to northbound SR 65 connector would transition from fill to a structure that would span a parallel portion of Secret Ravine and various roadways before transitioning back to fill and conforming to the westbound I-80 to northbound SR 65 connector and East Roseville Viaduct. The proposed structures along Secret Ravine are configured and designed (i.e., the use of outrigger options) so that all permanent features (columns, footings, and foundations) would be located outside the limits of ordinary high water. Some of the proposed foundations are large-diameter drilled shaft foundations; these foundations would be located such that the spoils from the drilling operations would not affect the streambed. The use of drilled shafts would minimize acoustic disturbance compared to a driven pile foundation.

The footprint of Alternative 1 would require right-of-way acquisition on parcel 456-010-028 (Olympus Pointe Open Space Preserve).

Westbound I-80 to Northbound SR 65 Connector

With the exception of the location of the ramp diverge, the westbound I-80 to northbound SR 65 connector is the same across the three build alternatives and would be widened to two lanes. Alternative 1 exits westbound I-80 earlier due to its proximity to the westbound Taylor Road off-ramp.

Southbound SR 65 to Eastbound I-80 Connector

In all three build alternatives, the southbound SR 65 to eastbound I-80 connector would be realigned and widened to two lanes and would begin on fill before transitioning to a structure that would span various roadways and Secret Ravine. An approximately 400-foot-long by 25-foot-high retaining wall would be required along the outside shoulder, prior to the structure, to separate the roadway from the southbound SR 65 to westbound I-80 connector. This connector would be the top (fourth) level of the interchange structures, reaching an elevation of approximately 80 feet above the I-80 mainline (see visual simulations in Section 2.6 “Visual/Aesthetics”). Structure columns would be placed such that they avoid the Secret Ravine floodway but may be located within the designated 100-year floodplain. Once back within the existing right-of-way (approximately station 139+00), the southbound SR 65 to eastbound I-80 connector would be constructed in a combination of cut and fill, requiring an approximately 2,000-foot-long by 10-foot-high retaining wall along the outside shoulder. Roadway geometrics for Alternative 1 require several hundred feet of the southbound SR 65 to eastbound I-80 merge ramp to fall permanently below the ordinary high water mark of Secret Ravine.

The footprint of Alternative 1 would require right-of-way acquisition on parcel 046-020-070 (Secret Ravine).

Southbound SR 65 to Westbound I-80 Connector

In all three build alternatives, the southbound SR 65 to westbound I-80 connector would be realigned and widened to three lanes. For Alternative 1, the southbound SR 65 to westbound I-80 connector would have the largest footprint compared to the other two build alternatives due to the location of the westbound Taylor Road on-ramp. This footprint would result in a larger impact on the parking lots of adjacent businesses on parcel 015-162-002 (Cattlemens restaurant) and parcel 015-162-006 (Seventh Day Adventist Church). Up to 79 parking spaces would be affected on parcel 015-162-002 and up to 25 spaces on parcel 015-162-006. A bridge along the southbound SR 65 to westbound I-80 connector would be required to span the proposed ramp roadway below that would connect the relocated Taylor Road interchange ramps to the existing Taylor Road. The rest of the southbound SR 65 to westbound I-80 connector would be constructed on fill, with retaining walls (approximately 2,000 feet long and 25 feet high) along portions of the outside shoulder.

Taylor Road

The ramp connections to the relocated Taylor Road interchange would descend from the I-80 mainline and would be constructed in cut. Retaining walls (approximately 700 feet long and 10 feet high) would be required on portions of the westbound Taylor Road off-ramp due to its proximity to the westbound I-80 to northbound SR 65 connector ramp. A new ramp roadway would be constructed to connect the Taylor Road interchange ramps to the existing Taylor Road on the west side of the East Roseville Viaduct. This connection would cross under I-80, requiring two bridges along I-80—one in each direction.

The proposed eastbound Taylor Road on-ramp and off-ramp would use portions of the existing eastbound I-80 to northbound SR 65 and southbound SR 65 to eastbound I-80 connector ramps. Portions of the existing ramps not used by the proposed Taylor Road ramps would be removed, and the area would be regraded.

The four Taylor Road ramps would intersect at a new stop-controlled intersection on the north side of I-80. The ramp roadway would intersect with the existing Taylor Road at a new signalized intersection. Due to the location of this proposed signalized intersection, the adjacent existing driveway on Stonehouse Court would need to be reconfigured and shifted west only in Alternative 1. Taylor Road would be widened to include two turn pockets required at the signalized intersection.

The Taylor Road overcrossing would consist of four lanes and have a longer span than the current overcrossing due to the proposed location of the southbound SR 65 to westbound I-80 connector along westbound I-80. Because the Taylor Road ramps would be relocated in Alternative 1, ramps would no longer connect to the Taylor Road overcrossing. The existing ramps would be removed, and the area would be regraded.

Eureka Road/Atlantic Street Interchange Ramps

The Eureka Road/Atlantic Street interchange ramps would remain in the same location and would be adjusted to accommodate widening of the I-80 mainline. The eastbound Eureka Road loop ramp would be shifted closer to Miners Ravine. An approximately 350-foot-long by 20-feet-high retaining wall would be added to the outside shoulder to minimize additional impacts on the floodplain. Existing pavement not used by the reconfiguration would be removed, and the area would be regraded.

Because the Taylor Road full access interchange is proposed in Alternative 1, the traffic volumes along the eastbound Eureka Road off-ramp do not warrant improvements or an auxiliary lane between the eastbound Douglas Boulevard on-ramp and eastbound Eureka Road off-ramp, allowing Alternative 1 improvements to begin just after the Miners Ravine bridge on I-80.

Local Roads

Alternative 1 does not warrant improvements to the Eureka Road/Atlantic Street/Taylor Road intersection or the Taylor Road/East Roseville Parkway intersection.

TSM Features

The following TSM features are unique to Alternative 1.

- Ramp widening for storage and HOV bypass lane on the westbound Taylor Road on-ramp.
- Ramp widening for storage and HOV bypass lane on the eastbound Taylor Road on-ramp.

Staging, Storage, and Proposed Access during Construction

The construction of the bridges along I-80 over the Taylor Road ramp roadway would require a mainline crossover detour and increased traffic management during construction.

The eastbound I-80 to northbound SR 65 connector structures are proposed to be constructed with cast-in-place concrete; this will require the use of temporary falsework. To minimize impacts on Secret Ravine, temporary falsework construction platforms will be necessary. These platforms would be constructed to span across the ravine, above the ordinary high water mark. In addition, temporary construction access has been planned to allow construction equipment access to the site. This access is proposed to occur along the existing right-of-way, parallel to the I-80 mainline, as well as along a temporary route across Secret Ravine to access the eastbound I-80 to northbound SR 65 connector from the south. Where access is required across Secret Ravine, temporary bridges are proposed. These temporary bridges have been sited to occur outside of the sensitive areas of the streambed. Construction debris would be contained within the limits of the falsework configuration to prevent impacts on the stream.

Although the proposed structures along Secret Ravine are conventional, they are large structures that will require more than a single construction season to construct. The bridges have been configured into smaller portions, or frames, to allow the bridge to be constructed in segments. Building the bridge in segments allows the contractor to break up the work so that operations can be focused in smaller areas. For instance, one frame is over Secret Ravine and another frame is over I-80 mainline traffic. The frame over Secret Ravine would be constructed in approximately 4 months.

Utility Relocations

PG&E and SMUD each own two parallel overhead electric transmission lines that run perpendicular across I-80 just south of the Roseville Parkway overcrossing. Two steel towers carry the 60 and 230 kilovolt (kV) electric lines over I-80 at the north corner of the Roseville Golfland Sunsplash parking lot. Alternative 1 avoids the steel transmission towers, as the eastbound improvements would occur within the existing Caltrans right-of-way in this location.

Project Phasing

The four major phases are generally the same across the three build alternatives. However, in Alternative 1, Phase 3 would include construction of Taylor Road ramps that are not proposed in the other alternatives.

Alternative 2—Collector-Distributor (C-D) System Ramps

Alternative 2 would provide eastbound access to Taylor Road at the Atlantic Street/Eureka Road interchange via a C-D ramp system and would restrict local traffic from leaving or entering I-80 mainline until after the critical weave area between Eureka Road and the I-80/SR 65 interchange. The two existing Taylor Road interchange ramps would remain in their current location but would be reconfigured to accommodate the surrounding improvements.

Roadway Improvements

I-80 Mainline Improvements

Alternative 2 would not include the 2-foot-wide pavement delineation soft barrier between the HOV and general purpose lanes in the eastbound direction due to the proposed barrier between the I-80 mainline and the C-D ramp system. A 2-foot-wide pavement delineation soft barrier is proposed in the westbound direction, similar to Alternative 1.

Eastbound I-80 to Northbound SR 65 Connector

The eastbound I-80 to northbound SR 65 connector would be realigned into a flyover and would diverge from I-80 as a two-lane connector ramp. A third lane would be added by the C-D ramp system discussed below. At the diverge from eastbound I-80, retaining walls (approximately 900 feet long and 25 feet high) on each side of the ramp would minimize fill impacts on Secret Ravine. The eastbound I-80 to northbound SR 65 connector would transition to a structure that would span a parallel portion of Secret Ravine and other roadways before transitioning back to fill and conforming to the westbound I-80 to northbound SR 65 connector and East Roseville Viaduct. Compared to Alternative 1, the eastbound I-80 to northbound SR 65 connector is spaced closer to I-80 to accommodate the C-D ramp located immediately south and parallel to the eastbound I-80 to northbound SR 65 connector. The proposed structures along Secret Ravine are configured and designed (i.e., the use of outrigger options that span the area below and support the connector on the outer edges of the structure) so that all permanent features (columns, footings, and foundations) would be located above the ordinary high water mark. Some of the proposed foundations are large-diameter drilled shaft foundations; these foundations would be located such that the spoils from the drilling operations would not affect the streambed. The use of drilled shafts would minimize acoustic disturbance compared to a driven pile foundation.

Alternative 2 would require right-of-way acquisition on parcel 456-010-028 (Olympus Pointe Open Space Preserve).

Westbound I-80 to Northbound SR 65 Connector

With the exception of the location of the ramp diverge, the westbound I-80 to northbound SR 65 connector is the same across the three build alternatives, and would be widened to two lanes. Alternative 2 exits westbound I-80 farther west and is located in the same general location as the existing westbound I-80 to northbound SR 65 connector ramp.

Southbound SR 65 to Eastbound I-80 Connector

In all three build alternatives, the southbound SR 65 to eastbound I-80 connector would be realigned and widened to two lanes. The connector would begin on fill before transitioning to a structure that would span various roadways and Secret Ravine. An approximately 80-foot-long by 15-foot-high retaining wall would be required along the outside shoulder, prior to the structure, to separate the roadway from the southbound SR 65 to westbound I-80 connector. This connector would be the top level of the interchange structures, reaching an elevation of approximately 80 feet above mainline I-80. Structure columns would be placed such that they avoid the Secret Ravine floodway but may be located within the designated 100-year floodplain. Once back within the existing right-of-way (approximately station 139+00), the southbound SR 65 to eastbound I-80 connector would be constructed in a combination of cut and fill, requiring an approximately 2,000-foot-long by 10-foot-high retaining wall along the outside shoulder to avoid impacts on Secret Ravine before merging with eastbound I-80.

Southbound SR 65 to Westbound I-80 Connector

In all three build alternatives, the southbound SR 65 to westbound I-80 connector would be realigned and widened to three lanes. The southbound SR 65 to westbound I-80 connector for Alternative 2 has a smaller footprint compared to Alternative 1 because surrounding geometrics allow the ramp to merge with westbound I-80 farther east than Alternative 1. Impacts would occur at the parking lots of the adjacent businesses on parcel 015-162-002 (Cattlemens restaurant) and parcel 015-162-004 (Flooring Liquidators). Up to 39 parking spaces would be affected on parcel 015-162-002, and the rear paved area of parcel 015-162-004 would be reduced. Retaining walls (approximately 2,000 feet long and 25 feet high) are proposed along portions of the southbound SR 65 to westbound I-80 connector outside shoulder to minimize impacts on adjacent parcels. The southbound SR 65 to westbound I-80 connector would be constructed on fill and would not require a bridge because Alternative 2 does not propose a local road below the connector ramp.

Taylor Road

Alternative 2 does not require a new signalized intersection or turn pockets along Taylor Road. It also does not require the driveway relocation included in Alternative 1. The Taylor Road overcrossing span length would be shorter than the current overcrossing due to the proposed location of the southbound SR 65 to westbound I-80 connector ramp conform on westbound I-80. The Taylor Road overcrossing would consist of five lanes, two in the southbound direction and three in the northbound direction. The third northbound lane on the bridge would be added by the eastbound Taylor loop off-ramp and would become a local roadway auxiliary lane that would serve as the turn pocket for the Cattlemens restaurant parking lot. To minimize bicycle traffic conflicts with the loop ramp traffic, per City of Roseville design standards, a bicycle lane would be located between the second and third northbound lanes.

The eastbound Taylor loop off-ramp would be constructed with a reduced radius at the terminus to provide an improved pedestrian crossing. A retaining wall (approximately 450 feet long and 15 feet high) would be required along a portion of the outside shoulder to maintain standard horizontal clearance from the existing right-of-way. The existing loop ramp would be removed, and the area would be regraded to accommodate the new geometry.

The westbound Taylor on-ramp would be reconfigured to accommodate the westbound I-80 mainline widening but would remain in the same location.

Eureka Road/Atlantic Street Interchange Ramps

The westbound Eureka Road/Atlantic Street interchange ramps would remain in the same location and would be adjusted to accommodate the westbound I-80 mainline widening. The eastbound Eureka Road ramps would be reconfigured to tie-in to the C-D ramp system instead of the I-80 mainline. The existing eastbound Eureka Road off-ramp structure over Miners Ravine would be widened by approximately 6 feet to accommodate the interchange reconfiguration but would remain a single-lane off-ramp. Columns would be placed in line with existing columns, avoiding the Miners Ravine floodway but potentially located within the designated 100-year floodplain. No structures would be placed below the ordinary high water mark of Miners Ravine. The structure widening would require lowering the profile of the existing bike path below the ramp to maintain the minimum vertical clearance requirements. The bike path would remain open during construction via a temporary detour. Existing pavement not used by the ramp reconfigurations would be removed, and the area would be regraded.

Collector-Distributor (C-D) System Ramps

The new ramp would diverge from the existing eastbound Eureka Road off-ramp and would require new structures over Miners Ravine and Secret Ravine.

The proposed C-D ramp system is formed by combining the eastbound Eureka Road and eastbound Taylor Road off-ramps at the existing Eureka Road off-ramp location. After the ramp separates from I-80, the Eureka Road off-ramp continues on its existing alignment. The Taylor Road off-ramp traffic diverges, proceeding east across Miners Ravine, requiring a new bridge over Miners Ravine, then combines with the eastbound Eureka Road loop on-ramp. The combined ramps then pass under Eureka Road and the Eureka Road slip on-ramp. The three ramps merge into two lanes and run parallel and adjacent to eastbound I-80, separated from mainline traffic by a combination of concrete barriers and retaining walls. An additional retaining wall (approximately 1,500 feet long and 20 feet high) would be required along the outside shoulder of the C-D ramp system to minimize impacts on the adjacent parcels.

The proposed C-D ramp structures along Miners Ravine and Secret Ravine have been configured such that all permanent features (columns, footings, and foundations) are located above the ordinary high water mark in the vicinity of the ravines.

The C-D ramp system continues east, where it combines with the Eureka Road slip on-ramp and then passes under Taylor Road. Access to Taylor Road would be provided by the connection to the reconstructed Taylor Road loop ramp located along the C-D system. At this point, the Taylor Road off-ramp traffic diverges to the reconstructed Taylor Road loop off-ramp, and the Eureka Road on-ramp traffic continues east. The C-D system then splits into two on-ramps, one to the eastbound I-80 to northbound SR 65 connector and the other to eastbound I-80. These roadways would be on a structure spanning Secret Ravine. Column placement would affect both the floodway and floodplain due to roadway geometrics and bridge span requirements. No pile driving would be used, and no structures would be placed below the ordinary high water mark of Secret Ravine or Miners Ravine. This alternative would result in sliver right-of-way acquisitions on parcel 015-450-059 (Hilton Garden Inn), parcel 015-450-058 (Larkspur Landing), and parcel 015-450-079 (Golfland Sunsplash), in addition to utility impacts described in more detail below under “Utility Relocations.”

The new C-D ramp crossing under Eureka Road and the Eureka Road slip on-ramp would require two new bridge crossings. The bridge on Eureka Road would be constructed for the new C-D ramp and eastbound Eureka Road loop ramp. The eastbound Eureka Road slip on-ramp would be shifted west and braided over the new C-D and eastbound Eureka Road loop ramps on the other structure. The existing slip ramp pavement would be removed, and the area would be regraded. See the exhibits in Appendix D of the *Draft Project Report to Authorize Release of the Draft Environmental Document* prepared for the proposed project (CH2M HILL 2015). The report and its attachments are available on the project website at http://8065interchange.org/.

Local Roads

Alternative 2 does not warrant improvements to the Eureka Road/Atlantic Street/Taylor Road intersection or the Taylor Road/East Roseville Parkway intersection.

TSM Features

The following TSM feature is unique to Alternative 2.

- Eastbound auxiliary lane between Douglas Boulevard interchange and Eureka Road interchange.

Staging, Storage, and Proposed Access during Construction

Access to the Taylor Road interchange would be maintained during construction. Because the Taylor Road ramps are remaining in relatively the same location, temporary pavement may be required to shift traffic between the existing and proposed ramps during construction.

The C-D ramp structures are proposed to be constructed with cast-in-place concrete; this will require the use of temporary falsework. To minimize impacts on Miners Ravine and Secret Ravine, temporary falsework construction platforms will be necessary. These platforms would be constructed to span across the streambed (above the ordinary high water mark), such that construction can take place above the streambed without any temporary features encroaching on the streambed. Construction debris would be contained within the falsework configuration to prevent it from falling into the stream. Temporary construction access would allow construction equipment access to the site within the existing right-of-way, parallel to the I-80 mainline, as well as along a temporary route across Secret Ravine to access the eastbound I-80 to northbound SR 65 connector and C-D system ramp from the south. Where access is required across Secret Ravine, temporary bridges (e.g., Bailey bridges) are proposed. These temporary bridges would be sited to occur outside the sensitive areas of the streambed.

The proposed structures along Miners Ravine and Secret Ravine are conventional structures; it is assumed that the structures would be constructed within a single construction season. With appropriate construction staging, the falsework over the streambed would be in place for approximately 4 months.

Utility Relocations

In addition to the facility impacts that are consistent with Alternative 1, Alternative 2 would require avoiding or relocating the existing Comcast line across I-80 near the eastbound auxiliary lane between Douglas Boulevard and Eureka Road.

The proposed eastbound widening and retaining wall between the Eureka Road interchange and the Roseville Parkway overcrossing would require relocation of the 230 kV SMUD and PG&E overhead transmission towers. Relocation of the steel towers would require the Golfland Sunsplash parking lot to be reconfigured and would affect up to 18 parking spaces. The relocation of transmission towers and power lines would be consistent with Public Utilities Commission General Order 131-D.

The eastbound lanes and retaining wall for Alternative 2 would affect the existing electronic billboard located in the Golfland Sunsplash parking lot. Potential relocation of this structure may require the lot to be reconfigured, affecting up to 8 parking spaces.

Project Phasing

The four major phases are generally the same across the three build alternatives. However, under Alternative 2, Phase 3 would include reconfiguration of the Taylor Road ramps and construction of the C-D facility.

Alternative 3—Taylor Road Interchange Eliminated

Similar to Alternative 2, Alternative 3 would improve spacing and vehicle lane-weaving movements between interchanges on I-80 by collecting eastbound Eureka Road on-ramp traffic. Vehicle lane weaving on I-80 would be significantly improved because ramp traffic would be redirected to a C-D ramp system and restricted from entering and exiting the I-80 mainline until after the critical weave area between Eureka Road and the I-80/SR 65 interchange. Unique to Alternative 3, the two existing Taylor Road interchange ramps would be eliminated, and access to the Taylor Road area would be accommodated by the adjacent local interchanges at the Atlantic Street/Eureka Road, Rocklin Road, and Galleria Boulevard/Stanford Ranch Road interchanges. The connector ramps serving I-80 and SR 65 and their proposed staging and construction access are the same for Alternatives 2 and 3. Under Alternative 3, however, up to 42 parking spaces on parcel 015-162-002 (Cattlemens restaurant) would be affected by realignment of the southbound SR 65 to westbound I-80 connector ramp.

Roadway Improvements

I-80 Mainline Improvements

Alternative 3 does not include the 2-foot-wide pavement delineation soft barrier between the HOV and general purpose lanes in the eastbound direction due to the proposed barrier between the I-80 mainline and the ramp system. A 2-foot-wide soft barrier is proposed in the westbound direction, similar to Alternatives 1 and 2.

Taylor Road

Alternative 3 does not require a new intersection or turn pockets along Taylor Road. It also does not require the driveway relocation required in Alternative 1. The Taylor Road overcrossing is shorter compared to Alternative 1 because of the proposed location of the southbound SR 65 to westbound I-80 connector ramp conform on westbound I-80. The Taylor Road overcrossing would consist of four lanes because the eastbound Taylor loop ramp would be eliminated in this alternative.

Eureka Road/Atlantic Street Interchange Ramps

The westbound Eureka Road/Atlantic Street interchange ramps would remain in the same location and would be adjusted to accommodate the mainline I-80 widening. The existing eastbound Eureka Road ramps would remain in the same location but would tie-in to a ramp system instead of merging with the I-80 mainline.

The proposed ramp system is formed by combining the eastbound Eureka Road loop on-ramp and the eastbound Eureka Road slip on-ramp after the Eureka Road loop on-ramp passes under the existing Eureka Road/Atlantic Street interchange overcrossing. The two ramps merge into two lanes and run parallel and adjacent to eastbound I-80, separated from mainline traffic by a combination of concrete barriers and retaining walls. An additional retaining wall (approximately 2,000 feet long and 20 feet high) would be required along the outside shoulder of the ramp system to minimize impacts on the adjacent parcels.

Similar to Alternative 2, the eastbound Eureka Road/Atlantic Street interchange ramps would be located adjacent and parallel to eastbound I-80. The ramp system would be separated from eastbound I-80 traffic by a combination of concrete barriers and retaining walls measuring approximately 800 feet long and 8 feet high. A retaining wall would be required along the outside shoulder of the ramps to minimize impacts on adjacent parcels. This alternative would result in sliver right-of-way acquisitions on parcel 015-450-059 (Hilton Garden Inn), parcel 015-450-058 (Larkspur Landing), and parcel 015-450-079 (Golfland Sunsplash), in addition to utility impacts described in more detail below under “Utility Relocations.”

Access to Taylor Road would not be provided in Alternative 3; the existing ramps would be removed, and the area would be regraded. The C-D ramp system then splits into two on-ramps: one to the eastbound I-80 to northbound SR 65 connector and the other to eastbound I-80. Similar to Alternative 2, these roadways would be on a structure spanning Secret Ravine. Column placement would affect both the floodway and floodplain due to roadway geometrics and bridge span requirements. No pile driving would be used, and no structures would be placed below the ordinary high water mark of Secret Ravine.

Eliminating the existing Taylor Road ramps would require widening the eastbound Eureka Road off-ramp to a two-lane ramp, as well as adding an auxiliary lane along eastbound I-80 between the Douglas Boulevard and Eureka Road interchanges. Widening the eastbound Eureka Road off-ramp to the outside requires widening the existing structure over Miners Ravine. New columns would be constructed in line with existing columns, avoiding the Miners Ravine floodway but potentially located within the designated 100-year floodplain. The structure widening would require lowering the profile of the existing bike path below the ramp to maintain the minimum vertical clearance requirements. The bike path would remain open during construction via a temporary detour.

Local Roads

Alternative 3 would include improvements to the Eureka Road/Atlantic Street/Taylor Road intersection and the Taylor Road/East Roseville Parkway intersection. Additional turn lanes are required to meet intersection LOS requirements.

TSM Features

The following TSM features are unique to Alternative 3.

- Eastbound auxiliary lane between Douglas Boulevard interchange and Eureka Road interchange.

- Ramp widening for storage at Eureka Road/Taylor Road intersection.

Staging, Storage, and Proposed Access during Construction

Additional traffic management during construction would be required at the Eureka Road/Atlantic Street/Taylor Road intersection as well as the Taylor Road/East Roseville Parkway intersection due to the added turn pockets under Alternative 3.

Utility Relocations

In addition to the facility impacts that are consistent with Alternative 1, Alternative 3 would require avoiding or relocating the existing Comcast line across I-80 near the eastbound auxiliary lane between Douglas Boulevard and Eureka Road.

The proposed eastbound widening and retaining wall between the Eureka Road interchange and the Roseville Parkway overcrossing would require relocation of the 230 kV SMUD and PG&E overhead transmission towers. Relocation of the steel towers would require the Golfland Sunsplash parking lot to be reconfigured and would affect up to 18 parking spaces. The relocation of transmission towers and power lines would be consistent with Public Utilities Commission General Order 131-D.

Alternative 3 would affect the existing electronic billboard located in the Golfland Sunsplash parking lot. Potential relocation of this structure may require the lot to be reconfigured.

Project Phasing

The four major phases are generally the same across the three build alternatives. However, under Alternative 3, Phase 3 would include reconfiguration of the Eureka Road/Atlantic Street interchange ramps and construction of the C-D facility.

1.3.2 No Build Alternative (No-Project)

The No Build Alternative would not make any improvements to the I-80/SR 65 interchange or adjacent transportation facilities to satisfy the purpose and need identified in Section 1.2, “Purpose and Need.” Unrelated planned projects, such as the HOV and auxiliary lanes proposed on SR 65 north of the Galleria Boulevard/Stanford Ranch Road intersection, and other local improvements separately proposed and identified in the MTP/SCS, would be implemented according to their proposed schedules.

1.3.3 Comparison of Alternatives

After extensive engineering and traffic analysis efforts and review and screening of 22 design concepts, three build alternatives surfaced for consideration and analysis that would meet the project’s purpose and need. All of the alternatives studied involve the same or similar improvements on I-80 and SR 65, except for how access to the existing Taylor Road interchange is addressed. See Table 1-6 for a list of all 22 design concepts.

Alternative 1 (Taylor Road Full Access Interchange) provides for an improved Taylor Road interchange access but has less than desirable effects on I-80 and the system interchange. Alternative 1 is not acceptable to FHWA and Caltrans because it still allows weaving conditions between the Eureka Road/Atlantic Street, Taylor Road, and SR 65 interchanges that result in increased congestion and reduced safety on I-80 eastbound. Alternative 2 would solve this issue by separating the Eureka Road/Atlantic Street and Taylor Road weaving movements from the I-80 freeway, while still maintaining the existing access to Taylor Road.

Alternative 2 (Collector-Distributor [C-D] System Ramps) was found to meet all aspects of the need and purpose, over and above Alternatives 1 and 3, by providing a separation of the ramp and freeway movements on I-80 eastbound, which will reduce traffic congestion compared to Alternative 1, and maintain the existing Taylor Road ramps, access that would be eliminated under Alternative 3.

Alternative 3 (Taylor Road Interchange Eliminated) would eliminate the Taylor Road interchange, transferring the local access to the adjacent Eureka Road/Atlantic Street, Galleria Boulevard/Stanford Ranch Road, and Rocklin Road interchanges. Construction of the original I-80/SR 65 interchange and adjacent interchanges has reduced local access to Taylor Road, resulting in a strain on the local roadways, especially Eureka Road/Atlantic Street. Alternative 3 would result in negative impacts to businesses with significant out-of-direction travel that is unacceptable to local agencies. Alternative 2 would solve this issue by maintaining the existing access to Taylor Road.

Substantial contributions from many different disciplines at FHWA and Caltrans assisted the Project Development Team (PDT) in developing the three build alternatives under consideration. As a result of this collaboration, PCTPA and Caltrans identified a preferred alternative subject to selection after public review and comment, Alternative 2 (Collector–Distributor [C-D] System Ramps). Because the engineering design is limited by the available area in and adjacent to the interchange, the impact footprint of the three build alternatives are not substantially different from each other. Further, Alternative 2 is a solution to the need for the project that is acceptable to the local agencies, Caltrans, and FHWA.

1.3.4 Identification of a Preferred Alternative

After the public circulation period, all comments were considered, and Alternative 2 (Collector—Distributer [C-D] System Ramps) was confirmed by the PDT as the preferred alternative. Alternative 2 is supported by the Cities of Roseville, Rocklin and Lincoln; PCTPA; Caltrans and FHWA. The preferred alternative is documented in the Project Report, and will be approved by Caltrans.

Alternative 2 was identified as the preferred alternative because it best addresses the project purpose and need. Further, public comments on the build alternatives included opposition to Alternative 3 and support for Alternative 2. Alternative 2 would provide a separation of the ramp and freeway movements on I-80 eastbound, which would reduce traffic congestion compared to Alternative 1. Alternative 2 would also maintain the existing Taylor Road ramps, access that would be eliminated under Alternative 3.

Because of the weaving condition that would remain between the Eureka Road/Atlantic Street, Taylor Road, and SR 65 interchanges, Alternative 1 is not acceptable to FHWA and Caltrans. The remaining weave condition would result in increased congestion and reduced safety on I-80 eastbound. Alternative 2 would solve the weaving issue by separating the Eureka Road/Atlantic Street and Taylor Road weaving movements from the I-80 freeway, while still maintaining the existing access to Taylor Road. By eliminating the Taylor Road interchange, Alternative 3 would result in negative impacts to businesses with significant out-of-direction travel that is unacceptable to local agencies. Alternative 2 would solve this issue by maintaining the existing access to Taylor Road. Environmental effects of the build alternatives are not substantially different from each other.

1.3.5 Alternatives Considered but Eliminated from Further Discussion Prior to the Draft Environmental Document

1.3.5.1 Alternatives Screening Process

To identify the alternatives to carry forward for analysis in this EIR/EA, PCTPA established a Technical Working Group (TWG) to perform the pre-screening process of the concepts presented in the PSR prepared in 2009 by Caltrans as well as those gathered during PCTPA’s consultant selection process. The TWG consisted of representatives from the Cities of Rocklin and Roseville, Placer County, Caltrans, FHWA, PCTPA, and project consultants. The representatives provided input regarding the interests of their respective stakeholders. A process was developed to identify which alternatives would be carried forward for analysis in the environmental document. To move forward in the process, the concept needed to be representative of the purpose and need statement developed by the PDT. While reviewing each concept, the three following questions also were considered.

1. Does the concept alternative solve the “transportation problem” (congestion, operations, safety, access)?
2. Is the concept alternative likely to fail under local/state/federal standards or regulatory requirements?
3. Are there engineering/environmental factors (such as geometrics, constructability, Section 4f resources, and biological resources) that will make the concept alternative infeasible?

A TSM working group consisting of representatives from PCTPA, Placer County, the Cities of Roseville, Rocklin and Lincoln, Caltrans District 3 project management and traffic operations, and project consultants was created to identify potential TSM options for the project. A meeting was held on March 20, 2012, to discuss potential solutions that could be incorporated into the TSM concept alternative.

Twenty-two concepts were developed and screened by the PDT (Table 1-6). Four TWG meetings were held to screen the concepts in order to balance the competing demands of design, environmental impact, cost, and function using the following ranking criteria.

- Improve Freeway Operations
- Reduce Congestion
- Enhance Safety
- Preserve Access
- Consider Alternative Modes
- Maintain Consistency with Regional and Local Plans (including phasing and funding)
- Minimize Community Impacts
- Minimize Adverse Environmental Impacts
- Maximize Cost Effectiveness

The initial screening process resulted in identification of a TSM alternative, a No Build Alternative and three build alternatives: (1) Full Access Taylor Interchange – Diamond Shaped; (2) Full Access Taylor Interchange – Trumpet Shaped; and (3) Taylor Road Interchange Eliminated. After identification of these alternatives, concerns with weaving distance and interchange spacing triggered several design focus meetings throughout 2013 with Caltrans, FHWA, local agencies, and the design team. Through discussions with the PDT and feedback provided by Caltrans and FHWA, build alternatives were modified to provide more acceptable design features, resulting in design revisions to the build alternatives as well as development of a new alternative proposing a collector-distributor system in the eastbound direction. Features from Alternatives (1) and (2) were combined to maximize the available weaving distance. On December 4, 2013, the PCTPA board approved moving forward with the five alternatives listed below.

1. Taylor Road Full Access Interchange

2. Collector-Distributor System Ramps

3. Taylor Road Interchange Eliminated

4. Transportation System Management (TSM)

5. No Build Alternative

1.3.5.2 Alternatives Considered but Eliminated

Alternative 4—Transportation System Management

Alternative 4 could include ramp metering, HOV bypass lanes, traffic signal coordination, transit options, and bicycle and pedestrian facilities in order to improve the transportation system at the

I-80/SR 65 interchange. The TSM features identified by the working group as feasible options are shown in Figure 1-9. Alternative 4 would attempt to manage the design year traffic volumes without increasing capacity or modifying the current interchange configuration and surrounding transportation facilities within the project area. The project footprint impacts would be significantly lower than with the build alternatives, though Alternative 4 cannot provide the improvements needed to address forecasted traffic operations and reduce no-build traffic congestion. Although TSM measures alone could not satisfy the purpose and need of the project, the following TSM features have been incorporated into the build alternatives for this project.

Common to all build alternatives:

- Freeway auxiliary lanes in both direction on SR 65 between I-80 and the Galleria Boulevard/Stanford Ranch Road interchange.
- Ramp widening for storage and HOV bypass lane on the southbound Galleria Boulevard on-ramp.

Alternative 1:

- Ramp widening for storage and HOV bypass lane on the westbound Taylor Road on-ramp.
- Ramp widening for storage and HOV bypass lane on the eastbound Taylor Road on-ramp.

Alternative 2:

- Eastbound auxiliary lane between the Douglas Boulevard interchange and Eureka Road interchange.

Alternative 3:

- Eastbound auxiliary lane between the Douglas Boulevard interchange and Eureka Road interchange.
- Ramp widening for storage at the Eureka Road/Taylor Road intersection.

Other Alternatives Considered but Eliminated

The following concepts also were considered but eliminated from further discussion or carried forward in a modified configuration (Table 1-6).

Table 1-6. Other Alternatives Considered but Eliminated or Modified

Concept No.	Description	Reason for Elimination
C1	PSR Alternative #1 – HOV Direct Connector, Connector Widening and Auxiliary Lanes • Maintained the existing 2-lane eastbound I-80 to northbound SR 65 loop connector.	• Did not address the I-80 weave by leaving Taylor Road interchange in its existing location. • Did not improve the eastbound I-80 to northbound SR 65 connector ramp.
C2	PSR Alternative #2 – Mixed Flow Flyover, Connector Widening and Auxiliary Lanes • Replaced the eastbound I-80 to northbound SR 65 loop connector with a 3-lane flyover.	• Did not address the I-80 weave by leaving Taylor Road interchange in its existing location. • Did not provide the HOV system continuity by not providing the HOV direct connector to SR 65.

Concept No.	Description	Reason for Elimination
C3	PSR Alternative #3 – Ultimate Build • Included a combination of Concept C1 and C2 with Taylor Road maintained in its existing location.	• This concept was modified to address the weaving conditions due to the location of Taylor Road interchange. The two existing ramps were relocated to be combined with the I-80/SR 65 interchange, outside the weaving area, similar to Concept C7. The concept was renamed Concept 3B • This concept was further refined to a new Concept 3A that included removal of the Taylor Road Interchange, relying on the surrounding existing local interchanges for access. • As the Taylor Road Interchange Eliminated alternative, it was carried forward for evaluation.
C4	PSR Alternative #3 + Relocated L-1 Configuration Taylor Road interchange • Included a combination of Concept C3 with the Taylor Road interchange relocated as part of the new I-80/SR 65 interchange in a diamond configuration.	• Dismissed because its best features were combined with Concept C7 to create the Taylor Road Full Access Interchange (Alternative 1)
C5	General Purpose and HOV Direct Connector Flyover • PSR Alternative #3 Modified to provide left exit to SR 65 • Accommodates dominant movement + partial Taylor Road interchange	• Concept determined to be redundant. • Did not maintain the I-80 Interstate continuity by converting I-80 to right hand branch connections from SR 65. • Reduced access by removing Taylor Road interchange and restricting ramp access at Eureka Road interchange. • Concept did not conform to Caltrans and FHWA criteria (see criteria listed in Section 1.3.4.1).
C6	General Purpose and HOV Direct Connector + L-1 Taylor Road interchange • Included a combination of Concept C5 and a new Taylor Road interchange	• Concept was carried forward for traffic operations analysis and then removed from consideration in subsequent screening. • Did not maintain the I-80 interstate continuity by converting I-80 to right-hand branch connections from SR 65. • Reduced access by removing Taylor Road interchange and restricting ramp access at Eureka Road interchange. • Concept did not conform to Caltrans and FHWA criteria (see criteria listed in Section 1.3.4.1).
C7	PSR Alternative #3 + Relocated Taylor Road interchange • Included a combination of Concept C3 with the Taylor Road interchange relocated as part of the new I-80/SR 65 interchange in a trumpet configuration. • This concept was further refined to a new Concept 7A that included the Antelope Creek Extension from Concept C20. • Carried forward to the concept screening evaluation as the Full Access Taylor Interchange – Trumpet-Shaped alternative	• Dismissed because its best features were combined with Concept C4 to create the Taylor Road Full Access Interchange (Alternative 1).

Concept No.	Description	Reason for Elimination
C8	PSR Alternative #3 + Elevated Collector-Distributor (C-D) Roads • Widened I-80 to the east to provide an eastbound I-80 collector-distributor (C-D) ramp system, requiring right-of-way from the Golfland Sunsplash commercial area, replacement of the Roseville Parkway structure, and relocation of power transmission facilities.	• Did not address the WB 80 weave, Eureka Road to Taylor Road. • Concept determined to have excessive right-of-way impacts and associated construction costs, and poor operations on westbound I-80.
C9	PSR Alternative #3 + Relocated Taylor Road interchange	• Concept determined to be redundant.
C10	PSR Alternative #3 + C-D Roads + Relocated Taylor Road interchange • Widened I-80 to the north to provide a WB 80 C-D ramp system, requiring relocation of the Union Pacific Railroad right of way and utilities into the existing landfill.	• Concept determined to have excessive right-of-way impacts and associated construction costs.
C11	PSR Alternative #3 + C-D Roads + Relocated Taylor Road interchange • Widened I-80 to the north to provide a westbound 80 C-D ramp system, requiring relocation of the Union Pacific Railroad right-of-way and utilities into the existing landfill. Widened I-80 to the east to provide an eastbound I-80 C-D ramp system, requiring right-of-way from the Golfland Sunsplash commercial area, replacement of the Roseville Parkway structure, and relocation of power transmission facilities	• Concept determined to have excessive right-of-way impacts and associated construction costs.
C12	Maintain Loop Connector + HOV Direct Connector	• Concept determined to be redundant.
C13	PSR Alternative #3 + Taylor Connection	• Concept determined to be redundant.
C14	PSR Alternative #3 + Taylor Connection + Taylor ramps	• Concept determined to be redundant.
C15	PSR Alternative #3 + Eureka Road interchange + Remove Taylor Road interchange	• Concept determined to be redundant.
C16	PSR Alternative #3 + Relocated Taylor Road interchange	• Concept determined to be redundant.
C17	PSR Alternative #3 + Relocated Taylor Road interchange	• Concept determined to be redundant.
C18	PSR Alternative #3 + C-D Road & Relocated Taylor Road interchange • Partially relocated Taylor Road interchange and provided all four directional ramps through ramp braiding and new connections. Requires additional acquisitions from the Cattlemens restaurant commercial area and east of SR 65 at the self-storage commercial area.	• Did not address the westbound I-80 weave, Eureka Road to Taylor Road. • Concept determined to have excessive right-of-way impacts, and poor operations on westbound I-80.
C19	PSR Alternative #3 + Elevated C-D Roads • Widened I-80 to the east to provide an eastbound I-80 C-D ramp system, requiring right-of-way from the Golfland Sunsplash commercial area, replacement of the Roseville Parkway structure, and relocation of power transmission facilities.	• Did not address the westbound I-80 weave, Eureka Road to Taylor Road. • Concept determined to have excessive right-of-way impacts and associated construction costs, and poor operations on westbound I-80.

Concept No.	Description	Reason for Elimination
C20	PSR Alternative #3 + Elevated C-D Roads & Taylor Road Single Point Urban Interchange • Included a combination of eastbound and westbound C-D ramps, a new Taylor Road single-point urban interchange, and an extension of Antelope Creek Road • Widened I-80 to the west to provide a braided ramp configuration for the westbound off-ramp. Requires additional right-of-way acquisitions from the Cattlemens restaurant commercial area. • Widened I-80 to the east to provide an eastbound I-80 C-D ramp system, requiring right-of-way from the Golfland Sunsplash commercial area, replacement of the Roseville Parkway structure, and relocation of power transmission facilities.	• Did not address the westbound I-80 weave, Eureka Road to Taylor Road. • Concept determined to have excessive right-of-way impacts and associated construction costs, and poor operations on westbound I-80.
C21	PSR Alternative #1 Variation • Three-lane loop ramp • Relocate Taylor Road interchange ramps (four each) • Included maintaining the existing eastbound I-80 to northbound SR 65 loop connector ramp alignment and expanding it to three lanes, and relocating Taylor Road interchange to the I-80/ SR 65 interchange location using slip ramps from/to the connector ramps.	• Dismissed based on Caltrans headquarters and district-level design feedback that a three-lane loop connector would not be an approvable alternative due to safety concerns.
C21A	PSR Alternative #1 Variation • Provided a three-lane connector loop ramp • Included maintaining the existing eastbound I-80 to northbound SR 65 loop connector ramp alignment and expanding it to three lanes, and maintaining the Taylor Road interchange at its current location.	• Dismissed based on Caltrans headquarters and district-level design feedback that a three-lane loop connector would not be an approvable alternative due to safety concerns.
C22	I-80/Sunset Boulevard interchange • New interchange • Proposed extending Sunset Blvd to I-80 and providing a full access interchange at this location rather than Taylor Road	• There would be new economic development opportunities but residential impacts. This concept would not provide the minimum interchange spacing between the system interchange and the Sunset Boulevard interchange. The City of Rocklin said this option has been previously discussed at the City of Rocklin and has never passed the screening process. This would require significant residential impacts and would not meet Caltrans interchange spacing requirements.

1.4 Permits and Approvals Needed

Table 1-7 lists the permits and coordination that would likely be required for the project.

Table 1-7. Permits and Approvals Needed

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service	Coordination and Section 7 consultation regarding threatened and endangered species; Amendment to City of Roseville *Open Space Preserve Overarching Management Plan*	Initiated formal consultation for threatened and endangered species on April 24, 2015 Biological Opinion received March 8, 2016
National Marine Fisheries Service	Coordination and Section 7 consultation regarding threatened and endangered species	Informal consultation/ technical assistance initiated August 2014 Submitted documentation on April 24, 2015, requesting agency determination Concurrence letter received August 10, 2015
U.S. Army Corps of Engineers	Section 404 authorization for fill of waters of the United States	Submitted delineation of potential waters of the United States, including wetlands, on March 4, 2015, to support a preliminary jurisdictional determination USACE verified delineation on November 13, 2015 Permit application process not yet initiated
California Department of Fish and Wildlife	Section 1602 Streambed Alteration Agreement	Not yet initiated
Central Valley Regional Water Quality Control Board	Section 401 Water Quality Certification and coverage under the existing Caltrans National Pollutant Discharge Elimination System Permit (Order No. 2012-0011-DWQ); Section 402 coverage under General Order R5-2013-0074 for low threat discharges	Not yet initiated
Central Valley Flood Protection Board	Permit for encroachment into jurisdictional floodway	Not yet initiated
Placer County Air Pollution Control District	Formal notification prior to construction	Not yet initiated

1.5 References Cited

Fehr & Peers. 2014. *Transportation Analysis Report – I/80/SR 65 Interchange Improvements.* Roseville, CA. August.

Caltrans. 2009. *Project Study Report – I-80/SR 65 Interchange Modification*. Marysville, CA. June.

CH2M HILL. 2015. *Draft Project Report to Authorize Release of the Draft Environmental Document.* On Route Interstate 80 and State Route 65 Between Douglas Blvd (PM1.9 to 6.1) and Rocklin Road and Interstate 80 and Pleasant Grove Blvd (PM R4.8 to R7.3). 03-4E3200 - Project Number.

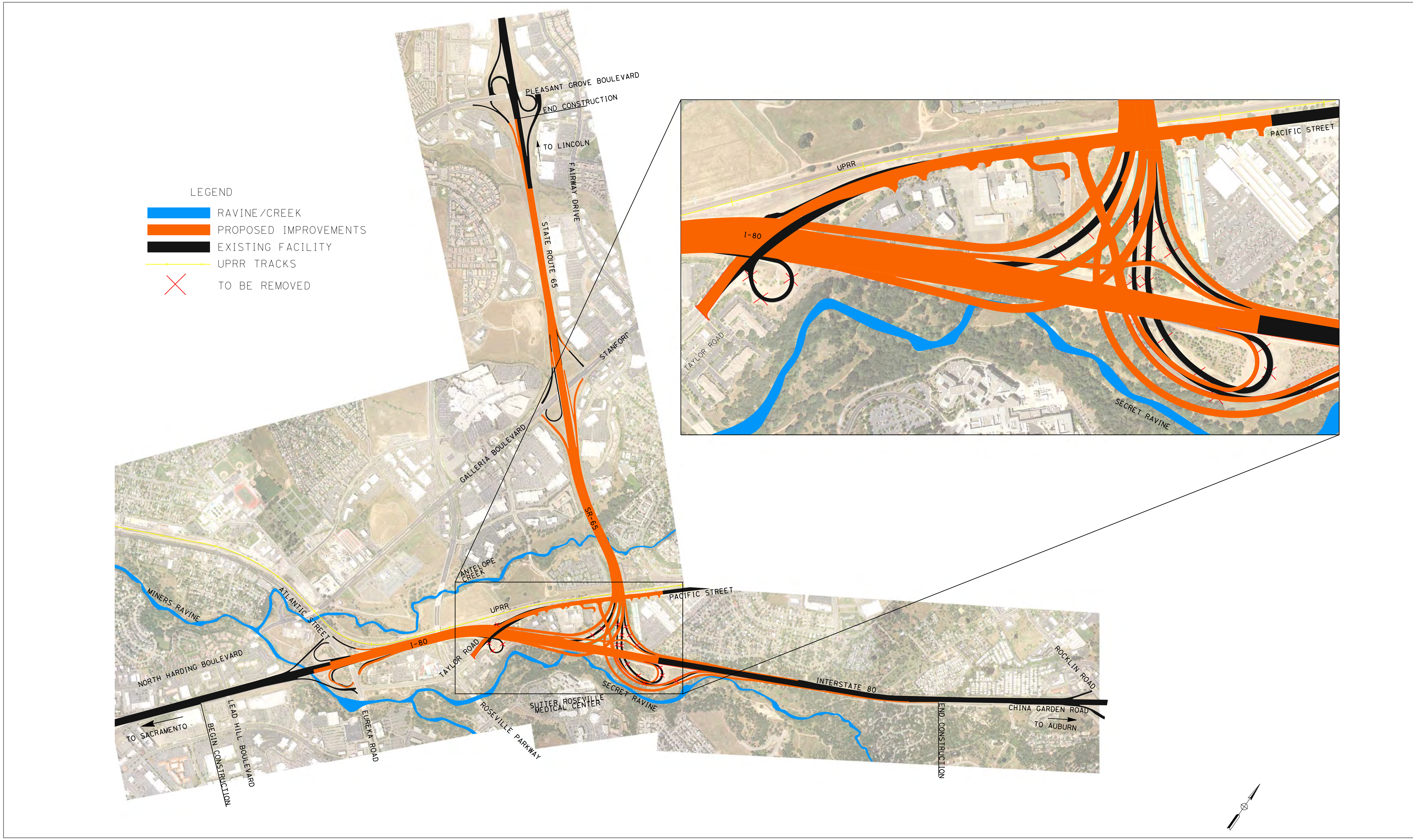

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Figure 1-3
Alternative 1—Taylor Road Full Access Interchange

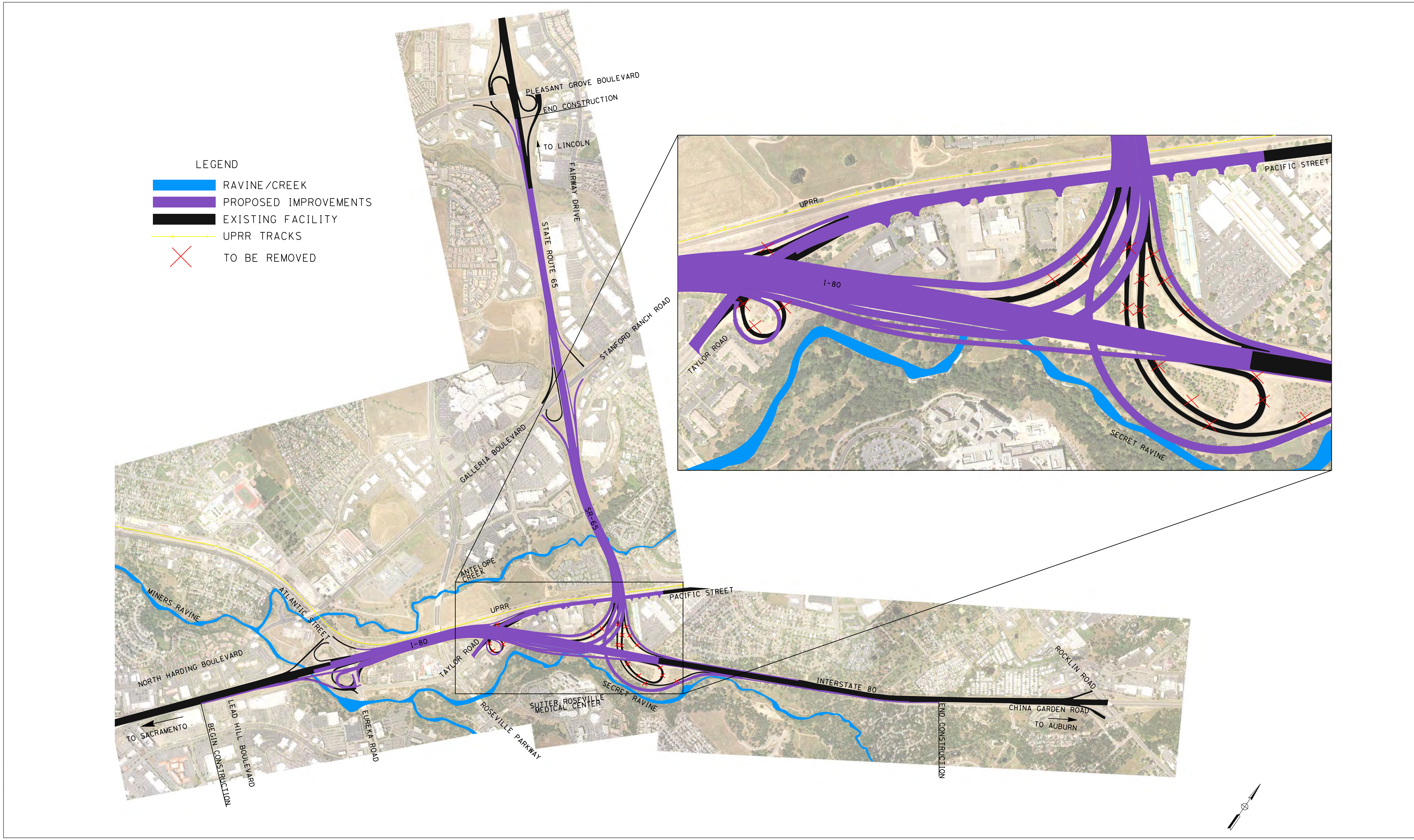

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Figure 1-4
Alternative 2—Collector-Distributor System Ramps

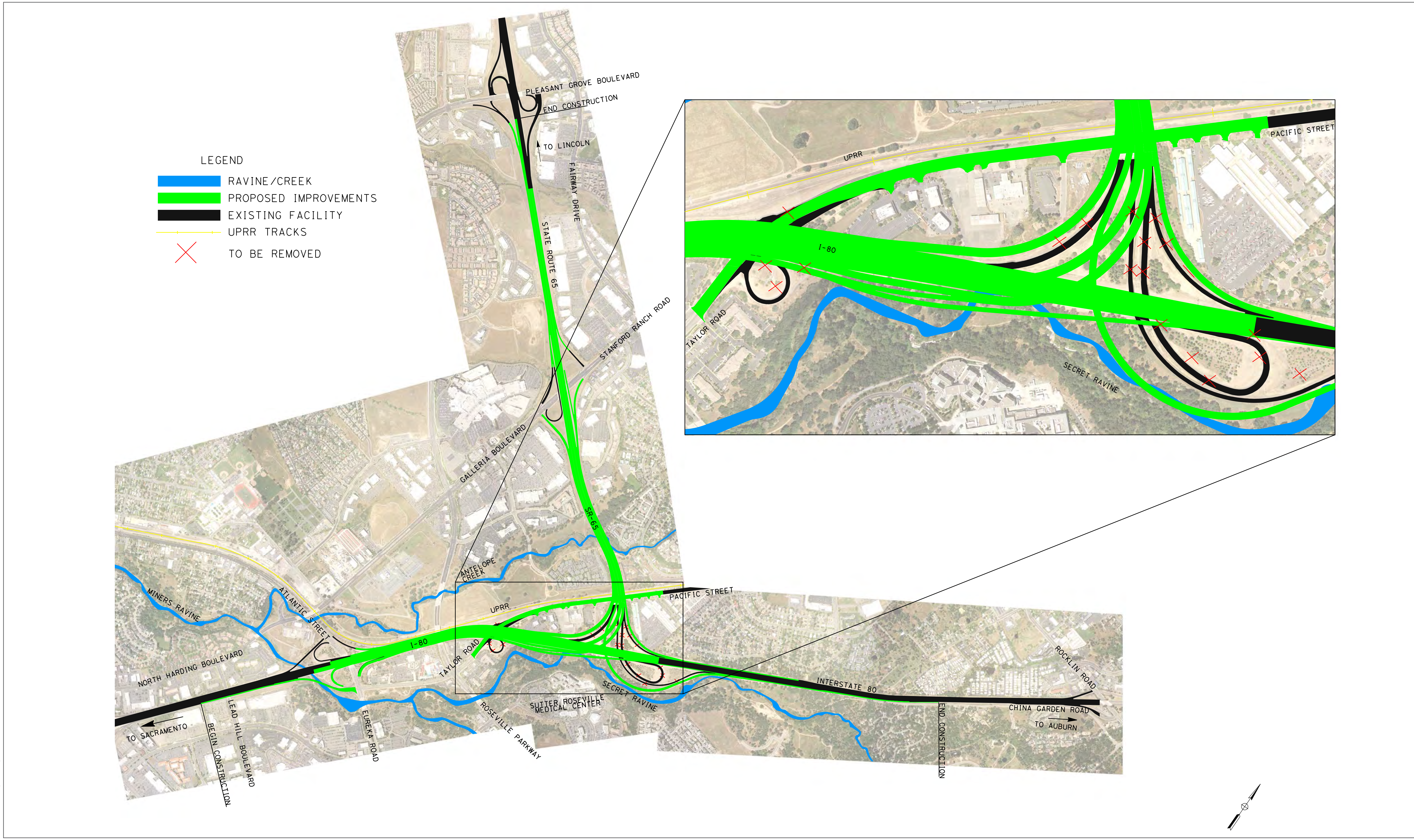

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Figure 1-5
Alternative 3—Taylor Road Interchange Eliminated

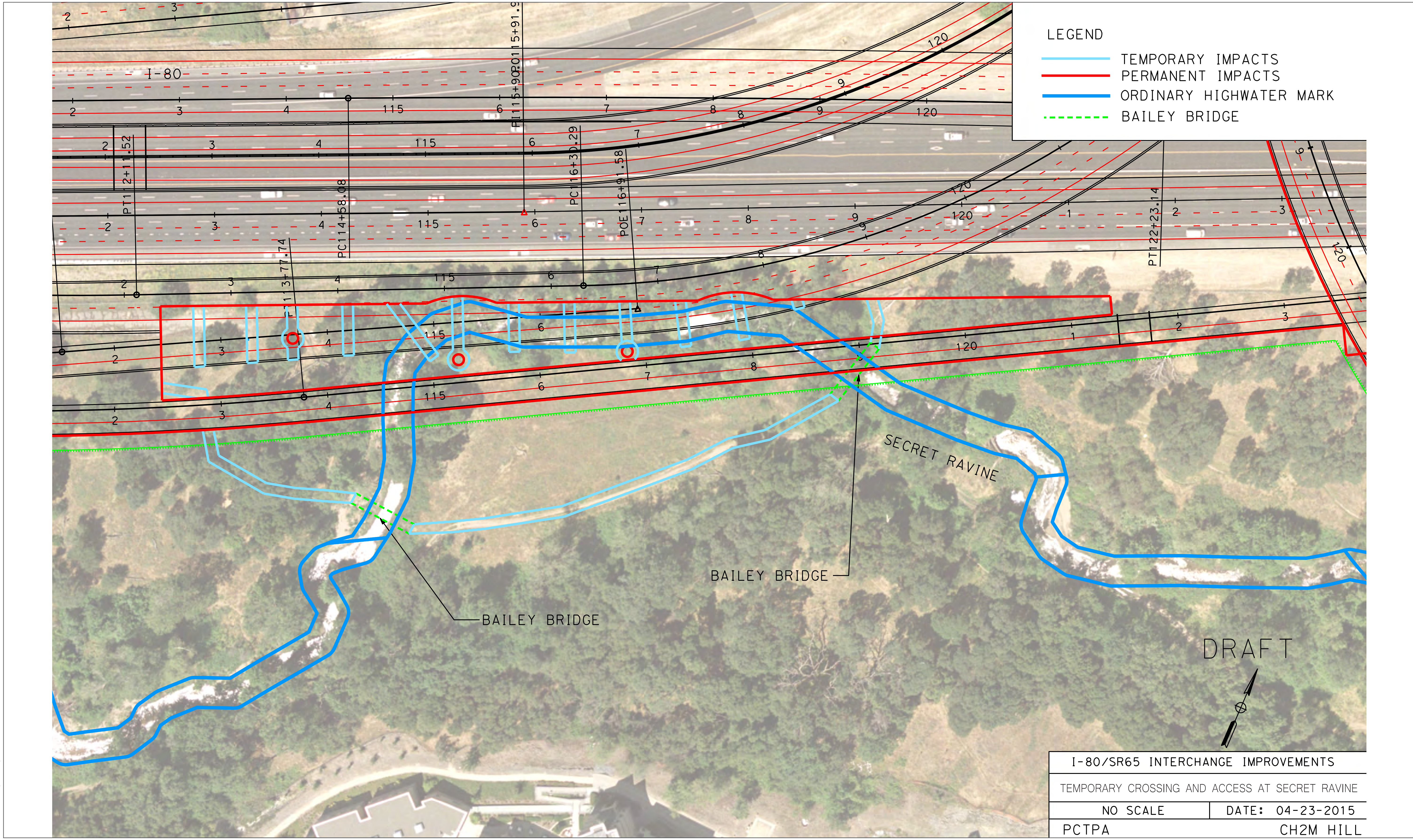

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Figure 1-6
Temporary Crossing and Access at Secret Ravine

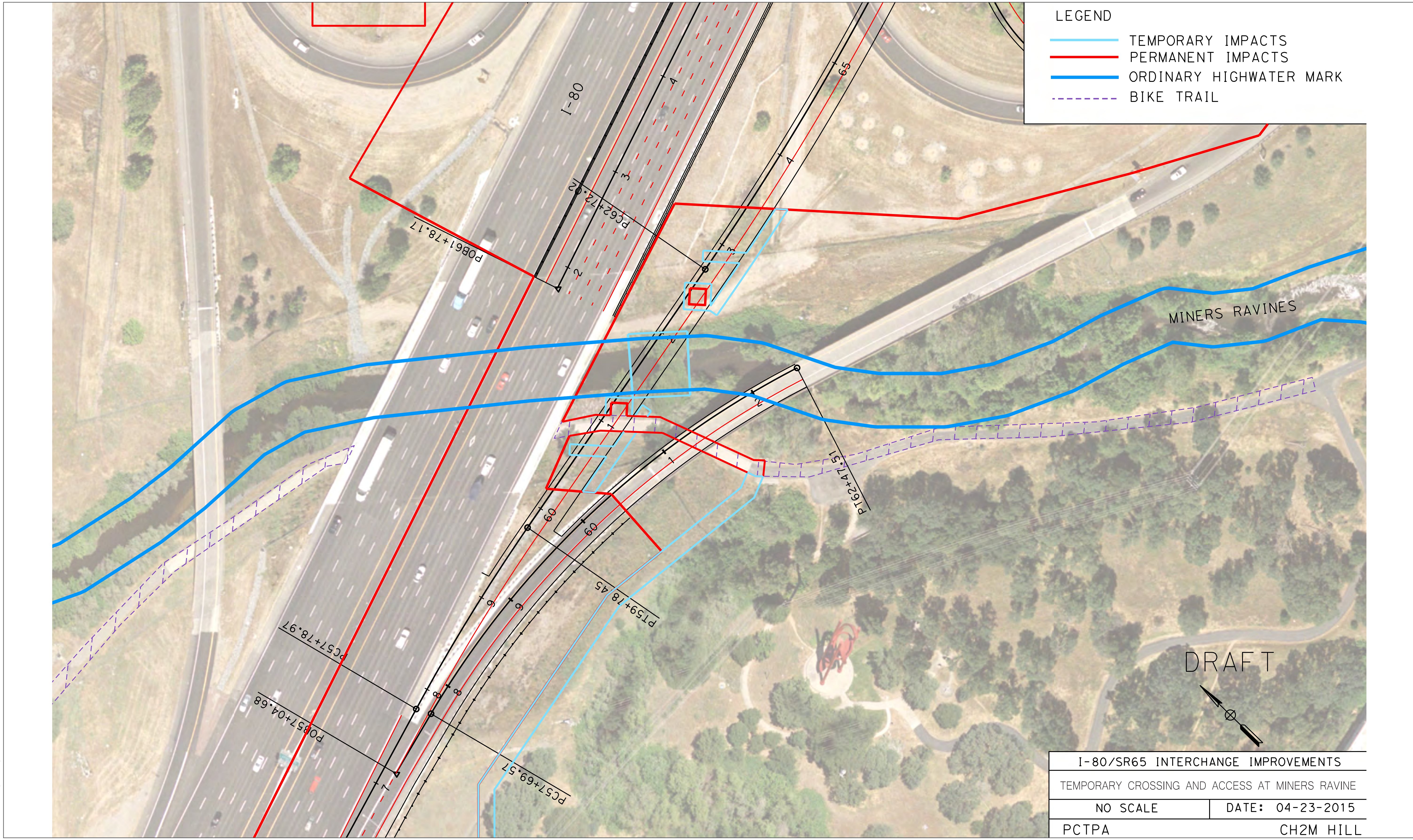

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Figure 1-7
Temporary Crossing and Access at Miners Ravine

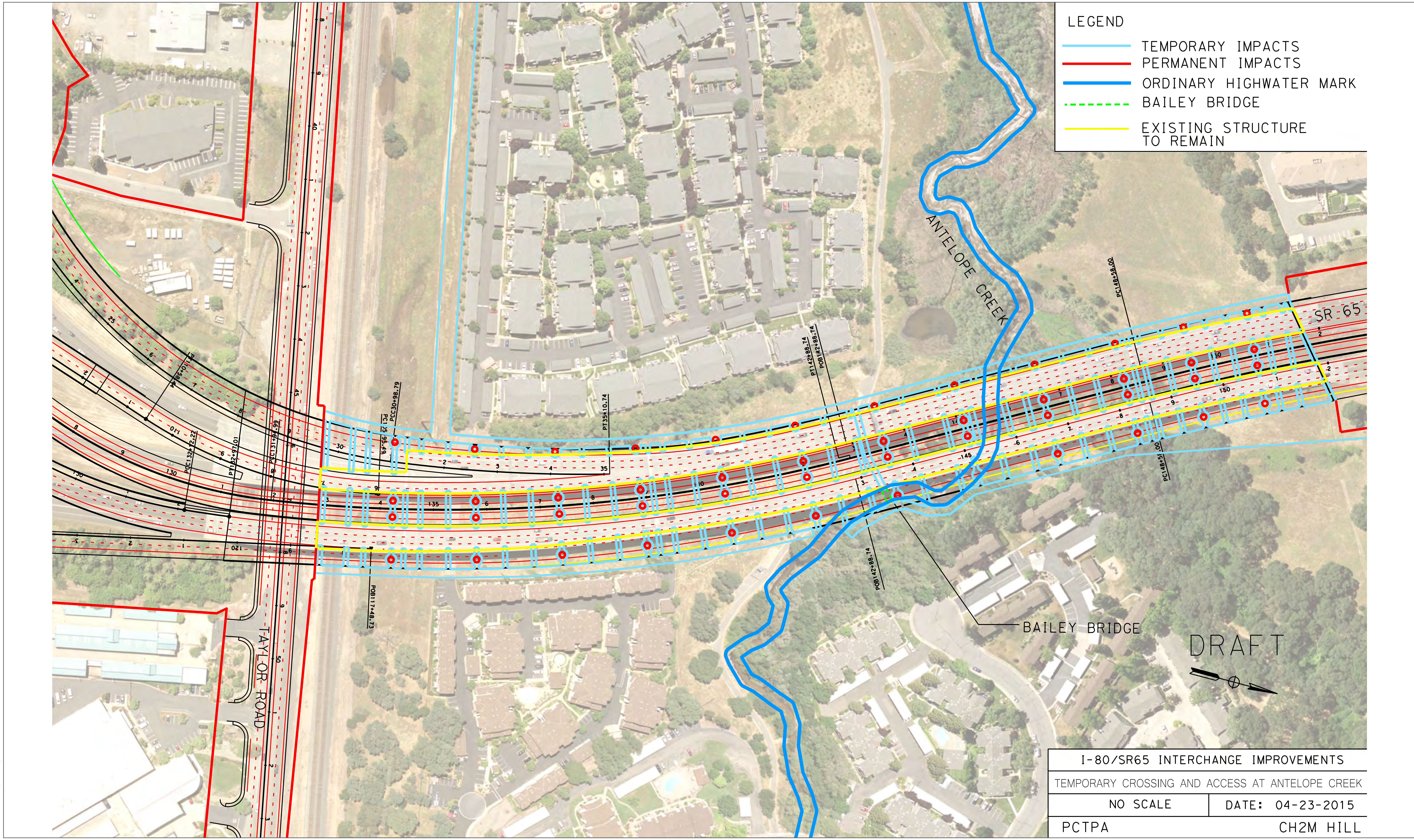

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Figure 1-8
Temporary Crossing and Access at Antelope Creek

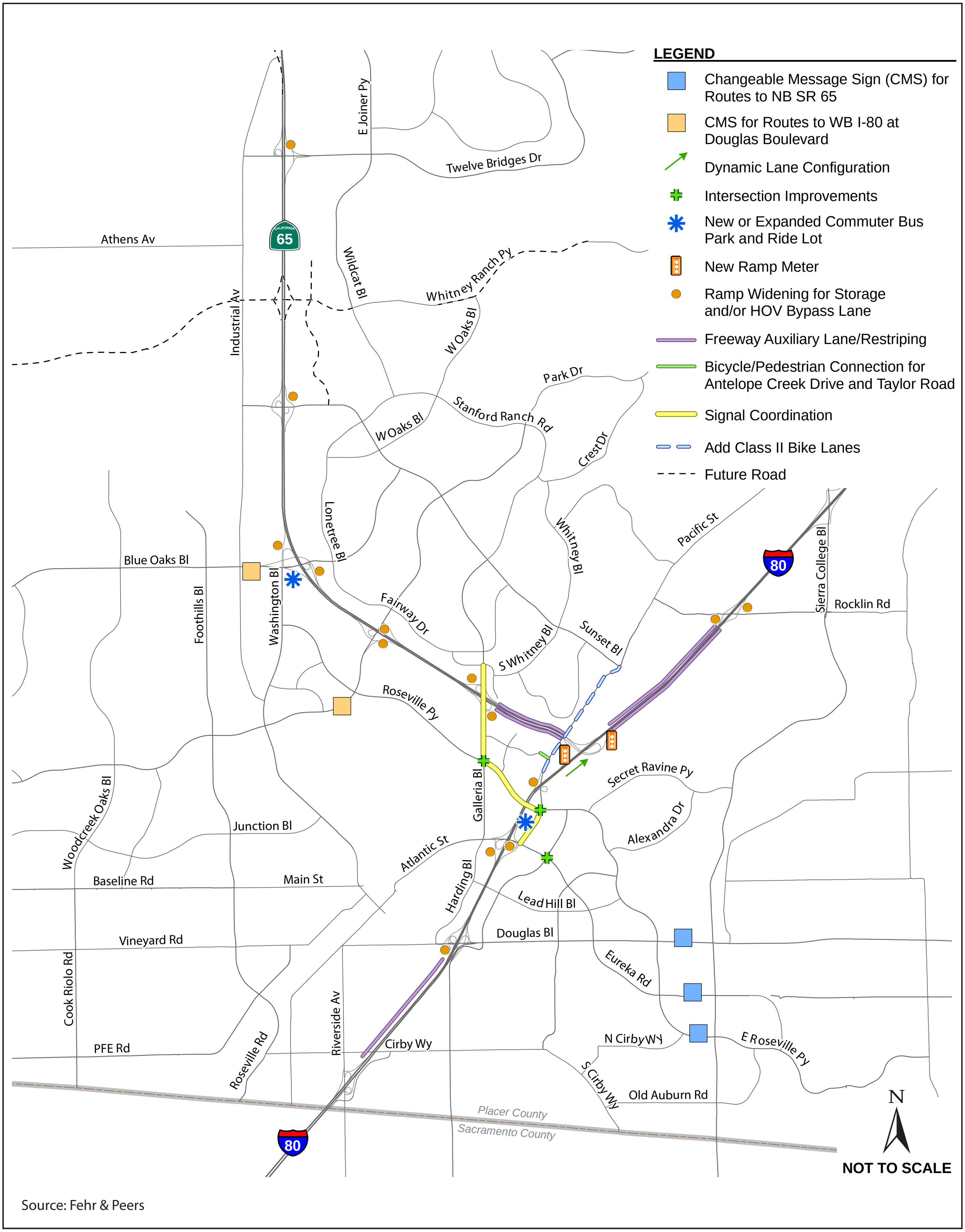

Figure 1-9
Alternative 4—Transportation System Management

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

This chapter explains the project-related impacts on the human, physical, and biological environments in the project area. It describes the existing environment that could be affected by the project; potential impacts from each of the alternatives; and proposed avoidance, minimization, and/or mitigation measures. Any indirect impacts are included in the general impacts analysis and discussions that follow.

As part of the scoping and environmental analysis conducted for the project, the following environmental issues were considered, but no adverse impacts were identified. Consequently, there is no further discussion regarding these issues in this document.

- **Coastal Zone.** The project area is located outside the California Coastal Zone and therefore outside the jurisdiction of the California Coastal Commission. The project would not affect the coastal zone.
- **Wild and Scenic Rivers.** None of the creeks and other waterways within or adjacent to the project area are designated Wild and Scenic. The project would not affect designated Wild and Scenic rivers.
- **Farmlands/Timberlands.** The project area is not located on or adjacent to lands used for agriculture or timber production. No farmland or timberland would be affected by the proposed project.

Human Environment

2.1 Land Use

This section is a summary of the analysis documented in the *Community Impact Assessment* (CIA) prepared for this project (ICF International 2014a). The report is available on the project website at http://8065interchange.org/. Land use characteristics include major existing land uses, land use designations, parks and recreation facilities, development trends, and relevant land use plans and policies applicable to the study area.

2.1.1 Existing Land Uses and Development Trends

A land use study area was defined by the census tracts surrounding the project alignment with the potential to be affected by the proposed project (Figure 2.1-1). I-80 runs east to west and SR 65 runs north to south. The study area is divided generally into three areas. The northwest portion of the study area includes the area north of I-80 and west of SR 65, the northeast portion of the study area includes the area north of I-80 and east of SR 65, and the south portion of the study area includes the area south of I-80. Existing land uses are described further below, along with trends in development.

2.1.1.1 Existing Land Uses

Northwest

The northwest portion of the study area, located north of I-80 and west of SR 65, is dominated by suburban single-family residential development, the Roseville Galleria mall, and large-scale office and retail developments with associated surface parking. A variety of public and institutional uses are located in the area, including a small park, an electrical substation, a high school, an elementary school, and several churches. Antelope Creek and the Antelope Creek multi-use trail runs north and south through this portion of the study area; the UPRR tracks run parallel to I-80 and Taylor Road in this portion of the study area.

Northeast

The northeast portion of the study area, located north of I-80 and east of SR 65, contains large-scale retail, infrastructure, and institutional uses immediately adjacent to SR 65. Nearly all land uses behind these frontages are single-family suburban residential neighborhoods, consisting of residences, neighborhood parks, a school, and several churches. Retail uses along SR 65 and I-80 include big-box clothing, sporting goods, and home improvement outlets, with occasional restaurants located throughout. The UPRR runs east-west through this portion of the study area, alongside and parallel to I-80.

South

The southern portion of the study area includes everything in the study area that is south of I-80. The dominant land uses in this portion of the study area include suburban single-family residential and commercial development. Secret Ravine and its associated trails and Sierra College are located north of East Roseville Parkway, adjacent to I-80. Miners Ravine and its associated trails are located southeast of East Roseville Parkway. Most of the commercial development in the eastern portion of the study area is located in between East Roseville Parkway and Douglas Boulevard, and includes big-box retail outlets, restaurants, a group of small to mid-sized medical institutions, and the Roseville Auto Mall.

2.1.1.2 Land Use Designations

Northwest

The northwest portion of the study area is located entirely within the city of Roseville. According to the City of Roseville General Plan Land Use Map the main land use designations within this portion of the study area along SR 65 include Community Commercial, Business Professional, and Regional Commercial. Land uses along I-80 include General Industrial, which is UPRR property, as well Open Space and some High Density Residential near the I-80/SR 65 interchange. The rest of this part of the study area mainly contains Low Density Residential and Parks and Recreation land uses. The City of Roseville General Plan Land Use Map is included as Figure 2.1-2.

Northeast

The northeast portion of the study area is located within the cities of Roseville and Rocklin. According to the City of Roseville General Plan Land Use Map, the main land use designation in this portion of the study area within Roseville is Community Commercial. Low Density Residential, High Density Residential, Parks and Recreation, Open Space, and Public/Quasi Public land uses in Roseville are in the northern portion of the study area.

According to the City of Rocklin General Plan Land Use Map, the dominant land use designations in this portion of the study area within Rocklin are Medium Density Residential and Recreation/Conservation. Retail Commercial uses are adjacent to SR 65 and I-80 in this portion of the study area. Other land uses include Heavy Industrial, Light Industrial, and Professional Office. The City of Rocklin General Plan Land Use Map is included as Figure 2.1-3.

South

The southern portion of the study area is located within the Cities of Roseville and Rocklin. Land uses in this portion of the study area within Roseville primarily include Community Commercial, Regional Commercial, Open Space/Flood Plain Combined and Open Space, and Low Density Residential.

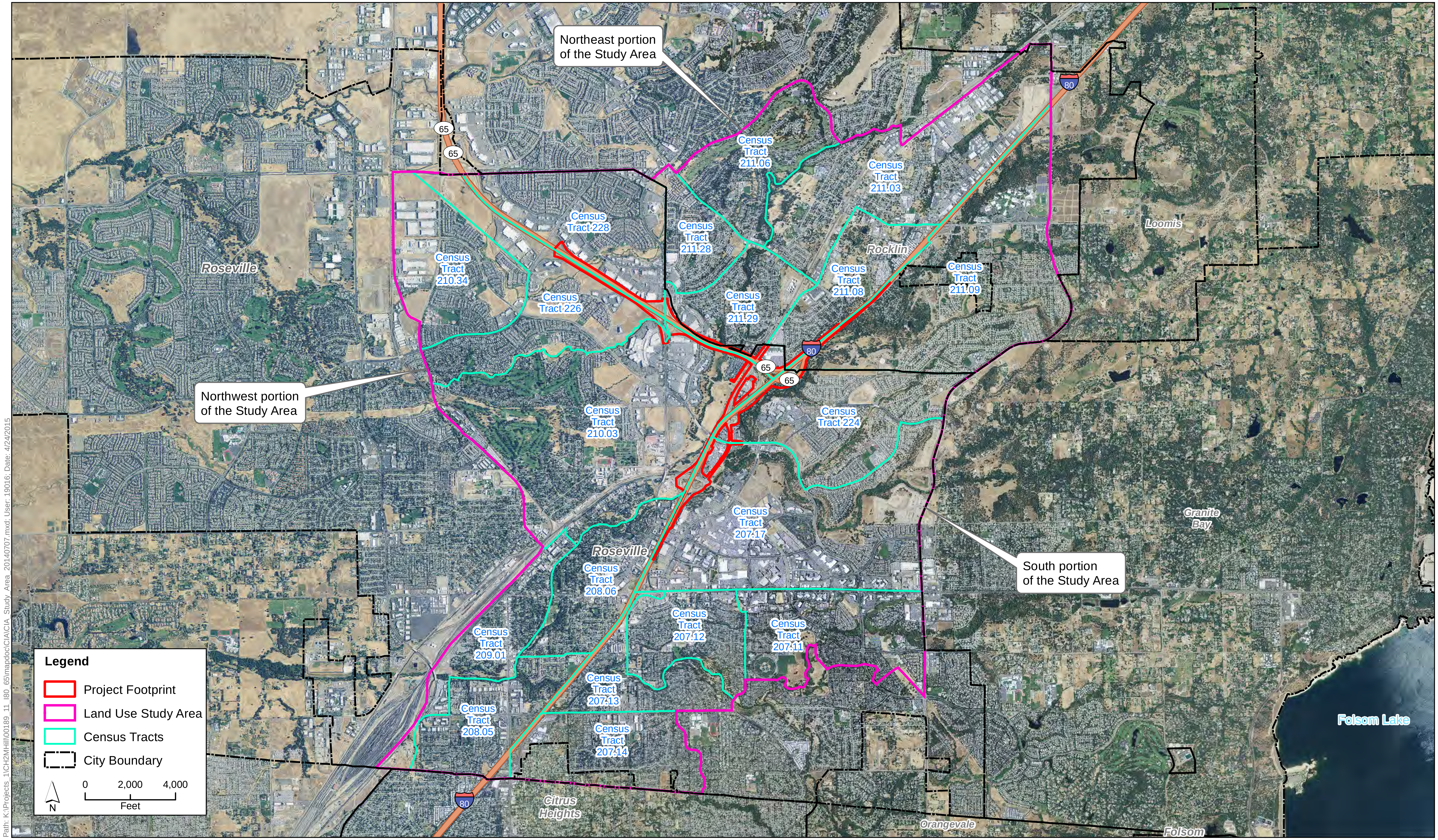

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Figure 2.1-1
Land Use Study Area

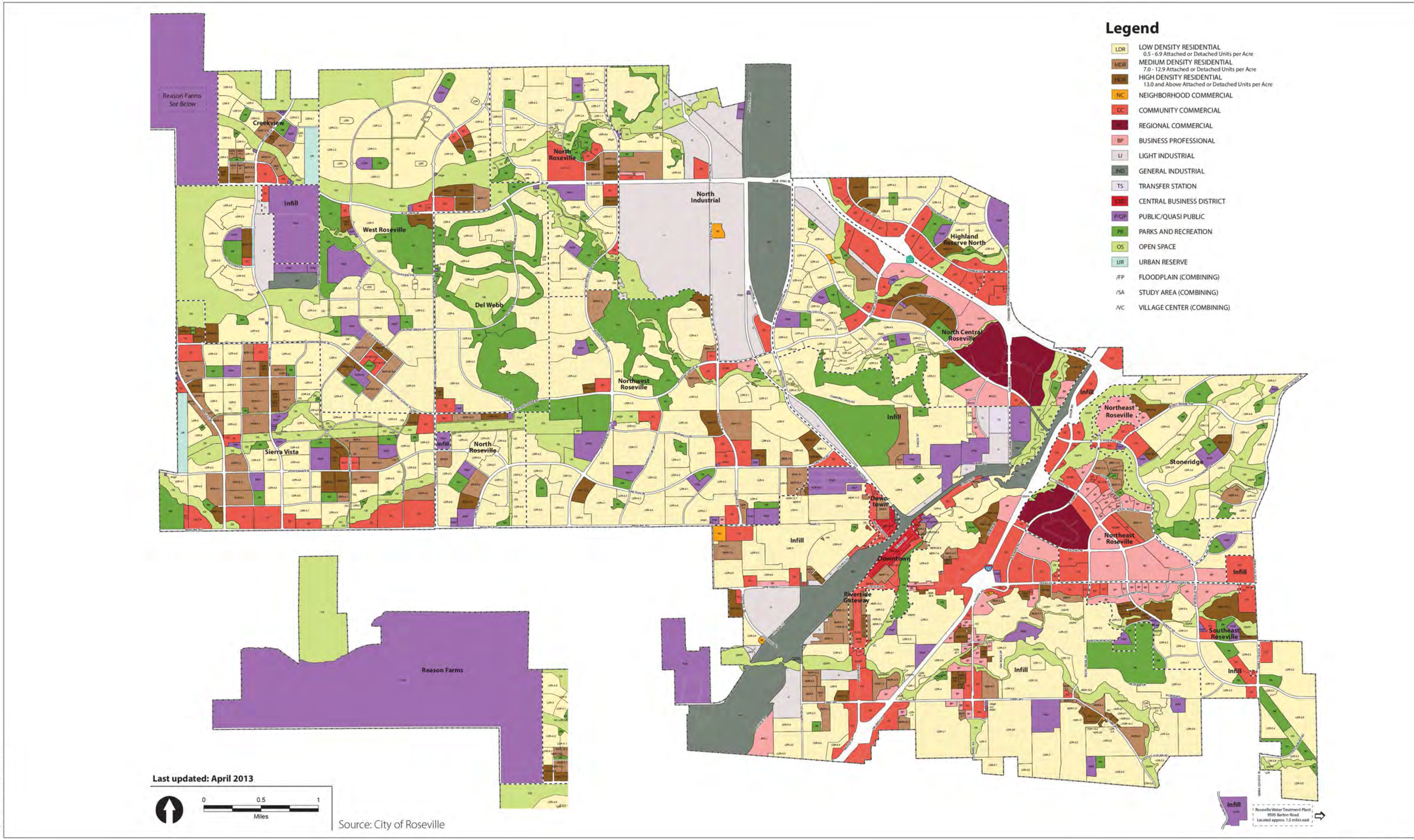
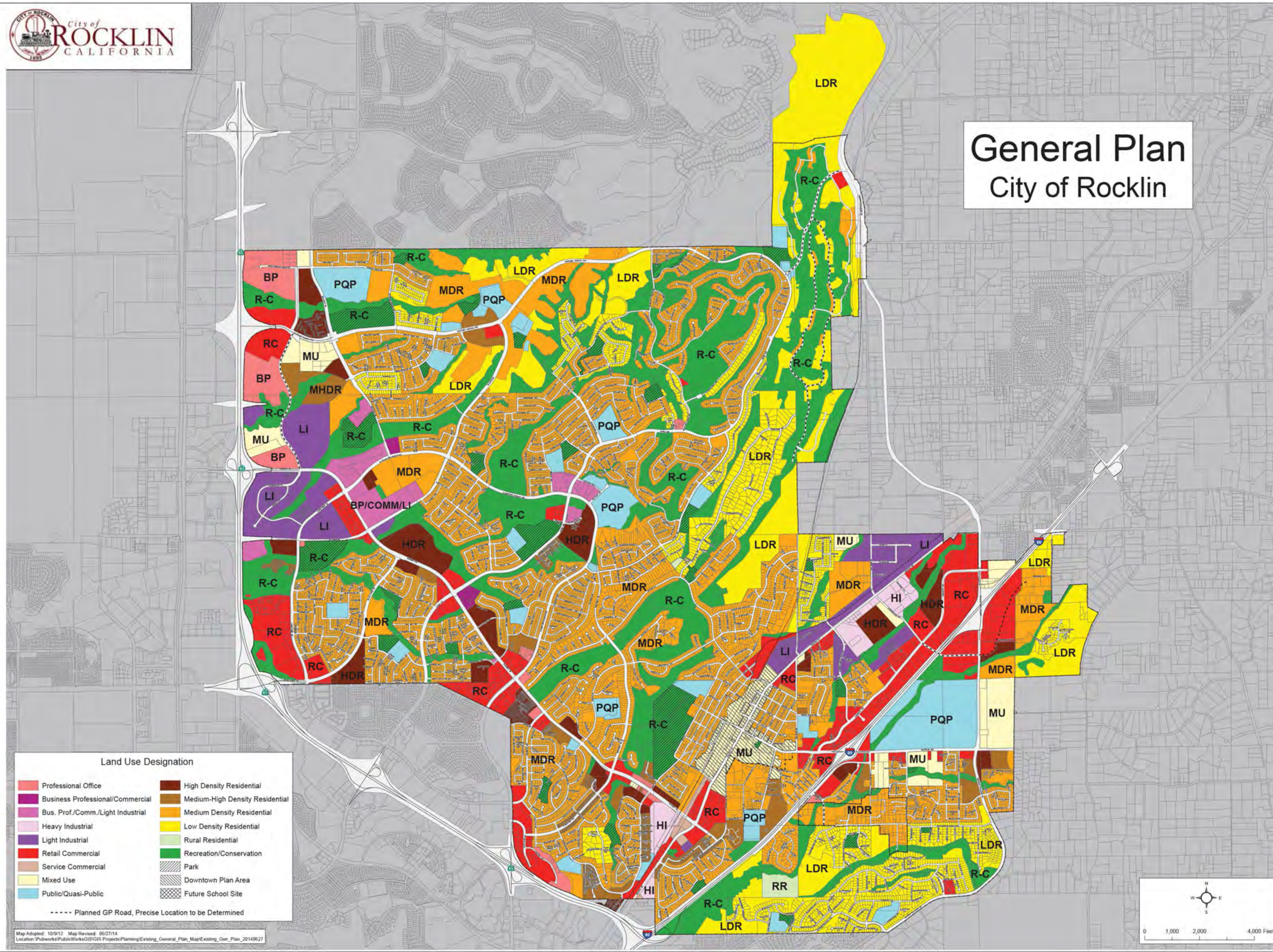


Figure 2.1-2
City of Roseville General Plan Land Use Map



Source: City of Rocklin

Figure 2.1-3
City of Rocklin General Plan Land Use Map

Land uses in this portion of the study area within Rocklin include Recreation/Conservation, Low Density Residential, Medium Density Residential, some Rural Residential, and Public/Quasi Public on the Sierra College parcel.

2.1.1.3 Development Trends

The City of Roseville's future land uses and development trends are limited in the city, as much of the developable land already has been developed. Roseville, along with the entire South Placer/Sacramento region, has experienced and continues to experience significant growth. This has led to a transition of the city from a relatively small residential community to a larger center with a mix of uses and increasingly urban character. Some new growth and development would be accommodated by promoting infill of vacant and underutilized lots. In addition, the city will continue to expand into its sphere of influence[1].

The City of Rocklin's future land uses and development trends also are limited, as the city's physical growth is reaching the limits of its planning area. The focus on large-scale "planned developments" is expected to decline, with increased focus on the quality of the living environment within the city limits. The policies of the Land Use Element in the General Plan therefore were designed to guide decisions regarding new development in existing developed areas (commonly referred to as "infill development") and mixed-use development (commercial and residential) using smart growth principles. Most new growth and development in Rocklin would be accommodated by infill of vacant and underutilized lots.

Future planned developments in the study area include separately proposed projects such as a hotel and conference center, several mixed-use developments, and two athletic/fitness developments. These developments are identified as current projects on the City of Roseville and the City of Rocklin websites and are consistent with the growth described in the General Plans for those cities. More information is included in Section 2.22, "Cumulative Impacts." Growth in the study area is also discussed in Section 2.2, "Growth."

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

The project's consistency with state, regional, and local plans and programs is discussed below. Land use planning in the study area is governed by the *City of Roseville General Plan 2025* (City of Roseville 2012) and the *City of Rocklin General Plan* (City of Rocklin 2012). Regional transportation planning for the study area is generally conducted by PCTPA. Only plans with direct relevance to the project are discussed below.

City of Roseville General Plan

The Roseville General Plan applies to the portion of the study area located in the City of Roseville. The *City of Roseville General Plan 2025* was reviewed to identify policies relevant to the project. The project's consistency with relevant policies is discussed below.

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[1] A local government agency's *sphere of influence* is a plan for the probable future physical boundaries and service area of the agency. It is an area in which the local agency has power to affect developments although it has no formal authority.

For purposes of Roseville General Plan policy development, the city is divided into 14 specific plan/planning areas subareas. The project is located within the North Central Roseville, Infill, Northeast Roseville, and Stoneridge planning areas.

The Land Use Element of the Roseville General Plan describes the land use designations that appear on the plan's land use diagram. This element also outlines the legally required standards of density and intensity for the designated land uses. The Circulation Element describes the proposed circulation system and the street classification system.

> **Circulation Element – Goal 1, Policy 1:** Maintain a level of service (LOS) "C" standard at a minimum of 70 percent of all signalized intersections and roadway segments in the City during the p.m. peak hours. Exceptions to the LOS "C" standard may be considered for intersections where the City finds that the required improvements are unacceptable based on established criteria identified in the implementation measures. In addition, Pedestrian Districts may be exempted from the LOS standard.

As stated in the project description, the roadway system in the project area already experiences peak period congestion. The purpose of the project is to reduce forecasted congestion by increasing capacity at the system interchange. Project improvements also would increase capacity on Taylor Road and improve local intersections including Eureka Road/Atlantic Street, Taylor Road/East Roseville Parkway, and Galleria Boulevard/Stanford Ranch Road. The project is consistent with this policy.

> **Circulation Element – Goal 1, Policy 3:** Work with neighboring jurisdictions to provide acceptable and compatible levels of service on the roadways that cross the City's boundaries.

The project is a collaboration of the Cities of Roseville and Rocklin, Placer County, Caltrans, and PCTPA to ensure acceptable and compatible levels of service throughout the study area, but most specifically on SR 65 and I-80 and the interchanges that connect them. The project is consistent with this policy.

City of Rocklin General Plan

The Rocklin General Plan applies to the portion of the study area located in the City of Rocklin. The Land Use Element of the Rocklin General Plan describes the land use designations that appear on the plan's land use diagram and outlines the legally required standards of density and intensity for these designated land uses. The Circulation Element describes the proposed circulation system and the street classification system.

The *City of Rocklin General Plan* was reviewed to identify policies directly relevant to the project. The project's consistency with relevant policies is discussed below.

> **Circulation Element –**
>
> **Policy C-10 A.:** Maintain a minimum traffic Level of Service "C" for all signalized intersections during the p.m. peak hour on an average weekday, except in the circumstances described in C-10.B and C. below.

> **Policy C-10 B.:** Recognizing that some signalized intersections within the City serve and are impacted by development located in adjacent jurisdictions, and that these impacts are outside the control of the City, a development project which is determined to result in a Level of Service worse than “C” may be approved, if the approving body finds (1) the diminished level of service is an interim situation which will be alleviated by the implementation of planned improvements or (2) based on the specific circumstances described in Section C. below, there are no feasible street improvements that will improve the Level of Service to “C” or better as set forward in the Action Plan for the Circulation Element.

> **Policy C-10 C.:** All development in another jurisdiction outside of Rocklin’s control which creates traffic impacts in Rocklin should be required to construct all mitigation necessary in order to maintain a LOS C in Rocklin unless the mitigation is determined to be infeasible by the Rocklin City Council. The standard for determining the feasibility of the mitigation would be whether or not the improvements create unusual economic, legal, social, technological, physical or other similar burdens and considerations.

As stated above, the purpose of the project is to reduce forecasted congestion. The project also would increase capacity on Taylor Road in the project area to match the capacity of Pacific Street in Rocklin. The project is consistent with these policies.

> **Circulation Element – Policy C-11:** Continue to participate with adjacent jurisdictions toward the completion and improvement of streets that extend into other communities through individual cooperation and/or use of the Placer County Transportation Planning Agency (PCTPA), joint powers authorities, and similar entities.

As stated above, the proposed project is a collaboration of the Cities of Roseville, Rocklin, and Lincoln, Placer County, Caltrans, and PCTPA to improve intersections and streets that carry traffic into the City of Rocklin, including improvements on Taylor Road. The project would be consistent with this General Plan policy.

> **Circulation Element – Policy C-12:** Encourage improvements to the existing Federal Interstate and State highway system, and the addition of new routes that would benefit the City of Rocklin.

The project entails major improvements to I-80 and SR 65, which would reduce system congestion and benefit the City and residents of Rocklin. The project is consistent with this policy.

Placer County Transportation Planning Agency Regional Transportation Plan

PCTPA is the forum for making decisions about the regional transportation system in Placer County. The nine-member PCTPA Board of Directors consists of one council member from each of Placer County’s six incorporated jurisdictions (including Roseville and Rocklin); two members of the Placer County Board of Supervisors; and one citizen representative.

The *Placer County Regional Transportation Plan 2035* (RTP) was reviewed to identify policies directly relevant to the project. The project’s consistency with relevant policies is discussed below.

> **Goal 1:** Maintain and upgrade a safe, efficient, and convenient countywide roadway system that meets the travel needs of people and the movement of goods through and within the region.
>
> **Objective A:** Identify and prioritize improvements to the roadway system.
>
> **Policy 1:** Work with Caltrans and local jurisdictions to identify roadways in need of major upgrading to meet standards for safety and design, maximize system efficiency and effectiveness, and plan their improvement through regional planning, corridor system management planning, and capital improvement programming.

The project represents a need identified by Caltrans and the PCTPA to upgrade the I-80/SR 65 interchange in order to meet standards for safety and design and to maximize system efficiency and effectiveness. The project was identified by both agencies as necessary, and both regional planning and capital improvement programming were incorporated into its planning. The project is consistent with this policy.

> **Objective C:** To promote economic development, prioritize roadway maintenance and improvement projects on principal freight and tourist travel routes in Placer County.
>
> **Policy 1:** Maintain and improve the Interstate 80 Corridor as one of the major connections for freight distribution to and from destinations east of California.
>
> **Policy 2:** Improve State Route 65 in order to facilitate goods movement and access to jobs.

The project represents an effort to improve the I-80 corridor by reducing delays associated with the I-80/SR 65 interchange and likely will assist in reducing travel times for vehicles engaged in freight distribution to and from destinations east of California. In addition, the project would reduce travel times on SR 65, thereby facilitating goods movement and access to jobs on this roadway. The project is consistent with these policies.

> **Goal 9:** By integrating land, air, and transportation planning, build and maintain the most efficient and effective transportation system possible while achieving the highest possible environmental standards.
>
> **Objective E:** Participate in state, multi-county and local transportation efforts to insure coordination of transportation system expansion and improvements.
>
> **Policy 1:** Continue to coordinate with local jurisdictions in transportation improvement efforts.

As noted, the project represents a collaboration between the Cities of Roseville, Rocklin, and Lincoln, Placer County, Caltrans, and PCTPA to improve transportation in the region. The project is consistent with this policy.

In addition, one of the measures in the Transportation System Management Action Plan (from the Action Element of the RTP) references the use of ridesharing:

2. Continue to work cooperatively with SACOG, SMAQMD, and the City of Roseville on implementation and enhancement of regional rideshare programs that encourage the use of

alternative modes of transportation. (SACOG, SMAQMD, PCTPA, City of Roseville, local employers)

The project includes creation of an HOV lane on SR 65. As noted, it is a collaboration of the Cities of Roseville, Rocklin, and Lincoln, Placer County, Caltrans, and PCTPA to improve transportation in the region. The project is consistent with this policy.

City of Roseville Open Space Preserve Overarching Management Plan

The City of Roseville Open Space Preserve Overarching Management Plan (OSPOMP) was adopted in August 2011 (ECORP Consulting 2011) to standardize monitoring and management of the City of Roseville's vernal pool and wetland preserves. The plan provides a city-wide approach to open space management, maintenance, and monitoring. It applies to all open space managed by the City within the city limits.

The OSPOMP refers to both Open Space Preserve and General Open Space. Open Space Preserve is land that was required to be set aside as part of a regulatory permitting action. These lands are primarily vernal pool grassland or riparian corridors protected because of the presence of waters of the United States or endangered species. General Open Space areas are owned by the City and were set aside because of City policy or to meet Specific Plan restrictions.

In the study area, Miners Ravine and Secret Ravine are considered to be part of the Olympus Point Preserve, which is labeled as Open Space Preserve under the OSPOMP.

Figure 2.1-4 shows where acquisitions of Open Space Preserve and General Open Space would occur. In addition, Table 2.1-1 shows the total acres of permanent acquisitions of General Open Space and Open Space Preserve in the study area by alternative.

Table 2.1-1. Permanent Acquisitions of Open Space Lands in the Study Area

Open Space Lands in the Olympus Pointe–Open Space Preserve	Permanent Acquisition (acres)
Alternative 1	4.43
Alternative 2	6.64
Alternative 3	5.86

As shown in Table 2.1-1, acquisition of at least four acres of Open Space Preserve in the Olympus Pointe Preserve would be required for each of the build alternatives. The most land would be acquired under Alternative 2 (6.64 acres), and the least would be acquired under Alternative 1 (4.43 acres).

Any property acquisitions that are located in Open Space Preserve would require an amendment to the OSPOMP and changes to the Biological Opinion (reinitiation of Section 7 consultation for the OSPOMP). Changes in activities in General Open Space are not subject to the Section 7 requirements of the Plan, though project-specific Section 7 or Section 404 triggers and other restrictions may apply.

In areas designated as General Open Space, recreational uses (e.g., birding, biking, walking/ running) are allowed off-trail. Allowed recreational uses within Open Space Preserve are use of the bike trails (including City- and federally authorized bike jump or skills parks), social trails located away from endangered species habitat and approved by the Open Space Manager, outlook points, and community gardens. In General Open Space areas, additional allowed recreational uses are fishing with an appropriate fishing license and following all laws and regulations regarding fishing, and additional community gardens. None of the build alternatives would affect recreational uses in the General Open Space or Open Space Preserve lands.

2.1.3 Parks and Recreational Facilities

2.1.3.1 Regulatory Setting

This project will affect facilities that are protected by the Park Preservation Act (California PRC Sections 5400–5409). The public parks and trails that could be affected are listed below in Section 2.1.3.2. The Park Preservation Act prohibits local and state agencies from acquiring any property that is in use as a public park at the time of acquisition unless the acquiring agency pays sufficient compensation or land, or both, to enable the operator of the park to replace the park land and any park facilities on that land. In addition, Section 4(f) of the Department of Transportation Act of 1966 specifies that FHWA and other USDOT agencies must consider park and recreational lands, wildlife and waterfowl refuges, and historic sites (referred to as *Section 4(f) properties*) when developing transportation projects. FHWA administers the act through 23 CFR 774, which requires all possible planning to minimize harm to Section 4(f) properties before approving a transportation project.

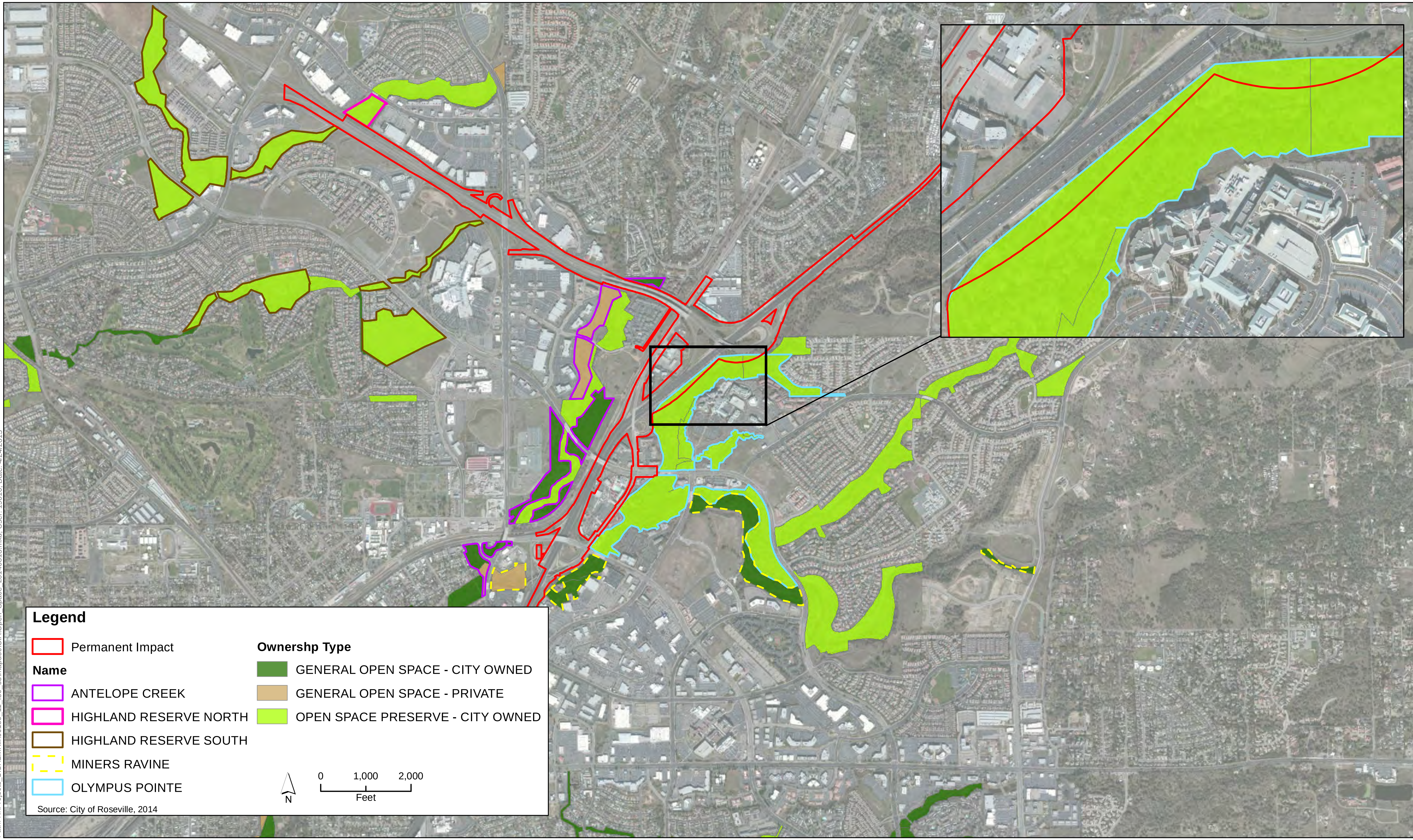
2.1.3.2 Affected Environment

This section is based on the CIA and *Resources Evaluated Relative to the Requirements of Section 4(f)* prepared for the project (ICF International 2014b). The Section 4(f) report evaluates whether parks, recreational facilities, wildlife and waterfowl refuges, and historic properties within or adjacent to the project area trigger Section 4(f) protection (see Appendix A).

The City of Roseville has designated certain areas as Open Space, which the Roseville General Plan defines as non-traditional park lands such as vernal pool preserves, oak woodlands, watershed/riparian areas, and greenbelts. The General Plan states that these lands may be used as passive recreational areas for visual and aesthetic enjoyment. In addition, such areas may accommodate bikeway or other trail connections. Some of the areas that are designated as Open Space in the City's General Plan also are considered Open Space Preserve by the OSPOMP.

The City of Rocklin has designated certain areas as Recreation-Conservation, characterized as areas of existing or future recreational use primarily related to outdoor facilities or areas of important environmental or ecological qualities.

The following parks and recreational facilities may be affected by the project. See Appendix A for a figure showing the locations of these facilities.



Path: K:\Projects_1\CH2MHill\00189_11_I80_65\mapdoc\CIA\Open_Space_20140813.mxd; User: 19016; Date: 4/24/2015

Figure 2.1-4
Impacts on Open Space Lands

Miners Ravine Trail

Miners Ravine Trail follows the course of Miners Ravine, a tributary to Dry Creek. The trail is located in the eastern portion of the study area, generally south of East Roseville Parkway until it crosses under and continues on to the eastern edge of the study area. It includes a paved Class I multi-use trail for bicyclists and pedestrians.

Secret Ravine Trail

Secret Ravine Trail is located in the eastern portion of the study area along I-80. It is also part of the drainage system that ultimately flows into Dry Creek. There are two existing portions of Secret Ravine Trail, in Roseville and Rocklin. The existing portion of the trail in Roseville is approximately 450 feet (0.09 mile) east of the southbound SR 65 to eastbound I-80 connector. The trail is below the grade of the existing interchange and is separated from the roadway by Secret Ravine, vegetation, and trees along the ravine. The existing trail in Rocklin is more than 1,300 feet east of I-80 and is separated from the freeway by residential areas and Secret Ravine.

Antelope Creek Trail

Antelope Creek Trail is approximately 3 miles long and is used for bicyclists and pedestrians. It follows the Antelope Creek drainage through the northwest and northeast portions of the study area, passing under SR 65.

Highland Reserve Trail

The Highland Reserve Trail is a Class I, off-street, paved, multi-use path owned and maintained by the City of Roseville. The trail extends from Pleasant Grove Boulevard along the creek east to SR 65 within the Highland Reserve South Open Space Preserve, then makes a 90-degree turn and crosses the creek where the paved portion of the trail ends. The trail does not cross SR 65 at this time, but the trail is planned to extend to the east side of SR 65 in the future within Highland Reserve North. The trail is approximately 0.56 mile in length. The bridge over the creek is approximately 0.02 mile from the existing edge of pavement of SR 65.

Shea Center Trail

The existing portion of the Shea Center Trail is a Class I, off-street, paved, multi-use path owned and maintained by the City of Roseville. The trail extends from Gibson Drive along the east side of the Shea Center toward SR 65, where the trail turns north and parallels SR 65. The existing portion of the trail is approximately 0.29 mile in length and is approximately 0.02 mile from the existing edge of pavement of SR 65. A proposed portion of the trail that would connect the existing portion of the trail to the Highland Reserve Trail has been approved by the City of Roseville. The trail would be approximately 0.30 mile in length and adjacent to SR 65.

Conference Center/Galleria Trail

The Conference Center/Galleria Trail is a proposed Class I, multi-use path that would connect the Shea Center Trail to the Galleria at Roseville Mall. The trail has been approved by the City of Roseville and would be approximately 0.29 mile in length. The trail is proposed to generally run parallel to and west of SR 65.

Woodside Park

Woodside Park is a 5-acre park located adjacent to I-80 in the northern portion of the study area, in the City of Rocklin. Facilities in this neighborhood park include a basketball court, two play areas, picnic tables, barbecues, and decomposed granite pathways that wind through a grove of large oak trees.

Sculpture Park

The 0.8-acre Sculpture Park is located just east of the Eureka Road off-ramp and is a trailhead for Miners Ravine Trail. The park sits on a hill above where the trail emerges from under the eastbound off-ramp to Eureka Road. Stairs provide access to the trail from the area near “Cosmos,” a sculpture that was dedicated to the City of Roseville in 1990, and another paved trail connects to Miners Ravine Trail north of the sculpture from the trailhead parking area.

2.1.3.3 Environmental Consequences

Miners Ravine Trail

No permanent right-of-way would be acquired from Miners Ravine Trail under any of the build alternatives. Under Alternatives 2 and 3, the grade profile of the trail would need to be lowered by approximately 6 inches under the Eureka Road/Atlantic Street eastbound off-ramp to maintain vertical clearance requirements.

A temporary construction easement would be required that would affect approximately 0.35 mile of the trail from approximately 740 feet (0.14 mile) west of the Eureka Road on-ramp to approximately 630 feet (0.12 mile) east of the Eureka Road off-ramp. A temporary construction zone would be established at the closure points. Temporary wooden falsework with netting and/or other containment devices would be constructed underneath I-80 and freeway off-ramps over the trail in order to prevent construction debris from falling on trail users. Installation of the falsework may require short-term closures of the trail. The trail would be closed just east of where the trail crosses under Harding Boulevard/ Galleria Boulevard and where the trail east of I-80 splits east of Sculpture Park. To maintain trail access during falsework installation and while the work on the trail is underway, a detour would be provided via Harding Boulevard/Galleria Boulevard, Lead Hill Boulevard, North Sunrise Avenue, and Sculpture Park—a distance of approximately 1 mile. Signs would be posted at each closure point depicting the detour for trail users.

The detour would maintain access to the trail around the temporary construction zone. No other access points would be affected during construction. Once the trail profile correction is completed, the trail would reopen for use and access points would be the same as prior to project implementation. During construction, trail users would have direct views of construction activities and of vehicles traveling through the project area. These impacts would be temporary and would occur only during the construction period. Activities along the trail are transitory (e.g., walking, skating, and bike riding); the trail is close to I-80 and Atlantic Street/Eureka Road, and is exposed to noise levels typical of an urban area.

The temporary occupancy of Miners Ravine Trail and the detour during construction is also discussed in Appendix A. The provisions of Section 4(f) are not triggered because the project would not require acquisition of permanent right-of-way from the Miners Ravine Trail and the temporary occupancy of Miners Ravine Trail during trail profile correction, I-80 mainline widening, construction of the collector-distributor ramp, and widening of the Eureka Road off-ramp under Alternatives 2 and 3 would meet all of the temporary occupancy criteria outlined in 23 CFR 774.13(d).

Secret Ravine Trail

Secret Ravine Trail is a publicly owned facility with mixed recreation and non-motorized transportation use. There are two existing portions of the trail in Roseville and Rocklin.

The existing portion of the trail in Roseville is approximately 450 feet (0.09 mile) east of the southbound SR 65 to eastbound I-80 connector. The trail is below the grade of the existing I-80/SR 65 interchange and separated from the roadway by vegetation and trees along the ravine. Access to the trail is from outside the project area (Petruchio Way and Viola Way) and would not be affected. Improvements proposed in this area include improving the SR 65 and I-80 connectors, constructing new connection ramps, and widening the I-80 mainline. Trail users may have intermittent views of construction activities, but these would not affect use of the trail. Although construction noise may be audible, no adverse noise impacts are anticipated because construction noise would be short term and intermittent.

The existing trail in Rocklin is more than 1,300 feet east of I-80 and is separated from the freeway by residential areas and Secret Ravine. Improvements on I-80 would include widening to the west; no impacts are anticipated for this trail.

The evaluation for Section 4(f) effects concluded that the proposed project would not cause a constructive use to the Secret Ravine Trail because proximity impacts would not substantially impair the protected activities, features, or attributes of the trail.

Antelope Creek Trail

During widening of the East Roseville Viaduct and SR 65 mainline, a temporary construction zone would be established on both sides of Antelope Creek Trail for access to the viaduct/SR 65 and installation of new columns. The temporary construction zone would be required under all build alternatives. Temporary wooden falsework would be constructed underneath the viaduct and over the trail. The falsework would prevent construction debris from falling on trail users during viaduct and mainline widening, and would ensure uninterrupted use of the trail during construction activities.

One of the columns required for construction widening of the viaduct would permanently affect the currently alignment of Antelope Creek trail. Column placement requires realignment of the section of trail underneath the viaduct. To minimize trail closures, the new portion of trail would be constructed and, when completed, trail users would be shifted to the new trail section. Following the shift, the old trail section would be permanently closed to accommodate the viaduct column. During short periods of 1 to 2 days, the trail may be closed to allow for construction of the viaduct falsework over the trail, and to construct trail conforms. Falsework construction and trail closures would be scheduled to occur during times (e.g., during the day on weekdays) that would minimize impacts on trail users, or temporary rerouting of the trail around the construction area would be provided. In addition, construction vehicles (not equipment) may need to cross the trail to reach the new column locations. In this situation, appropriate traffic control measures (signs and flaggers) would be used as necessary to maintain the safety and flow of travel on the trail.

The trail follows the creek drainage and is below the elevation of SR 65; views of the roadway are part of the existing environment. During construction, trail users would have direct views of construction activities on either side of the trail and of construction vehicles traveling through the project area. These impacts would be temporary and would occur only during the construction period. Widening the viaduct and mainline would create a solid "ceiling" over the trail as it passes beneath SR 65; however, this change would not interfere with use of the trail and would be similar to the existing views of the roadway.

Recreationists using the trail are walking, skating, and bike riding; the trail is not considered a noise-sensitive receptor. Traffic noise from SR 65 is part of the existing urban environment for trail users in this area. According to the *Noise Study Report* prepared for the project (ICF International 2014c), construction noise could result in maximum noise levels of 91 to 96 A-weighted decibels (dBA) (at a distance of 50 feet from an active construction area). Trail users traveling through the construction area could experience these noise levels when equipment that generates the maximum noise levels is in use. However, construction noise would be short term and intermittent, and trail users would not experience loss of access or use of the trail.

The temporary occupancy of Antelope Creek Trail and the detour during construction is also discussed in Appendix A. The provisions of Section 4(f) are not triggered because the project would not require acquisition of permanent right-of-way from the Antelope Creek Trail and temporary occupancy of the Antelope Creek Trail during viaduct and mainline widening would meet all of the temporary occupancy criteria outlined in 23 CFR 774.13(d).

Highland Reserve, Shea Center, and Conference Center/Galleria Trails (Existing and Proposed)

The existing and proposed portions of the Highland Reserve, Shea Center, and Conference Center/Galleria Trails are shown in Appendix A. Implementation of the proposed project would not interfere with development of the proposed Conference Center/Galleria Trail planned for right-of-way acquisition once the development along the parcels adjacent to SR 65 commences, nor would it interrupt the continuity of the planned trail. The northern extension of the Highland Reserve Trail is identified as a long-term project in the *Bicycle Master Plan*, and development of the Shea Center Trail is contingent upon the next phase of development for the Shea Center. The proposed project would not affect future development of either trail.

Proposed construction activities on SR 65 in this area would occur within the existing roadway right-of-way where the southbound Pleasant Grove Boulevard on-ramp would be adjusted to accommodate the mainline widening. There would be no temporary or permanent use of trail right-of-way; the trails would not be used for access to the project. Access to the trails is from areas outside the project area, and there would be no change in access.

The evaluation for Section 4(f) effects concluded that the proposed project would not cause a constructive use to the Highland Reserve, Shea Center, or Conference Center/Galleria trails because proximity impacts would not substantially impair the protected activities, features, or attributes of the trails.

Woodside Park

Under all of the build alternatives, I-80 would be widened within the existing right-of-way, and the existing noise wall would not require reconstruction or relocation. No permanent right-of-way would be acquired from the park, and a temporary construction easement would not be required for staging or other construction activities.

Access to the park is from Westwood Drive and would not be affected by the project. The existing noise wall and large trees block direct views of I-80. During construction, park users may have intermittent and temporary views of construction equipment. Visitors also could experience temporary construction-related noise effects but would not experience any loss of access or use of recreational facilities. Woodside Park already is exposed to noise levels typical of an urban park. The described construction-related impacts would be intermittent and short term.

Sculpture Park

No right-of-way would be acquired from Sculpture Park on a permanent or temporary basis under any alternative. Additionally, the park would not be used for access to the project area. Access to the project area would be from I-80 and Eureka Road/Atlantic Street. Access to the park would be maintained during construction and would not change.

The sculpture and viewing area in the park sit above the trail, with trees and vegetation along the edge of the park. Park and trail users have intermittent but existing views of I-80, the Eureka Road off-ramp, and Miners Ravine from the park and trails. Construction activities and vehicles would be visible during the construction period, but these temporary views would not interfere with use of the park or affect views of the sculpture. Additionally, construction of the proposed project would not substantially change the viewshed from the existing viewshed. Traffic noise from I-80 is part of the existing environment for park and trail users. The park is within approximately 160 feet of the Eureka Road off-ramp, close to I-80, and already exposed to noise levels typical of an urban park.

2.1.3.4 Avoidance, Minimization, and/or Mitigation Measures

Minimization Measures

Restore Trails after Construction

In the event that any inadvertent damage occurs to the Antelope Creek or Miners Ravine Trail, the area affected will be restored to the condition that existed prior to construction activities or better.

Provide Advance Notification of Trail Closures

The City of Roseville will provide advance notification of the Miners Ravine Trail closure on its websites and trailheads. Notices will include trail closure dates, approximate duration, and description of the detour available during closure. The City of Roseville will post signs at the Miners Ravine Trail trailheads and closure points, depicting the detour.

2.1.4 References Cited

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ICF International. 2014c. *Noise Study Report – I-80/SR 65 Interchange Improvements Project*. September.

2.2 Growth

2.2.1 Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with NEPA, requires evaluation of the potential environmental effects of all proposed federal activities and programs. This includes a requirement to examine indirect effects, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations (40 CFR 1508.8) refer to these consequences as "indirect impacts." Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

CEQA also requires analysis of a project's potential to induce growth. The State CEQA Guidelines (Section 15126.2[d]) require that environmental documents "…discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment…."

2.2.2 Affected Environment

This section is a summary of the analysis documented in the CIA prepared for the project (ICF International 2014). The report is available on the project website at http://8065interchange.org/.

The project is located in Placer County, in the cities of Roseville and Rocklin, at the I-80/SR 65 interchange (Figure 1-1). The project boundaries consist of I-80 from the Douglas Boulevard interchange to the Rocklin Road interchange and SR 65 from the I-80 separation to the Pleasant Grove Boulevard interchange. The total length of the project is 2.5 miles along SR 65 and 4.2 miles along I-80.

As shown in Table 2.2-1, rapid population growth occurred in Placer County, the City of Roseville, and the City of Rocklin between 2000 and 2010. The City of Rocklin grew from a population of 36,330 in 2000 to 56,974 in 2010, which was the highest 10-year growth rate, at 56.8 percent (4.6 percent average annual growth rate [AAGR]). Placer County grew from a population of 248,399 in 2000 to 348,432 in 2010, representing a 40.3 percent growth rate (3.4 percent AAGR). The City of Roseville also had significant growth, from a population of 79,921 in 2000 to 118,788 in 2010, a 48.6 percent growth rate (4.0 percent AAGR). Unincorporated Placer County also experienced some growth, from 100,701 in 2000 to 108,128 in 2010, approximately a 7.4 percent growth rate (0.7 percent AAGR). Please refer to Section 2.3 for a more detailed population analysis.

Table 2.2-1. Existing Regional and Local Population Change

Area	2000	2010	Percent Change (%)	AAGR (%)
Unincorporated Placer County	100,701	108,128	7.38	0.7
Placer County total	248,399	348,432	40.27	3.4
Roseville	79,921	118,788	48.63	4.0
Rocklin	36,330	56,974	56.82	4.6

Source: Placer County 2013.

Employment forecasts project rapid growth in Placer County, with a total employment projection of 32.4 percent growth by 2022. Business activities directly adjacent to the project area are associated with a variety of auto repair shops and self-storage business along Taylor Road and the large-scale retail businesses along SR 65, both associated with the Roseville Galleria mall and operated independently of the mall. There are also some restaurants and smaller businesses, including a law office, gyms, and a hardware store. In addition, a few hotels, Roseville Golfland-Sunsplash, and various medical services providers are in the project vicinity.

2.2.3 Environmental Consequences

2.2.3.1 Build Alternatives

Caltrans provides guidelines for determining whether a project will cause growth-related impacts on the surrounding community. The Caltrans *Guideline for Preparers of Growth-Related, Indirect Impact Analysis* (California Department of Transportation 2006) (referred to in the remainder of this section as *the Guidance document*) is the document used to determine whether the I-80/SR 65 Interchange Improvements Project would cause growth-related impacts on Placer County and the Cities of Roseville and Rocklin. A two-phase approach was used to determine whether the project is anticipated to cause growth-related impacts. The first phase was a first-cut screening, based on factors that include how the project potentially changes accessibility, how the project type and location may influence growth, whether project-related growth is "reasonably foreseeable," and whether any project-related growth would affect resources of concern. If the project is determined to have significant impacts under first-cut screening criteria, a second screening analysis is needed.

The first-cut screening considers the following factors.

- How, if at all, does the project potentially change accessibility?
- How, if at all, do the project type, project location, and growth-pressure potentially influence growth?
- Determine whether project-related growth is "reasonably foreseeable."
- If there is project-related growth, how, if at all, will that impact resources of concern?

To determine the potential for growth-related impacts associated with the three build alternatives, a first-cut screening was performed in accordance with the Guidance document. The interrelated screening factors (accessibility, growth pressure, project type, and project location) discussed in Chapter 5 and summarized in Figure 5-2 of the Guidance document were considered. The results of this analysis are detailed below.

In terms of accessibility, the project's build alternatives would improve the I-80/SR 65 interchange and adjacent intersections to reduce future traffic congestion. All of the highways and local roadways to be improved are already in existence, and no new roads would be constructed. The land surrounding the project is made up of commercial, residential, and open space. Improving the I-80/SR 65 interchange and adjacent intersections would improve access throughout the project area, which would benefit the surrounding residents of Rocklin and Roseville.

In terms of growth pressure, the extent to which the project's build alternatives would induce growth in the project area depends largely on the strength of local planning and growth management mechanisms, including adhering to adopted growth boundaries, maintaining existing zoning restrictions and land use designations, and implementing farmland and floodplain protection policies. In this case, there appears to be a strong, integrated structure that discourages premature and unplanned growth in the project area. The Cities of Roseville and Rocklin have provided land use designations to guide future growth in the region; and new development must adhere to these land use designations, per the rules and regulations of the relevant cities. Adherence to these restrictions reduces pressure for unplanned development by making adequate quantities of land available for development in locations that best serve the policy goals of the relevant cities. Given the coordinated growth control mechanisms in place, the project is unlikely to substantially encourage unplanned development in the project area, or to shift or hasten planned growth along the SR 65 and I-80 corridors. Therefore, the proposed project would cause no, or only minimal, growth-related impacts.

In terms of project type, the project's build alternatives include improving the I-80/SR 65 interchange and adding HOV lanes. This type of project on an existing facility is described specifically in the Guidance document as a project that could cause growth-related impacts because it adds capacity to existing freeways.

In terms of location, the project is located in a suburban area. As detailed in the Guidance document, transportation projects in suburban areas could cause growth-related impacts because of a greater presence of open space/vacant land. Presently, the land in the project area consists largely of residential uses, in addition to commercial and open space. The project area has very little undeveloped land. As stated in Section 2.1, "Land Use," growth is expected in the surrounding region, outside of the project limits. However, some new growth could occur inside the project limits through development of vacant and underutilized lots. The population of Placer County is growing and is expected to grow rapidly in the Cities of Rocklin and Roseville. This growth would not be attributable to, or otherwise influenced by, the project.

The results of the first-cut screening analysis indicate that, because of the developed nature of the project area, the existing land use designations and the planning and growth mechanisms enforced by local agencies, the project is not expected to encourage unplanned development, or increase growth along the SR 65 and I-80 corridors. The project type, interchange improvements with addition of travel lanes, would help ease current and forecasted congestion at the interchange but would not cause extensive development beyond what is already planned for in the General Plans of the local jurisdictions.

Based on the first-cut screening analysis detailed above, the project's build alternatives would not be growth-inducing, and further analysis of the potential for growth inducement is not necessary.

2.2.3.2 No Build Alternative

The No Build Alternative would not lead to any growth-inducing improvements in the project area or in the surrounding community. The existing roadways and interstate systems would operate at current levels of service and efficiency, and existing congested conditions would stay the same and likely worsen over time.

2.2.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

2.2.5 References Cited

California Department of Transportation. 2006. *Guidance for Preparers of Growth-Related Indirect Impact Analysis*. May. Sacramento, CA. Available: <http://www.dot.ca.gov/ser/Growth-related_IndirectImpactAnalysis/gri_guidance.htm>. Accessed: August 15, 2014.

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2.3 Community Impacts

2.3.1 Community Character and Cohesion

2.3.1.1 Regulatory Setting

NEPA established that the federal government use all practicable means to ensure that all Americans have safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 USC 4331[b][2]). In its implementation of NEPA (23 CFR 109[h]), FHWA 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 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.

2.3.1.2 Affected Environment

This section is a summary of the analysis documented in the *Community Impact Assessment* (CIA) prepared for this project (ICF International 2014a). The report is available on the project website at http://8065interchange.org/.

Community cohesion is the degree to which residents have a "sense of belonging" to their neighborhood; a level of commitment of the residents to the community; or a strong attachment to neighbors, groups, or institutions—usually because of continued association over time. Communities often are delineated by physical barriers such as major roadways or large open space areas (California Department of Transportation 2011).

Cohesive communities are indicated by specific social characteristics such as long average lengths of residency, home ownership, frequent personal contact, ethnic homogeneity, high levels of community activity, and shared goals. Transportation projects may divide cohesive neighborhoods when the projects act as physical barriers or are perceived by residents as psychological barriers. A transportation project perceived as a physical or psychological barrier may isolate one portion of a homogeneous neighborhood.

Study Area

The project is located in the Cities of Roseville and Rocklin in Placer County, California. The study area is shown in Figure 2.1-1. This section focuses on community character, population, and housing characteristics for the Cities of Roseville and Rocklin, Placer County, and the study area as a whole.

By its nature, the study area is heavily divided. As stated in Section 2.1.1, the study area is divided generally into three areas. The northwest portion of the study area includes the area north of I-80 and west of SR 65, the northeast portion of the study area includes the area north of I-80 and east of SR 65, and the south portion of the study area includes the area south of I-80. The northwest portion of the study area is characterized primarily by residential land uses. The land directly east of SR 65 consists of big box retail stores. Churches and schools are scattered throughout this portion of the study area. The southwest portion of the study area is largely commercial and consists of the Roseville Galleria shopping mall and a shopping center. Near the interchange are residences and the Antelope Creek Trail. Residential uses are located behind commercial uses, as is Sierra View Country Club and scattered schools and churches. The southern portion of the study area includes mainly residential land uses, with park lands located near the interchange. This portion of the study area also includes Sierra Community College.

Traveling across SR 65 and I-80 in between these separate areas is not easily achieved. Even within the three separate areas within the study area, there is a division of commercial uses (primarily big-box retail outlets) and residential uses (primarily suburban, single-family developments). The commercial developments are designed primarily to serve a regional, not local, clientele, thereby dividing each subarea within the study area into retail outlets populated with mostly non-local shoppers and local residents within their neighborhoods.

Population and Age

The study area consists of 19 census tracts in the Cities of Roseville and Rocklin (Figure 2.1-1). Table 2.3-1 shows the existing regional and local population change for Unincorporated Placer County, Placer County, the City of Roseville, and the City of Rocklin.

Table 2.3-1. Existing Regional and Local Population Change

Area	2000	2010	Percent Change (%)	AAGR (%)
Unincorporated Placer County	100,701	108,128	7.38	0.7
Placer County total	248,399	348,432	40.27	3.4
Roseville	79,921	118,788	48.63	4.0
Rocklin	36,330	56,974	56.82	4.6

Source: Placer County 2013a.

The total population of the study area was 70,600 in 2010. The study area population is approximately 20.3 percent of Placer County as a whole.

City of Roseville Population and Age

The City of Roseville’s population in 2010 was 118,788. From 2000 to 2010, the city’s population increased by approximately 48.63 percent. The median age in the City is 36.8 years. 34,152 people were 19 or under (28.7 percent), 22,210 were between the ages of 20 and 34 (18.6

percent), 17,607 were between 35 and 44 (14.8 percent), 17,006 were between 45 and 54 (14.3 percent), 11,946 were between 55 and 64 (10.0 percent), and 15,867 (13.4 percent) were ages 65 and older (2010 Census).

City of Rocklin Population and Age

The City of Rocklin's population in 2010 was 56,974. From 2000 to 2010, the city's population increased by approximately 56 percent. The median age in the City is 36.7 years. 17,438 people were 19 or under (30.5 percent), 9,879 were between the ages of 20 and 34 (17.3 percent), 8,761 were between 35 and 44 (15.4 percent), 8,979 were between 45 and 54 (15.7 percent), 5,689 were between 55 and 64 (10.0 percent), and 6,228 (11.0 percent) were ages 65 and older (2010 Census).

Placer County Population and Age

According to the *Placer County Housing Element, Part II Background Report* (Placer County 2013a), Placer County is one of the fastest-growing counties in the United States. Most of the growth in the county has occurred in the incorporated areas, as the County's General Plan policy has steered growth to the cities. From 2000 to 2010, the average annual growth rate (AAGR) for Placer County as a whole was 3.4 percent, a rate nearly three times California's population AAGR of 1.0 percent during this period. Most of this growth occurred in the incorporated areas of the county, where the AAGR was 5.0 percent between 2000 and 2010. Growth in unincorporated areas of the county slowed to an AAGR of 0.7 percent between 2000 and 2010 (Placer County 2013a). The county's population is expected to grow from 348,432 to approximately 415,000 residents by 2025.

The median age in the County is 40.3 years. A total of 93,739 people were 19 or under (27.0 percent), 57,109 were between the ages of 20 and 34 (16.3 percent), 46,565 were between 35 and 44 (13.4 percent), 53,339 were between 45 and 54 (15.3 percent), 44,118 were between 55 and 64 (12.7 percent), and 53,562 (15.4 percent) were ages 65 and older.

Ethnicity and Race

As reported in the 2010 census (U.S. Census Bureau 2010), the total population of Placer County was 348,432. Of the total population, the largest group was White (approximately 83.5 percent), and persons of Hispanic or Latino origin of any race made up the next largest group (9.3 percent). The remaining population in descending order of proportion was Asian, two or more races, other race, Black or African American, American Indian/Alaskan Native, and Native Hawaiian/Pacific Islander (Table 2.3-2). The cities of Roseville and Rocklin are more ethnically diverse than the rest of Placer County. Table 2.3-2 indicates the ethnic distribution of the relevant census tracts.

Income

According to the 2010 census (U.S. Census Bureau 2010), the census tracts in the study area generally have a lower median household income and a lower per capita income than the rest of Placer County, Roseville, and Rocklin. A notably higher percentage of families and individuals in Census Tracts 207.13, 207.14, and 209.01 are below the poverty level than the rest of Placer County, Roseville, and Rocklin. Table 2.3-3 shows income and poverty statistics in Placer County and the study area.

Community Facilities

Community facilities and services, including schools and health care facilities, are shown in Figure 2.3-1. There are no public community libraries in the study area, and libraries are not discussed further in this document.

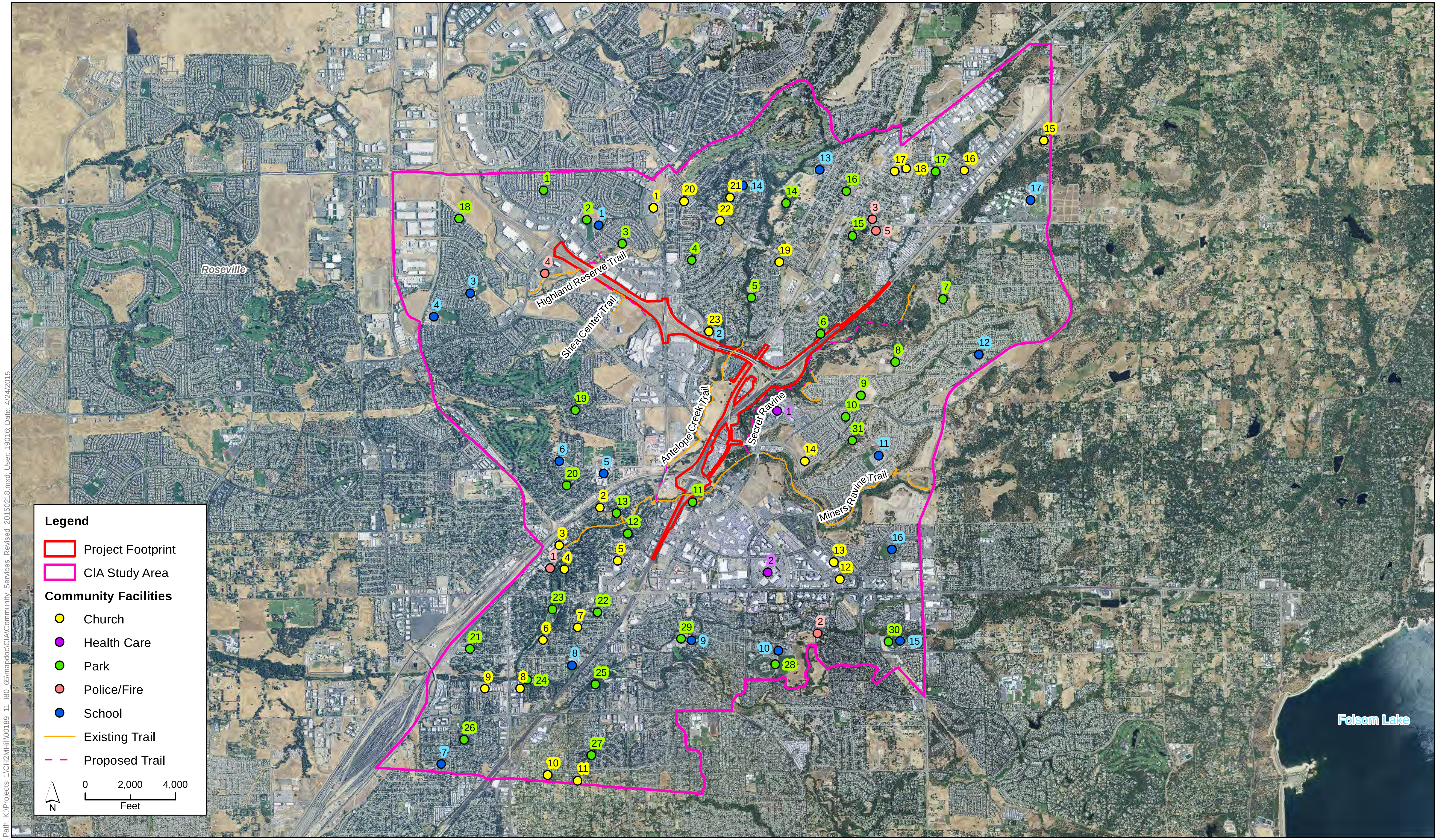

Figure 2.3-1
Community Facilities

Figure 2.3-1
Community Facilities Index

Resource #	Resource
Church (yellow)	
1	Adventure Christian Church
2	Abundant Life Fellowship
3	Salvation Army
4	Christian Science Church
5	The Church of Jesus Christ of Latter-day Saints
6	Saint Rose Catholic Church
7	Hillcrest Alliance Church
8	Calvary Chapel Roseville
9	Horizon Community Church
10	Living Way Community Church
11	New Life Hungarian Church
12	Valley Springs Presbyterian Church
13	Metro Calvary
14	Saint Anna Greek Orthodox Church
15	The LIFEhouse Church
16	Saint Peter and Saint Paul Catholic Church
17	Foothills Church of Christ
18	Holy Cross Lutheran Church
19	Gracepoint Adventist Church
20	Spring Valley Church
21	Community Covenant Church
22	First Baptist Church of Rocklin
23	Destiny Christian Church
Health Care (purple)	
1	Sutter Roseville Medical Center
2	Kaiser Permanente Roseville Medical Center
Park (green)	
1	Aldo Pineschi Sr. Park
2	Central Park
3	Erven Park
4	Vista Grande Park
5	Sunset East Park
6	Woodside Park
7	Corral-Alva Park
8	Joe Hernandez Park
9	Harry Crabb Park
10	Cambria Park
11	Olympus Point Sculpture Park
12	Lincoln Estates Park

Resource #	Resource
13	Taylor Park
14	Johnson-Springview Park
15	Quarry Park
16	Old Timers Park
17	Sierra Meadows Park
18	Summerhill Park
19	Diamond Oaks Park
20	Woodbridge Park
21	Mark White Neighborhood Park
22	Garbolino Park
23	Saugstad Park
24	Cirby Creek Park
25	Eastwood Park
26	Cresthaven Park
27	Kenwood Oaks Park
28	Maidu Park
29	Sierra Gardens Park
30	Ray E. Lockridge Park
31	False Ravine Park
Police/Fire (pink)	
1	Roseville Fire Department Station 1
2	Roseville Fire Department Station 4
3	Rocklin Fire Department
4	Roseville Fire Department Station 7
5	Rocklin Police Department
School (blue)	
1	Thomas Jefferson Elementary School
2	Antelope Creek Elementary School
3	Vencil Brown Elementary School
4	George A. Buljan Middle School
5	Roseville High School
6	Ferris Spanger Elementary School
7	Saint Albans Country Day School
8	George Cirby Elementary School
9	Warren T. Eich Elementary School
10	Maidu School
11	Stoneridge Elementary School
12	Sierra Elementary School
13	Spring View Middle School
14	Parker Whitney Elementary School
15	Excelsior Elementary School
16	Olympus Junior High School
17	Sierra College

Table 2.3-2. Existing Regional and Local Race and Ethnicity Characteristics (2010)*

Area	Total Population	Hispanic or Latino (of Any Race)	%	Not Hispanic or Latino													
				White	%	Black or African American	%	American Indian or Alaskan Native	%	Asian	%	Native Hawaiian/ Pacific Islander	%	Other Race	%	Two or More Races	%
California	37,253,956	14,013,719	37.7	21,453,934	57.6	2,299,072	6.2	362,801	1.0	4,861,007	13.0	144,386	0.4	6,317,372	17.0	1,815,384	4.9
Placer County	348,432	16,696	4.8	290,977	83.5	4,751	1.4	3,011	0.9	20,435	5.9	778	0.2	13,375	3.8	15,105	4.3
Roseville	116,042	17,615	15.5	83,419	71.9	1,793	1.5	378	0.3	9,320	8.0	360	0.3	373	0.3	2,784	2.4
Rocklin	86,625	7,459	8.6	68,903	79.5	1,077	1.2	715	0.8	5,265	6.1	34	0.0	169	0.2	3,003	3.5
Census Tract 207.11	4,442	471	10.6	3,339	75.2	117	2.6	0	0.0	367	8.3	0	0.0	0	0.0	148	3.3
Census Tract 207.12	3,473	809	23.3	2,628	75.7	9	0.3	10	0.3	0	0.0	0	0.0	11	0.3	6	0.2
Census Tract 207.13	3,359	610	18.2	2,679	79.8	5	0.1	0	0.0	0	0.0	0	0.0	0	0.0	65	1.9
Census Tract 207.14	3,219	296	9.2	2,626	81.6	63	2.0	10	0.3	139	4.3	0	0.0	0	0.0	85	2.6
Census Tract 207.17	3,117	585	18.8	1,861	59.7	17	0.5	0	0.0	552	17.7	0	0.0	18	1.6	84	2.7
Census Tract 208.05	4,046	571	14.1	2,887	71.3	11	0.2	28	0.6	259	6.4	58	1.4	49	1.2	183	4.5
Census Tract 208.06	3,248	624	19.2	2,462	75.8	35	1.1	0	0.0	102	3.1	0	0.0	0	0.0	25	0.8
Census Tract 209.01	2,769	1,305	47.1	1,227	44.3	58	2.1	15	0.5	12	0.4	82	3.0	0	0.0	70	2.5
Census Tract 210.03	6,305	1,546	24.5	4,113	65.2	111	1.8	13	0.2	324	5.1	10	0.2	16	0.3	172	2.7
Census Tract 210.34	4,155	438	10.5	2,926	70.4	63	1.5	0	0.0	588	14.2	0	0.0	17	0.4	123	3.0
Census Tract 211.03	3,725	734	19.7	2,797	75.1	24	.06	30	0.8	0	0.0	0	0.0	38	1.0	102	2.7
Census Tract 211.06	2,027	135	6.7	1,726	85.2	19	.09	0	0.0	78	3.8	0	0.0	0	0.0	69	3.4
Census Tract 211.08	2,502	388	15.5	1,971	78.8	0	0.0	81	3.2	32	1.3	0	0.0	0	0.0	30	1.2
Census Tract 211.09	4,558	401	8.8	3,609	79.2	112	2.5	31	0.7	297	6.5	8	0.2	0	0.0	100	2.2
Census Tract 211.28	2,654	136	5.1	2,121	79.9	119	4.5	70	2.6	78	2.9	18	0.7	0	0.0	112	4.2
Census Tract 211.29	3,322	327	9.8	2,685	80.8	12	0.4	68	2.0	135	4.1	0	0.0	0	0.0	95	2.9
Census Tract 224.00	4,406	433	9.8	2,893	65.7	78	1.8	7	0.2	858	19.5	0	0.0	28	0.6	109	2.5
Census Tract 226.00	5,293	373	7.0	3,903	73.7	44	0.8	0	0.0	677	12.8	125	2.4	0	0.0	171	3.2
Census Tract 228.00	3,980	528	13.3	2,680	67.3	13	0.3	0	0.0	663	16.7	16	0.4	0	0.0	80	2.0

Source: U.S. Census Bureau 2010.

* Refer to Figure 2.1-1 for location of census tracts included in this table

Table 2.3-3. Income and Poverty Statistics for Placer County and the Study Area (2010)*

Area	Median Household Income	Per capita Income	% of Families Below Poverty Level	% of All People Below Poverty Level
Placer County	73,356	34,917	4.8	8.4
Roseville	72,244	33,574	5.5	8.4
Rocklin	84,358	41,149	3.3	6.5
Census Tract 207.11	58,613	32,547	1.3	8.6
Census Tract 207.12	44,296	27,898	6.6	9.6
Census Tract 207.13	52,048	28,805	13.0	13.6
Census Tract 207.14	68,659	31,985	16.3	19.7
Census Tract 207.17	68,160	40,107	1.4	2.5
Census Tract 208.05	63,176	32,357	6.5	7.9
Census Tract 208.06	50,994	38,184	5.8	5.4
Census Tract 209.01	39,982	17,907	17.3	22.7
Census Tract 210.03	71,263	32,234	1.5	6.8
Census Tract 210.34	94,583	30,789	9.3	9.2
Census Tract 211.03	62,466	26,636	6.2	6.2
Census Tract 211.06	84,112	39,526	1.7	3.7
Census Tract 211.08	47,406	26,722	4.3	8.8
Census Tract 211.09	10,6995	44,173	4.2	9.8
Census Tract 211.28	63,044	29,085	4.9	11
Census Tract 211.29	61,610	30,472	4.2	9.6
Census Tract 224.00	90,081	43,668	4.5	5.1
Census Tract 226.00	58,639	29,864	1.5	4.8
Census Tract 228.00	10,3531	37,606	6.0	12

Source: U.S. Census Bureau 2010.
* Refer to Figure 2.1-1 for location of census tracts included in this table

Economic Conditions

This section discusses the economic conditions of the study area and the surrounding region, including employment and income data and a description of business activity in the study area.

Regional Economy and Employment

The study area is located in Placer County, a region that had seen job growth and increases in taxable sales prior to the economic downturn. The county is specialized in six sectors (Construction; Financial Activities; Leisure and Hospitality; Educational and Health Services; Trade, Transportation, and Utilities; and Other Services). Table 2.3-4 below shows Placer County's employment by industry.

Table 2.3-4. Placer County Employment by Industry

Industry Sector	2002	2007	2012	% Change 2002–2007	% Change 2007–2012
Total All Industries	120,700	140,400	131,800	9.2%	-6.1%
Agriculture	400	300	400	0.0%	33.3%
Mining and Logging	100	100	0	-100.0%	-100.0%
Construction	14,700	14,700	8,400	-42.9%	-42.9%
Manufacturing	8,100	8,500	6,300	-22.2%	-25.9%
Trade, Transportation and Utilities	23,500	29,200	27,500	17.0%	-5.8%
Information	2,500	2,600	2,300	-8.0%	-11.5%
Financial Activities	8,200	11,300	10,200	24.4%	-9.7%
Professional and Business Services	12,700	14,300	13,900	9.4%	-2.8%
Educational and Health Services	11,800	15,800	20,400	72.9%	29.1%
Leisure and Hospitality	15,400	19,100	18,700	21.4%	-2.1%
Other Services	3,900	4,500	5,000	28.2%	11.1%
Government	19,500	20,000	18,700	-4.1%	-6.5%

Source: Center for Strategic Economic Research 2014.

Total employment in Placer County is projected to increase approximately 32 percent by 2022, to a total of nearly 174,000 jobs. Employment projections show that the strongest growth through 2022 in Placer County will be in the Construction; Professional and Business Services; and Education and Health Services sectors (approximately 66, 44, and 40 percent, respectively) (Center for Strategic Economic Research 2014). Table 2.3-5 below shows Placer County's employment projections by industry.

Table 2.3-5. Placer County Employment Projections by Industry

Industry	2012	2022	% Change 2012–2022
Total, All Industries	131,800	174,441	32.4%
Agriculture	400	526	31.6%
Construction	8,400	13,929	65.8%
Manufacturing	6,300	6,864	9.0%
Trade, Transportation and Utilities	27,500	35,444	28.9%
Information	2,300	2,823	22.7%
Financial Activities	10,200	13,974	37.0%
Professional and Business Services	13,900	20,000	43.9%
Educational and Health Services	20,400	28,581	40.1%
Leisure and Hospitality	18,700	24,248	29.7%
Government	18,700	21,139	13.0%

Source: Center for Strategic Economic Research 2014.

Business Activity in the Study Area

The major employers in the City of Roseville include Kaiser Permanente, Hewlett-Packard, the City of Roseville, Sutter Roseville Medical Center, local school districts, Union Pacific Railroad, and Wal-Mart (two locations) (City of Roseville 2011). Major employers in the City of Rocklin include the Rocklin Unified School District, Oracle America, Inc., United Natural Foods, Inc., Esurance, Sierra College, and Wal-Mart (two locations) (City of Rocklin 2014).

Business activities immediately adjacent to the study area are associated with the variety of auto repair shops and self-storage businesses along Taylor Road and the large-scale retail businesses along SR 65, both associated with the Roseville Galleria mall and operated independently of the mall. There are also scattered restaurants; smaller businesses including a law office, gyms, and hardware store; hotels; Roseville Golfland-Sunsplash, and various medical services providers.

2.3.1.3 Environmental Consequences

The affected roadways in the study area, including Taylor Road and Pacific Street, serve as a parallel facility to I-80 and are a primary transportation route for commuters and patrons of the local businesses and shopping areas. During the construction period, roadways would remain open with unrestricted travel during hours of non-construction activities. Travelers may experience delays during periods of active construction that would require temporary lane closures. These delays could discourage some travelers from using these access routes, but lane closures would be temporary.

Build Alternatives

Alternative 1 – Taylor Road Full Access Interchange

Alternative 1 would not construct any new structures or roadways that would significantly alter existing community divisions. As a result, direct impacts that may affect community character are not likely to occur.

Alternative 2 – Collector/Distributor System Ramps

Similarly to Alternative 1, Alternative 2 would also not construct any new structures or roadways that would significantly alter community divisions. Direct impacts that may affect community character are not likely to occur under Alternative 2.

Alternative 3 – Taylor Road Interchange Eliminated

Alternative 3 would eliminate the Taylor Road interchange, which would reduce access to businesses on Taylor Road in Roseville and would reduce route options for local residents that currently use Taylor Road to access residential areas and businesses. This also would reduce access to businesses on Pacific Street in Rocklin, as well as remove a local alternative to I-80. Alternative 3, with the elimination of the Taylor Road interchange, would be considered a new barrier within the project area that could have a minor adverse effect on community cohesion.

No Build Alternative

No impacts on community cohesion would occur under the No Build Alternative.

2.3.1.4 Avoidance, Minimization, and/or Mitigation Measures

The community cohesion impacts of the project are anticipated to be minor. Therefore, no measures to reduce impacts are proposed. Implementation of the project’s TMP would ensure that access to adjacent properties would be provided during construction and that delays would be minimized as much as possible. A discussion of the TMP is included in Section 2.5, “Traffic and Transportation/Pedestrian and Bicycle Facilities.”

2.3.2 Relocations and Real Property Acquisition

2.3.2.1 Regulatory Setting

Caltrans’ Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and 49 CFR 24. The purpose of the RAP 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. Please see Appendix C for a summary of the RAP.

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 USC 2000d, et seq.). Please see Appendix B for a copy of Caltrans’ Title VI Policy Statement.

2.3.2.2 Affected Environment

This section is a summary of the analysis documented in the *Community Impact Assessment* prepared for the project (ICF International 2014a).

In general, the project would involve modifications to portions of SR 65, I-80, Taylor Road, and the interchanges between these roadways. The project would require acquisition of some strips of land from adjacent parcels, which would displace existing uses. Removal of these land uses, which include strips of open space and commercial use, would not significantly alter the overall land use make-up of the study area. The changes in land use would be consistent and compatible with existing land uses. In addition, as detailed in the *Placer County Regional Transportation Plan 2035* (Placer County 2013b), the project has been included in future land use planning in the study area and region, and therefore would be consistent and compatible with planned land uses in the project area. Property acquisitions are discussed below.

2.3.2.3 Environmental Consequences

Build Alternatives

All build alternatives would require property acquisitions. Table 2.3-6 shows the amount of right-of-way acquisition under each build alternative. In addition, figures that show the right-of-way acquisition locations by alternative are included in Appendix K of the *Draft Project Report to Authorize Release of the Draft Environmental Document*, available on the project website at http://8065interchange.org/.

Table 2.3-6. Property Acquisitions by Build Alternative

Parcel Number	Description	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3 (acres)
015-162-001	Corner of Cattlemens Restaurant parking lot	0.05	0.05	0.05
015-162-002	Cattlemens Restaurant parking lot	1.93	1.34	1.34
015-450-079	Roseville Golfland-Sunsplash	0.00	0.26	0.14
015-162-004	Flooring Liquidators	0.61	0.54	0.54
015-162-006	Seventh Day Adventist Church	0.18	0.00	0.00
015-162-007	Edwin Purdy House property	2.90	2.90	2.90
015-450-022	Secret Ravine	0.27	1.18	1.18
015-450-059	Hilton Garden Inn side lot	0.00	0.15	0.15
455-010-032	Olympus Point Open Space Preserve	0.99	0.92	0.92
456-010-028	Olympus Point Open Space Preserve	3.61	4.52	4.52
015-450-058	Larkspur Landing Roseville Hotel	0.00	0.13	0.13
456-020-069	Olympus Point Open Space Preserve	0.71	0.57	0.57
456-020-070	Olympus Point Open Space Preserve	0.43	0.00	0.00
Total		**11.68**	**12.56**	**12.44**

An estimated 13 parcels would be directly affected by acquisitions of strips of land. Under all of the build alternatives, all of parcel 015-162-001 and a portion of parcel 015-162-002 would be acquired, which would remove land from the Cattlemens Restaurant parking lot. The most right-of-way take from this property would occur under Alternative 1. Under all of the alternatives, right-of-way would be acquired from the Flooring Liquidators parcel parking lot. The most amount of take would occur under Alternative 1. Under Alternative 1, 0.18 acre would be acquired from parcel 015-162-006. This would result in the loss of 25 parking spaces from the Seventh Day Adventist Church. There would be no impacts on this parcel under Alternatives 2 and 3. Under all of the build alternatives, the Edwin Purdy House, a vacant former residential property (parcel 015-162-007), may be acquired in full due to the large percentage of the parcel that would be affected. Under Alternatives 2 and 3, strips of land would be acquired from parcels 015-450-059 and 015-450-058, which would remove some landscaping from the Hilton Garden Inn and Larkspur Landing Roseville hotel properties. Alternatives 2 and 3 also would acquire a portion of parcel 015-450-079, the Roseville Golfland-Sunsplash theme park, including the existing digital billboard on this property and would remove approximately 18 parking spaces. Alternative 2 would require more right-of-way take from this parcel than Alternative 3 (0.26 acre compared to 0.14 acre) and would also remove a heavily used 20-table picnic area available for patrons who bring their own food to the park.

In addition, strips of land would be acquired along Secret Ravine under all of the build alternatives. This land is a part of the Olympus Point Open Space Preserve, set aside as part of a regulatory permitting action, as described in the *City of Roseville Open Space Preserve Overarching Management Plan* (ECORP Consulting 2011). This area also is designated as Open Space in the City of Roseville's General Plan. As shown in Table 2.3-6, Alternative 1 would require land from parcel 046-020-070 while Alternatives 2 and 3 would not affect the parcel. Under Alternatives 2 and 3, more land would be acquired from parcel 015-450-022 than under Alternative 1 (1.18 acres compared to 0.27 acre). The strips of land that would be removed from these parcels are located between I-80 and Secret Ravine, west and north of the Sutter Roseville Hospital. Recreationists passively use the portions of the Secret Ravine area adjacent to the freeway. Developed trails and public areas are located southeast of the creek, away from the project area. Oak trees and riparian vegetation that currently serve as a buffer between I-80 and the Secret Ravine area would be removed from the areas proposed to be acquired. Mitigation measures to account for the loss of trees are discussed in Section 2.16, "Natural Communities," and in the *Natural Environment Study Report* prepared for the project (ICF International 2014b).

The *City of Roseville General Plan 2025* (City of Roseville 2012) states that these lands may be used as passive recreational areas for visual and aesthetic enjoyment. In addition, such areas may accommodate bikeway or other trail connections.

No Build Alternative

There would be no relocation impacts under the No Build Alternative.

2.3.2.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

2.3.3 Environmental Justice

The project is being developed in accordance with the Civil Rights Act of 1964, as amended; the Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970, as amended; and EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*). Executive Order 12898 requires each federal agency to take the appropriate and necessary steps to identify and address disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on minority and low-income populations.

Environmental justice refers to the fair treatment of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The CEQ's *Environmental Justice: Guidance under the National Environmental Policy Act* (1997) indicates that environmental justice concerns may arise from impacts on the natural or physical environment, such as human health or ecological impacts on minority and low-income populations, or from related social or economic impacts.

For adverse environmental justice effects to result from the project, two conditions need to exist. First, minority or low-income populations need to reside in parts of the study area that would be adversely affected by the project. Second, any adverse impacts would need to fall disproportionately on minority or low-income populations, rather than proportionately on all populations affected by the project.

2.3.3.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with 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 2010, this was $22,050 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes also have 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 C of this document.

2.3.3.2 Affected Environment

This section is a summary of the analysis documented in the CIA prepared for the project (ICF International 2014a).

The 19 census tracts discussed above under "Community Character and Cohesion" constitute the affected environment for environmental justice. These census tracts are closest to the project. Table 2.3-2 shows the racial and ethnic composition of California, Placer County, the City of Roseville, the City of Rocklin, and the individual census tracts that make up the study area.

As shown in Table 2.3-2, several of the census tracts within the study area are more ethnically diverse compared to the rest of Rocklin and Roseville, and the rest of Placer County, with slightly higher percentages of residents that are Hispanic or Latino of any race. Census Tracts 211.09 and 211.28 have higher percentages of Black or African American residents than the rest of Rocklin (2.5 and 4.5 percent, respectively, compared to 1.2 percent). Several of the census tracts in Roseville have higher percentages of Asian residents than the rest of the city, including Census Tracts 207.17, 224, 226, and 228. See Figure 2.1-1 for locations of census tracts.

According to the 2010 census, the census tracts in the study area generally have a lower median household income and a lower per capita income than the rest of Placer County, Roseville, and Rocklin. A notably higher percentage of families and individuals in Census Tracts 207.13, 207.14, and 209.01 are below the poverty level than the rest of Placer County, Roseville, and Rocklin. Table 2.3-7 shows income and poverty statistics in Placer County and the study area.

Table 2.3-7. Income and Poverty Statistics for Placer County and the Study Area (2010)*

Area	Median Household Income	Per capita Income	% of Families Below Poverty Level	% of All People Below Poverty Level
Placer County	73,356	34,917	4.8	8.4
Roseville	72,244	33,574	5.5	8.4
Rocklin	84,358	41,149	3.3	6.5
Census Tract 207.11	58,613	32,547	1.3	8.6
Census Tract 207.12	44,296	27,898	6.6	9.6
Census Tract 207.13	52,048	28,805	13.0	13.6
Census Tract 207.14	68,659	31,985	16.3	19.7
Census Tract 207.17	68,160	40,107	1.4	2.5
Census Tract 208.05	63,176	32,357	6.5	7.9
Census Tract 208.06	50,994	38,184	5.8	5.4
Census Tract 209.01	39,982	17,907	17.3	22.7
Census Tract 210.03	71,263	32,234	1.5	6.8
Census Tract 210.34	94,583	30,789	9.3	9.2
Census Tract 211.03	62,466	26,636	6.2	6.2
Census Tract 211.06	84,112	39,526	1.7	3.7
Census Tract 211.08	47,406	26,722	4.3	8.8
Census Tract 211.09	10,6995	44,173	4.2	9.8
Census Tract 211.28	63,044	29,085	4.9	11
Census Tract 211.29	61,610	30,472	4.2	9.6
Census Tract 224.00	90,081	43,668	4.5	5.1
Census Tract 226.00	58,639	29,864	1.5	4.8
Census Tract 228.00	10,3531	37,606	6.0	12

Source: U.S. Census Bureau 2010.

* Refer to Figure 2-1 for location of census tracts included in this table.

Although minority populations live within the study area, the project would not result in disproportionate effects to those populations. The census tracts with the higher percentages of poverty are not located adjacent to the project boundary but are further out in the study area. No relocations would occur. Construction of the project would generate dust, diesel fumes, and noise during construction periods. Impacts would be shared proportionally by all residents surrounding the study area and would not be experienced disproportionately by the minority residents.

2.3.3.3 Environmental Consequences

Build Alternatives

The project would not result in a disproportionate effect to minority or low-income populations. No relocations of minority or low-income populations would occur under any of the build alternatives. Based on the above discussion and analysis, and based on the consideration of the benefits that the project would provide to *all* the minority and low-income residents of the study area, the build alternatives will not cause disproportionately high and adverse effects on minority or low-income populations per E.O. 12898 regarding environmental justice. No environmental justice impacts are anticipated.

2.3.3.4 No Build Alternative

There would be no environmental justice impacts under the No Build Alternative.

2.3.3.5 Avoidance, Minimization, and/or Mitigation Measures

No environmental justice effects are anticipated to result from the project. Therefore, no measures to reduce impacts are needed.

2.3.4 References Cited

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2.4 Utilities/Emergency Services

This section is based on the CIA prepared for the project (ICF International 2014) and discusses utilities, communications providers, and emergency services (including police, fire, and emergency medical services). The report is available on the project website at http://8065interchange.org/.

2.4.1 Affected Environment

2.4.1.1 Utilities

Electricity and Natural Gas

The City of Roseville operates its own electric utility (Roseville Electric) providing electricity to residents and businesses. Roseville Electric constructs, operates, and maintains the City's electric distribution system. PG&E provides electrical services to the City of Rocklin and builds infrastructure on an as-needed basis.

PG&E, SMUD, Western Area Power Administration (WAPA), and Roseville Electric own and operate electric overhead utilities that cross I-80 in the project area. An electric substation is located on Galleria Boulevard, south of the Roseville Galleria mall. Two parallel overhead electric transmission lines, one owned by PG&E and the other by SMUD, run perpendicular across I-80 just south of the East Roseville Parkway overcrossing. Two steel towers carry the 60 and 230 kilovolt (kV) electric lines over I-80 at the north corner of the Roseville Golfland-Sunsplash parking lot. PG&E also owns a 60 kV overhead electrical facility that crosses over SR 65 near the south abutment of the East Roseville Viaduct.

PG&E provides natural gas to both the Cities of Roseville and Rocklin. Underground gas lines run along Taylor Road in the project area.

Water Supply

The City of Roseville's water is primarily derived from surface sources, mainly American River water delivered through Folsom Lake under the jurisdiction of the U.S. Bureau of Reclamation. The City of Roseville's water distribution system delivers surface water to the City's water treatment plant (WTP) and potable water system. The City also owns and operates wastewater treatment facilities which produce recycled water, delivered through a recycled water distribution system.

The City of Rocklin receives its water supply from the Placer County Water Agency (PCWA). The PCWA service area is currently divided into five zones. The City of Rocklin is located in Zone 1, which is the largest of the five zones. Zone 1 extends north from the northern boundary of the City of Roseville to the City of Auburn and extends northwest to include the City of Lincoln. PCWA's surface water supply sources consist of water purchased from PG&E from the

Yuba and Bear Rivers, Middle Fork Project water from the American River, and Central Valley Project water from the American River. The City of Rocklin is served by three major water lines: a 24-inch line along Pacific Street/Taylor Road, a 30-inch pipeline that supplies water to the Stanford Ranch development north of Sunset Boulevard, and a 42-inch pipeline that runs south from Penryn to Lincoln just outside the project area.

Wastewater/Stormwater

The City of Roseville provides wastewater and stormwater collection and maintenance within the City limits. The City owns and operates two wastewater treatment plants (WWTPs), the Dry Creek WWTP and the Pleasant Grove WWTP. The Dry Creek WWTP serves the southeast portion of the City of Roseville, portions of Placer County, and the South Placer Municipal Utility District (SPMUD). The Pleasant Grove WWTP serves the northwest portion of the City of Roseville, portions of Placer County, and the SPMUD. SPMUD provides sewer collection and maintenance service to the City of Rocklin. SPMUD lines currently run along the I-80 mainline in both the eastbound and westbound directions near the Taylor Road overcrossing and the existing southbound SR 65 to westbound I-80 connector. The City of Rocklin maintains storm drains, pipes, and catch basins within the city. Within unincorporated Placer County, operation and maintenance of sewer services are provided by the County.

Solid Waste

The City of Roseville Solid Waste Division provides residential, commercial, and industrial waste removal within the city. Recology Auburn Placer provides residential and commercial garbage service within the City of Rocklin. Waste from both cities is taken to the Western Regional Sanitary Landfill, which is located about 6 miles northwest of the I-80/SR 65 interchange and is operated by the Western Placer Waste Management Authority.

Communications

Consolidated Communications (formerly SureWest) provides telephone service to the City of Roseville. Consolidated Communications and AT&T provide telephone service to the City of Rocklin. A Consolidated Communications line is located within the existing Taylor Road overcrossing, and a second line is located east of the I-80/SR 65 interchange. Comcast provides local cable television service, and there is an existing line across I-80 near the eastbound auxiliary lane between Douglas Boulevard and Eureka Road.

2.4.1.2 Emergency Services

Police

The City of Roseville Police Department, headquartered at 1051 Junction Boulevard (west of the project area), provides primary law and traffic enforcement in the city. The department maintains a full-service police department with approximately 195 full-time staff, including 127 sworn officers, and other staff as needed to support the department's mission and meet community needs. No Roseville police stations are located in the immediate vicinity of the project area.

The Rocklin Police Department provides police protection services within the City of Rocklin; the nearest police station is located at 4080 Rocklin Road, approximately 0.4 miles north of the project area. As of July 2014, the total staff included 54 sworn officers and 27 professional staff.

The Placer County Sheriff's Department, headquartered at 2929 Richardson Drive in Auburn, provides law enforcement and traffic enforcement to the unincorporated areas of Placer County. The Placer County Sheriff's Department occasionally assists other agencies, including the Cities of Roseville and Rocklin, when requested.

Fire

The City of Roseville is responsible for fire protection services within the city limits and is headquartered at 401 Oak Street, approximately 0.76 miles west of the project area. The Roseville Fire Department has eight existing fire stations and employs approximately 119 staff. In 2012, the department received 12,925 calls for service. The fire department meets its goal of responding to calls in 492 seconds in populated areas approximately 90 percent of the time. The closest station to the project is Fire Station 7 located at 911 Highland Pointe Drive.

In Rocklin, fire prevention, fire suppression, emergency medical, and technical rescue services are provided by the City of Rocklin Fire Department. The nearest station, which is also the headquarters (Fire Station 1), is located at 4060 Rocklin Road, approximately 0.54 miles north of the project area. The Rocklin Fire Department responded to 3,758 emergency calls in 2012.

Ambulance Service

In addition to emergency response services provided by the Roseville and Rocklin fire departments, American Medical Response (AMR) provides ambulance services. AMR is privately owned and maintains response times under 10 minutes for the majority of calls. AMR serves western Placer County and locates ambulances throughout the region, including within Rocklin and Roseville.

2.4.2 Environmental Consequences

This section describes the potential impacts of the proposed project on law enforcement, fire protection, and other emergency service providers. It also discusses potential impacts on utilities. Except for post-project beneficial operational effects on public service providers, all potential adverse impacts are related to construction activities.

2.4.2.1 Build Alternatives

Disruption of Utilities Services during Construction

During construction of any of build alternatives, some utilities may be affected by relocation or extension, which could temporarily disrupt service. New utility lines would be installed prior to impacts on affected lines in order to transition nearly immediately to the new system and minimize any needed service disruption. Under the three build alternatives, the following utilities may be affected.

- The SMUD, WAPA and Roseville Electric electric overhead utilities crossing I-80 would require protection from equipment during construction, but would not be relocated. Roseville Electric also has overhead utilities crossing Taylor Road that would need protection during construction and may require relocation.
- The project would not be in direct conflict with the PG&E 60 kV overhead electric facility that spans SR 65 near the south abutment of the East Roseville Viaduct because the elevation of the viaduct would remain the same. However, there could be clearance conflicts during construction which may require temporary or permanent relocation of the lines.
- PG&E underground gas lines and Roseville Electric underground electric lines on Taylor Road would be avoided, protected in place, or may require relocation depending on the depth of excavation necessary for proposed improvements to Taylor Road.
- The PCWA underground water lines along Taylor Road may require relocation, depending on the depth of excavation needed for proposed improvements to Taylor Road. If possible, the water lines would be protected in place or avoided.
- SPMUD storm drains that run along I-80 mainline in both the eastbound and westbound directions near the Taylor Road overcrossing and the existing southbound SR 65 to westbound I-80 connector may be affected and need to be relocated/replaced.
- The Consolidated Communications line on the Taylor Road overcrossing would be relocated and replaced within the proposed alignment. The second line east of the I-80/SR 65 interchange may require relocation due to the proposed widening on I-80.

Additionally, Alternatives 2 and 3 would require relocation of the SMUD and PG&E transmission towers located in the north corner of the Roseville Golfland-Sunsplash parking lot and may require relocation of the Comcast line across I-80 near Douglas Boulevard and Eureka Road. The Comcast line would be avoided to the extent possible. No permanent or long-term impacts would occur. City of Roseville underground water and sewer lines would be protected in place or avoided. There would be no effect on water supply or distribution facilities, or solid waste facilities. Utility service providers would be responsible for the relocation of facilities.

Increase in Emergency Response Times during Construction

During construction, short-term lane closures would be necessary throughout the project corridor, potentially increasing the response times for emergency service providers under all build alternatives. Caltrans requires Traffic Management Plans (TMPs) for all major construction activities that are expected to affect traffic on the state highway system. Following this requirement, a TMP would be implemented during all phases of construction to facilitate local traffic circulation and through-traffic requirements. Emergency service providers would be notified as early as possible in order to plan for lane closures and other delays related to construction activity. The police and fire departments in Roseville and Rocklin, the Placer County Sheriff Department, AMR, and the California Highway Patrol would be notified in advance of any road closures. It is expected that emergency service providers in the project vicinity would be minimally affected during construction.

Alternative 3, which includes closure of the Taylor Road interchange, could adversely affect provision of emergency services. Within Rocklin, the closure of the Taylor Road interchange not only could affect police and fire department response times but also could affect mutual aid from Placer County and the nearby cities of Roseville and Citrus Heights by eliminating a local access point. Closure of the Taylor Road interchange also could affect response times for the Roseville police and fire departments. After construction is complete, Alternatives 1 and 2 could result in beneficial effects to emergency service providers, because the improved I-80/SR 65 interchange and adjacent interchanges would enhance existing emergency service routes.

2.4.2.2 No Build Alternative

Under the No Build Alternative, the proposed improvements would not be constructed, so no change in operations of emergency service providers or relocations of utilities would occur, including changes and impacts that would be caused by the removal of the Taylor Road interchange (Alternative 3). Because the project would not be constructed, construction activities would not result in potential for delays or interference with law enforcement, fire, or other emergency service providers.

2.4.3 Avoidance, Minimization, and/or Mitigation Measures

2.4.3.1 Avoidance and Minimization Measures

Provide Advance Notification of Road Closures

Advanced notification of any closures would help to ensure that the local emergency service providers could make proper arrangements, in the event that the Taylor Road interchange is eliminated.

Prepare a Transportation Management Plan

Prior to construction, the project proponent will prepare a Transportation Management Plan (TMP) in order to minimize disruptions to traffic and to emergency services during construction. A TMP is a program of activities for alleviating or minimizing work-related traffic delays by applying traditional traffic handling practices and innovative strategies. The TMP program includes public awareness campaigns, motorist information, demand management, incident management, system management, construction methods and staging, and alternate route planning. TMP strategies also strive to reduce the overall duration of work activities where appropriate. Typical components of a TMP can include measures such as implementation of staging, traffic handling, and detour plans; restricting construction work to certain days and/or hours to minimize impacts on traffic and pedestrians; coordination with other construction projects to avoid conflicts; and the use of portable changeable message signs to inform the public and emergency vehicles of construction activities.

Provide Advance Notice to Utility Service Providers

Provide advance notification and coordinate with utility service providers prior to and during construction to avoid or minimize potential service disruptions.

2.4.4 References Cited

ICF International. 2014. *Community Impact Assessment – I-80/SR 65 Interchange Improvements Project*, *Placer County, Interstate 80 and State Route 65*. Sacramento, CA. November.

2.5 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.5.1 Regulatory Setting

Caltrans, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during development of federal-aid highway projects (see 23 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 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 (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR Part 27) implementing Section 504 of the Rehabilitation Act (29 USC 794). FHWA has enacted regulations for implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including transportation enhancement activities.

2.5.2 Affected Environment

This section is based on the *Transportation Analysis Report* completed for the project in August 2014 (Fehr & Peers 2014). The report is available on the project website at http://8065interchange.org/.

2.5.2.1 Study Area

The study area for the *Transportation Analysis Report* extends beyond the immediate vicinity of the I-80/SR 65 interchange, as shown in Figure 2.5-1. I-80 is the principal east–west route in northern and central California, providing all-weather access across the Sierra Nevada for major goods movement into the Sacramento and San Francisco Bay areas. The interstate accommodates high commute, interregional and recreational traffic volumes, as well as high levels of truck freight traffic within the greater Sacramento region. SR 65 is an important interregional route that serves local and regional traffic. The route serves as a major connector for both automobile and truck traffic originating from the I-80 corridor in the Roseville/Rocklin area to the SR 70/99 corridor in the Marysville/Yuba City area. SR 65 is a vital economic link from residential areas to shopping and employment centers in southern Placer County.

2.5.2.2 Methodology and Limitations

The *Transportation Analysis Report* used an integrated modeling approach with three different levels of detail: macro, meso, and micro. Traffic volume forecasts were developed for construction year (2020) and design year (2040) conditions. The forecasts relied on modified inputs to SACOG's Sacramento Regional Travel Demand model based on refinements to land use projects and the planned roadway network. The traffic volume forecasts are influenced by modifications to the existing transportation network according to planned improvement projects anticipated to be constructed by the construction and design years. Because the study area already experiences peak period congestion, which is forecast to worsen, the traffic operations analysis required the use of simulation-based analysis. Therefore, a traffic simulation model was developed as follows. The model was constructed from roadway network (lane configuration), traffic volume (traffic counts), and traffic control (traffic signal and ramp meter) data. Additional detail were incorporated into the network (e.g., posted speed limits, grades) to reflect observed field conditions. Driver behavior parameters were adjusted based on field observations. The distribution of vehicle types was calibrated to local conditions so that the percentages of trucks and HOVs matched the traffic counts.

Additional detail regarding the methodology used for the traffic analysis is contain in the *Transportation Analysis Report* available on the project website at http://8065interchange.org/.

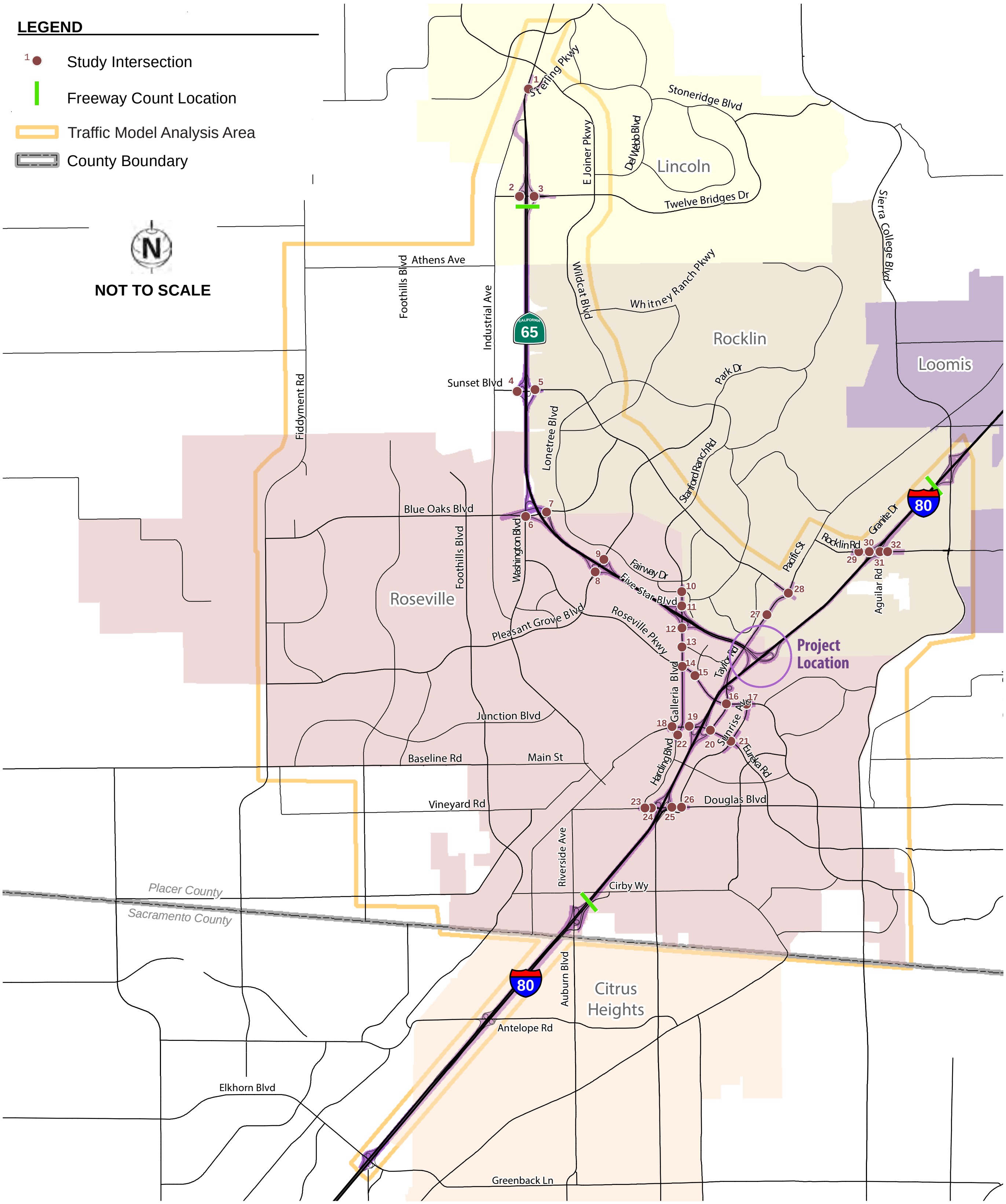
2.5.2.3 Acceptable Traffic Operating Conditions

Level of service (LOS) is a qualitative measure of traffic operations from a driver's perspective; it varies from LOS A (the best) to LOS F (the worst), and is one of the main evaluation criteria for the *Transportation Analysis Report*. Tables 2.5-1 and 2.5-2 describe the LOS thresholds from the *Highway Capacity Manual* (Transportation Research Board 2011) for freeway sections and signalized intersections, respectively.

Table 2.5-1. Freeway LOS Descriptions

LOS	Average Density (vplpm)		Description
	Basic Sections	Ramp Junction & Weave Sections	
A	<11	< 10	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver.
B	> 11 to 18	> 10 to 20	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.
C	> 18 to 26	> 20 to 28	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.
D	> 26 to 35	> 28 to 35	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.
E	> 35 to 45	> 35 to 43	Operation at capacity. There are virtually no usable gaps within the traffic stream leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.
F	> 45	> 43	Represents a breakdown in flow.

Note: vplpm = vehicles per lane per mile
Source: Fehr & Peers 2014.



Source: Fehr & Peers, 2014.

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Figure 2.5-1
Study Area

Table 2.5-2. Signalized Intersection LOS Descriptions

LOS	Average Delay (sec/veh)	Description
A	< 10	Very low delay occurs with favorable progression and/or short cycle length.
B	> 10 to 20	Low delay occurs with good progression and/or short cycle lengths.
C	> 20 to 35	Average delays result from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.
D	> 35 to 55	Longer delays occur due to a combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop and individual cycle failures are noticeable.
E	> 55 to 80	High delay values indicate poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.
F	> 80	Delays are unacceptable to most drivers due to over-saturation, poor progression, or very long cycle lengths.

Note: sec/veh = seconds per vehicle

Source: Fehr & Peers 2014.

The project has the potential to affect traffic operations across multiple jurisdictions. LOS is used to assess effects because each affected agency has established policies and thresholds related to LOS expectations. The acceptable traffic operating conditions for each jurisdiction in the study area is described below.

California Department of Transportation

According to the *Interstate 80 and Capital City Freeway Corridor System Management Plan and the State Route 65 Corridor System Management Plan* (Caltrans District 3, May 2009), Caltrans has identified the minimum acceptable LOS for the following segments.

- LOS F for I-80 from Riverside Avenue/Auburn Boulevard to Sierra College Boulevard
- LOS F for SR 65 from I-80 to Blue Oaks Boulevard
- LOS E for SR 65 from Blue Oaks Boulevard to Industrial Avenue (Lincoln Boulevard)

LOS E conditions are desired when feasible, but LOS F conditions are likely to occur in the study area under no build conditions as recognized by the concept LOS thresholds. The LOS E threshold will be used to identify minimum acceptable operations (that is, deficiencies) and potential impacts on state highway mainline segments, ramp junctions, weaving segments, and ramp terminal intersections. For locations with LOS F under the No Build Alternative, an impact would occur if the three build alternatives would worsen the LOS F condition based on the quantitative performance measure associated with the specific type of analysis.

City of Lincoln

For study intersections within the City of Lincoln, the *City of Lincoln General Plan* (Adopted March 2008) contains the following LOS policies:

- Strive to maintain a LOS "C" at all signalized intersections in the City during the PM peak hours.
- The City shall coordinate with Caltrans in order to strive to maintain a minimum LOS "D" for SR 65 and SR 193.

With construction of the SR 65 bypass, the analysis locations on Lincoln Boulevard in Lincoln are local intersections. As a result, LOS C will serve as the minimum acceptable LOS for the intersections on Lincoln Boulevard and Twelve Bridges Drive for both a.m. and p.m. peak hours.

City of Roseville

For study intersections within the City of Roseville, the *City of Roseville General Plan* (Adopted May 5, 2010) LOS policy states:

- Maintain a level of service (LOS) "C" standard at a minimum of 70 percent of all signalized intersections and roadway segments in the City during the PM peak hours.

Some of the study intersections are shown in the General Plan to operate at worse than LOS C under the conditions identified in the General Plan in year 2025. For this project, the following criteria are proposed.

- For intersections shown to be operating at LOS C or better in the General Plan under 2025 conditions, LOS C will be used as the minimum acceptable LOS.
- For intersections shown to be operating at LOS D in the General Plan under 2025 conditions, LOS D will be used as the minimum acceptable LOS.
- For intersections shown to be operating at LOS E in the General Plan under 2025 conditions, LOS E will be used as the minimum acceptable LOS.
- For intersections shown to be operating at LOS F in the General Plan under 2025 conditions, LOS F and the corresponding delay will be used as the minimum acceptable LOS.

Using the above criteria, LOS D is the minimum acceptable LOS for the Stanford Ranch Road/Galleria Boulevard ramp terminal and Roseville Parkway/Taylor Road intersections, and LOS E is the minimum acceptable LOS for the Galleria Boulevard/Roseville Parkway, Roseville Parkway/Taylor Road, Eureka Road/Taylor Road/I-80 eastbound ramps, and Douglas Boulevard/Harding Boulevard intersections. For all other Roseville intersections, LOS C is the minimum acceptable LOS. These thresholds will be used for both the a.m. and p.m. peak hours in both the construction and design year analysis.

City of Rocklin

For study intersections within the City of Rocklin, the *City of Rocklin General Plan* (Adopted October, 2012), Section C (Circulation Element) Policy C-10 states:

- **A.:** Maintain a minimum traffic Level of Service "C" for all signalized intersections during the p.m. peak hour on an average weekday, except in the circumstances described in C-10.B and C. below.

Based on this standard, LOS C is the minimum acceptable LOS for intersections in the City of Rocklin.

2.5.2.4 Existing Conditions

Network performance and traffic operations were analyzed for existing (2012) conditions under a.m. and p.m. peak-period and peak-hour conditions. Detailed exhibits and technical background is included in the *Transportation Analysis Report* available on the project website at http://8065interchange.org/.

Existing Network Performance

Table 2.5-3 summarizes the overall traffic operations performance of the network. The p.m. peak period has the highest level of travel and delay with the most congestion, lasting up to 3 hours for select segments.

Table 2.5-3. Network Performance Summary – Existing (2012) Peak Period Conditions

Measure of Effectiveness	A.M. Peak Period (6:00 to 10:00)	P.M. Peak Period (3:00 to 7:00)
Vehicle miles of travel	645,270	730,100
Vehicle hours of travel	13,760	16,850
Vehicle hours of delay	2,670	3,950
Average travel speed (mph)	46.9	43.3

Note: mph = miles per hour
Source: Fehr & Peers 2014.

Existing Freeway Operations

Table 2.5-4 includes select LOS results for freeway operations that demonstrate the overall conditions. A complete list of existing operations data is in the *Transportation Analysis Report* available on the project website at http://8065interchange.org/. During the a.m. peak hour, congested LOS F conditions occur on northbound SR 65 at the I-80 on-ramp and southbound SR 65 between Blue Oaks Boulevard and Pleasant Grove Boulevard. On northbound SR 65, the merging of the westbound I-80 on-ramp causes congestion. For southbound SR 65, the constraint is the high demand from the mainline combined with the Pleasant Grove Boulevard on-ramp volume.

During the p.m. peak hour, the primary bottleneck is northbound SR 65 at the on-ramp from westbound I-80. This bottleneck results in LOS F conditions on eastbound I-80 at the SR 65 off-ramp. LOS E conditions exist from Taylor Road to Eureka Road, with the rightmost lanes mostly congested (queued from the SR 65 off-ramp) while the left lanes operate with higher speeds. The Eureka Road off-ramp has LOS F conditions due to queues spilling back from the ramp terminal intersection. During summer 2012, queues regularly extended to the mainline due to recreational trips generated by the water park on Taylor Road. After the Eureka Road widening project was completed in 2013, the peak-hour off-ramp queues no longer extended to the mainline. Westbound I-80 has LOS E conditions at the SR 65 off-ramp due to the same bottleneck.

LOS D/E conditions occur farther north on northbound SR 65 between Stanford Ranch Road and Pleasant Grove Boulevard. If the bottleneck at I-80 were relieved, this downstream section would likely become congested.

Table 2.5-4. Selected Freeway Operations Results – Existing (2012) Peak Hour Conditions

Freeway	Location	A.M. Peak Hour	P.M. Peak Hour
Eastbound I-80	Eureka Road off-ramp	C / 26	**F / 46**
	Eureka Road off-ramp to on-ramp	C / 21	C / 23
	Eureka Road eastbound on-ramp	B / 19	B / 20
	Eureka Road to Taylor Road	C / 23	E / 42
	Taylor Road to SR 65	D / 28	E / 42
	SR 65 off-ramp	C / 28	**F / 52**
Westbound I-80	SR 65 off-ramp	B / 19	E / 35
	Douglas Boulevard off-ramp	D / 32	C / 26
	Douglas Boulevard westbound on-ramp	E / 36	D / 34
	Douglas Boulevard eastbound on-ramp	E / 42	E / 37
	Douglas Boulevard to Riverside Avenue	D / 33	D / 31
	Riverside Avenue off-ramp	E / 40	E / 36
Northbound SR 65	I-80 westbound on-ramp	**F / 53**	**F / 95**
	I-80 to Stanford Ranch Road	D / 32	**F / 77**
	Stanford Ranch Road off-ramp	D / 33	**F / 62**
Southbound SR 65	Blue Oaks Boulevard westbound on-ramp	**F / 60**	B / 20
	Blue Oaks Boulevard to Pleasant Grove Boulevard	**F / 75**	C / 21
	Pleasant Grove Boulevard off-ramp to on-ramp	**F / 89**	C / 25
	Pleasant Grove Boulevard westbound on-ramp	**F / 72**	D / 31
	Pleasant Grove Boulevard eastbound on-ramp	**F / 53**	E / 39
	Pleasant Grove Boulevard to Galleria Boulevard	E / 36	D / 32
	Galleria Boulevard off-ramp	E / 35	D / 32

Notes: **Bold** and underline font indicate LOS F conditions. The level of service and average density for the study segment are reported.

Source: Fehr & Peers 2014.

Existing Arterial Intersection Operations

Table 2.5-5 shows the LOS and average delay at key study intersections under existing (2012) conditions. All of the study intersections operate acceptably, except the Blue Oaks Boulevard/Washington Boulevard/SR 65 southbound ramps (LOS D during the a.m. peak hour) and the Rocklin Road/Granite Drive intersection (LOS D during the p.m. peak hour). During the a.m. peak hour, all intersections operate at LOS C or better, except for the Roseville Parkway/Sunrise Avenue and Blue Oaks Boulevard/Washington Boulevard intersections which operate at LOS D. During the p.m. peak hour, the following five intersections operate at LOS D or E: Galleria Boulevard/ Roseville Parkway, Roseville Parkway/Sunrise Avenue, Eureka Road/Taylor Road/ I-80 eastbound ramps, Douglas Boulevard/Sunrise Avenue, and Rocklin Road/Granite Drive.

Table 2.5-5. Selected Intersection Operations Results – Existing (2012) Peak Hour Conditions

Intersection	A.M. Peak Hour	P.M. Peak Hour
Blue Oaks Boulevard / Washington Boulevard / SR 65 southbound ramps	**D / 43**	C / 33
Stanford Ranch Road / Five Star Boulevard	B / 19	C / 32
Stanford Ranch Road / SR 65 northbound ramps	A / 9	B / 15
Galleria Boulevard / SR 65 southbound ramps	B / 13	B / 19
Galleria Boulevard/ Antelope Creek Drive	B / 10	C / 24
Galleria Boulevard/ Roseville Parkway	C / 30	D / 36
Roseville Parkway / Creekside Ridge Drive	A / 6	B / 17
Roseville Parkway / Taylor Road	C / 30	C / 28
Roseville Parkway / Sunrise Avenue	D / 37	D / 37
Atlantic Street / Wills Road	B / 10	B / 12
Atlantic Street / I-80 westbound ramps	A / 7	B / 11
Eureka Road / Taylor Road / I-80 eastbound ramps	C / 26	E / 61
Eureka Road / Sunrise Avenue	C / 24	C / 30
Douglas Boulevard / Sunrise Avenue	C / 26	D / 35
Pacific Street / Sunset Boulevard	B / 18	C / 29
Rocklin Road / Granite Drive	B / 15	**D / 37**
Rocklin Road / I-80 westbound ramps	C / 21	B / 17
Rocklin Road / I-80 eastbound ramps	B / 17	B / 20
Rocklin Road / Aguilar Road	A / 8	B / 13

Note: **Bold** and underline font indicate unacceptable operations. The LOS and average delay in seconds per vehicle are reported.
Source: Fehr & Peers 2014.

2.5.2.5 Traffic Safety

Table 2.5-6 summarizes the traffic accident data compiled by the Caltrans Traffic Accident Surveillance and Analysis System (TASAS). The data shown are for the 3-year period between April 1, 2009, and March 31, 2012 for the freeway sections and ramps adjacent to the I-80/SR 65 interchange.

Table 2.5-6. Mainline Accident History (April 1, 2009 – March 31, 2012)

Location/Section	Total Accidents	Total Fatalities	Actual Collision Rate[a]			Average Collision Rate[a]		
			F	F&I	Total	F	F&I	Total
Eastbound I-80 (p.m. 2.2 to 4.2): Douglas Boulevard on-ramp to SR 65 off-ramp	256	2	**<u>0.012</u>**	**<u>0.56</u>**	**<u>1.52</u>**	0.004	0.28	0.90
Eastbound I-80 (p.m. 4.2 to 5.9): SR 65 off-ramp to Rocklin Road off-ramp	52	0	0.000	0.15	0.48	0.004	0.27	0.87
Westbound I-80 (p.m. 4.3 to 5.9): Rocklin Road on-ramp to SR 65 off-ramp	81	1	**<u>0.010</u>**	**<u>0.34</u>**	0.81	0.004	0.27	0.87
Westbound I-80 (p.m. 2.2 to 4.3): SR 65 off-ramp to Douglas Boulevard off-ramp	189	1	**<u>0.006</u>**	**<u>0.31</u>**	**<u>1.08</u>**	0.004	0.28	0.90
Northbound SR 65 (p.m. R4.9 to 6.9): I-80 on-ramp to Pleasant Grove Boulevard off-ramp	55	1	**<u>0.009</u>**	0.15	0.5	0.006	0.33	1.02
Southbound SR 65 (p.m. R4.9 to 7.1): Pleasant Grove Boulevard westbound on-ramp to I-80 off-ramp	95	0	0.000	0.29	0.77	0.006	0.34	1.04

Notes: The post mile (PM) limits are provided in the first column. Bold and underline font indicate actual accident rates that are higher than the statewide average for similar facilities.

[a] The accident rate is accidents per million vehicle-miles. “F” refers to the fatality rate, and “F&I” refers to the fatality and injury rate. “Total” includes non-injury accidents, which are not listed separately.

Source: Fehr & Peers 2014, Table 9.

Within the study area, 728 collisions occurred on the freeway sections during the 3-year period. The total collision rates were higher than statewide averages for eastbound and westbound I-80 between Douglas Boulevard and SR 65. This location has the highest volume and experiences the most severe congestion during peak periods. Therefore, drivers in this section are more likely to experience speed differentials and exposure to conflicts. The fatality and injury collision rate for westbound I-80 between Rocklin Road and SR 65 is also greater than the statewide average. As this section is the first congested area drivers may experience when approaching the metropolitan Sacramento area from the east, the potential is high for crashes due to driver inattentiveness.

Table 2.5-7 categorizes the accidents within the 3-year period studied according to accident type. The most frequent collision type (62 percent) is a rear-end collision, which is typical of congested conditions. The next most frequent collision types are side-swipe and hit object. The other collision types are collectively less than 10 percent of all collisions. The freeway section with the higher than average collision rates, I-80 between Douglas Boulevard and SR 65, also has the highest number of rear-end collisions.

Table 2.5-7. Mainline Collisions by Type (April 1, 2009 – March 31, 2012)

Location	Head On	Side Swipe	Rear End	Broad-side	Hit Object	Overturn	Auto-Ped	Other
Eastbound I-80: Douglas Boulevard on-ramp to SR 65 off-ramp	0	42	175	6	24	3	1	3
Eastbound I-80: SR 65 off-ramp to Rocklin Road off-ramp	0	14	19	1	16	0	1	1
Westbound I-80: Rocklin Road on-ramp to SR 65 off-ramp	0	48	105	2	21	6	1	5
Westbound I-80: SR 65 off-ramp to Douglas Boulevard off-ramp	0	8	53	2	11	2	2	1
NB SR 65: I-80 on-ramp to Pleasant Grove Boulevard off-ramp	0	6	34	1	10	1	1	2
SB SR 65: Pleasant Grove Boulevard westbound on-ramp to I-80 off-ramp	0	13	67	1	14	0	0	0
Total	**0**	**131 (18%)**	**453 (62%)**	**13 (2%)**	**96 (13%)**	**12 (2%)**	**6 (1%)**	**12 (2%)**

Source: Fehr & Peers 2014, Table 10.

Table 2.5-8 summarizes the accident history for the ramps within the 3-year study period. Of the 728 collisions that occurred on the freeway system in the study area, 20 percent (148) occurred on the ramps at Eureka Road/Atlantic Street, Taylor Road, I-80/SR 65, and Stanford Ranch Road/Galleria Boulevard interchanges. Three ramps each on eastbound and westbound I-80 have higher than average total collision rates. In the eastbound direction, they are the loop ramps at Eureka Road, Taylor Road, and SR 65. In the westbound direction, the two SR 65 ramps and the Atlantic Street on-ramp have higher than average collision rates. On SR 65, both on-ramps at Stanford Ranch Road/Galleria Boulevard have higher than average accident rates.

Table 2.5-8. Ramp Accident History (April 1, 2009 – March 31, 2012)

Location/Section	Total Accidents	Total Fatalities	Actual Collision Rate			Average Collision Rate		
			F	F&I	Total	F	F&I	Total
Eastbound I-80 off-ramp to Eureka Road (p.m. 2.9)	13	0	0.000	0.16	1.01	0.003	0.34	1.01
Eastbound I-80 on-ramp from eastbound Eureka Road (p.m. 3.0)	3	0	0.000	**0.37**	**1.10**	0.002	0.21	0.73
Eastbound I-80 on-ramp from westbound Eureka Road (p.m. 3.2)	6	0	0.000	**0.25**	0.51	0.003	0.18	0.57
Eastbound I-80 off-ramp to Taylor Road (p.m. 3.6)	7	0	0.000	**0.62**	**1.44**	0.003	0.30	1.03
Eastbound I-80 off-ramp to SR 65 (p.m. 4.2)	31	0	0.000	**0.29**	**0.98**	0.004	0.20	0.68
Eastbound I-80 on-ramp from SR 65 (p.m. 4.5)	2	0	0.000	**0.17**	0.17	0.003	0.14	0.41
Westbound I-80 off-ramp to SR 65 (p.m. 4.3)	9	1	**0.070**	**0.42**	**0.63**	0.005	0.13	0.38
Westbound I-80 on-ramp from SR 65 (p.m. 4.0)	21	0	0.000	**0.18**	**0.75**	0.003	0.11	0.32
Westbound I-80 on-ramp from Taylor Road (p.m. 3.6)	3	0	0.000	0.00	0.54	0.003	0.18	0.57
Westbound I-80 off-ramp to westbound Atlantic Street (p.m. 3.2)	2	0	0.000	0.23	0.46	0.004	0.24	0.75
Westbound I-80 off-ramp to eastbound Atlantic Street (p.m. 3.0)	0	0	0.000	0.00	0.00	0.003	0.30	1.06
Westbound I-80 on-ramp from Atlantic Street (p.m. 2.8)	9	0	0.000	**0.32**	**0.71**	0.002	0.22	0.63
Northbound SR 65 off-ramp to Stanford Ranch Road (p.m. R5.7)	2	0	0.000	0.06	0.11	0.002	0.08	0.25
Northbound SR 65 on-ramp from Stanford Ranch Road (p.m. R6.2)	22	0	0.000	**0.88**	**2.15**	0.002	0.22	0.63
Southbound SR 65 off-ramp to Galleria Boulevard (p.m. R6.2)	2	0	0.000	0.09	0.18	0.002	0.08	0.25
Southbound SR 65 on-ramp from Galleria Boulevard (p.m. R5.7)	16	0	0.000	**0.45**	**0.90**	0.002	0.22	0.63

Notes: The post mile (PM) limits are provided in the first column. Bold and underline font indicate actual accident rates that are higher than the statewide average for similar facilities.

[a] The accident rate is accidents per million vehicle-miles. "F" refers to the fatality rate, and "F&I" refers to the fatality and injury rate. "Total" includes non-injury accidents, which are not listed separately.

Source: Fehr & Peers 2014, Table 11.

2.5.2.6 Pedestrian and Bicycle Facilities

Sidewalks are provided adjacent to developed areas within the project area, except for Taylor Road between just east of Roseville Parkway and Pacific Street. Within the study area, the availability of sidewalks varies depending on the level and type of development. Signalized crosswalks are provided at major intersections throughout the study area.

The City of Roseville's existing bikeway system includes 27 miles of Class I, off-street bicycle trails; 83 miles of Class II, pavement-marked, on-street bicycle lanes; and 9 miles of Class III, on-street and signed bicycle routes. Roseville also permits bicycling on all public sidewalks, except a select few in downtown Roseville. In some instances (typically along arterial roads), the City provides wide sidewalks that are referred to as Class 1A side paths. These are intended to supplement on-street bike lanes. Since sidewalks, including Class IA side paths, are primarily intended and designed to serve pedestrians, the City does not sign or map Class IA side paths or other sidewalks as bikeways (ICF International 2014).

The City of Rocklin has Class II on-street bike lanes on numerous roadways throughout the city. There are several Class I bikeways, including one along Antelope Creek. An additional Class I bikeway is proposed along Secret Ravine Creek (ICF International 2014).

The following Class I bicycle paths are adjacent to or within 0.5 mile of the project area.

- Highland Reserve South Open Space Preserve Trail (Highland Reserve Trail) (existing and proposed) (in Roseville)
- Shea Center Trail (existing and proposed) (in Roseville)
- Conference Center/Galleria Trail (proposed) (in Roseville)
- Secret Ravine Trail (existing and proposed) (in Roseville and Rocklin)
- Antelope Creek Trail (existing) (Roseville and Rocklin)
- Miners Ravine Trail (existing and proposed) (in Roseville)

The following Class II bicycle lanes are located within the project limits.

- Bicycle lane along Lead Hill Boulevard between Harding Boulevard and Sunrise Avenue.
- Bicycle lane along Taylor Road between Eureka Road and I-80 immediately south of I-80.
- Bicycle lane along Roseville Parkway between the Miners Ravine Trail and Antelope Creek Trail.
- Bicycle lane along Galleria Boulevard immediately south of and north of SR 65.

2.5.3 Environmental Consequences

2.5.3.1 Build Alternatives

Future year travel demand forecasts were developed for the design (2040) and construction (2020) year for the three build alternatives. A technical description of the traffic forecast and operations analysis methodologies is included in the *Transportation Analysis Report*. A summary of the findings is presented below.

Design Year (2040) Network Performance

Overall network performance statistics for a.m. and p.m. peak period operations during the design year are summarized below and in Tables 2.5-9 and 2.5-10 for Alternatives 1 through 3 and the No Build Alternative.

- Overall, the build alternatives improve overall network performance compared to no-build conditions.

- The three build alternatives serve nearly all of the peak-period demand volume, but the No Build Alternative does not. Some of the No Build Alternative metrics appear to perform better than the Build Alternatives because the results do not fully account for vehicles that could not enter the network during the peak periods. At the end of the four-hour analysis period, traffic would still be congested under the No Build Alternative.
- Alternative 2 has slightly lower delay and higher average speed during the a.m. peak period than the other two build alternatives. Compared to Alternative 1, Alternative 2 has fewer freeway ramps, which minimizes freeway congestion. Although Alternative 3 has even fewer ramps, the local system is more congested, offsetting the benefit to the freeway network.
- The p.m. peak-period results reveal that Alternative 1 serves the most vehicles with the lowest delay for vehicles and persons, as well as the lowest travel times for single-occupant vehicles (SOVs) and HOVs. In this case, the additional ramps to and from the east at Taylor Road reduce the demand for the ramps to and from the east at Eureka Road/Atlantic Street and, consequently, the weaving volume between Eureka Road/Atlantic Street and SR 65.
- The a.m. peak-hour SOV travel time from Blue Oaks Boulevard to Antelope Road for the build alternatives is worse under design year conditions than existing conditions. Even with a future project to provide an auxiliary lane from Douglas Boulevard to Riverside Avenue, this location is predicted to be a bottleneck.
- The p.m. peak-hour SOV travel time from Auburn Boulevard to Blue Oaks Boulevard for the build alternatives is similar or better under design year than existing conditions. The improvement is due to auxiliary lane and HOV lane improvements that are common to all alternatives.
- For all build alternatives, a.m. and p.m. HOV travel times are better than existing conditions.

Table 2.5-9. Comparison of Overall Network Performance – Design Year (2040) A.M. Peak Period Conditions

Performance Measure		Existing Conditions	Design Year Conditions			
			Alternative 1	Alternative 2	Alternative 3	No Build
Volume served (% of total demand)		143,450 (100%)	207,230 (99%)	206,770 (99%)	206,770 (99%)	200,650 (95%)
Vehicle miles of travel		645,270	920,910	921,610	915,790	831,280
Person miles of travel[a]		786,260	1,106,120	1,110,890	1,100,400	1,004,060
Vehicle hours of travel[b]		13,760	21,450	21,190	21,450	26,470
Vehicle hours of delay (% of vehicle hours of travel)		2,670 (19%)	5,560 (26%)	5,310 (25%)	5,660 (26%)	12,040 (46%)
Average delay per vehicle (minutes)		1.12	1.61	1.54	1.64	3.60
Person hours of delay		3,240	6,360	6,080	6,520	13,880
Average speed (miles per hour)		46.9	42.9	43.5	42.7	31.4
Average speed for HOVs		47.0	46.8	47.5	46.1	36.2
Travel time: Blue Oaks Boulevard to Antelope Road (minutes:seconds)	SOV	9:44	14:59	14:31	14:09	9:29
	HOV	9:27	8:45	8:43	8:44	8:31

Notes: HOV = high occupancy vehicles, SOV = single-occupant vehicle
Source: Fehr & Peers 2014, Table 17.
[a] Person miles of travel= the average vehicle occupancy multiplied by the vehicle miles of travel.
[b] Vehicle hours of travel is the sum of the travel times for each modeled vehicle.

Table 2.5-10. Comparison of Overall Network Performance – Design Year (2040) P.M. Peak Period Conditions

Performance Measure		Existing Conditions	Design Year Conditions			
			Alternative 1	Alternative 2	Alternative 3	No Build
Volume served (% of total demand)		198,170 (101%)	300,410 (100%)	300,020 (100%)	300,690 (100%)	259,410 (86%)
Vehicle miles of travel		730,100	1,114,000	1,109,610	1,110,480	863,410
Person miles of travel[a]		880,180	1,355,200	1,349,510	1,352,230	1,071,230
Vehicle hours of travel[b]		16,850	29,970	30,790	30,680	43,430
Vehicle hours of delay (% of vehicle hours of travel)		3,950 (23%)	10,300 (34%)	11,210 (36%)	11,080 (36%)	28,070 (65%)
Average delay per vehicle (minutes)		1.20	2.06	2.24	2.21	6.49
Person hours of delay		4,670	12,020	13,020	12,900	32,910
Average speed (miles per hour)		43.3	37.2	36.0	36.2	19.9
Average speed for HOVs		44.7	40.8	40.1	40.1	24.7
Travel time: Blue Oaks Boulevard to Antelope Road (minutes:seconds)	SOV	9:16	7:52	9:38	9:07	45:38
	HOV	9:11	6:28	6:30	6:29	15:38

Notes: HOV = high occupancy vehicle, SOV = single occupant vehicle
Source: Fehr & Peers 2014, Table 18.
[a] Person miles of travel= the average vehicle occupancy multiplied by the vehicle miles of travel.
[b] Vehicle hours of travel is the sum of the travel times for each modeled vehicle.

Construction Year (2020) Network Performance

Overall network performance statistics for a.m. and p.m. peak period operations during the construction year are summarized for Alternatives 1 through 3 and the No Build Alternative in Tables 2.5-11 and 2.5-12. The tables show the following.

- Overall, the build alternatives improve network performance compared to no-build conditions.
- The three build alternatives serve all of the peak-period demand volume, but the No Build Alternative does not. At the end of the four-hour analysis period, traffic would still be congested under the No Build Alternative.
- During the a.m. peak period, Alternative 3 has the lowest delay and highest average speed. However, all three build alternatives have about the same results.
- During the p.m. peak period, Alternative 2 has the lowest delay and highest average speed. Because all three build alternatives have similar freeway operations (no congested segments), the data indicates that the arterial network is performing more efficiently for Alternative 2.
- The a.m. peak-hour SOV travel time from Blue Oaks Boulevard to Antelope Road is better for Alternative 2 than Alternative 3 even though Alternative 3 has lower overall delay.
- The p.m. peak-hour travel time from Auburn Boulevard to Blue Oaks Boulevard for the build alternatives is similar.
- For all build alternatives, a.m. and p.m. travel times are better than existing conditions.

Table 2.5-11. Comparison of Overall Network Performance – Construction Year (2020) A.M. Peak Period Conditions

Performance Measure		Existing Conditions	Construction Year Conditions			
			Alternative 1	Alternative 2	Alternative 3	No Build
Volume served (% of total demand)		143,450 (100%)	168,990 (100%)	167,770 (99%)	167,860 (99%)	163,780 (96%)
Vehicle miles of travel		645,270	794,080	788,250	788,060	740,650
Person miles of travel[a]		786,260	976,830	970,480	970,660	909,000
Vehicle hours of travel[b]		13,760	16,990	16,800	16,760	23,040
Vehicle hours of delay (% of vehicle hours of travel)		2,670 (19%)	3,360 (20%)	3,300 (20%)	3,260 (20%)	10,330 (45%)
Average delay per vehicle (minutes)		1.12	1.19	1.18	1.17	3.78
Person hours of delay		3,240	3,990	3,930	3,890	12,370
Average speed (miles per hour)		46.9	46.7	46.9	47.0	32.1
Average speed for HOVs		47.0	49.0	49.2	49.1	34.4
Travel time: Blue Oaks Boulevard to Antelope Road (minutes:seconds)	SOV	9:44	8:56	8:45	9:22	17:10
	HOV	9:27	8:30	8:30	8:39	13:58

Notes: HOV = high occupancy vehicle, SOV = single occupant vehicle
Source: Fehr & Peers 2014, Table 25.
[a] Person miles of travel= the average vehicle occupancy multiplied by the vehicle miles of travel.
[b] Vehicle hours of travel is the sum of the travel times for each modeled vehicle.

Table 2.5-12. Comparison of Overall Network Performance – Construction Year (2020) P.M. Peak Period Conditions

Performance Measure		Existing Conditions	Construction Year Conditions			
			Alternative 1	Alternative 2	Alternative 3	No Build
Volume served (% of total demand)		198,170 (101%)	234,970 (101%)	235,230 (101%)	235,090 (101%)	216,610 (91%)
Vehicle miles of travel		730,100	934,490	931,460	930,080	805,450
Person miles of travel[a]		880,180	1,155,450	1,152,400	1,151,470	998,020
Vehicle hours of travel[b]		16,850	21,500	21,290	21,620	37,230
Vehicle hours of delay (% of vehicle hours of travel)		3,950 (23%)	5,080 (24%)	4,940 (23%)	5,300 (25%)	23,020 (62%)
Average delay per vehicle (minutes)		1.20	1.30	1.26	1.35	6.38
Person hours of delay		4,670	6,140	5,970	6,420	27,150
Average speed (miles per hour)		43.3	43.5	43.7	43.0	21.6
Average speed for HOVs		44.7	45.2	45.4	44.7	25.8
Travel time: Blue Oaks Boulevard to Antelope Road (minutes:seconds)	SOV	9:16	6:26	6:28	6:26	35:10
	HOV	9:11	6:23	6:23	6:23	14:07

Notes: HOV = high occupancy vehicle, SOV = single occupant vehicle
Source: Fehr & Peers 2014, Table 26.
[a] Person miles of travel= the average vehicle occupancy multiplied by the vehicle miles of travel.
[b] Vehicle hours of travel is the sum of the travel times for each modeled vehicle.

Design Year (2040) Traffic Operations

Overall, the project is required to satisfy two conditions for an operational deficiency to occur. First, the study location must operate at a worse LOS than the acceptable traffic operating conditions identified in Section 2.5.2.2, above. Second, the study location must operate at a worse condition (higher delay for intersections or higher density for freeway segments) than the similar case for the No Build Alternative.

The locations of operational deficiencies in the design year (2040) are shown by alternative in Tables 2.5-13 through 2.5-16 to support the traffic avoidance and minimization discussions below. The potential operational deficiencies to I-80 west of the project area could not be quantified; however the model extended to the Greenback Lane/Elkhorn Boulevard/I-80 interchange. The improved performance of the No Build Alternative compared to the build alternatives at some of the freeway segment locations is caused in part by different forecast assumptions used for the Build versus No Build Alternatives in the *Transportation Analysis Report*, and in part by upstream congestion that affects downstream operations. An operational deficiency occurs where the design year LOS threshold is exceeded and the conditions are worse than the No Build Alternative.

Table 2.5-13. Selected Freeway Operations Results – Design Year (2040) A.M. Peak Period Conditions

Freeway	Location	Alternative 1	Alternative 2	Alternative 3	No Build
Eastbound I-80	Auburn Boulevard on-ramp	D / 33	E / 36	D / 33	**F / 55**
	Auburn Boulevard to Douglas Boulevard	E / 40	E / 37	E / 39	**F / 78**
	Douglas Boulevard eastbound off-ramp	D / 31	D / 29	D / 33	**F / 71**
	Douglas Boulevard westbound off-ramp	C / 26	C / 26	E / 36	**F / 127**
	Douglas Boulevard on-ramp	D / 35	C / 26	C / 26	**F / 153**
	Eureka Road off-ramp	E / 37			**F / 114**
	Eureka Road to SR 65	C / 23	D / 30	D / 31	**F / 131**
	Taylor Road off-ramp	B / 16	-	-	
	SR 65 off-ramp	-	C / 25	C / 25	**F / 86**
	SR 65 on-ramp	D / 30	D / 30	D / 30	B / 20
Westbound I-80	Rocklin Road to HOV lane start	D / 32	D / 31	D / 32	D / 29
	SR 65 off-ramp	C / 24	C / 22	C / 23	C / 27
	SR 65 to Atlantic Street	**F / 90**	**F / 83**	**F / 78**	C / 27
	Atlantic Street eastbound off-ramp	**F / 112**	**F / 107**	**F / 111**	**F / 53**
	Atlantic Street off- to on-ramp	**F / 109**	**F / 104**	**F / 112**	C / 24
	Atlantic Street on-ramp	**F / 75**	**F / 73**	**F / 77**	C / 28
	Douglas Boulevard off-ramp	**F / 63**	**F / 60**	**F / 63**	C / 21
	Douglas Boulevard off- to on-ramp	**F / 87**	**F / 88**	**F / 87**	D / 32
	Douglas Boulevard westbound on-ramp	**F / 113**	**F / 113**	**F / 112**	C / 25
	Douglas Boulevard eastbound on-ramp	**F / 77**	**F / 76**	**F / 76**	C / 23
	truck scales off- to on-ramp	**F / 47**	E / 40	E / 39	D / 30
	truck scales on-ramp	**F / 77**	**F / 70**	**F / 63**	D / 35
	truck scales to Elkhorn Boulevard	**F / 56**	**F / 57**	**F / 55**	E / 39
	Elkhorn Boulevard off-ramp	E / 36	E / 35	E / 37	D / 29
	Elkhorn Boulevard off- to on-ramp	**F / 54**	**F / 49**	**F / 65**	D / 28
	Elkhorn Boulevard westbound on-ramp	**F / 72**	**F / 55**	**F / 80**	C / 28
	Elkhorn Boulevard eastbound on-ramp	**F / 67**	**F / 61**	**F / 71**	E / 39
Northbound SR 65	I-80 to Stanford Ranch Road	C / 27	C / 26	C / 26	**F / 57**
	Stanford Ranch Road off- to on-ramp	**F / 47**	**F / 47**	**F / 47**	D / 27
	Stanford Ranch Road on-ramp	**F / 61**	**F / 57**	**F / 61**	D / 30
	Stanford Ranch Road to Pleasant Grove Boulevard	E / 44	**F / 46**	**F / 45**	
	Pleasant Grove Boulevard off-ramp	E / 40	E / 39	E / 40	
	Whitney Ranch Parkway westbound on-ramp	C / 26	D / 30	C / 25	C / 24
	Twelve Bridges Drive off-ramp	D / 30	D / 33	D / 28	C / 26
Southbound SR 65	Ferrari Ranch Road eastbound on-ramp	**F / 133**	**F / 97**	**F / 104**	C / 24
	Ferrari Ranch Road to lane drop	**F / 122**	**F / 116**	**F / 117**	D / 33
	lane drop to Lincoln Boulevard	**F / 112**	**F / 109**	**F / 109**	D / 33
	Lincoln Boulevard to Twelve Bridges Drive	**F / 87**	**F / 87**	**F / 87**	E / 37
	Twelve Bridges Drive off- to on-ramp	**F / 95**	**F / 96**	**F / 96**	**F / 67**
	Twelve Bridges Drive on-ramp	**F / 73**	**F / 74**	**F / 73**	**F / 61**
	Placer Parkway westbound on-ramp	**F / 54**	E / 42	E / 43	C / 28
	Sunset Boulevard westbound on-ramp	E / 36	E / 37	E / 36	E / 43
	Blue Oaks Boulevard westbound on-ramp	E / 43	E / 37	E / 36	D / 34
	Pleasant Grove Boulevard eastbound on-ramp	E / 38	E / 36	D / 34	E / 44
	Galleria Boulevard off-ramp	D / 29	D / 29	D / 29	**F / 55**
	Galleria Boulevard to I-80	C / 26	C / 26	C / 28	**F / 77**

Notes: **Bold** and underline font indicate LOS F conditions. Shaded cells indicate an operational deficiency. The level of service and average density for the study segment are reported.

Source: Fehr & Peers 2014.

Table 2.5-14. Selected Freeway Operations Results – Design Year (2040) P.M. Peak Period Conditions

Freeway	Location	Alternative 1	Alternative 2	Alternative 3	No Build
Eastbound I-80	Auburn Boulevard on-ramp	C / 28	D / 29	E / 36	**F / 164**
	Auburn Boulevard to Douglas Boulevard	D / 33	D / 33	E / 37	**F / 154**
	Douglas Boulevard eastbound off-ramp	E / 37	D / 30	E / 37	**F / 107**
	Douglas Boulevard westbound off-ramp	D / 30	C / 27	E / 39	**F / 180**
	Douglas Boulevard on-ramp	E / 35	C / 27	C / 26	**F / 181**
	Eureka Road off-ramp	E / 38			**F / 149**
	Eureka Road to SR 65	C / 27	D / 32	D / 33	**F / 142**
	Taylor Road off-ramp	B / 17	-	-	
	SR 65 off-ramp	-	C / 25	C / 28	**F / 65**
	SR 65 on-ramp	D / 33	D / 32	D / 33	C / 21
Westbound I-80	Rocklin Road to HOV lane start	E / 36	E / 37	E / 40	**F / 113**
	SR 65 off-ramp	C / 23	C / 21	C / 22	**F / 114**
	SR 65 to Atlantic Street	E / 39	C / 24	D / 28	E / 41
	Atlantic Street eastbound off-ramp	**F / 91**	**F / 51**	E / 39	**F / 61**
	Atlantic Street off- to on-ramp	**F / 108**	**F / 87**	**F / 77**	**F / 77**
	Atlantic Street on-ramp	**F / 84**	**F / 79**	**F / 61**	**F / 100**
	Douglas Boulevard off-ramp	**F / 77**	**F / 71**	**F / 70**	**F / 108**
	Douglas Boulevard off- to on-ramp	**F / 100**	**F / 97**	**F / 97**	D / 26
	Douglas Boulevard westbound on-ramp	**F / 114**	**F / 111**	**F / 114**	C / 20
	Douglas Boulevard eastbound on-ramp	**F / 74**	**F / 75**	**F / 73**	B / 15
	truck scales to Elkhorn Boulevard	D / 29	D / 29	D / 29	C / 21
	Elkhorn Boulevard westbound on-ramp	C / 26	C / 26	C / 26	B / 18
	Elkhorn Boulevard eastbound on-ramp	D / 29	D / 28	D / 28	C / 22
Northbound SR 65	I-80 to Stanford Ranch Road	E / 44	**F / 71**	**F / 65**	**F / 84**
	Stanford Ranch Road off- to on-ramp	**F / 103**	**F / 112**	**F / 106**	D / 27
	Stanford Ranch Road on-ramp	**F / 73**	**F / 75**	**F / 72**	D / 30
	Pleasant Grove Boulevard off-ramp	D / 33	D / 34	D / 34	
	Whitney Ranch Parkway westbound on-ramp	E / 37	E / 35	E / 41	D / 29
	Twelve Bridges Drive off-ramp	E / 37	E / 37	E / 38	D / 30
Southbound SR 65	Ferrari Ranch Road eastbound on-ramp	B / 13	B / 13	B / 13	B / 16
	Lincoln Boulevard to Twelve Bridges Drive	C / 22	C / 22	C / 23	C / 21
	Twelve Bridges Drive on-ramp	C / 27	C / 28	C / 28	C / 25
	Placer Parkway westbound on-ramp	C / 24	C / 24	C / 24	B / 18
	Sunset Boulevard westbound on-ramp	D / 29	D / 29	D / 29	D / 32
	Blue Oaks Boulevard westbound on-ramp	D / 32	D / 33	D / 32	C / 28
	Pleasant Grove Boulevard eastbound on-ramp	D / 30	D / 32	D / 32	D / 29
	Galleria Boulevard off-ramp	D / 29	D / 30	D / 30	D / 33
	Galleria Boulevard to I-80	C / 25	C / 25	C / 26	E / 39

Notes: **Bold** and underline font indicate LOS F conditions. Shaded cells indicate an operational deficiency. The level of service and average density for the study segment are reported.

Source: Fehr & Peers 2014.

Table 2.5-15. Selected Intersection Operations Results – Design Year (2040) A.M. Peak Period Conditions

Intersection	Alternative 1	Alternative 2	Alternative 3	No Build
Blue Oaks Boulevard / Washington Boulevard	**D / 45**	**D / 49**	**D / 50**	**F / 136**
Blue Oaks Boulevard / SR 65 northbound ramps	B / 10	B / 11	B / 12	**F / 116**
Stanford Ranch Road / Five Star Boulevard	C / 28	C / 26	C / 28	**F / 151**
Stanford Ranch Road / SR 65 northbound ramps	B / 16	C / 25	B / 19	**F / 127**
Galleria Boulevard / SR 65 southbound ramps	C / 24	C / 34	C / 25	D / 38
Galleria Boulevard / Roseville Parkway	D / 45	D / 45	D / 46	D / 39
Roseville Parkway / Creekside Ridge Drive	A / 7	A / 7	A / 7	B / 10
Roseville Parkway / Taylor Road	**E / 61**	**E / 62**	**F / 95**	**F / 98**
Atlantic Street / I-80 westbound ramps	**D / 43**	C / 25	**D / 38**	B / 12
Eureka Road / Taylor Road / I-80 eastbound ramps	C / 32	C / 29	D / 42	E / 55
Eureka Road / Sunrise Avenue	**D / 38**	**D / 37**	**D / 39**	C / 29
Douglas Boulevard / Harding Boulevard	C / 28	C / 29	C / 30	C / 25
Douglas Boulevard / Sunrise Avenue	D / 37	D / 40	D / 47	C / 35
Rocklin Road / Granite Drive	C / 27	C / 25	**D / 42**	**D / 29**
Rocklin Road / I-80 westbound ramps	C / 23	C / 21	**D / 46**	B / 13

Notes: **Bold** and underline font indicate unacceptable conditions. Shaded cells indicate an operational deficiency. The level of service and average delay in seconds per vehicle are reported.

Source: Fehr & Peers 2014.

Table 2.5-16. Selected Intersection Operations Results – Design Year (2040) P.M. Peak Period Conditions

Intersection	Alternative 1	Alternative 2	Alternative 3	No Build
Blue Oaks Boulevard / Washington Boulevard	**F / 165**	**F / 164**	**F / 175**	**F / >240**
Blue Oaks Boulevard / SR 65 northbound ramps	**F / 85**	**E / 69**	**E / 80**	**F / 115**
Stanford Ranch Road / Five Star Boulevard	**E / 56**	**E / 55**	**E / 59**	**D / 36**
Stanford Ranch Road / SR 65 northbound ramps	C / 26	C / 22	C / 22	D / 36
Galleria Boulevard / SR 65 southbound ramps	C / 24	C / 23	C / 25	C / 29
Galleria Boulevard / Roseville Parkway	**F / 91**	**F / 131**	**F / 102**	**F / 213**
Roseville Parkway / Creekside Ridge Drive	**E / 77**	**E / 72**	**D / 40**	C / 24
Roseville Parkway / Taylor Road	D / 54	D / 53	**E / 71**	D / 48
Atlantic Street / I-80 westbound ramps	B / 15	B / 18	C / 34	**D / 51**
Eureka Road / Taylor Road / I-80 eastbound ramps	**F / 104**	**F / 103**	**F / 104**	**F / 92**
Eureka Road / Sunrise Avenue	**F / 99**	**F / 132**	**F / 113**	**F / 184**
Douglas Boulevard / Harding Boulevard	**F / 81**	E / 80	**F / 111**	**F / >240**
Douglas Boulevard / Sunrise Avenue	**F / 158**	**F / 240**	**F / 166**	**F / >240**
Rocklin Road / Granite Drive	**F / 83**	**F / 97**	**F / 105**	**F / >240**
Rocklin Road / I-80 westbound ramps	C / 26	C / 26	C / 32	**F / 99**

Notes: **Bold** and underline font indicate unacceptable conditions. Shaded cells indicate an operational deficiency. The level of service and average delay in seconds per vehicle are reported.

Source: Fehr & Peers 2014.

Construction Year (2020) Traffic Operations

The operational deficiencies in the construction year (2020) are shown by alternative in Tables 2.5-17 through 2.5-20 to support the traffic avoidance and minimization discussions below. An operational deficiency occurs where the LOS threshold is exceeded and the conditions are worse than the No Build Alternative.

Table 2.5-17. Selected Freeway Operations Results – Construction Year (2020) A.M. Peak Period Conditions

Freeway	Location	Alternative 1	Alternative 2	Alternative 3	No Build
Eastbound I-80	Auburn Boulevard on-ramp	D / 29	D / 29	D / 29	E / 37
	Auburn Boulevard to Douglas Boulevard	E / 36	E / 36	E / 36	E / 39
	Douglas Boulevard eastbound off-ramp	D / 30	D / 30	D / 30	D / 34
	Douglas Boulevard westbound off-ramp	C / 24	C / 24	C / 25	E / 40
	Douglas Boulevard on-ramp	E / 35	C / 24	C / 24	D / 28
	Eureka Road off-ramp	E / 38			D / 30
	Eureka Road to SR 65	C / 20	D / 27	D / 27	C / 25
	Taylor Road off-ramp	B / 15	-	-	
	SR 65 off-ramp	-	C / 22	C / 22	**F / 66**
	SR 65 on-ramp	C / 27	C / 26	C / 26	B / 20
Westbound I-80	Rocklin Road to HOV Lane Start	D / 28	D / 27	D / 29	D / 28
	SR 65 off-ramp	C / 22	C / 21	C / 22	**F / 51**
	SR 65 to Atlantic Street	C / 25	C / 23	C / 23	D / 32
	Atlantic Street eastbound off-ramp	D / 29	D / 30	D / 28	**F / 93**
	Atlantic Street on-ramp	**F / 47**	E / 41	C / 22	**F / 107**
	Douglas Boulevard off-ramp	**F / 51**	E / 43	E / 37	**F / 46**
	Douglas Boulevard westbound on-ramp	**F / 99**	**F / 86**	**F / 87**	**F / 114**
	Douglas Boulevard eastbound on-ramp	**F / 77**	**F / 76**	**F / 74**	**F / 71**
	truck scales off- to on-ramp	**F / 70**	**F / 64**	**F / 51**	D / 32
	truck scales on-ramp	**F / 88**	**F / 87**	**F / 78**	D / 33
	truck scales to Elkhorn Boulevard	**F / 67**	**F / 66**	**F / 64**	E / 41
	Elkhorn Boulevard off-ramp	**F / 56**	**F / 53**	**F / 51**	**E / 36**
	Elkhorn Boulevard off- to on-ramp	**F / 92**	**F / 91**	**F / 86**	**F / 64**
	Elkhorn Boulevard westbound on-ramp	**F / 96**	**F / 96**	**F / 92**	**F / 93**
	Elkhorn Boulevard eastbound on-ramp	**F / 76**	**F / 76**	**F / 76**	**F / 82**
Northbound SR 65	I-80 to Stanford Ranch Road	C / 21	C / 21	C / 22	**F / 87**
	Stanford Ranch Road on-ramp	B / 11	B / 10	B / 11	**F / 64**
	Pleasant Grove Boulevard off-ramp	D / 35	D / 34	D / 34	D / 33
	Blue Oaks Boulevard on-ramp	C / 23	C / 23	C / 23	C / 21
	Twelve Bridges Drive off-ramp	B / 18	B / 18	B / 18	B / 17
Southbound SR 65	Ferrari Ranch Road eastbound on-ramp	B / 16	B / 15	B / 14	E / 38
	Lincoln Boulevard to Twelve Bridges Drive	C / 27	C / 25	C / 25	**F / 153**
	Twelve Bridges Drive on-ramp	E / 40	D / 35	E / 35	**F / 164**
	Placer Parkway westbound on-ramp	E / 35	D / 34	D / 31	**F / 165**
	Sunset Boulevard eastbound on-ramp	**F / 51**	E / 45	E / 43	**F / 126**
	Blue Oaks Boulevard westbound on-ramp	E / 39	E / 35	E / 36	**F / 111**
	Blue Oaks Boulevard to Pleasant Grove Boulevard	E / 40	E / 38	E / 37	**F / 96**

Freeway	Location	Alternative 1	Alternative 2	Alternative 3	No Build
	Pleasant Grove Boulevard westbound on-ramp	D / 29	D / 29	D / 29	**F / 79**
	Pleasant Grove Boulevard eastbound on-ramp	D / 32	D / 32	D / 33	**F / 58**
	Galleria Boulevard off-ramp	C / 28	D / 28	D / 28	D / 34
	Galleria Boulevard to I-80	C / 24	C / 24	C / 24	C / 26

Notes: **Bold** and underline font indicate LOS F conditions. Shaded cells indicate an operational deficiency. The LOS and average vehicle density for the study segment are reported.

Source: Fehr & Peers 2014.

Table 2.5-18. Selected Freeway Operations Results – Construction Year (2020) P.M. Peak Period Conditions

Freeway	Location	Alternative 1	Alternative 2	Alternative 3	No Build
Eastbound I-80	Auburn Boulevard on-ramp	C / 27	C / 27	C / 27	**F / 180**
	Auburn Boulevard to Douglas Boulevard	D / 32	D / 32	D / 32	**F / 142**
	Douglas Boulevard eastbound off-ramp	D / 29	D / 29	D / 29	**F / 103**
	Douglas Boulevard westbound off-ramp	C / 25	C / 25	C / 25	**F / 158**
	Douglas Boulevard on-ramp	D / 33	C / 25	C / 25	**F / 165**
	Eureka Road off-ramp	E / 35			**F / 131**
	Eureka Road to SR 65	C / 24	D / 30	D / 31	**F / 135**
	Taylor Road off-ramp	B / 16	-	-	
	SR 65 off-ramp	-	C / 24	C / 25	**F / 79**
	SR 65 on-ramp	D / 28	C / 27	C / 28	B / 19
Westbound I-80	Rocklin Road to HOV Lane Start	D / 27	C / 25	D / 26	**F / 128**
	SR 65 off-ramp	C / 20	B / 19	B / 19	**F / 140**
	SR 65 to Atlantic Street	C / 20	B / 20	B / 20	C / 25
	Atlantic Street eastbound off-ramp	C / 22	C / 23	C / 21	C / 28
	Atlantic Street on-ramp	C / 25	C / 25	B / 20	C / 20
	Douglas Boulevard off-ramp	D / 31	D / 31	D / 30	B / 15
	Douglas Boulevard westbound on-ramp	C / 26	C / 26	C / 26	D / 29
	Douglas Boulevard eastbound on-ramp	C / 26	C / 25	C / 24	D / 33
	truck scales to Elkhorn Boulevard	D / 29	D / 28	D / 28	C / 26
	Elkhorn Boulevard westbound on-ramp	C / 27	C / 26	C / 26	C / 23
	Elkhorn Boulevard eastbound on-ramp	D / 29	D / 29	D / 29	C / 27
Northbound SR 65	I-80 to Stanford Ranch Road	C / 24	C / 25	C / 26	**F / 90**
	Stanford Ranch Road on-ramp	B / 18	B / 18	B / 18	**F / 83**
	Pleasant Grove Boulevard off-ramp	D / 35	E / 36	E / 35	D / 31
	Blue Oaks Boulevard on-ramp	E / 36	E / 38	E / 39	C / 22
	Twelve Bridges Drive off-ramp	D / 30	D / 29	D / 30	C / 25
Southbound SR 65	Ferrari Ranch Road eastbound on-ramp	A / 7	A / 7	A / 7	A / 7
	Lincoln Boulevard to Twelve Bridges Drive	B / 14	B / 14	B / 14	B / 13
	Twelve Bridges Drive on-ramp	B / 19	B / 19	B / 19	B / 18
	Placer Parkway westbound on-ramp	B / 18	B / 18	B / 18	B / 18
	Sunset Boulevard eastbound on-ramp	D / 34	D / 33	D / 33	**F / 113**
	Blue Oaks Boulevard westbound on-ramp	C / 27	C / 27	C / 28	**F / 129**
	Blue Oaks Boulevard to Pleasant Grove Boulevard	C / 27	C / 26	C / 26	**F / 60**

Freeway	Location	Alternative 1	Alternative 2	Alternative 3	No Build
	Pleasant Grove Boulevard westbound on-ramp	C / 25	C / 25	C / 25	E / 36
	Pleasant Grove Boulevard eastbound on-ramp	C / 22	C / 22	C / 23	D / 29

Notes: **Bold** and underline font indicate LOS F conditions. Shaded cells indicate an operational deficiency. The LOS and average vehicle density for the study segment are reported.

Source: Fehr & Peers 2014.

Table 2.5-19. Selected Intersection Operations Results – Construction Year (2020) A.M. Peak Period Conditions

Intersection	Alternative 1	Alternative 2	Alternative 3	No Build
Blue Oaks Boulevard / Washington Boulevard	C / 33	C / 33	C / 33	**F / 187**
Blue Oaks Boulevard / SR 65 northbound ramps	B / 12	B / 11	B / 11	B / 12
Stanford Ranch Road / Five Star Boulevard	C / 24	C / 25	C / 24	C / 29
Stanford Ranch Road / SR 65 northbound ramps	A / 7	A / 7	A / 8	C / 27
Galleria Boulevard / SR 65 southbound ramps	B / 20	B / 19	B / 19	C / 23
Galleria Boulevard / Roseville Parkway	C / 31	D / 36	C / 33	D / 36
Roseville Parkway / Creekside Ridge Drive	D / 47	D / 46	D / 49	**F / 130**
Roseville Parkway / Taylor Road	C / 29	B / 12	C / 26	B / 16
Atlantic Street / I-80 westbound ramps	C / 26	C / 28	C / 31	C / 22
Eureka Road / Taylor Road / I-80 eastbound ramps	**D / 36**	C / 34	**D / 35**	C / 25
Eureka Road / Sunrise Avenue	C / 22	C / 25	C / 23	C / 22
Douglas Boulevard / Harding Boulevard	D / 35	D / 37	D / 37	C / 30
Douglas Boulevard / Sunrise Avenue	C / 22	C / 22	B / 17	C / 28
Rocklin Road / Granite Drive	B / 18	B / 19	B / 19	C / 21
Rocklin Road / I-80 westbound ramps	C / 29	C / 25	**D / 40**	**D / 37**
Rocklin Road / I-80 eastbound ramps	**D / 39**	C / 26	**D / 35**	E / 70

Notes: **Bold** and underline font indicate unacceptable conditions. Shaded cells indicate an operational deficiency. The LOS and average delay in seconds per vehicle are reported.

Source: Fehr & Peers 2014.

Table 2.5-20. Selected Intersection Operations Results – Construction Year (2020) P.M. Peak Period Conditions

Intersection	Alternative 1	Alternative 2	Alternative 3	No Build
Blue Oaks Boulevard / Washington Boulevard	**D / 39**	**D / 43**	**D / 40**	**F / 188**
Blue Oaks Boulevard / SR 65 northbound ramps	B / 11	B / 12	B / 12	C / 26
Stanford Ranch Road / Five Star Boulevard	**D / 43**	**D / 37**	**D / 37**	**F / 107**
Stanford Ranch Road / SR 65 northbound ramps	B / 11	A / 10	B / 10	D / 45
Galleria Boulevard / SR 65 southbound ramps	B / 17	B / 16	B / 17	D / 43
Galleria Boulevard / Roseville Parkway	E / 61	E / 56	E / 58	**F / 227**
Roseville Parkway / Creekside Ridge Drive	D / 48	D / 42	D / 53	D / 37
Roseville Parkway / Taylor Road	B / 17	B / 12	C / 29	**D / 36**
Atlantic Street / I-80 westbound ramps	E / 63	E / 77	E / 78	D / 42
Eureka Road / Taylor Road / I-80 eastbound ramps	**D / 52**	**E / 63**	**D / 48**	**D / 49**

Intersection	Alternative 1	Alternative 2	Alternative 3	No Build
Eureka Road / Sunrise Avenue	D / 42	D / 39	D / 49	**F / 123**
Douglas Boulevard / Harding Boulevard	D / 50	**E / 56**	D / 47	**F / 203**
Douglas Boulevard / Sunrise Avenue	**D / 39**	**D / 43**	C / 24	C / 30
Rocklin Road / Granite Drive	**F / 101**	**F / 91**	**F / 110**	**F / 170**

Notes: **Bold** and underline font indicate unacceptable conditions. Shaded cells indicate an operational deficiency. The LOS and average delay in seconds per vehicle are reported.

Source: Fehr & Peers 2014.

Traffic Safety

Any build alternative would likely provide similar improvements to transportation safety. A key improvement would be provided by congestion reduction on the freeway. Rear-end collisions on the freeway are associated with congested conditions. As previously described, rear-end collisions in the study area are highest on eastbound I-80 west of SR 65 during the congested p.m. peak period. Because the build alternatives would reduce congestion compared to the No Build Alternative, the expected number of rear-end end collisions would be reduced with any of the build alternatives.

Freeway ramp junctions also are associated with higher collision rates. Due to the different configurations, the number of ramp junctions on I-80 between Eureka Road/Atlantic Street and SR 65 differs among the build alternatives. Alternative 1 has 16 ramp junctions, which is the highest number of ramp junctions. Alternative 2 has 15 ramp junctions—although some of these are on the collector-distributor roadway, which would have a lower free-flow speed. Alternative 3 has 12 ramp junctions, which is the fewest number of ramp junctions.

Roadway design standards are used to provide consistent expectations for drivers, which helps improve transportation safety by reducing collision risks. When these standards are not met, collision risks may increase. For the build alternatives, the following design exceptions are related to freeway operations:

- Interchange spacing – The existing configuration for the project area does not meet the interchange spacing standard of 1 mile between local interchanges and 2 miles between system interchanges and local interchanges. None of the build alternatives would meet these standards either. However, Alternatives 2 and 3 would provide the largest traffic weaving distance between the Eureka Road/Atlantic Street and SR 65 interchanges on I-80.
- Lane and shoulder width – The Roseville Parkway overcrossing is a "pinch point" on I-80 in the project area. The right-of-way is restricted initially by the overcrossing itself. However, if the overcrossing were replaced with a wider structure, the standard lane and shoulder widths could not be provided due to right-of-way constraints: a railroad to the north and an electrical tower and commercial properties to the east. As a result, all build alternatives have a similar, narrow cross-section at the Roseville Parkway overcrossing.
- Connector ramp design speed – The design speed for the freeway-to-freeway connector ramps under all build alternatives is less than the standard due to right-of-way constraints on I-80 west of the interchange and the location and design of the existing East Roseville Viaduct north of I-80.

- For Alternatives 2 and 3, the westbound on-ramp from Taylor Road would be maintained. Due to the added lanes on I-80 and the Roseville Parkway overcrossing pinch point described above, the merge area would be shorter than standard length.

Finally, the freeway analysis was conducted assuming that traffic using the I-80/SR 65 interchange carpool direct connector ramps do not enter or exit the freeway network at the Eureka Road/Atlantic Street or Stanford Ranch Road/Galleria Boulevard interchanges. On northbound SR 65, the carpool lane movement would be prevented under all alternatives using a physical barrier (median) between I-80 and Stanford Ranch Road. Alternatives 2 and 3 would prevent this movement through the use of a collector-distributor roadway on eastbound I-80 between Eureka Road and SR 65. For eastbound I-80 under Alternative 1 and westbound I-80 and southbound SR 65 under all three build alternatives, the weaving movement into and out of the HOV lane would be prohibited by signs, pavement markings, and a 4-foot-wide pavement delineation soft barrier. Because the lane would not be physically separate, vehicles traveling in the HOV lane would have additional exposure to errant vehicles.

Construction-Related Effects

Construction of the project could result in temporary disruptions to traffic flow, where temporary lane shifts or closures are required. The majority of the project work would be during the day; night work would be necessary to complete some key construction operations or to avoid high traffic volumes, including on the East Roseville Viaduct. During roadway construction, emergency vehicles may need to stop temporarily or slow down in order to ensure that they can safely pass through the study area. Preparation and implementation of a Transportation Management Plan will be required throughout project construction.

Effects on Pedestrians and Bicycles

Impacts on pedestrians and bicyclists are expected to be minimal. Currently, a significant portion of Taylor Road within the project limits has no sidewalks or bicycle facilities. Under all of the build alternatives, curb, gutter, and sidewalk would be constructed along the south side of Taylor Road, benefiting pedestrians and filling a gap in the pedestrian network.

Under Alternative 2, to minimize bicycle traffic conflicts with the Taylor Road loop off-ramp traffic, per City of Roseville design standards, a bicycle lane would be located between the second and third northbound lanes.

Under all build alternatives, construction of one of the proposed northbound East Roseville Viaduct columns would permanently affect a portion of the existing Antelope Creek Trail. Column placement requires realignment of the section of trail underneath the viaduct. To minimize trail closures, the new portion of trail would be constructed and, when completed, trail users would be shifted to the new trail section.

Under Alternatives 2 and 3, the grade profile of Miners Ravine Trail would need to be lowered by approximately 6 inches under the Eureka Road/Atlantic Street eastbound off-ramp to maintain vertical clearance requirements. Installation of the falsework necessary for construction may require short-term closures of the trail and implementation of an approximately 1-mile detour during construction.

Falsework construction and trail closures would be scheduled to occur during times (e.g., weekdays) that would minimize impacts on trail users, or temporary rerouting of the trail around the construction area would be provided. Appropriate traffic control measures (signs and flaggers) would be used as necessary to maintain the safety and flow of travel on the trails. Effects on trail users would be temporary and are not considered adverse.

Additional information on the project's effects on recreational trails is provided under "Parks and Recreational Facilities" in Section 2.1, "Land Use."

2.5.3.2 No Build Alternative

Overall, the No Build Alternative would result in worse network and operational performance compared to the build alternatives and would not provide any improved traffic safety.
Tables 2.5-8 and 2.5-9 (above) identify future network performance of the No Build Alternative. The study locations that do not meet acceptable LOS operating conditions under the No Build Alternative are summarized below. The acceptable LOS operating conditions are provided in Section 2.5.2.2. Detailed operations results for the No Build Alternative are shown in Tables 2.5-12 through 2.5-19.

Existing (2012) A.M. Peak Hour Operational Deficiencies

- Westbound I-80: from the westbound Antelope Road on-ramp to the Elkhorn Boulevard off-ramp.
- Northbound SR 65: westbound I-80 on-ramp.
- Southbound SR 65: from the westbound Blue Oaks Boulevard on-ramp to the eastbound Pleasant Grove Boulevard on-ramp.
- Intersections: Blue Oaks Boulevard/Washington Boulevard/SR 65 southbound ramps.

Existing (2012) P.M. Peak Hour Operational Deficiencies

- Eastbound I-80: Eureka Road off-ramp and SR 65 off-ramp.
- Westbound I-80: SR 65 off-ramp.
- Northbound SR 65: from the westbound I-80 on-ramp to the Stanford Ranch Road off- ramp.
- Intersections: Eureka Road/Taylor Road/I-80 westbound ramps.

Design Year (2040) A.M. Peak Hour Operational Deficiencies

- Eastbound I-80: Auburn Boulevard on-ramp to SR 65 off-ramp.
- Westbound I-80: eastbound Atlantic Street off-ramp.
- Northbound SR 65: westbound I-80 on-ramp.

- Southbound SR 65: Twelve Bridges Drive off-ramp to on-ramp, Twelve Bridges Drive on-ramp, and from the Pleasant Grove Boulevard to Galleria Boulevard section to the Galleria Boulevard on-ramp.
- Intersections: Lincoln Boulevard/Sterling Parkway, Blue Oaks Boulevard/Washington Boulevard/SR 65 southbound ramps, Blue Oaks Boulevard/SR 65 northbound ramps, Stanford Ranch Road/Five Star Boulevard, Stanford Ranch Road/SR 65 northbound ramps, Roseville Parkway/Taylor Road, Douglas Boulevard/I-80 westbound ramps, Douglas Boulevard/I-80 eastbound ramps, Lincoln Boulevard/SR 65 northbound off-ramp, Lincoln Boulevard/SR 65 southbound on-ramp, and Placer Parkway/SR 65 northbound ramps.

Design Year (2040) P.M. Peak Hour Operational Deficiencies

- Eastbound I-80: Auburn Boulevard on-ramp to SR 65 off-ramp.
- Westbound I-80: Rocklin Road on-ramp to SR 65 off-ramp and Taylor Road on-ramp to Douglas Boulevard off-ramp.
- Northbound SR 65: westbound I-80 on-ramp.
- Intersections: Lincoln Boulevard/Sterling Parkway, Twelve Bridges Drive/SR 65 northbound ramps, Blue Oaks Boulevard/Washington Boulevard/SR 65 southbound ramps, Blue Oaks Boulevard/SR 65 northbound ramps, Stanford Ranch Road/Five Star Boulevard, Galleria Boulevard/Roseville Parkway, Roseville Parkway/Sunrise Avenue, Atlantic Street/Wills Road, Atlantic Street/I-80 westbound ramps, Eureka Road/Taylor Road/I-80 eastbound ramps, Eureka Road/Sunrise Avenue, Douglas Boulevard/Harding Boulevard, Douglas Boulevard/I-80 westbound ramps, Douglas Boulevard/I-80 eastbound ramps, Douglas Boulevard/Sunrise Avenue, Rocklin Road/Granite Drive, Rocklin Road/I-80 westbound ramps, Rocklin Road/I-80 eastbound ramps, Rocklin Road/Aguilar Road, Lincoln Boulevard/SR 65 northbound off-ramp, Lincoln Boulevard/SR 65 southbound on-ramp, and Whitney Ranch Parkway/SR 65 northbound ramps.

Construction Year (2020) A.M. Peak Hour Operational Deficiencies

- Eastbound I-80: SR 65 off-ramp and Rocklin Road off-ramp.
- Westbound I-80: SR 65 off-ramp, Taylor Road on-ramp to eastbound Douglas Boulevard on-ramp, and from the Elkhorn Boulevard off-ramp to on-ramp section to the eastbound Elkhorn Boulevard on-ramp.
- Northbound SR 65: westbound I-80 on-ramp and Stanford Ranch Road on-ramp.
- Southbound SR 65: from the Ferrari Ranch Road to lane drop section to the eastbound Pleasant Grove Boulevard on-ramp.
- Intersections: Twelve Bridges Drive/SR 65 southbound ramps, Twelve Bridges Drive/SR 65 northbound ramps, Blue Oaks Boulevard/Washington Boulevard/SR 65 southbound ramps, Pleasant Grove Boulevard/SR 65 southbound ramps, Roseville Parkway/Taylor Road, Douglas Boulevard/I-80 westbound ramps, Douglas Boulevard/I-80 eastbound ramps, Rocklin Road/I-80 eastbound ramps, Lincoln Boulevard/SR 65 southbound on-ramp, and Placer Parkway/SR 65 southbound ramps.

Construction Year (2020) P.M. Peak Hour Operational Deficiencies

- Eastbound I-80: Auburn Boulevard on-ramp to SR 65 off-ramp.
- Westbound I-80: Rocklin Road on-ramp to SR 65 off-ramp.
- Northbound SR 65: westbound I-80 on-ramp, Stanford Ranch Road off-ramp to on-ramp, and Stanford Ranch Road on-ramp.
- Southbound SR 65: from the Placer Parkway to Sunset Boulevard weaving section to the eastbound Pleasant Grove Boulevard on-ramp.
- Intersections: Lincoln Boulevard/Sterling Parkway, Sunset Boulevard/SR 65 southbound ramps, Sunset Boulevard/SR 65 northbound ramps, Blue Oaks Boulevard/Washington Boulevard/SR 65 southbound ramps, Stanford Ranch Road/Five Star Boulevard, Galleria Boulevard/Roseville Parkway, Roseville Parkway/Creekside Ridge Drive, Atlantic Street/I-80 westbound ramps, Eureka Road/Sunrise Avenue, Douglas Boulevard/Harding Boulevard, Douglas Boulevard/I-80 westbound ramps, Douglas Boulevard/I-80 eastbound ramps, Douglas Boulevard/Sunrise Avenue, Rocklin Road/Granite Drive, Rocklin Road/I-80 westbound ramps, Rocklin Road/I-80 eastbound ramps, Rocklin Road/Aguilar Road, and Lincoln Boulevard/SR 65 northbound off-ramp, and Lincoln Boulevard/SR 65 southbound on-ramp.

2.5.4 Avoidance, Minimization, and/or Mitigation Measures

2.5.4.1 Avoidance and Minimization Measure

Prepare a Transportation Management Plan

Prior to construction, the project proponent will prepare a Transportation Management Plan (TMP) in order to minimize disruptions to traffic and to emergency services during construction. A TMP is a program of activities for alleviating or minimizing work-related traffic delays by applying traditional traffic handling practices and innovative strategies. The TMP program includes public awareness campaigns, motorist information, demand management, incident management, system management, construction methods and staging, and alternate route planning. TMP strategies also strive to reduce the overall duration of work activities where appropriate. Typical components of a TMP can include measures such as implementation of staging, traffic handling, and detour plans; restricting construction work to certain days and/or hours to minimize impacts on traffic and pedestrians; coordination with other construction projects to avoid conflicts; and the use of portable changeable message signs to inform the public and emergency vehicles of construction activities.

2.5.4.2 Mitigation Measures

Improve Taylor Road at Stonehouse Court

At the time that improvements to Taylor Road are constructed as part of the proposed project, the project proponent will facilitate egress from businesses located on the south side of Taylor Road through the construction of a new traffic signal on Taylor Road at Stonehouse Court that allows eastbound Taylor Road traffic to make a U-turn.

Regional Coordination for Transportation Improvements

The *Transportation Analysis Report* assumed modifications to the existing transportation network according to improvement projects anticipated to be constructed by the construction (2020) and design (2040) years (refer to *Transportation Analysis Report* Figures 6 and 7). These projects are based on the financially constrained project list contained in the 2035 MTP/SCS, but also consider projects the project development team agreed would likely be constructed by the design year (2040).

The rationale for adding projects to the MTP/SCS list was that the design year is five years beyond the 2035 horizon of the MTP/SCS. This creates a longer timeframe for revenue to accumulate. Further, the additional socioeconomic growth added to the model would also be contributing to transportation revenue to help pay for these improvements.

Based on results from the *Transportation Analysis Report*, it was determined that even with transportation improvements assumed through year 2040, the following specific locations in the project boundary may operate below acceptable thresholds and potential future improvements are identified below.

Westbound I-80:

- Improve from SR 65 to Riverside Avenue by providing an additional through lane from the Douglas Boulevard off-ramp to the westbound on-ramp and from the Riverside Avenue off-ramp to the northbound on-ramp. This improvement may cause a secondary operational deficiency downstream at Elkhorn Boulevard.
- Improve from the truck scales to Elkhorn Boulevard by providing a full auxiliary lane from the truck scales to Elkhorn Boulevard or adding a through lane at Elkhorn Boulevard.
- An alternate improvement to the above widening options would be to operate the ramp meters on westbound I-80 and southbound SR 65 at a more restrictive rate. With a more restrictive rate, longer ramp queues may cause a secondary operational deficiency on local streets.

Northbound SR 65:

- Improve from Stanford Ranch Road to Pleasant Grove Boulevard by providing an additional through lane from the Pleasant Grove Boulevard off-ramp to on-ramp. The additional lane may need to be extended past the Blue Oaks Boulevard interchange to improve potential secondary operational deficiencies.

Southbound SR 65:

- Improve from Ferrari Ranch Road to Twelve Bridges Drive by providing an auxiliary lane between Twelve Bridge Drive and Placer Parkway. Secondary operational deficiencies may occur at downstream sections.

- Improve the westbound Placer Parkway on-ramp (Alternative 1 only) by extending the planned auxiliary lane between Placer Parkway and Sunset Boulevard to start at the westbound, instead of the eastbound, on-ramp.
- Improve the southbound-to-westbound connector at I-80 (Alternatives 1 and 2) by widening westbound I-80 at Douglas Boulevard or adjusting ramp meter rates as discussed above for westbound I-80.

Intersections:

- Improve the Stanford Ranch Road/Five Star Boulevard intersection by providing a second eastbound right-turn lane.
- Improve the Roseville Parkway/Creekside Ridge Drive intersection, caused by queuing from the adjacent intersection at Roseville Parkway/Galleria Boulevard, by implementing signal timing adjustments (when warranted based on monitoring) or widening improvements at the adjacent signal.
- Improve the Roseville Parkway/Taylor Road intersection (Alternative 3 only) by adding a third southbound left-turn lane.
- Improve the Atlantic Street/I-80 westbound ramps intersection (Alternatives 1 and 3) by adjusting the ramp meter rate or widening the on-ramp to provide more storage.
- Improve the Eureka Road/Taylor Road/I-80 eastbound ramps intersection. For Alternatives 1 and 2, add a second northbound left-turn and southbound right-turn lanes to reduce delays although accommodations may be needed for bicycles and pedestrians. Because Alternative 3 already includes these modifications, further improvements will need to be identified.
- Improve the Eureka Road/Sunrise Avenue intersection by widening to provide a fourth through lane or a third left-turn lane on some approaches.
- Improve the Pacific Street/Sunset Boulevard intersection (Alternatives 1 and 2) under construction year conditions by constructing the planned widening of Sunset Boulevard from four to six lanes prior to the construction year. The planned widening is currently assumed to occur before the design year.

Some of the improvements identified above are already being considered as part of the SR 65 Widening (http://pctpa.net/projects/sr65widening/) and I-80 Auxiliary Lanes (http://pctpa.net/projects/i-80-auxiliary-lanes/) projects. Other improvements identified above are preliminary and need further study, including inclusion in the Placer County Regional Transportation Plan and SACOG MTP/SCS, environmental clearance and public outreach, project approval from Caltrans and/or FHWA, project design, and potential right of way acquisition, before the improvements can be constructed and open to the traveling public. Depending on the project size and cost, infrastructure improvements on federal and state highways can take an average of 16 years. If a project is not controversial, fully funded, and within existing right of way, then typically those projects can be constructed within five to ten years.

The need for additional transportation improvements after year 2040 is based on growth in traffic demand from development over a wide area. Jurisdictions in Placer County currently have traffic impact fee programs both at the local jurisdiction and regional county levels. Traffic impact fees on new development are a potential source of funding for the above identified improvements. Placer County has a history of planning for both local and regional transportation improvements, including the South Placer Regional Transportation Authority (http://pctpa.net/sprta/). Caltrans, PCTPA, and local jurisdictions continuously update and add new projects that are identified to accommodate future population and employment growth. The specific intersection and roadway improvements identified above, which are all located on Caltrans facilities or within the City of Rocklin and City of Roseville, will be addressed as part of current ongoing projects, capital improvement program updates, and traffic impact fee updates.

2.5.5 References Cited

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2.6 Visual/Aesthetics

2.6.1 Regulatory Setting

NEPA establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 USC 4331[b][2]). To further emphasize this point, FHWA 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.

CEQA establishes 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 PRC Section 21001[b]).

2.6.2 Affected Environment

This section was prepared using information from the *Visual Impact Assessment* (VIA) technical report prepared for this project (ICF International 2014). The report is available on the project website at http://8065interchange.org/. The VIA assesses potential visual impacts of the proposed project based on guidance outlined in the *Visual Impact Assessment for Highway Projects* published by the FHWA. The following key terms describe visual resources in a project area. The terms are used as descriptors and as part of a rating system to assess a landscape's visual quality.

- *Visual character* includes attributes such as form, line, color, and texture and is used to describe, not evaluate visual resources.
- *Visual quality* is evaluated by identifying the vividness, intactness, and unity present in the project area.
- *Vividness* is the extent to which the landscape is memorable and is associated with distinctive, contrasting, and diverse visual elements.
- *Intactness* is the integrity of visual features in the landscape and the extent to which the existing landscape is free from non-typical visual intrusions.
- *Unity* is the extent to which all visual elements combine to form a coherent, harmonious visual pattern.

In addition to their use as descriptors, vividness, intactness, and unity are used more objectively as part of a rating system to assess a landscape's visual quality. Visual quality is evaluated using the equation:

$$\text{Visual Quality (VQ)} = \frac{\text{Vividness (V)} + \text{Intactness (I)} + \text{Unity (U)}}{3}$$

Vividness, intactness, and unity are evaluated independently; each quality is assigned a rating from 0.0 – 7.0. On this scale, 0.0 = very low, 4.0 = average/moderate, and 7.0 = very high. The overall rating for visual quality follows the same 0.0 – 7.0 range. Ratings have been included in parentheses (e.g., VQ = 2.0) in the visual quality description of the visual assessment units.

Resource change is one of the two major variables that determine visual impacts. *Resource change* refers to the evaluation of the visual character and the visual quality of the visual resources that comprise the project corridor before and after construction of a proposed project. The other major variable is *viewer response*, the response of viewers to changes in their visual environment.

2.6.2.1 Project Location and Setting

The project location and setting provide the context for determining the type and severity of changes to the existing visual environment. The project setting is the *project corridor*, which is defined as the area of land that is visible from, adjacent to, and outside the highway right-of-way. The project corridor is determined by topography, vegetation, and viewing distance and, consequently, is larger than the project area.

The proposed project is located between the Rocklin Road and Douglas Boulevard interchanges on I-80 and between the I-80 separation and Pleasant Grove Boulevard interchanges on SR 65 (Figure 1-1). The project region is in western Placer County in northern California's Sacramento Valley, in the transition zone between the valley floor and the Sierra Nevada and Lake Tahoe region. The rolling Sierra Nevada foothills make up most of the eastern portion of the region. The western portion of the region consists primarily of agricultural and suburban land uses, with the urban core of Sacramento located in the southwestern portion of the region. The landscape pattern is influenced by development occurring outward from existing city cores and the major roadways, such as SR 65, SR 70, I-80, U.S. Highway 50, SR 99, and I-5. This portion of the county supports agricultural, open space, and developed land uses at the base of the foothills. Urban areas include Lincoln, Roseville, and Rocklin. In addition to numerous creeks and streams, major water bodies in the region that are outside the immediate project vicinity include Dry Creek, Auburn Ravine, Pleasant Grove Creek, Folsom Lake, and the American River.

The project area (Figure 1-1) lies within the cities of Roseville and Rocklin. The land uses within the project corridor are primarily commercial, business park, and industrial bordering I-80 and SR 65, intermixed with residential and open space and recreational uses. The immediate project area is characterized by flat to gently sloping terrain. Development, transportation infrastructure, and mature trees and shrubs prevent distant views of the Sutter Buttes to the northwest and views of the Sierra Nevada to the east, except where Taylor Road crosses I-80, allowing views toward the Sierra Nevada. Transportation facilities are dominant visual features in the project vicinity;

these include SR 65, I-80, Roseville Parkway, East Roseville Parkway, Eureka Road, Secret Ravine Parkway, Galleria Boulevard, Pleasant Grove Boulevard, Rocklin Road, and others. The project area is not located near a state scenic highway or other designated scenic corridor. Water bodies in and near the project area include Antelope Creek, Secret Ravine, and Miners Ravine.

2.6.2.2 Visual Assessment Units

The project corridor was divided into a series of five visual assessment units based on specific vantage points and differing sensitivities of viewer groups. Each visual assessment unit has its own visual character and visual quality, and is typically defined by the limits of a particular viewshed. The five visual assessment units that were evaluated are listed and described below.

- I-80 Corridor
- SR 65 Corridor
- Open Space
- Residential
- Commercial/Institutional

The visual assessment units are shown in Figure 2.6-1. Key views were selected for their representation of the visual assessment unit within which they are located and the viewer groups affected.

The topography in the visual assessment units is flat to gently rolling along the highway corridors. Buildings associated with commercial and industrial areas are larger in form and scale than those of single- and multi-family residential development. The existing SR 65 and I-80 corridors have a low to moderate profile within the landscape and include a number of interchanges and overcrossings that tend to draw attention toward transportation facilities. Although the overcrossings are visually apparent, they do not dominate viewsheds because they are in keeping with the many transportation facilities in the project vicinity. Vegetation in the visual assessment units varies from unmanicured, low-growing grasslands, to trees and shrubs growing naturally along waterways, to more manicured lawns and trees and shrubs planted for landscaping in association with residential and business areas—giving an overall medium- to coarse-textured appearance in the project area. The color of nonirrigated vegetation generally changes seasonally in response to the amount of rain, ranging from tan grasses and green trees in summer to green grass and dormant trees in winter. Evergreen species provide greenery year-round. The visual assessment units, except for open space areas, are fairly well illuminated.

I-80 Corridor Visual Assessment Unit

The existing I-80 corridor is generally at-grade, varies from three to five lanes in each direction with paved shoulders, and has a continuous concrete barrier in the median. Views in this visual assessment unit are largely of the immediate paved surface of I-80 and bridges crossing over it; grassy terrain, trees, and shrubs; buildings and signage associated with the adjacent commercial and industrial land uses to the northeast and southwest; soundwalls; and highway signage. Vegetation along the highway shoulders consists of unlandscaped grasslands. Current lighting along the I-80 corridor is concentrated at the existing interchanges. Lighting is also associated with nearby businesses and residences, including interior and exterior building lighting and overhead lighting in parking lots.

Views in this unit are mostly limited by adjacent commercial and industrial development; soundwalls abutting residential areas; trees and shrubs associated with residential, open space, and commercial areas; and gently rolling terrain on either side of the highway. Overcrossings also limit views down the corridor and often prevent views beyond the structure.

Views of the bordering visual assessment units to the northwest and southeast are visible to motorists traveling either northeast or southwest (Figures 2.6-2 through 2.6-7). While utilities and infrastructure detract from the corridor southwest of the Taylor Road overcrossing, vegetation associated with the nearby Open Space and Residential visual assessment units improves the appearance of the right-of-way and provides visual interest and an attractive visual experience while driving northeast of this overcrossing.

The vividness of this visual assessment unit is moderately high (V = 5), because while highway infrastructure (e.g., sound walls, guardrails, overcrossings, bridges, and light standards) interrupts views of the surrounding landscape, vegetation associated with nearby visual assessment units provides visual interest and improves the appearance of the right-of-way. Utilities and infrastructure detract from the corridor southwest of the Taylor Road overcrossing. The intactness and unity are moderate (I & U = 4.5), because although the portion of the unit northeast of the Taylor Road overcrossing (the larger portion of the unit) contains highway infrastructure, soundwalls and vegetation block views of nearby development, and mature trees and shrubs dominate the corridor, softening the appearance of the corridor’s edges and reducing the apparent scale of overcrossings, contributing to the quality of scenic views within this visual assessment unit. However, the portion of the unit southwest of the Taylor Road overcrossing contains many visual intrusions, such as a predominance of highway infrastructure combined with highway billboards and overhead utility lines crossing the highway, with poles and transmission towers bordering the unit. The resulting visual quality is moderate (VQ = 4.7).

SR 65 Corridor Visual Assessment Unit

The existing SR 65 corridor is generally at-grade with an unplanted median. Views to the northeast and southwest are visible to motorists traveling in both directions (Figure 2.6-7). Views in this visual assessment unit are mostly limited to the foreground by the adjacent commercial and institutional (e.g., churches and educational facilities) development; trees, shrubs, and block walls around businesses to buffer views of SR 65; and gently rolling terrain on either side of the corridor. Current lighting along the SR 65 corridor is minimal and is concentrated at the existing interchanges and on overcrossings. Lighting also is associated with nearby businesses, including safety lighting affixed to buildings and overhead lighting in parking lots.

Views in this visual assessment unit are largely of the immediate paved surface of the highway, grassy terrain, trees and shrubs, buildings and signage associated with the adjacent commercial and industrial land uses to the northeast and southwest, highway signage, and bridges crossing over SR 65. Vegetation along the highway consists of unlandscaped grasslands. The Galleria

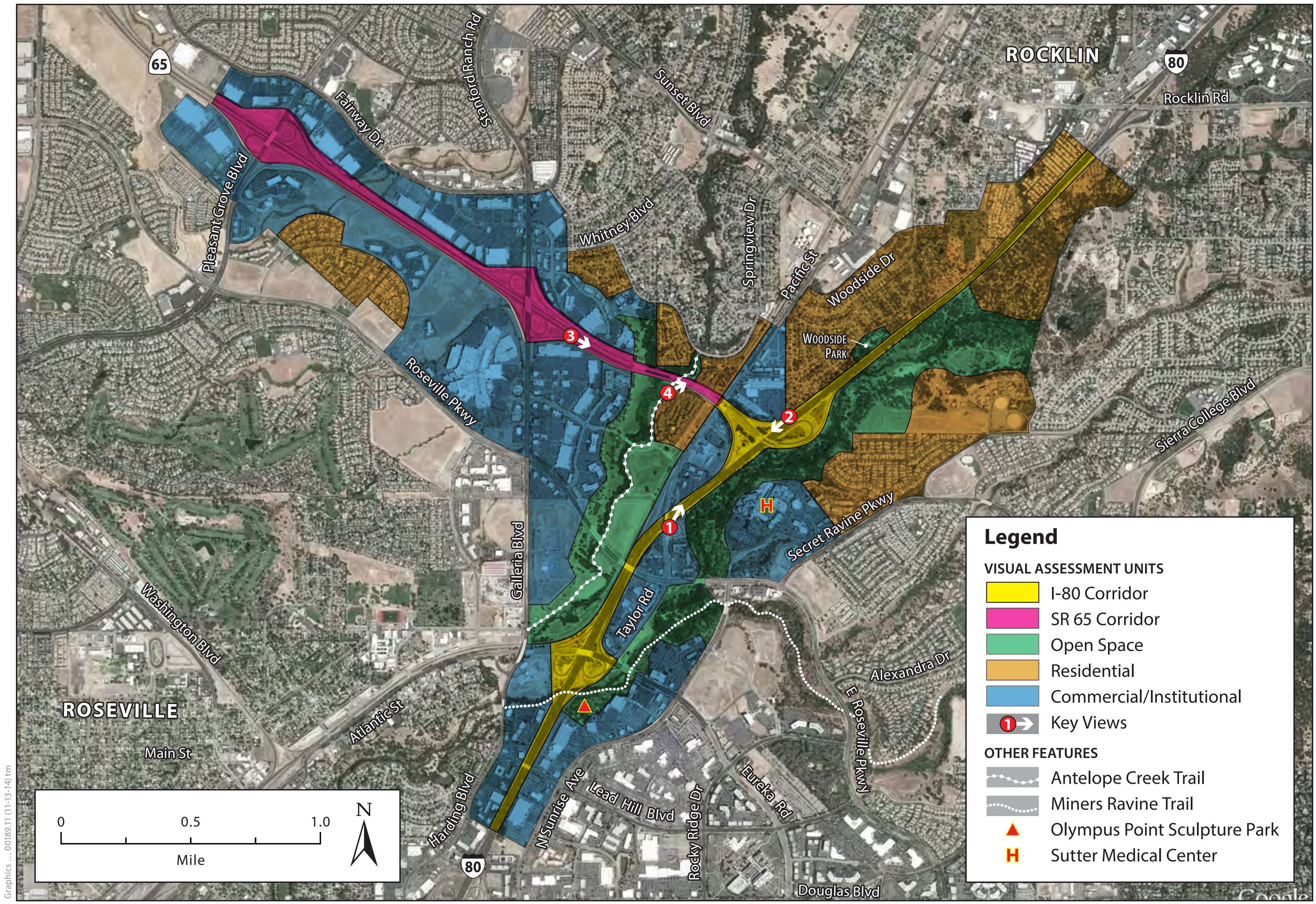

Figure 2.6-1
Visual Assessment Units


Existing View


Simulation

Graphics ... 00189.11 (11-13-14) tm

Figure 2.6-2
Key View 1a: Existing View and Alternative 1 Simulated Conditions—from Eastbound I-80 near the SR 65 Exit

Graphics ... 00189.11 (11-13-14) tm

Figure 2.6-3
Key View 2a: Existing View and Alternative 1 Simulated Conditions—from Westbound I-80 near the SR 65 Exit

Graphics … 00189.11 (11-13-14) tm

Figure 2.6-4
Key View 1b: Existing View and Alternative 2 Simulated Conditions— from Eastbound I-80 near the SR 65 Exit

Existing View

Simulation

Graphics ... 00189.11 (1-13-14) tm

Figure 2.6-5
Key View 2b: Existing View and Alternatives 2 and 3 Simulated Conditions—from Westbound I-80 near the SR 65 Exit

Graphics ... 00189.11 (11-13-14) tm

Figure 2.6-6
Key View 1c: Existing View and Alternative 3 Simulated Conditions—from Eastbound I-80 near the SR 65 Exit

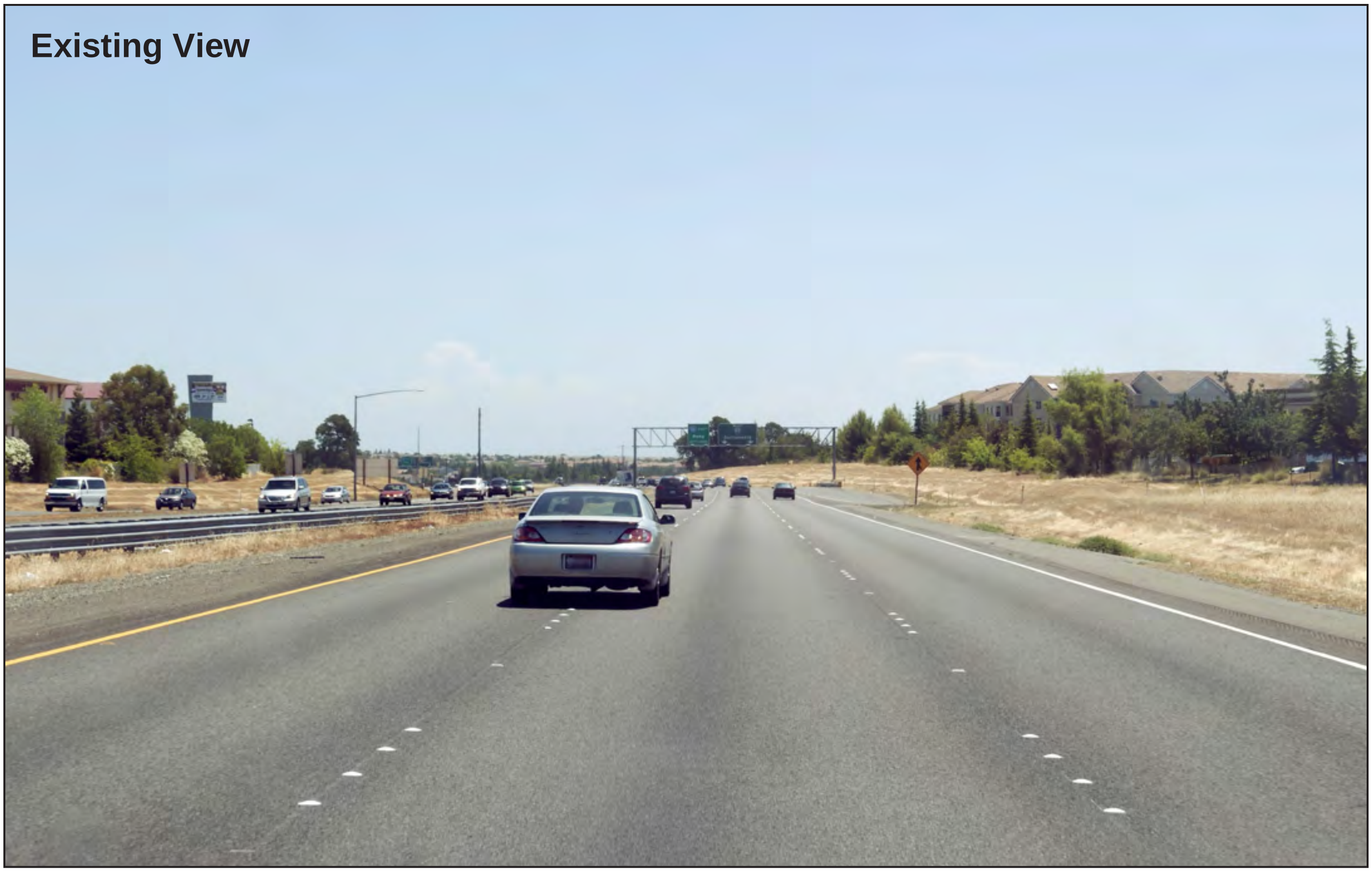

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Figure 2.6-7
Key View 3: Existing View and Alternatives 1, 2, and 3 Simulated Conditions—from Southbound SR 65 near the Galleria Boulevard Onramp

Boulevard and Pleasant Grove Boulevard overcrossings limit views to the foreground and middleground for roadway travelers close to the overcrossings.

The vividness of this visual assessment unit is moderate (V = 4), because, although the SR 65 corridor includes highway infrastructure (e.g., signage, guardrails, overcrossings, and light standards), it lacks concrete barriers, large soundwalls, and substantial development encroachments immediately adjacent to the highway (e.g., transmission lines, billboards, and commercial buildings directly abutting the right-of-way). The grassland area along the right-of-way and vegetative buffers associated with other visual assessment units provide an attractive view, but the vegetation is not sufficiently mature to obscure adjacent development along the highway corridor. The intactness and unity also are moderate (I & U = 4.5); the moderate amount of highway infrastructure allows the highway to better blend with the surrounding grassland landscape, and utilities and billboards that could detract from the corridor are minimal. The resulting visual quality is moderate (VQ = 4.3).

Open Space Visual Assessment Unit

Open space corridors follow Dry Creek and Antelope Creek northwest of I-80 and Miners Ravine and Secret Ravine southeast of I-80. These open space and creek corridors support recreational uses that are accessed by the Antelope Creek and Miners Ravine Trails (Figure 2.6-1). The multi-use trails are accessible from the nearby Commercial/Industrial and Residential visual assessment units. The trails traverse rolling terrain and grasslands and oak woodlands associated with upland areas, and skirt the riparian corridors along the waterways. These open space and recreational areas are used for biking, walking, running, sightseeing, photography, and fishing. This unit and its associated trails cross under SR 65 and directly abut the I-80 right-of-way. The UPRR rail line parallels Taylor Road/Pacific Street on the northwest. The rail line skirts the eastern edge of the portion of the unit that contains the Antelope Creek Trail.

Views within the unit include views of the natural landscape; the surrounding Commercial/ Industrial and Residential visual assessment units; and roadway and freeway infrastructure such as paved surfaces, pier supports, and bridge decks. Vegetation within the open space, as well as vegetation, fencing, and walls associated with residential and commercial landscaping, limit some views in the unit. The unit is not lighted; however, aboveground utilities (e.g., wooden utility poles, steel transmission towers, and utility lines) are visible features crossing this viewshed.

The vividness of the Open Space visual assessment unit is high (V = 6) because the unit provides visually appealing natural areas in an otherwise developed area. The intactness and unity are moderately high (I & U = 5) because, while the open space area is not very disjointed and encroachments that could detract from the unit are minimal, pier supports and bridge decks are visible where structures span waterways and trails. In addition, the UPRR line, utility poles, steel transmission towers, and utility lines transect this unit. Mature vegetation obscures portions of nearby development and helps to reduce the apparent scale of highway infrastructure and visible development. The resulting visual quality is moderately high (VQ = 5.3).

Residential Visual Assessment Unit

Suburban residential areas consist of multi- and single-family residential uses. Two-story, multi-family housing complexes are located on either side of SR 65, northwest of Taylor Road/Pacific Street, and along Gibson Drive between Roseville Parkway and SR 65. The multi-family developments on either side of SR 65 are located below the East Roseville Viaduct, which bridges Antelope Creek in this area. Along the I-80 corridor, one- and two-story single-family housing developments are located south of Whitney Boulevard and southwest of Springview Drive, southeast of Pacific Street, southeast of China Garden Road, and north of Secret Ravine Parkway and Scarborough Drive. Soundwalls separate housing developments southeast of Pacific Street and southeast of China Garden Road from the I-80 corridor.

Views from the interior of residential developments are primarily limited to views of residential development, local roadways, and landscaping because existing buildings, fencing, walls, highway soundwalls, and landscaping block views of the project area. Views of the project area are most available from the nearest edges of development, where views from structures' second stories are available. First-story views are mostly limited by fencing and walls, landscaping, soundwalls and, in some locations, vegetation associated with the Open Space visual assessment unit. Lighting within the Residential visual assessment unit is concentrated in the residential developments and is associated with interior and exterior house lighting, landscape lighting, and street and traffic lighting.

The vividness of the Residential visual assessment unit is moderate (V = 4) because the various housing developments are typical of other such development in the region. The intactness and unity also are moderate (I & U = 4) because the area is uniformly developed and well-manicured. The I-80/SR 65 interchange is not a dominant visual element in the landscape. Development in the area is well designed, lacking abrupt transitions between developed land uses, and large-scale utility corridors that can detract from views in the region are absent. The resulting visual quality is moderate (VQ = 4).

Commercial/Institutional Visual Assessment Unit

Commercial uses in this visual assessment unit include big-box retail, small businesses, office complexes, the Roseville Galleria mall, restaurants, Roseville Golfland-Sunsplash amusement park, and other commercial and retail uses. Institutional uses include hospital and medical facilities, churches, and educational facilities. Aboveground utilities (e.g., roadway lights, traffic lights, wooden utility poles, steel transmission towers, and utility lines) are prominent features in the viewshed.

The Commercial/Institutional visual assessment unit has the most direct views of the project area because it is the largest unit adjacent to the project area and because it has the most unobstructed views of the I-80 and SR 65 corridors (e.g., from Cattlemens restaurant, the edges of Roseville Golfland-Sunsplash amusement park, and businesses near the Pleasant Grove Boulevard/SR 65 interchange). However, as described for the SR 65 Corridor and I-80 Corridor visual assessment units, trees, shrubs, and block walls constructed around businesses buffer many views toward the project area from this unit, especially along SR 65. In addition, vegetation associated with the Open Space visual assessment unit and landscaping, such as in parking areas, in some areas blocks ground-level views of the project corridor, such as views from the lower level of the

Sutter Medical Center. Potential views of the project area would be available from the upper levels of buildings facing it, such as the medical facility. Lighting in this unit includes safety lighting from the interior and affixed to the outside of buildings, lighting in parking lots, landscape lighting, and street and traffic lights.

The vividness of the Commercial/Institutional visual assessment unit is moderate (V = 3.5), because the various commercial and institutional buildings in the unit are typical of such development in the region. They contain large-scale buildings and parking lots that often lack mature landscaping to offset the scale of development. These areas have limited views of the I-80 and SR 65 corridors and of other residential and commercial land uses in the area. As shown on Figure 2.6-1, the Commercial/Institutional visual assessment unit borders both parts of the Open Space visual assessment unit and the Commercial/Institutional visual assessment unit would, therefore, have views of both of these areas. The intactness and unity are moderate (I & U = 4) because development in the area is consistent and lacks abrupt transitions between developed land uses, and large-scale utility corridors that often detract from views in the region are minimal. The resulting visual quality is moderate (VQ = 3.8).

2.6.2.3 Viewers and Viewer Response

Two major types of viewer groups are of primary concern for highway projects: highway neighbors and highway users. Each viewer group has its own particular level of viewer exposure and viewer sensitivity, resulting in distinct and predictable visual concerns for each group that help to evaluate their responses to visual changes. More detailed information on viewers and viewer response is provided in the VIA technical report prepared for this project (ICF International 2014). The report is available on the project website at http://8065interchange.org/.

Highway Users (Views from the Road)

Highway users are people who have views from the road. They can be subdivided into different viewer groups in two different ways—by mode of travel or by reason for travel. For example, subdividing highway users by mode of travel may yield pedestrians, bicyclists, transit riders, car drivers and passengers, and truck drivers. Dividing highway users or viewer groups by reason for travel creates categories like tourists, commuters, and haulers. It is also possible to use both mode and reason for travel simultaneously, creating a category like bicycling tourists, for example.

This analysis considers the categories of highway users listed below.

- Recreational travelers
- Local commuters
- Haulers

Highway users in the I-80 corridor constitute the largest number of viewers who would come into direct visual contact with the proposed project. It is estimated that between 2,550 and 7,470 vehicles per hour travel in each direction on I-80 through the project area during peak hours.[1] An

[1] Refer to Figure 12 of the *Transportation Analysis Report* (Fehr & Peers 2014) for more information.

estimated 1,150–4,360 vehicles per hour travel in each direction on SR 65 through the project area during peak hours. Views of the interchange from SR 65 would be apparent only as drivers are about to enter the interchange because development, vegetation, and road curvature obscure views. However, many roadway users likely travel this route daily for work commutes. Roadway users' exposure to the proposed project would range from moderate-high to high based on traffic volumes.

Highway users would have moderate to moderate-high sensitivity to visual changes resulting from the project. Although viewers would have direct visual contact with the project only while travelling through the area and views would be intermittent, many roadway users travel this route on a daily basis for work commutes and are familiar with the existing visual conditions.

Highway Neighbors (Views to the Road)

Highway neighbors are people who have views to the road. They can be subdivided into different viewer groups by land use. For example, residential, commercial, industrial, retail, institutional, civic, educational, recreational, and agricultural land uses may generate highway neighbors or viewer groups with distinct reasons for being in the corridor and therefore having distinct responses to changes in visual resources.

This analysis considers highway neighbors in the categories listed below.

- Residents in the Residential visual assessment unit.
- Workers and patrons in the Commercial/Institutional visual assessment unit.
- Recreationists in the Open Space visual assessment unit.
- Roadway users in the Residential and Commercial/Institutional visual assessment units.

Highway neighbors constitute viewers who would have longer term, stationary views (residents and businesses) and viewers who would have shorter term, transient views (recreationists and roadway users on nearby local roadways) as they pass by the proposed project. Highway neighbors' views of the project vary based on their location within the landscape and distance from the project area. A limited number of highway neighbors have immediate and direct views of the project area; these views include stationary views from the edges of development that are directly adjacent to the project area and transient views by viewers approaching and directly adjacent to the project area. Most highway neighbors do not have immediate and direct views of the project area because views are limited by development, vegetation, and topography. More distant views are similarly obstructed by these intervening features. Residents would have high exposure, businesses would have moderate-high exposure, and transient highway neighbors would have moderate exposure to the proposed project.

Highway neighbors would have moderate-high to high sensitivity to visual changes resulting from the proposed project because the neighbors adjacent to or near the project area have short- to long-term stationary and transient views of the SR 65 and I-80 corridors and the vegetation adjacent to the right-of-way.

2.6.3 Environmental Consequences

As noted above, the project area is not located near a state scenic highway or other designated scenic corridor. Accordingly, the proposed project would not substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; and there would be no effect to such scenic resources in any visual assessment unit for all build alternatives.

2.6.3.1 Build Alternatives

Visual Character and Visual Quality

I-80 Corridor Visual Assessment Unit

Project construction would take place between 2020 and 2036, entailing four major phases and eight subphases that would occur consecutively (refer to Chapter 1, “Proposed Project”). Construction activities would introduce considerable heavy equipment and associated vehicles (e.g., backhoes, compactors, tractors, cranes, and trucks) into the viewshed of highway users. Construction staging would occur within the right-of-way, including within ramp loops, and would be immediately visible to passing viewers. Construction signaling and signage also would be introduced to direct traffic, signifying lane shifts and closures. The presence of construction activities and equipment would affect views of and from the project area during the construction period. This effect is considered adverse because construction within the I-80 corridor would be perceived as a continual event. Highway users, the primary viewers in this visual assessment unit, are transient and familiar with heavy equipment associated with other highway construction projects; nevertheless, all build alternatives would constitute a major highway construction project, and construction would result in adverse visual effects. Construction of each alternative would result in some variations.

- Alternative 1 would result in slightly less vegetation removal than Alternatives 2 and 3 at the Atlantic Street/Eureka Road interchange and adjacent commercial area, within the Taylor Road interchange ramps, and within the Open Space visual assessment unit near the Sutter Medical complex. However, Alternative 1 would entail slightly more vegetation removal than Alternatives 2 and 3 in the Open Space visual assessment unit along the eastern edge of the I-80 Corridor visual assessment unit, from near the eastbound I-80 on-ramp from SR 65 to the residential area east of China Garden Road. Vegetation removal near Cattlemens restaurant, Roseville Yamaha, and Enterprise Rent-A-Car and within the I-80 and SR 65 interchange western ramps would be greater under Alternative 1 than under Alternatives 2 and 3. An undercrossing that would be constructed under I-80 to accommodate the Taylor Road connection would result in slightly more visible construction activities from earthwork and bridge construction at this location under Alternative 1 than under Alternatives 2 and 3.
- Alternative 2 would result in slightly more vegetation removal than Alternatives 1 and 3 at the Atlantic Street/Eureka Road interchange, along Miners Ravine, and in the adjacent commercial area; within the Taylor Road interchange loops; and within the Open Space visual assessment unit near the Sutter Medical complex. An additional bridge would be constructed across Miners Ravine near the Atlantic Street/Eureka Road interchange, between the eastbound I-80 corridor and the Atlantic Street/Eureka Road off-ramp. Alternative 2

would require more construction and vegetation removal at this location. Reconfiguring the existing eastbound I-80 to northbound SR 65 connector would likely not affect vegetation. The Taylor Road off-ramp from eastbound I-80 would be slightly reconfigured, and the westbound I-80 on-ramp from Taylor Road would be reconfigured, resulting in slightly more construction near the Taylor Road overcrossing than under Alternatives 1 and 3. Alternatives 2 and 3 would retain more vegetation on the northeast side of I-80 in the interchange area than would Alternative 1.

- Under Alternative 3, no additional bridge would be constructed across Miners Ravine near the Atlantic Street/Eureka Road interchange, and less construction and vegetation removal would be required at this location than under Alternative 2. An undercrossing would not be constructed under I-80 to accommodate the Taylor Road connection, resulting in slightly less visible construction activities associated with earthwork and bridge construction at this location. Removal of the Taylor Road on-ramp likely would not affect vegetation.

For all alternatives, construction would affect the existing visual quality because it would be ongoing for more than a decade and would affect native trees and shrubs and other vegetation that provide aesthetic qualities along the corridor. When considered together with viewer response, construction would result in a resource change to this visual assessment unit that is moderate-low; the resulting visual impacts on scenic views associated with the vegetated right-of-way located northeast of the Taylor Road overcrossing and the existing visual character during construction would be moderate to moderate-high.

All build alternatives would include permanent visual changes following completion of construction, such as highway and structure widening, introduction of retaining wall structures and lane barriers, HOV and ramp improvements, removal and replacement of I-80/SR 65 connectors, vegetation removal, and changes to private properties. All these project components would be visible to highway users within the I-80 Corridor visual assessment unit.

Some changes associated with the build alternatives, such as ramp and intersection improvements and the Taylor Road overcrossing replacement, would not greatly alter the existing visual character of the I-80 corridor. Ramp and intersection improvements at the I-80/Eureka Road/Atlantic Street interchange may include ramp metering, ramp widening for storage or HOV bypass lanes, and auxiliary lanes. The widened ramps would appear similar to existing visual conditions and would not constitute a substantial visual change. The Taylor Road overcrossing would be replaced with a wider structure over I-80 to accommodate additional lanes, but all the features associated with the proposed overcrossing also are visual elements of the existing overcrossing. The widened overcrossing would not significantly alter the existing visual character of the project area as seen by highway users.

For all alternatives, other features would result in a higher degree of change, especially when viewed together. One or two mixed-flow lanes and one or two auxiliary lanes in each direction of travel would be added to the existing corridor width, depending on location. A 2-foot-wide pavement delineation soft barrier would separate the HOV lanes from the general purpose lanes in both directions between the Eureka Road/Atlantic Street and the HOV direct connector ramp, depending on build alternative. The widened lanes, pavement, and striping associated with the build alternatives would slightly alter the existing visual character of the project area, as seen by highway users, by expanding the highway corridor, the number of lanes, and the extent of paved surface. The widening also would bring highway users nearer to adjacent land uses northwest of the corridor between the Taylor Road overcrossing and the I-80/SR 65 interchange—that is, Cattlemens restaurant, Enterprise Rent-A-Car, and Taylor Road Self Storage.

Widening also would reduce the amount of grassland and vegetated areas within the right-of-way. Removal of mature trees and shrubs, including native oak trees and riparian vegetation along waterways, at the following locations would be visible to highway users.

- Evergreen and deciduous trees and shrubs within the Atlantic Street/Eureka Road interchange eastern loops and between the eastbound on-ramp at Eureka Road and adjacent commercial area.
- Evergreen and deciduous trees and shrubs within the Taylor Road interchange eastbound loop and near the Taylor Road overcrossing along westbound I-80.
- Perimeter buffer plantings along the Cattlemens restaurant parking lot and between Roseville Yamaha and Enterprise Rent-A-Car.
- Oak woodland vegetation within the Open Space visual assessment unit along the eastern edge of the I-80 Corridor visual assessment unit from near the Sutter Medical complex to the residential area east of China Garden Road.
- Evergreen and deciduous trees and shrubs within the I-80 and SR 65 interchange medians along westbound I-80.
- Evergreen and deciduous trees and shrubs north of the SR 65 on-ramp from westbound I-80 and south of the I-80 westbound on-ramp from SR 65.

Grassland areas along the right-of-way would be reduced to accommodate highway widening. The visual character of the corridor would be adversely affected by removal of mature trees and shrubs within ramp loops and on the edges of the right-of-way to accommodate widening and the new and reconfigured interchange ramps.

The build alternatives would add retaining wall structures and lane barriers in the I-80 Corridor visual assessment unit. The proposed project includes a retaining wall between the eastbound Eureka Road/Atlantic Street interchange and the Roseville Parkway overcrossing, a cast-in-place retaining wall near the East Roseville Viaduct to support the direct connecting HOV ramp, a tie-back wall under the eastbound Roseville Parkway overcrossing, and a concrete barrier between the northbound HOV and general purpose lanes between I-80 and the Galleria Boulevard/ Stanford Ranch Road interchange. Retaining walls currently are located in conjunction with corridor overcrossings and on eastbound I-80 near Roseville Golfland-Sunsplash. Retaining walls would create vertical surfaces that limit views and create a sense of enclosure in locations that currently lack such features. These impacts are considered adverse because retaining walls prevent open views to the surrounding landscape and barriers create a channelized effect.

The greatest visual changes associated with the build alternatives in the I-80 Corridor visual assessment unit would be removal and modification of the existing I-80/SR 65 loop connectors and structures over I-80. The existing I-80 overcrossing (i.e., the eastbound I-80/SR 65 connectors) consists of two parallel structures that appear to be one span until highways users pass under it and can see the gap. The existing overcrossing has an approximately 18-foot clearance over I-80 and is approximately 26 feet tall at the top of the side barriers. In the reconfigured system of connectors, three to four aerial structures would cross over I-80, and other connector ramps would be at this location, depending on the alternative. A three-lane flyover structure would be added to accommodate traffic from eastbound I-80 to northbound SR 65. The tallest of the reconfigured structures would be approximately 80 feet high at the top of the structure, measured from the existing I-80 highway grade, making the reconfigured structure 54 feet taller than the existing structures. In addition, a direct connecting HOV ramp in the I-80 median—built on mechanically stabilized earth walls transitioning to a structure and then to a cast-in-place retaining wall near the East Roseville Viaduct—would be added to serve traffic in both directions. The HOV direct connector from I-80 to SR 65 would be located in the middle of I-80 and would obscure views of the I-80 corridor beyond; currently, views down the corridor are not obscured until the Taylor Road overcrossing.

The connectors would require fill and mounding to provide bridge clearance over other connector ramps. These new landforms would obscure views beyond only to a small degree for passing highway users, but they would alter the existing visual character. The bridge materials would be visually similar to those of existing structures, but the visual prominence of the connectors would be greatly increased because of their number and height.

Changes to I-80/Taylor Road ramp connections would vary under the build alternatives. Under Alternative 1, the Taylor Road on-ramps would be relocated, regraded, and seeded. This modification would reduce roadway infrastructure at these locations, creating new open space areas in the foreground of views from the Taylor Road overcrossing and I-80. The new Taylor Road off-ramp from westbound I-80 would require removal of existing vegetation and regrading within the interchange medians northwest of I-80.

Under Alternative 2, the modified Taylor Road off-ramp from eastbound I-80 and modified westbound I-80 on-ramp from Taylor Road would be visually similar to existing conditions.

Under Alternative 3, the Taylor Road on-ramps would be removed, regraded, and seeded. The visual effects would be similar to those under Alternative 1, except that the new Taylor Road connections would not be constructed.

Alternative 2 would entail an additional bridge across Miners Ravine near the Atlantic Street/Eureka Road interchange, between the I-80 corridor and the Atlantic Street/Eureka Road off-ramp. This new bridge is not anticipated to substantially alter the existing visual character at this location because one large bridge for I-80 and two smaller bridges on the ramps are currently present, and the new bridge would be located between the existing bridges. Recreationists on Miners Ravine Trail are already familiar with crossing under bridges at this location, and the additional bridge would not substantially alter this experience. Under Alternative 3, the modified Atlantic Street/Eureka Road ramps would appear visually similar to existing conditions.

Both Alternatives 2 and 3 would entail slightly wider footprints on the southeast side of the project area along I-80 between Eureka Road and the I-80/SR 65 interchange because of the collector-distributor ramp system that is part of those alternatives.

As noted, the greatest visual impacts in the I-80 Corridor visual assessment unit would be seen by highway users approaching the I-80/SR 65 interchange. As shown in Figures 2.6-2 through 2.6-6, all of the build alternatives would result in an interchange connector system that would require fill and mounding to provide bridge clearance over I-80; reconfigured, taller structures; and vegetation removal. The additional lanes would create a wider highway corridor compared to existing conditions, and removal of vegetation would make the reconfigured ramps and connectors much more visually apparent compared to existing conditions. The area remaining from the reconfigured eastbound I-80 to northbound SR 65 connector would be regraded and seeded; this area would appear to be a natural landform beneath the new connector, altering views of roadway infrastructure at this location.

All build alternatives would create a wider highway corridor compared to existing conditions, increasing the amount of visible transportation infrastructure within the landscape. The HOV direct connector from I-80 to SR 65 in the middle of I-80 would obscure views of the I-80 corridor beyond; currently, views down the corridor are not obscured until the Taylor Road overcrossing. Many of the reconfigured connectors would be of similar height to the existing SR 65 bridge over I-80, but the reconfigured SR 65 connector to eastbound I-80 would be much taller than the existing structures.

Under Alternative 1, the relocated Taylor Road ramp connections would be co-located with the I-80/SR 65 connector system, potentially adding complexity to the highway infrastructure in views for approaching highway users. Under Alternative 2, the configuration of the ramps connecting traffic from I-80 and Taylor Road to SR 65 would create additional complexity of elevated structures (Figure 2.6-4).

Summary

The overall visual quality (vividness, intactness, and unity) of the I-80 Corridor visual assessment unit would be substantially affected by the proposed project because the project would alter the appearance of the highway corridor and introduce substantial human-made features—primarily associated with the connectors—that would segment the landscape. In addition, the project would include highway and structure widening, introduction of retaining wall structures and lane barriers, HOV and ramp improvements, vegetation removal, and changes to private properties, detailed above, which also would affect visual quality. The quantitative changes are shown in Table 2.6-1. The detailed analysis from which this table is derived is available in the VIA (ICF International 2014).

Table 2.6-1. Visual Quality Change for I-80 Corridor Visual Assessment Unit

Alternative	Existing Visual Quality	Visual Quality with Project	Visual Quality Change
1	4.7 (MH)	2.3–2.7 (ML-M)	-2.4– -2.0 (ML)
2	4.7 (MH)	2.5–3.7 (M)	-2.2– -1.0 (L-M)
3	4.7 (MH)	2.5–3.7 (M)	-2.2– -1.0 (L-M)

L=Low, ML=Moderately low, M=Moderate, MH=Moderately high, H=High.

Viewer response of highway users would be moderate-high to high (refer to Tables 4, 8, and 12 in the VIA) for all build alternatives. Viewers within the I-80 Corridor visual assessment unit have the greatest exposure to major changes associated with the project area. Although they would come in direct visual contact with the project only while travelling through the area and views would be intermittent, many roadway users travel this route on a daily basis for work commutes and are familiar with the existing visual conditions. The modified interchange, roadway widening, and associated vegetation removal would alter the existing visual character and visual quality of the project area, and highway users would likely view these changes negatively. All build alternatives would result in a resource change to this visual assessment unit that is low to moderate. When considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate to moderate-high for all build alternatives. Therefore, these permanent built changes would result in adverse visual effects for all build alternatives.

SR 65 Corridor Visual Assessment Unit

Visual impacts associated with construction and operation would not vary among the build alternatives within the SR 65 Corridor visual assessment unit because the design is the same for all three alternatives.

Project construction would take place between 2020 and 2036, entailing four major phases and eight subphases that would occur consecutively (refer to Chapter 1, “Proposed Project”). Construction activities would introduce considerable heavy equipment and associated vehicles, including backhoes, compactors, tractors, cranes, and trucks, into the viewshed of highway users. Construction staging would occur within the right-of-way, including within ramp interiors that would be immediately visible to passing viewers. Construction signaling and signage would be visible to direct traffic and would signify lane shifts and closures. The presence of construction activities and equipment would affect views of and from the project area during the construction period.

Highway users—the primary viewers in this visual assessment unit—are transient and familiar with heavy equipment associated with other highway construction projects; nevertheless, the proposed project and its alternatives constitute a major highway construction project; construction would result in adverse visual effects.

Permanent changes in this visual assessment unit would involve highway and East Roseville Viaduct widening, addition of HOV lanes, introduction of lane barriers, ramp improvements, and vegetation removal that would be visible to highway users within the SR 65 corridor.

SR 65 would be widened in both directions to accommodate one additional mixed-flow lane and one or two auxiliary lanes in each direction of travel. An HOV lane would be added in each direction within the existing median, which would be paved, and the lanes would be separated from general traffic in the northbound direction by lane barriers between I-80 and the Galleria Boulevard/Stanford Ranch Road interchange. In addition, a 4-foot-wide pavement delineation soft barrier would separate the southbound HOV and general purpose lanes between the Galleria Boulevard/Stanford Ranch Road on-ramp and the eastbound I-80 HOV direct connector ramp. As shown in Figure 2.6-7, widening to the south would not be very noticeable. However, lane barriers—although shorter—would physically and visually separate traffic traveling in opposite directions. They also would partially obscure the lower portions of views of oncoming traffic. In locations where more lanes are added, the widened lanes, pavement, and striping associated with the project would slightly alter the existing visual character of the project area as seen by highway users.

All ramps at the SR 65/Galleria Boulevard/Stanford Ranch Road interchange would be reconstructed to accommodate additional lanes on SR 65, as well as the addition of an HOV preferential lane on the Galleria Boulevard/Stanford Ranch Road on-ramp from southbound SR 65 and widening the northbound Stanford Ranch Road slip off-ramp to two lanes. Widened ramps would appear similar to existing facilities in the area and would not constitute a substantial visual change.

These modifications would reduce the amount of grassland areas within the right-of-way along the SR 65 corridor, within the median, and where on-ramps and off-ramps are widened; but no mature trees or shrubs would be affected along this stretch of roadway or along these ramps. Reduction of grasslands would adversely affect the visual character of the corridor.

Retaining walls would create vertical surfaces that limit views and create a sense of enclosure. These impacts are considered adverse because retaining walls would replace views of grassland areas and create a channelized effect.

One of the more notable visual impacts within the SR 65 Corridor visual assessment unit would be seen as highway users travel the East Roseville Viaduct in both directions. The viaduct would be widened to accommodate the center HOV lanes, two new northbound lanes, and an additional southbound lane. These improvements would remove the center gap that presently exists between the two viaduct structures and widen the structure on both sides. The viaduct structure would appear to highway users traveling it to be one large, very wide bridge structure. Closing the center gap between the two existing structures would preclude views of the treetops of riparian vegetation that presently can be seen when crossing over Antelope Creek.

The greatest visual changes associated with the build alternatives would be seen by highway users traveling south over the East Roseville Viaduct and approaching the I-80/SR 65 connectors and structures over I-80. The existing SR 65 bridge over I-80 comprises two parallel structures that are approximately 26 feet tall at the top of the side barriers. In the reconfigured system of connectors, three to four aerial structures would cross over I-80, in addition to other connector ramps, depending on the alternative. The tallest of the reconfigured structures would be approximately 80 feet high at the top of the structure, measured from the existing I-80 highway grade, making the reconfigured structure 54 feet taller than the existing structures. These structures would be different heights and would be seen diverging into the viaduct near where the UPRR tracks cross under the viaduct. The interchange connectors would create new visual features and a new visual pattern that would obscure views beyond to a small degree and would alter the existing visual character. The bridge materials would be visually similar to those of the existing structures, but the visual prominence of the connectors would be greatly increased by the number and scale of reconfigured connectors introduced into the viewshed.

Summary

The vividness of the SR 65 Corridor visual assessment unit would not be affected by the project and would remain moderate. The intactness and unity would be slightly affected, decreasing from moderate-high to moderate because the new HOV lanes and lane barriers would alter the appearance of the highway corridor by reducing grassland areas, increasing pavement, and introducing visual barriers that would segment the corridor. The overall visual quality would remain moderate (refer to Table 18 in the VIA).

Viewer response of highway users would be moderate-high (refer to Table 16 in the VIA). Viewers in this unit have the greatest exposure to changes associated with the project area. Although they come in direct visual contact with the project only while travelling through the area and views would be intermittent, many roadway users travel this route on a daily basis for work commutes and are familiar with the existing visual conditions. Construction within the SR 65 corridor would be perceived as a continual event for an extended period of time and would affect grassland areas that provide aesthetic qualities along the corridor. Highway users would likely view these changes negatively. Upon completion of construction, the HOV lanes, roadway and viaduct widening, and associated vegetation removal would slightly alter the existing visual character of the project area.

All build alternatives would result in a resource change to this visual assessment unit that is low (refer to Table 19 in the VIA). When the resource change is considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate. Therefore, these permanent built changes would result in adverse visual effects for all build alternatives.

Open Space Visual Assessment Unit

Visual impacts in the Open Space visual assessment unit would be the same or very similar under all three build alternatives. Slight variations in the visibility of interchange connector facilities could result from specific viewpoints depending on the precise alignment of individual structures and lines of sight within the assessment unit; however, these changes would be very minor and would be subject to further variation depending on future vegetation growth.

Project construction would take place between 2020 and 2036, entailing four major phases and eight subphases that would occur consecutively (refer to Chapter 1, “Proposed Project”). Recreationists in open space areas near project work areas would be able to see heavy equipment and associated vehicles such as backhoes, compactors, tractors, and cranes constructing the reconfigured elevated structures and piers, and associated vegetation removal and earthwork would be visible. These activities would introduce intense construction activities very close to nearby formal and informal trails. Recreationists would not be accustomed to heavy equipment and associated construction activities at such close range over a prolonged period. Construction activities would affect their recreational experience, and they would be highly sensitive to this impact.

Construction would affect the existing visual quality in the Open Space visual assessment unit because it would take place over a prolonged period and would affect grassland areas that provide aesthetic qualities. When considered together with viewer response, construction would result in a resource change to this visual assessment unit that is low; the resulting visual impacts on scenic views and the existing visual character would be moderate.

Woodside Park would not be affected by the build alternatives because it is located outside the I-80 right-of-way and separated from it by a soundwall. Recreationists in the portion of the unit southeast of I-80 would have views of the project through the trees from some of the informal trails that weave through the area. These views may be limited by oak trees and may include views of portions of connectors and connector support structures that would introduce the presence of elevated structures. The tallest I-80/SR 65 interchange connector structure, which is 80 feet tall, may be more visible in some locations, rising over the tops of trees. However, it is expected that only smaller portions of the structure would be seen, and that the trees would mostly screen the visible portions of the structure. Visibility would increase in fall and winter when deciduous trees are dormant.

The area where the Antelope Creek Trail passes under the East Roseville Viaduct would be affected by the widened, elevated viaduct structure. The structure would be widened by approximately 7–10 feet on the south side of the existing structure and 41.5 feet on the north side. As shown in Figure 2.6-8, the project would result in the removal of grassland, trees, and shrubs between the two existing viaducts, including riparian vegetation along Antelope Creek. The viaduct would be widened on both sides to accommodate the center HOV lanes, two new northbound lanes, and an additional southbound lane, removing the center gap that presently exists between the two viaduct structures. The viaduct structure would become a large, very wide bridge structure; would introduce additional support columns; and would create a greater sense of enclosure for recreationists on the trail under the structure. Closing the center gap between the two existing structures also would block sunlight from the area beneath. This change may be perceived as negative or beneficial. Some recreationists using the trail or accessing the creek's edge may view these changes as negative because of the introduction of additional transportation infrastructure into the open space area. Conversely, some recreationists may view this positively because the increased structure could provide an expanded area of shade in the hot summer months and protection from rain in fall and winter.

From a distance, the structure would be visually similar to the existing facilities. A portion of the Antelope Creek Trail under the viaduct would need to be shifted to the north to accommodate a new pier. This realignment would not result in a substantial change to the visual environment because it would be slight and the relocated portion of the trail would appear visually similar to existing conditions.

Summary

The vividness of the Open Space visual assessment unit would be affected by the project and would be reduced from high to moderate-high because of the prominence of the I-80/SR 65 connectors, the widened viaduct, and removal of vegetation. Intactness and unity also would be affected by these changes but would remain moderate-high. The overall visual quality in the unit would not be reduced but would remain moderate-high (refer to Table 22 in the VIA).

The viewer response of recreationists would be moderate-high (refer to Table 20 in the VIA). Viewers within this unit would have less direct exposure to moderate changes associated with the project area than highway users. They come in direct visual contact with the proposed project area only while travelling through it, and views would be intermittent. Nevertheless, many recreationists value the existing visual conditions within the unit. The widened viaduct, addition of supports, and associated vegetation removal would alter the existing visual character of the project area, and would create additional shade and cover. Recreationists may view these changes as either negative or beneficial.

All build alternatives would result in a resource change to this visual assessment unit that is low (refer to Table 23 in the VIA). When considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate. Therefore, these permanent built changes would result in adverse visual effects for all build alternatives without mitigation.

Residential Visual Assessment Unit

Visual impacts in the Residential visual assessment unit would be the same or very similar under all three build alternatives. The primary features that might be seen from the Residential visual assessment unit would be the widened I-80 corridor, 80-foot-tall I-80/SR 65 interchange connector structure, and widened East Roseville Viaduct structure.

Residential areas south of Whitney Boulevard, along Gibson Drive, between Roseville Parkway and SR 65, southeast of China Garden Road, and north of Secret Ravine Parkway and Scarborough Drive generally would not be affected by the project because they are removed from the right-of-way and would not have direct views of the project area. Because residential areas southeast of Pacific Street and southeast of China Garden Road are separated from the I-80 corridor by soundwalls and landscaping, these residences would not have direct views of construction activities or completed structures. Select residences that border the edge of the adjacent Open Space visual assessment unit may have limited views of portions of the tallest I-80/SR 65 interchange connector structure rising over the tops of trees. However, it is expected that only smaller portions of the structure would be seen and that the trees would mostly screen the visible portions. Visibility would increase in fall and winter when deciduous trees are dormant.

Under Alternative 1, the soundwall near the westbound I-80 on-ramp to SR 65 would be shifted approximately 20 feet north for a distance of approximately 500 feet. The soundwall would be moved closer to the back edge of the backyards of residences, which have fencing and mature landscaping that would prevent or limit views. For residences with chain-link fencing in the backyard, the wall shift would appear visually similar to existing conditions and would not constitute a substantial alteration to the existing visual character.

The Hearthstone apartments, immediately southeast of the Antelope Creek Trail, and the Placer West apartments, northwest of Taylor Road/Pacific Street, would be affected by construction activities. Because these residences are at the level of the base of the East Roseville Viaduct support piers, heavy equipment and associated vehicles, including backhoes, compactors, tractors, and cranes, would be visible during construction activities. These intense construction

Figure 2.6-8
Key View 4: Existing View and Alternatives 1, 2, and 3 Simulated Conditions—from Antelope Creek Trail south of the East Roseville Viaduct

activities very close to nearby multi-family homes from ground level to elevations of approximately 50 feet above ground level would create a sense of visual intrusion and privacy invasion because construction workers could have visual access to residences directly adjacent to construction. Residents may feel obligated to close blinds and curtains, blocking daylight and views of nearby open spaces. Viewers in community areas would be able to see the elevated structures being raised and would be highly sensitive to the impact of construction.

Following completion, views of the widened viaduct from the south would not be substantially altered for residents at the Preserve at Creekside apartments abutting the southbound side of SR 65 and immediately southeast of Antelope Creek because dense vegetation, which would not be greatly affected during construction, buffers their views of the structure. Where visible, the structure would appear visually similar to existing conditions.

However, the reconfigured structure would be much closer to residences northwest of the viaduct and would appear to tower over them compared to existing conditions. The reconfigured structure would be within 20 feet of the Hearthstone and Placer West apartment complexes. The Hearthstone apartments lack the dense vegetative screening of the Placer West apartments; however, some vegetation near the Placer West apartments would be removed during construction, reducing the existing buffer.

Summary

While most residential highway neighbors do not have immediate or direct views of the project, longer term, stationary views are available to residential highway neighbors on the edges of development that are directly adjacent to the project area, especially residents at the Hearthstone and Placer West apartments. The exposure for these residents would be high because of their prolonged views. Their sensitivity would be high because they are close to the site and would likely perceive the removal of vegetation and construction activities so near to them as an adverse effect. Accordingly, viewer response for these highway neighbors would be high (refer to Table 24 in the VIA). Construction would affect the existing visual quality because it would be ongoing for a prolonged period and would affect the privacy of residents at the Hearthstone and Placer West apartments. Moreover, residential highway neighbors would not be accustomed to heavy equipment and the associated construction occurring so close to them. Although residential viewers within the project area are familiar with these types of interchanges, the connector structures would rise above the treeline and the widened viaduct would be located much closer to residents, altering the existing visual environment and visual character of the project area. This would be an adverse effect.

The vividness of the Residential visual assessment unit would be affected by the project, decreasing from moderate to moderate-low because of the prominence of the I-80/SR 65 connectors and widened viaduct and the removal of vegetation. Intactness and unity also would be affected by these changes but would remain moderate. The overall visual quality would decrease from moderate to moderate-low (refer to Table 26 in the VIA). Therefore, operation would result in a resource change to this visual assessment unit that is low (refer to Table 27 in the VIA). When considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate. Therefore, these changes would result in adverse visual effects.

Commercial/Institutional Visual Assessment Unit

The general changes associated with the I-80 Corridor visual assessment unit also pertain to the commercial/institutional areas adjacent to the I-80 corridor. The preponderance of construction and operation features would be the same or very similar under all three build alternatives. Where the effects of alternatives vary, these differences are addressed in the discussion below.

Commercial and institutional areas on either side of SR 65 would be minimally affected by construction and the completed facilities because they are located outside the right-of-way, because they face away from the corridor, and because landscaping, walls, and terrain help to buffer most views of the SR 65 corridor from parking areas. Where views do exist, the corridor would not be altered enough to substantially change the existing visual character of the corridor.

Commercial and institutional areas south of the Atlantic Street/Eureka Road interchange are at the end of the construction zone and have limited views of the Atlantic Street/Eureka Road interchange because of the open space and riparian area bordering Miners Ravine. These areas would have views of minor construction activities along visible portions of I-80. Because there would be a limited amount of construction of short duration in this area, it is anticipated that construction would result in temporary, short-term visual impacts. Following completion, this area would appear visually similar to existing conditions because the project transitions to meet existing lane configurations at this project limit.

The Sutter Medical complex also is likely to be minimally affected by construction activities because mature trees and shrubs associated with the intervening Open Space visual assessment unit screen the project area. However, because the hospital is at a higher elevation than the surrounding area, there may be views from the hospital—particularly from upper floors—of cranes and falsework associated with constructing the elevated connector structures, especially the 80-foot-tall structure. Portions of the completed interchange may be visible from the hospital, particularly from the upper floors; however, it is expected that only small portions of the structure would be seen, and that trees would mostly screen the visible portions of the structure. This visibility would increase in fall and winter when deciduous trees are dormant.

The commercial and institutional areas that would be most affected by the build alternatives would be those along Taylor Road on either side of I-80 because these areas directly abut and have views of the I-80 corridor, the I-80/SR 65 interchange, and Taylor Road. Viewers at these locations would be able to see heavy equipment and associated vehicles, including backhoes, compactors, tractors, and cranes, engaged in intense construction activities over a prolonged period. These highway neighbors also would have extensive views of the reconfigured transportation facilities.

The build alternatives would result in vegetation removal, as described above under "I-80 Corridor Visual Assessment Unit." The visual character of portions of the Commercial/Institutional visual assessment unit would be adversely affected by removal of mature trees and shrubs on the edges of the I-80 right-of-way, along Taylor Road, and between Roseville Yamaha and Enterprise Rent-A-Car to accommodate widening. Removal of these mature trees and shrubs would render the reconfigured I-80/SR 65 loop connectors and structures over I-80 more visually prominent. The widening of Taylor Road would reduce planter beds in front of businesses, bringing Taylor Road closer to businesses and making the roadway slightly more visually prominent.

Construction of the new Taylor Road ramps near the existing Stonehouse Court would entail slightly more vegetation removal under Alternative 1 than under Alternatives 2 and 3, specifically affecting plantings and customer parking areas associated with Cattlemens restaurant. This would result in permanent changes to the affected parking areas.

Under all alternatives, construction of the new Taylor Road connections also would necessitate removal of an open air structure, small accessory building, and some moveable storage units. Because of the extent of construction proceeding in the immediate area associated with the interchange, construction of the Taylor Road connection would appear to be a part of the overall construction activities and would not result in additional visual impacts. Moreover, these new ramps would be constructed in a commercial area that lacks sensitive viewers; the primary viewers would be drivers passing by on Taylor Road. Accordingly, it is not anticipated that the presence of the new ramps would constitute an adverse visual impact.

Relocation of the access to Stonehouse Court under Alternative 1 would require take of a portion of the parking area associated with the church located just south of Stonehouse Court. Because construction would result in alteration of the parking and planting areas associated with businesses along Taylor Road, it is likely that commercial and institutional highway neighbors could view the project changes negatively. At the same time, because Stonehouse Court would be relocated to an existing entry drive, and the new Taylor Road ramps would replace the existing Stonehouse Court just northeast on Taylor Road, there would be no increase in the number or roadways entering Taylor Road. However, the relocated access to Stonehouse Court would bring that roadway nearer the church where a parking area currently exists.

Construction activities would create visual impacts on views of the project area during the construction period. This is considered adverse because construction within the I-80 corridor and along Taylor Road would be perceived as an ongoing condition for a prolonged period. While commercial and institutional highway neighbors are familiar with heavy equipment associated with other highway construction projects, the proposed project and its alternatives constitute a major highway and roadway construction project that would be visually disruptive for a number of years.

Once built, the greatest visual changes associated with project alternatives would be the removal and modification of the existing I-80/SR 65 loop connectors and structures over I-80. These are described in detail above for the "I-80 Corridor Visual Assessment Unit."

Summary

The vividness of the Commercial/Institutional visual assessment unit would be affected by the proposed project, decreasing from moderate to moderate-low because of the prominence of the I-80/SR 65 connectors, impacts on businesses along Taylor Road because of the widened I-80 corridor and Taylor Road, and removal of vegetation. The intactness and unity also would be affected by these changes, decreasing from moderate to moderate-low. The overall visual quality would be reduced from moderate to moderate-low (refer to Table 30 in the VIA). All build alternatives would result in a resource change to this visual assessment unit that is low (refer to Table 31 in the VIA). When considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate.

While most highway neighbors do not have immediate or direct views of the project, longer term, stationary views are available to commercial and institutional highway neighbors that are directly adjacent to the project area. The exposure for these businesses would be high because of their prolonged views. Their sensitivity to changes associated with the project would be high because they are close to the site and would likely perceive the removal of vegetation and construction activities so close to them as an adverse effect (refer to Table 28 in the VIA). Construction would result in impacts on the existing visual quality because it would occur within this unit for an extended period of time and would result in impacts on vegetated areas that provide aesthetic qualities along the corridor. Moreover, while commercial and institutional viewers in the project vicinity are familiar with these types of interchanges, the connector structures would rise above the treeline and the widened viaduct would be much closer to businesses, altering the existing visual environment and visual character of the project area. These impacts would be adverse.

Light and Glare

I-80 Corridor Visual Assessment Unit

Effects related to light and glare would be the same or very similar under all build alternatives.

Evening and nighttime construction activities under all build alternatives would require the use of extremely bright lights, which would adversely affect highway users and nighttime views of and from the work area.

Some changes associated with the build alternatives, such as ramp and intersection improvements and the Taylor Road overcrossing replacement, would not greatly increase glare within the I-80 corridor. Ramp and intersection improvements at the I-80/Eureka Road/Atlantic Street interchange may include ramp metering, ramp widening for vehicle storage (i.e., allowing for more vehicles to queue on the ramp) or HOV bypass lanes, and auxiliary lanes. The widened ramps would appear similar to existing visual conditions and would not constitute a substantial increase in daytime glare. The Taylor Road overcrossing would be replaced with a wider structure to accommodate additional lanes; however, because all the features associated with the proposed overcrossing are visual elements of the existing overcrossing, the widened overcrossing would not significantly increase glare for highway users.

The remaining project-related visual changes would result in an increase of visible glare, especially when considered together. The widened lanes and pavement associated with the project would expand the highway corridor, as seen by highway users, increasing the amount of paved surfaces and slightly increasing daytime glare through of transformation of less reflective, vegetated surfaces to more reflective, paved surfaces.

All build alternatives would add retaining wall structures and lane barriers as described in the discussion of the potential for degradation of visual character in the I-80 corridor visual assessment unit. Retaining walls and lane barriers would have vertical surfaces that would result in increased reflective glare from sunlight during the day and from artificial light sources at night. These impacts are considered adverse because reflective glare could occur from those surfaces facing highway users.

The build alternatives would require the relocation of existing lights to accommodate lane widening and ramp improvements. New light from ramp metering facilities would add an inconsequential amount of light to the project area when meters are in use. However, new lights associated with reconfigured connectors would be at a higher elevation and have the potential to make lighting more prominent, if not properly designed.

SR 65 Corridor Visual Assessment Unit

Effects related to light and glare would be the same or very similar under all build alternatives.

Evening and nighttime construction activities under all build alternatives would require the use of extremely bright lights, which would adversely affect highway users and nighttime views of and from the work area.

All build alternatives have the potential to increase visible glare for highway users in the SR 65 corridor. SR 65 would be widened on both sides to accommodate additional lanes as described in the discussion of degradation of existing visual character in the SR 65 Corridor visual assessment unit. The widened lanes and pavement associated with the project would expand the highway corridor as seen by highway users, increasing the amount of paved surfaces and slightly increasing daytime glare through a transformation of less reflective, vegetated surfaces to more reflective, paved surfaces.

All ramps at the SR 65/Galleria Boulevard/Stanford Ranch Road interchange would be reconstructed and widened. Because widened ramps would appear similar to existing visual conditions, they would not constitute a substantial increase in daytime glare.

Alternatives would require relocation of existing lights to accommodate lane widening and ramp improvements. New lights associated with reconfigured connectors would be at a higher elevation and have the potential to make lighting more prominent, if not properly designed, resulting in adverse impacts.

Open Space Visual Assessment Unit

Effects related to light and glare would be the same or very similar under all build alternatives.

It is not anticipated that recreationists would use trails at night; therefore, evening and nighttime construction activities would not affect them.

The East Roseville Viaduct would be widened by approximately 50 feet (Figure 2.6-8) and the center gap that presently exists between the two viaduct structures would be closed. The structure would be visually similar to existing conditions when approaching from a distance and would not greatly increase glare.

Alternatives would require relocation of existing lights for widening the viaduct. New lights associated with reconfigured connectors would be at a higher elevation and have the potential to make lighting more prominent. Relocated lights could potentially spill onto adjacent open space areas or make lighting more prominent if not properly designed, resulting in adverse impacts.

Residential Visual Assessment Unit

Effects related to light and glare would be the same or very similar under all build alternatives.

Intense construction activities would occur very close to the Hearthstone and Placer West apartment complexes between ground level and elevations of approximately 50 feet. This would create a sense of visual intrusion and privacy invasion because construction workers could have visual access to residences located directly adjacent to construction on all levels. Residents may refrain from leaving curtains or blinds open, which would block sunlight. Therefore, viewers may experience less sunlight in their homes.

Evening and nighttime construction activities would require the use of extremely bright lights, which would adversely affect residential highway neighbors and nighttime views of and near the work area. Limiting construction near residences to daylight hours cannot be accommodated by the proposed project because while the majority of the project work would take place during the day, night work on the East Roseville Viaduct would be necessary to complete some key construction operations and to avoid high traffic volumes. For instance, use of cranes during the day may be infeasible due to high daytime winds, delaying crane activity until nighttime when winds die down.

Nighttime operations near residences would only occur intermittently on an as-needed basis. However, it is likely that even with installation of visual screening, high-intensity nighttime lighting associated with construction activities at higher elevations would be visible over the top of such screening. Residences in the Hearthstone apartments would be the most affected because they are close to the proposed changes and lack dense vegetative screening that would benefit the other nearby complexes. Impacts on these residences would be adverse.

Views of the widened viaduct from the south would not be substantially altered for residents at the Preserve at Creekside apartments because dense vegetation, which would not be greatly affected during construction, buffers their views of the structure. Where visible, the structure would appear visually similar to existing conditions and would not substantially increase glare. However, the reconfigured structure comes within 20 feet of the Hearthstone and Placer West apartment complexes and may increase shading of these complexes during different times of day, which varies seasonally. This effect may be perceived as a negative visual change, and no mitigation is available to reduce shading impacts.

All alternatives would require relocation of existing lights to accommodate widening of the viaduct. New lights associated with reconfigured connectors would be at a higher elevation and have the potential to make lighting more prominent. Relocated lights could potentially spill onto adjacent residential areas or make lighting more prominent if not properly designed, resulting in adverse impacts.

Commercial/Institutional Visual Assessment Unit

Effects related to light and glare would be the same or very similar under all build alternatives.

Evening and nighttime construction activities would require the use of extremely bright lights, which would adversely affect commercial and institutional highway neighbors and nighttime views of and near the work area.

The commercial and institutional areas that would be most affected by the build alternatives would be those along Taylor Road on either side of I-80 because these areas directly abut and have views of the I-80 corridor, I-80/SR 65 interchange, and Taylor Road.

Some changes associated with the build alternatives, such as ramp and intersection improvements and the Taylor Road overcrossing replacement, would not greatly increase glare within the I-80 corridor. Ramp and intersection improvements at the I-80/Eureka Road/Atlantic Street interchange may include ramp metering, ramp widening for storage or HOV bypass lanes, and auxiliary lanes. The widened ramps would appear similar to existing visual conditions and would not constitute a substantial increase in daytime glare. The Taylor Road overcrossing would be replaced with a wider structure to accommodate additional lanes; however, because all the features associated with the proposed overcrossing are visual elements of the existing overcrossing, the widened overcrossing would not significantly increase glare for commercial and institutional viewers.

The remaining project-related visual changes would result in an increase of visible glare, especially when considered together. The widened lanes and pavement associated with the project would expand the highway corridor, increasing the amount of paved surfaces and slightly increasing daytime glare through a transformation of less reflective, vegetated surfaces to more reflective, paved surfaces. This would affect commercial and institutional highway neighbors by bringing the transportation facilities of the I-80 corridor between the Taylor Road overcrossing and the I-80/SR 65 interchange nearer to Cattlemens restaurant, Enterprise Rent-A-Car, and Taylor Road Self Storage.

The build alternatives also would add retaining wall structures and lane barriers, introducing vertical surfaces that could result in increased reflective glare from sunlight during the day and from artificial light sources at night. Reflective glare from surfaces facing highway neighbors would be an adverse effect.

The build alternatives would require relocation of existing lights to accommodate lane widening and ramp improvements. New light associated with ramp metering facilities would add an inconsequential amount of light to the project area when meters are in use. However, new lights associated with reconfigured connectors would be at a higher elevation and have the potential to make lighting more prominent, if not properly designed.

2.6.3.2 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. While maintenance activities such as repaving and restriping may occur in the foreseeable future along portions of the SR 65 and I-80 corridors, such maintenance activities are part of the existing visual environment and would not affect the existing visual character of the project area or negatively affect viewer groups. Such activities would be visible in the SR 65 and I-80 Corridor visual assessment units and would be visible to only a limited degree to viewers in the Open Space, Residential, and Commercial/Institutional visual assessment units.

2.6.4 Avoidance, Minimization, and/or Mitigation Measures

Use Native Grass and Wildflower Species in Erosion Control Grassland Seed Mix

Construction contractors will be required to incorporate native grass and wildflower seed to standard seed mixes, which may be nonnative, for erosion control measures that will be applied to all exposed slopes. Wildflowers will provide seasonal interest to areas where trees and shrubs are removed and grasslands are disturbed. Only wildflower and grass species that are native will be incorporated into the seed mix, and under no circumstances will any invasive grass or wildflower plant species be used as any component in any erosion control measures. Species will be chosen that are indigenous to the area and for their appropriateness to the surrounding habitat. For example, upland grass and wildflower species will be chosen for drier, upland areas, and wetter species will be chosen for areas that will receive more moisture. If not appropriate to the surrounding habitat, wildflowers should not be included in the seed mix.

Implement Interchange and Slope Landscaping and Visual Buffers

Landscaping within interchange loops and on constructed earth slopes will improve the visual quality of the roadway corridor by improving corridor aesthetics and helping to reduce the apparent scale of new and reconfigured aerial connectors. Visual buffers also will be planted to replace or supplement existing visual buffers for visual assessment units bordering the I-80 and SR 65 corridors that are affected by the project. This landscaping will serve as a buffer and screen against nuisance lighting resulting from oncoming vehicle headlights and roadway lighting and will help to prevent or greatly reduce nuisance lighting from affecting nearby sensitive viewers. Prior to approval of the roadway design, the Caltrans project landscape architect will review project designs to ensure that the following elements are implemented in the project landscaping plan.

- One hundred percent of the species composition will reflect species that are native and indigenous to the project area and California. Native plant species can be used to create attractive spaces, high in aesthetic quality, that are not only drought-tolerant but attract more wildlife than traditional landscape plant palettes. Use of native species promotes a visual character of California that is being lost through development and reliance on nonnative ornamental plant species.
- The species list will include trees, shrubs, and an herbaceous understory of varying heights, as well as both evergreen and deciduous types. Plant variety will increase the effectiveness of the roadside planting areas by providing multiple layers, seasonality, diverse habitat, and reduced susceptibility to disease. Evergreen groundcovers or low-growing plants, such as

Ceanothus spp., should be used in areas where taller vegetation would potentially cause driving hazards by obscuring sight distances.

- Special attention should be paid to plant choices near residences to ensure that species chosen are of an appropriate height and rely on evergreen species to provide year-round light screening from nuisance light.
- Under no circumstances will any invasive plant species be used at any location.
- Vegetation will be planted within the first 6 months following project completion at any given location.
- 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 also may incorporate aesthetic features, such as cobbling swales or shallow detention areas, which can reduce or eliminate the need for irrigation in certain areas.
- If an irrigation system is required, areas that are irrigated will use a smart watering system that evaluates the existing site conditions and plant material against weather conditions to avoid overwatering of such areas. To avoid undue water flows, the irrigation system will be managed in such a manner that any broken spray heads, pipes, or other components are fixed within 1–2 days, or the zone or system will be shut down until it can be repaired.

Implement Project Design Aesthetics

The project will incorporate an aesthetic design treatment with a consistent motif for new and reconfigured structures such as retaining walls, lane barriers, and connector system structures. Choosing earth-toned colors for the surfaces would be less distracting to viewers than light or brightly colored surfaces. The design motif applied to structures will reflect a combination of naturally colored surfaces and surfaces that are textured to appear as natural materials (e.g., rock or cobble) or that incorporates a design theme (such as wildlife and plants of native oak woodlands, traditional architectural elements such as inset panels, or other design reflecting local heritage or environment) using form liners. Such a motif would reduce visual monotony, soften verticality, reduce glare, and be more visually pleasing to viewers than plain surfaces. It will be used for surfaces that would be visible to highway users and other viewers: retaining walls, exterior facing barriers and girders on bridges, decking, abutments and side supports, and columns. Local examples of such treatments include the I-5/French Camp interchange in Stockton and SR 99/Sheldon Road overcrossing in Elk Grove. Non-local examples include Maryland 216 in Prince Georges County, Maryland; US 54/East Kellogg Drive and South Oliver Street interchange in Wichita, Kansas; and Roberts Road bridge in Los Gatos, California.

Roughened retaining wall surfaces would soften the verticality of the wall faces by providing visual texture and reducing the amount of smooth surface that can reflect light. Furthermore, if possible, a plantable wall surface, such as a retaining wall structure that allows interstices for planting, will be evaluated for use as a possible best management practice to help introduce more landscaping. A local example includes the slopes east and west of the Rocklin Road/I-80 undercrossing. However, a plantable wall surface will not be used if it would require more space or create a greater impact on adjacent visual assessment units. The shade of the wall also will be carefully considered. Studies have shown that structures 2–3 degrees darker than the color of the general surrounding area creates less of a visual impact than matching or lighter hues (U.S. Bureau of Land Management 2008). In general, very light buff/tan, brown, or gray colors stand out more than darker colors such as deep browns, deep red-browns, and deep warm grays that have the ability to complement the surrounding vegetation. Lane barrier coloring should complement project retaining walls and avoid using lightly colored concrete that appears to be white or greyish-white and, instead, use mid- to darker greys or tans to limit reflective glare.

Minimize Fugitive Light from Portable Sources Used for Construction

At a minimum, the construction contractor will minimize project-related light and glare to the maximum extent feasible, given safety considerations. Color-corrected halide lights will be used. Portable lights will be operated at the lowest allowable wattage and height and will be raised to a height no greater than 20 feet. All lights will be screened and directed downward toward work activities and away from the night sky, highway users, and highway neighbors, particularly residential areas, to the maximum extent possible. The number of nighttime lights used will be minimized to the greatest extent possible.

Apply Minimum Lighting Standards

All overhead street lighting is to be limited to the minimum required for driver safety and will be designed using the Illuminating Engineering Society's design guidelines and in compliance with International Dark-Sky Association approved fixtures. All lighting is to cause minimum impact on the surrounding environment and will utilize downcast, cut-off type fixtures that are shielded and direct the light only toward surfaces requiring illumination. Accordingly, lights must be installed at the lowest allowable height and cast low-angle illumination while minimizing incidental light spill onto adjacent properties, open spaces, or backscatter into the nighttime sky. The lowest allowable wattage will be used for all lighted areas, and the amount of nighttime lights needed to light an area will be minimized to the highest degree possible. Light fixtures will have non-glare finishes that will not cause reflective daytime glare. Lighting will be designed for energy efficiency, use high-pressure sodium vapor lights with individual photocells, and have daylight sensors or be timed with an on/off program. Lights will provide good color rendering with natural light qualities with the minimum intensity feasible for security, safety, and personnel access. Technologies to reduce light pollution evolve over time and design measures that are presently available may help, but may not be the most effective means of controlling light pollution once the project is designed. Consequently, all design measures used to reduce light pollution will use the technologies available at the time of project design to allow for the highest potential reduction in light pollution.

Install Visual Barriers between Construction Work Areas and Sensitive Receptors

The contractor will install visual barriers to obstruct undesirable views of construction activities from, and to protect privacy for, sensitive receptors—especially residents and recreational areas that are adjacent to the construction site. The visual barrier may be chain-link fencing with privacy slats, fencing with windscreen material, wood or concrete barrier/soundwall, or other similar barrier. The visual barrier will 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.

2.6.5 References Cited

Fehr & Peers. 2014. *Transportation Analysis Report – I-80/SR 65 Interchange Improvements.* Roseville, CA. August.

ICF International. 2014. *Visual Impact Assessment – I-80/SR 65 Interchange Improvements Project, Placer County, Interstate 80 and State Route 65*. Sacramento, CA. November.

U.S. Bureau of Land Management. 2008. *Visual Resource Management Program*. (Course 8400-05.)

2.7 Cultural Resources

2.7.1 Regulatory Setting

The term *cultural resources* as used in this document refers to all "built environment" resources (e.g., structures, bridges, railroads, and water conveyance systems), culturally important resources, and archaeological resources (both prehistoric and historic), regardless of significance. Laws and regulations dealing with cultural resources include the following.

The National Historic Preservation Act (NHPA) 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 NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 2014, the Section 106 Programmatic Agreement that governs Caltrans cultural resources actions on federally-assisted state and local projects was amended, becoming the First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer (SHPO), 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). The amended PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. FHWA's responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Program (23 USC 327) as amended by Moving Ahead for Progress in the 21st Century Act (MAP-21).

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties. See Appendix A for specific information about Section 4(f).

NEPA mandates the protection of cultural resources within its general policy for environmental protection. It requires preservation of important historic, cultural, and natural aspects of our national heritage, and maintenance—wherever possible—of an environment that supports diversity and a variety of individual choice. Regulations promulgated by the ACHP provide for the coordination of NEPA and NHPA compliance, under 36 CFR Part 800.14(a). Regulations for implementing the procedural provisions of NEPA are available at 40 CFR Parts 1500–1508.

Historical resources are considered under the CEQA, which considers a substantial adverse effect on a historical resource as a significant environmental impact, as well as California PRC Section 5024.1, which established the California Register of Historical Resources. California PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet NRHP listing criteria. It further specifically requires Caltrans to inventory state-owned structures in its rights-of-way. The CEQA Guidelines provide that preservation in place is the preferred method of mitigating impacts on archaeological resources. (14 CCR 15126.4(b)(3)) When preservation in place is not feasible and another form of mitigation is chosen, the CEQA document must explain why that is the case.

2.7.2 Affected Environment

The analysis in this section is based on the *Historic Property Survey Report*, which includes the *Archaeological Survey Report* (ICF International 2014a), *Historical Resources Evaluation Report* (ICF International 2014b), *Extended Phase I Report* (ICF International 2015a) and *Archaeological Evaluation Report (Phase II)* (ICF International 2015b) prepared for the project. The reports are available on the project website at: http://8065interchange.org/.

2.7.2.1 Area of Potential Effects

The Area of Potential Effects (APE) for this undertaking was established by Caltrans in accordance with Stipulations VI.B.8 and VIII.A of the PA. The APE encompasses the area of impact resulting from all activities associated with all three build alternatives, including all construction activities, easements, and staging areas. The APE for archaeological and built environment resources is the same for this project. The APE includes the project footprint and follows the maximum possible area of direct impact resulting from the proposed project, including all new construction and easements. The vertical APE (the maximum extent of ground disturbance) ranges from 2–3 feet for grading to 50 feet below grade for pile installation. Depths vary at different structure locations as well, depending on foundation type.

2.7.2.2 Research Methodology

An investigation for the cultural resources located in the project APE was conducted beginning in 2013. The investigation included a records search, Native American consultation, archaeological and architectural field surveys, archaeological investigations, and additional archival research.

Archival Research and Records Search

Maps, photographs, books, and articles at the Roseville Historical Society and the California Room of the California State Library were used to evaluate the historical significance of three built environment resources within the APE, which include the Edwin Purdy House, a segment of the Lincoln Highway, and a segment of the First Transcontinental Railroad.

A records search conducted in March 2013 at the North Central Information Center (NCIC) at California State University, Sacramento, indicated that 36 previous cultural resources studies have been conducted within portions of the APE. Of these, 3 have been conducted in the last 10 years. Thirteen additional cultural resources studies have been conducted within 0.5 mile of the APE. The NCIC records search indicates that 21 previously recorded cultural resources (both archaeological and built environment) are located within the APE and another 69 are located within a 0.5-mile radius of the APE.

Consultation with Interested Parties

Letters describing the project and requesting any information on potential cultural resources in the APE were sent to the City of Lincoln Library, Placer County Historical Society, Placer County Museum, Rocklin Branch Library, Roseville Historical Society, and the Roseville Public Library. To date, only one response has been received from the Roseville Historical Society providing historical information about the Edwin Purdy House located within the APE.

The Native American Heritage Commission (NAHC) conducted a Sacred Lands File database search for the APE on March 13, 2013. On March 22, the NAHC responded that the Sacred Lands File did not indicate any recorded sacred lands in the immediate vicinity of the APE. They also provided a list of 11 Native American contacts who may be interested in the project.

On April 5, 2013, letters were sent, including maps of the APE, to the 11 identified Native American contacts, informing them of the project and its proposed activities, and requesting any information they may have pertaining to cultural resources within or in the vicinity of the APE. Gene Whitehouse, Chairman of the United Auburn Indian Community (UAIC), responded via letter on April 9, 2013. The UAIC indicated that their preservation committee had identified cultural resources within and close to the APE. The UAIC requested a site visit to confirm the locations of the cultural resources and to discuss the project. Mr. Whitehouse also requested that UAIC monitors be present for the pedestrian survey and that the tribe be provided with copies of studies that have been or will be completed for the project. A site visit was conducted with the UAIC on June 27, 2013. Josh Stewart, a Native American monitor representing the UAIC, was present for Extended Phase I testing (XPI) and Phase II evaluation activities conducted between December 2014 and March 2015, including locating and recording excavation units.

Shingle Springs Ranchería Cultural Resources Director Daniel Fonseca sent a letter on July 11, 2013, stating that the Shingle Springs Band of Miwok Indians does not know of any cultural resources within the APE. Mr. Fonseca provided the contact information for Andrew Godsey, the tribe's assistant cultural resources director, and requested to be kept informed regarding the status of the project and to be provided copies of any records searches or reports prepared for the project.

Letters of invitation were sent to the remaining nine Native American representatives regarding the field visit. Follow-up telephone calls were made to each of the nine, as well. None responded to offers to participate in the intensive archaeological field survey conducted in March 2014.

Field Methods

Pedestrian Survey

An architectural survey of the APE was conducted on May 8, 2013. The survey was conducted according to guidelines established in Caltrans' *Standard Environmental Reference*, Volume 2 – Cultural Resources, Chapter 7, "Built Environment Resources Evaluation and Treatment," revised January 2, 2014. Monte Kim conducted the survey. Dr. Kim meets the qualifications of an Architectural Historian per Attachment 1 of the Section 106 PA. The survey effort included formal recordation of built-environment cultural resources in the architectural APE with digital photographs and handwritten notes.

An intensive pedestrian archaeological survey of the APE was conducted on March 18, 21, and 25, 2014, by a qualified archaeologist. Transects spaced at no wider than 15 meters were walked to ensure maximum ground coverage in a timely manner. Areas with cut banks, exposed soils, or disturbance by rodents were closely inspected for cultural materials. Rock outcrops also were inspected for indications of cultural use. Attempts were made to find the 19 archaeological resources indicated by the records search as present within the APE. All portions of the APE were surveyed.

Extended Phase I Testing

One previously identified site, P-31-1399, was recorded in 1980 as a prehistoric "occupation site with midden deposit." For the current study, archaeologists surveyed the mapped location of the site and, although no artifacts were observed due to poor ground visibility, the area appeared relatively undisturbed. The site is likely associated with P-31-1443.

Site P-31-1443 was recorded in 1982 as a "small mound with chipped and ground stone artifacts." For the current study, archaeologists surveyed the mapped location of the site along with the location of P-31-1399 and, although no artifacts were observed due to poor ground visibility, the area remains relatively undisturbed. Due to their close proximity, P-31-1399 and P-31-1443 are likely related to each other and both recorded boundaries are within the project APE. Therefore, XP1 testing was recommended to try to verify site boundaries for both sites.

A crew of three archaeologists and one Native American monitor from the UAIC conducted the XPI field work. Shovel test probes (STPs) were excavated in an effort to identify the presence or absence of the existence of the two sites, P-31-1399 and P-31-1443, as well as the site boundaries, within the APE. Twenty eight STP locations were placed along transects, north to south and east to west, approximately 10 meters apart, located on the east and west sides of the existing Antelope Creek tributary where the original archaeological sites were recorded. STPs, 0.5 x 0.5 meter in size, were excavated to either a depth of 40 centimeters, bedrock (impeding further depth), or the presence of cultural material. Soil from the STPs was excavated by shovel, placed in a screen with ¼ inch mesh, and sifted, to remove granular soil and leave behind potential cultural residues or artifacts. The location of the STPs were recorded using a sub-meter Trimble GPS unit. It was determined, as a result of the XPI, that the location of P-31-1399 was incorrectly mapped in the 1980 Archaeological Site Survey Record. In 1982, site P-31-1443 was identified and mapped on an Archaeological Site Survey Record. This location has now been identified as the true location of P-31-1399. Updated records will be submitted to the California Historical Resources Information Center's (CHRIS) NCIC location and references to P-31-1399 have been dropped from further discussion.

Phase II Evaluation

Phase II work at site P-31-1443 included excavation of seven surface transect units (STUs) measuring 1.0 by 0.5 meters and one control unit (CU) measuring 1.0 x 1.0 meters, for a total of

2.8 cubic meters of excavated soil. Soils excavated from STUs were passed through ¼-inch mesh, while the CU soils were reduced using 1/8-inch mesh.

All recovered artifacts were placed in Ziploc bags labeled with the relevant provenience information and boxed for transport to the ICF laboratory in Sacramento, California. Details regarding cultural constituents, methods, and observations regarding soil texture, were recorded for each 20 centimeters excavated for all units. Munsell color charts were used to standardize soil information gathered in the field. Digital photographs were taken to document the excavation process.

2.7.2.3 Cultural Resources Identified

Architectural/Built Environment

Three architectural/built environment resources were evaluated for the current project, as follows.

The first resource, a 300-foot-long segment of the First Transcontinental Railroad, passes under the SR 65/East Roseville Viaduct and parallels Taylor Road, and is currently in use by the Union Pacific Railroad. Built originally by the Central Pacific Railroad, the entire segment within the state is California State Historic Landmark (No. 780), and was automatically listed in the California Register of Historical Resources.

The second resource, the Edwin Purdy House, is a residence that was originally part of a 240-acre ranch established by Edwin F. Purdy in 1872. Purdy constructed a masonry vernacular residence on his ranch using stones quarried in the nearby railroad community of Rocklin. The Purdy ranch was located approximately half-way between Rocklin and Roseville. The residence, located on a 2.7-acre parcel at the end of Stonehouse Court in the City of Roseville, has been subject to various modifications over the years as early as 1928 and as recent as the 1950s.

The third resource is a segment of the former Lincoln Highway (US 40), and includes sections of Taylor Road and Atlantic Street. Beginning near Taylor Road and Plumber Way on the north side of SR-65, the segment runs in a southeasterly direction under SR-65 to present-day I-80. At this juncture, the original route is subsumed into the I-80 freeway for approximately 3,300 feet. The incorporation of this segment into the freeway resulted in the realignment of the Lincoln Highway along Taylor Road to the east side of the I-80 during the early 1960s. The Lincoln Highway returns to its original alignment at the curve near the Atlantic Street exit, before proceeding west through Roseville along Atlantic Street. The subject segment ends approximately140 feet east of the Galleria Boulevard overpass on Atlantic Street. This segment, located in the project area, is a conventional, paved roadway constructed with a concrete bed and an asphalt surface. It is a two-lane road with a substantial portion of it widened to accommodate center and right turn lanes. Sections of the route are lined with concrete sidewalks, while other segments feature little to no paved shoulders.

The cultural resources studies were submitted to SHPO on May 4, 2015. As a result of consultation, SHPO concurred in a letter dated July 2, 2015, that the segment of the Lincoln Highway within the project APE is not eligible for listing in the NRHP due to a lack of integrity.

In the letter, SHPO further agreed that the evaluated segment of the First Transcontinental Railroad and the Edwin Purdy House would be assumed eligible for the NRHP for the purposes of this undertaking in accordance with Stipulation VII.C.4 of the Section 106 PA. Subsequent research into the Edwin Purdy House history supported a conclusion that the stone house is not eligible for listing in the NRHP. Caltrans provided the additional information to the SHPO, and received concurrence with the revised determination on July 28, 2015. Copies of the consultation correspondence are included in Appendix F.

Archaeological

No previously unrecorded archaeological resources were observed during the pedestrian survey. Of the 19 archaeological resources identified in the records search as still remaining within the APE, 12 have been destroyed or displaced by development, one was not located, and 6 were determined exempt from evaluation under the terms of the Section 106 PA. The boundaries of the remaining two sites (P-31-1399 and P-31-1443) were assessed during XPI testing. Results of the XPI effort indicate that P-31-1399 and P-31-1443 are the same site and P-31-1399 is misplotted on the NCIC base maps. Site boundaries resulting from the XPI excavation are very similar to the boundaries previously recorded for P-31-1443, which extend into the APE As a result of the XPI, it appeared that P-31-1443 was likely eligible for listing on the NRHP. It was determined that Phase II testing and evaluation would be conducted in order to verify the NRHP eligibility of the site.

The Phase II effort identified a rich, intact prehistoric deposit at site P-31-1443 and was recommended eligible for listing on the NRHP. The results of the evaluation were submitted to SHPO on May 4, 2015. The SHPO responded in a letter of concurrence dated July 2, 2015, concurring that site P-31-1443 is eligible for listing on the NRHP. The concurrence letter is included in Appendix F.

2.7.3 Environmental Consequences

2.7.3.1 Build Alternatives

Caltrans prepared a Finding of Effects document to consult with the SHPO on project effects in accordance with Stipulations IX, X, and XI of the Section 106 PA. The discussion below includes the proposed effect findings, and concurrence from SHPO.

Identified Cultural Resources

A portion of prehistoric archaeological site P-31-1443 is located within the project footprint for, and would be affected equally by, all three build alternatives. Project engineers have considered design alternatives and concluded that avoiding the site is not a viable option; therefore, avoidance of impacts to portions of the site within the APE is not possible and the project would result in an Adverse Effect under Section 106. Caltrans prepared a Memorandum of Agreement (MOA) stipulating appropriate mitigation measures for the project effect (discussed further below). Additionally, because the site is eligible for its data potential only and has minimal value for preservation in place, the site is not a protected resource under Section 4(f). See Appendix A for additional discussion of Section 4(f).

A 300-foot-long segment of the First Transcontinental Railroad runs under the East Roseville Viaduct and adjacent to Taylor Road within the project area. None of the build alternatives would directly affect the railroad or be located within railroad right of way. The project would widen the East Roseville Viaduct in the northbound and southbound directions, spanning the UPRR (former First Transcontinental Railroad segment) tracks at the same elevation as the existing structure, and widen Taylor Road, including construction of curb, gutter, and sidewalk along the south side of the road. All work on Taylor Road would be within the existing road right of way. The railroad alignment is currently active; therefore, project activities would not encroach on the railroad or railroad right of way. Construction would be coordinated with UPRR to ensure that no disruption of train services or damage to the railroad facility would occur. Caltrans proposed a finding of No Historic Property Affected under Section 106 for this resource. In a letter dated March 22, 2016, SHPO concurred with the finding. The concurrence letter is included in Appendix F. In addition, although the railroad is a protected resource type under Section 4(f), the proposed project would not result in a "use" of the resource. See Appendix A for additional discussion of Section 4(f).

Unidentified Cultural Resources

The existence of known archaeological sites and historic activities in the area make the project area moderately sensitive for archaeological resources. As a result, it is possible that previously unknown archaeological resources could be uncovered during ground-disturbing construction activities for any of the build alternatives. The MOA prepared for the project will include a plan for the treatment of previously unidentified cultural resources encountered during construction, including steps for evaluating the resource for NRHP eligibility and consultation with SHPO.

2.7.3.2 No Build Alternative

The No Build Alternative would not result in project-related effects on either known or as-yet-unidentified archaeological resources because there would be no project-related excavation within archaeologically sensitive areas. Similarly, the no build alternative would have no effect on architectural/built-environment cultural resources.

2.7.4 Avoidance, Minimization, and/or Mitigation Measures

Install Fencing to Protect Cultural Resources

Prior to construction, the construction contractor will install high-visibility orange construction fencing and/or flagging, as appropriate, along the perimeter of the area of direct impact (ADI) located within the APE to restrict access to the portion of P-31-1443 outside the ADI. Prior to installation, an ESA Action Plan will be prepared as required by Caltrans.

Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel

Before any ground disturbing work occurs in the project area, a qualified archaeologist will be retained to conduct mandatory contractor/worker cultural resources awareness training for construction personnel. The awareness training will be provided to all construction personnel (contractors and subcontractors) to brief them on the need to avoid effects on cultural resources adjacent to and within construction areas and the penalties for not complying with applicable state and federal laws and permit requirements.

Retain a Qualified Archaeologist and a Native American Monitor to Conduct Monitoring During Construction in Areas Sensitive for Cultural Resources

A qualified archaeologist and a Native American monitor will be retained to monitor all construction activities that involve ground disturbance (e.g., vegetation removal, grading, excavation, bridge construction) adjacent to ESAs. The purpose of the monitoring is to ensure that measures identified in the environmental document are properly implemented to avoid and minimize effects on cultural resources and to ensure that the project complies with all applicable permit requirements and agency conditions of approval. The archaeologist will ensure that fencing around ESAs remains in place during construction and that no construction personnel, equipment, or runoff/sediment from the construction area enters ESAs. The monitor will prepare daily logs recording the results of monitoring, and a final monitoring report will be prepared at the end of each construction season.

Implement Avoidance and Notification Procedures for Cultural Resources

It is Caltrans' policy to avoid cultural resources whenever possible. If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. All reasonable measures will be implemented to avoid, minimize, or mitigate further harm to the resource. If appropriate, the project proponent will notify Indian tribes or Native American groups that may attach religious or cultural significance to the affected resource.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease 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). The project proponent will work with the MLD to avoid the remains, and if avoidance is not feasible, to determine the respectful treatment of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

Conduct Phase III Data Recovery on P-31-1443

Because site P-31-1443 is eligible for listing on the NRHP and project construction cannot avoid a portion of the site, data recovery will be necessary. The potential contribution of a prehistoric site to archaeological research can be preserved, at least in part, through an excavation program designed to recover the materials that constitute important data. This research program is referred to as data recovery, or a Phase III study. Under 36 CFR 800, data recovery at an archaeological site is no longer the basis for a finding of "no adverse effect" to the site. However, data recovery continues to be an important measure to mitigate adverse effects, when avoidance of impacts is not feasible. The data recovery (or Phase III) study will consist of:

- Preparation of a Data Recovery Plan (DRP)
- Preparation of a Phase III Proposal
- Fieldwork
- Laboratory work and analysis
- Reporting the study's results

A MOA was prepared. The MOA documents agreements made about the timing, nature, and extent of the data recovery effort. Signatories on the MOA are the SHPO and Caltrans. Native American groups consulting on the project are invited to sign the MOA as concurring parties. A copy of the MOA is included in Appendix F.

The DRP was prepared concurrent with the MOA and serves to document agreement between Caltrans and SHPO that the objectives and scope of the proposed Phase III study are appropriate. The DRP is prepared in accordance with guidelines given in the Caltrans Standard Environmental Reference (SER) and Attachment 6 of the Section 106 PA. The DRP, at a minimum, provides for results and interpretation of research questions and proposed investigations, including how the public might benefit from the information gathered. The DRP also includes provisions for Native American consultation, qualifications of key personnel, field methods and techniques, and describe appropriate arrangements for curation of archeological materials and records.

Following approval of the DRP, a Phase III Proposal will be prepared, which is primarily an in-house document that builds on the DRP; it may reference appropriate portions of the plan or include them as attachments, if they have been adequately developed. The Phase III Proposal will differ from the DRP in that it will include the specifics of personnel, schedule, and cost.

Intensive fieldwork and detailed laboratory analyses are needed to realize the objectives of the data recovery program. Data recovery fieldwork will be conducted with a Native American monitor present. Recovered materials will be curated at an appropriate repository in accordance with 36 CFR Part 79, "Curation of Federally Owned and Administered Archaeological Collections," and the Office of Historic Preservation's "Guidance for the Curation of Archaeological Collections."

Once fieldwork and laboratory analysis are completed, a Data Recovery Report will be prepared that details the methods and results of the effort. The final report will describe the contributions the excavation made toward creating a more complete picture of regional prehistory. The SER guidelines for preparing Data Recovery Reports will be followed by the archaeologist. The archaeologist will also prepare a revised archaeological site record that documents the changed information about the site as a result of the Phase III studies, a copy of which will be submitted to the CHRIS NCIC located at California State University, Sacramento.

2.7.5 References Cited

ICF International. 2014a. *Historical Resources Evaluation Report for the I-80/SR 65 Interchange Improvements Project, California Department of Transportation, District 3,* Placer County, California. Prepared for CH2M HILL. Sacramento, CA. November.

ICF International. 2014b. *Archaeological Survey Report for the I-80/SR 65 Interchange Improvements Project*, Placer County, California. Prepared for CH2M Hill. Sacramento, CA. October.

ICF International. 2015a. *Extended Phase I Report: P-31-1399, P-31-1443 for the I-80/SR 65 Interchange Improvements Project*, Placer County, California. Prepared for Caltrans District 3. Sacramento, CA. November.

ICF International. 2015b. *Archaeological Evaluation Report (Phase II): P-31-1443 for the I-80/SR 65 Interchange Improvements Project*, Placer County, California. Prepared for Caltrans District 3. Sacramento, CA. April.

Physical Environment

2.8 Hydrology and Floodplain

2.8.1 Regulatory Setting

2.8.1.1 Federal

EO 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. FHWA requirements for compliance are outlined in 23 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."

2.8.1.2 State

The Central Valley Flood Protection Plan provides the comprehensive new framework for systemwide flood management and flood risk reduction in the Sacramento and San Joaquin River Basins. The Central Valley Flood Projection Board is the agency responsible for the implementation of this plan. Projects are required to apply for a Central Valley Flood Protection Board encroachment permit if any of the following apply to project or work plan.

- Project is within an Adopted Plan of Flood Control, as defined by the California Code of Regulations, Title 23, Section 4;
- Project is within the flood control right of way for levees;
- Project is near or on a regulated Central Valley stream;
- Project may impact the current or future State Plan on Flood Control.

2.8.2 Affected Environment

The affected environment and subsequent analysis in this section is based on the following reports.

- *Bridge Design and Location Hydraulic Study Report* (WRECO 2015a)
- *Drainage Impact Summary Report* (WRECO 2015b)

The project site falls within the Sacramento River Hydrologic Region, and the project limits cross two hydrologic sub-areas (HSAs), Lower American (HSA #519.21) and Pleasant Grove (HSA #519.22) within the Hydrologic Unit: Valley-American. See Section 2.9, “Water Quality and Storm Water Runoff” for further discussion of surface hydrology and a table of creeks and streams crossing the project site.

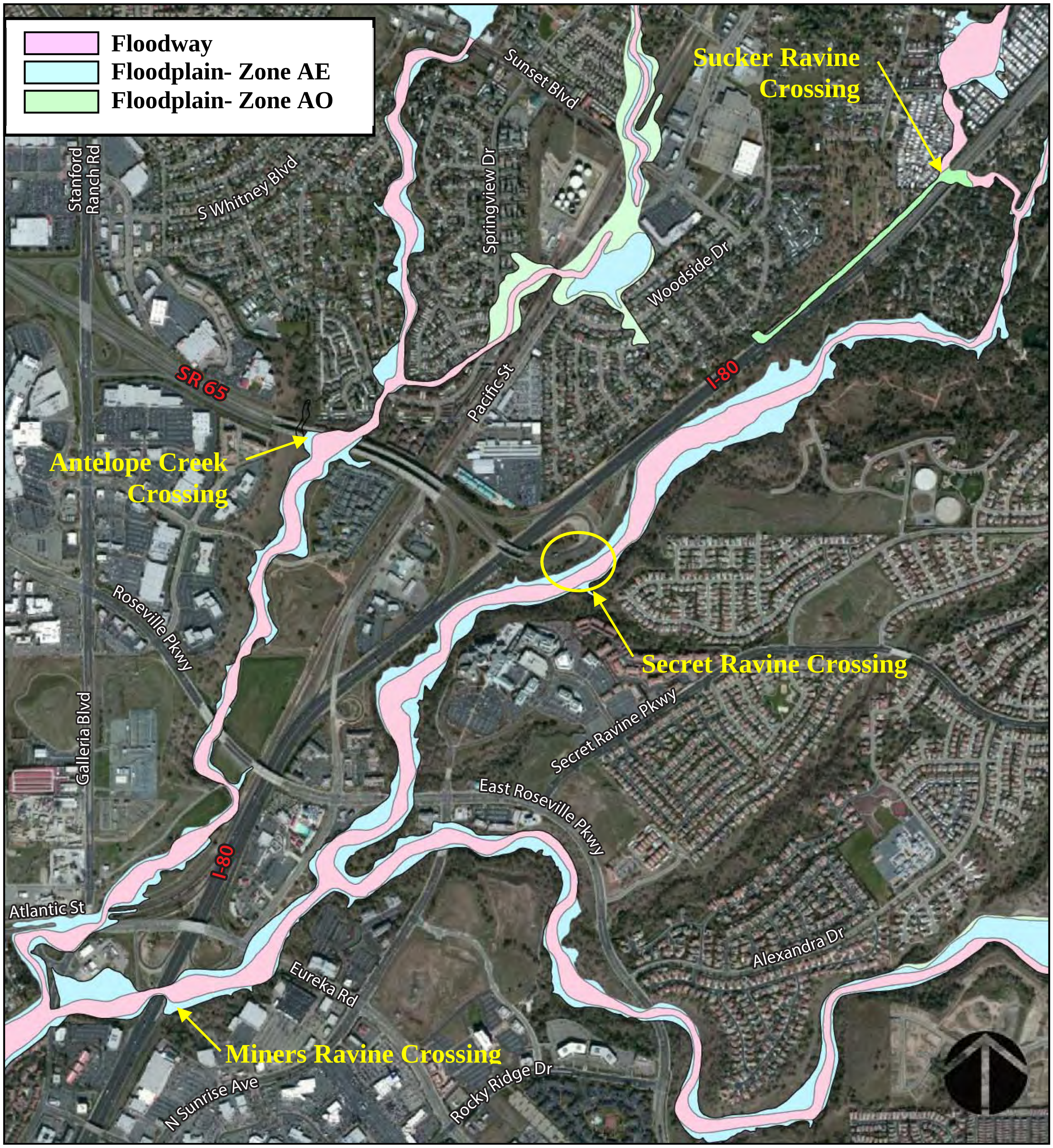
Existing drainage within the project site consists of a series of cross culverts, bridge crossings over major creeks, concrete ditches, urban vegetation, storm drains along roads, unlined ditches, and roadside asphalt concrete gutters. Many of the culverts were built in 1985 and should be in fair condition, assuming a 50-year design life. Inspections will be performed during the final engineering design phase to confirm the condition of the culverts. There are 15 storm water crossings greater than 24 inches in diameter, including four bridges in the project site that drain to receiving water bodies.

Portions of the project site are located within a 100-year floodplain designated by the Federal Emergency Management Agency (FEMA) (Zone AE) at Antelope Creek, Secret Ravine, and Miners Ravine. The Sucker Ravine crossing I-80 is designated as a Zone AO. Zone AO represents areas with a 1 percent or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. Antelope Creek, Secret Ravine, Sucker Ravine, and Miners Ravine are designated as floodways. The remaining project area is located within a Zone X region, which is a designation pertaining to areas of flood with a recurrence interval of 500 years or more. (Figure 2.8-1) The project is within the jurisdiction of the Central Valley Flood Protection Board and Secret Ravine is a regulated Central Valley stream. The project is also located within the jurisdictional boundaries of the Placer County Flood Control and Conservation District (PCFWCD).

2.8.3 Environmental Consequences

The analysis for this Project is based partially on the *Bridge Design and Location Hydraulic Study Report*, which assumed that standard piers would be spaced evenly apart, to support the eastbound I-80 to northbound SR 65 connector (Alternative 1) and collector-distributor system ramps (Alternatives 2 and 3). The initial geometry and spacing assumptions required that piers be placed in the wetted portions of the channel.

Concurrent with the development of the *Bridge Design and Location Hydraulic Study Report*, the project design and environmental team consulted with Caltrans’ engineers and relevant resource agencies to identify design options that would minimize or avoid impacts on listed species and riverine habitat within Secret Ravine. Based on these meetings, the project team



Source: WRECO, 2014.

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Figure 2.8-1
Project Flood Zone Delineation Map

designed an outrigger concept and/or shifted the bent spacing, which enables placement of the bridge foundation outside of the channel. A separate analysis was not conducted for this design change because the revised design would result in a condition similar to that analyzed or an improved condition over that analyzed.

2.8.3.1 Build Alternatives

The potential risks associated with implementation of all of the build alternatives include, but are not limited to, change in the amount of impervious area, fill inside the floodplain, and change in the 100-year water surface elevation.

All build alternatives would realign the eastbound I-80 loop on-ramp from Eureka Road into the Miners Ravine floodplain. Alternative 2 would require a new ramp to diverge from the existing eastbound Eureka Road off-ramp and would require a new bridge over Miners Ravine. Alternative 3 would widen the eastbound Eureka Road off-ramp bridge by approximately 11.8 feet at the upstream face of the existing bridge.

All build alternatives would place fill and encroach upon the Miners Ravine floodplain, cause longitudinal encroachments on the Secret Ravine and Miners Ravine base floodplains/floodways, and add impervious surface area. The highest of the 100- and 50-year discharge values of those reported by FEMA and PCF CWCD were used in the hydraulic modeling and floodplain assessment of bridge structures proposed for improvement and replacement by the project.

Water Surface Elevation

Hydraulic modeling was conducted to determine whether fill and encroachment upon the Miners Ravine floodplain and longitudinal encroachments on the Secret Ravine and Miners Ravine base floodplains/floodways would cause a significant increase in water surface elevation. This modeling was conducted assuming that bridge components would be placed in the channel; however, current design avoids placement of bridge components in the channel. Thus, impacts would be less than those indicated by the model. Model results indicate that under all alternatives water surface elevation would increase minimally (less than 0.1 feet); these changes are considered minor.

Runoff from Added Impervious Surfaces

All build alternatives would increase the area of impervious surfaces (Table 2.8-1). Alternative 1 would result in the largest increase in impervious area. Increased impervious surface area would increase the rate and volume of storm water runoff to downstream drainages, with the potential to result in localized flooding in surrounding areas.

Table 2.8-1. Area of Added Impervious Surface

	Added Impervious Surface (acres)
Alternative 1	30
Alternative 2	28
Alternative 3	26

Increased storm water runoff is anticipated to result in minimal impacts on Secret Ravine and Miners Ravine because they are at a low point along their waterways, and their surrounding neighborhoods are built up to a much higher elevation. Furthermore, added impervious area at the Miners Ravine bridge would result in minor effects to the total watershed runoff, given that the total hydrologic unit area is 136,960 acres and the Miners Ravine sub-watershed is approximately 12,800 acres (20 square miles). Similarly, added impervious area at the east-to-north and south-to-east connectors would result in minor effects to the overall watershed runoff given that the total hydrologic unit area is 136,960 acres and the Secret Ravine sub-watershed is approximately 13,820 acres (21.6 square miles). Finally, increases in impervious area at the East Roseville Viaduct would result in minor effects to the total watershed runoff given that the total hydrologic unit area is 136,960 acres and the Antelope Creek sub-watershed is approximately 9,020 acres (14.1 square miles). Therefore, the impacts from added impervious surfaces are considered minor.

Onsite Drainage Systems

New onsite drainage systems would be installed as part of the project. The drainage systems would be designed to route flows to and from the permanent storm water treatment BMPs in order to reduce storm water velocity to no greater than existing conditions. New drainage features would be designed to limit the design water surface elevations and to maintain the existing drainage patterns. Several existing culverts would require lengthening, and existing systems would be evaluated to determine compliance with current design standards. Therefore, the proposed project would maintain or improve upon existing drainage conditions.

Scour

Scour analyses were conducted according to criteria set by the FHWA's Hydraulic Engineering Circular No. 18, *Evaluating Scour at Bridges*, for the 100-year design storm (Federal Highway Administration 2012).

Geotechnical analysis at the East Roseville Viaduct at Antelope Creek indicates that soils that would be affected by the Project are expected to be scour-resistant. However, sufficient information was not available to determine channel bed elevation changes. Therefore, a conclusion could not be made about the rate of change of the channel bed. The bridge should be monitored in the future for stream bed stability.

Based on geotechnical analysis, the east-to-north and south-to-east connectors are expected to be underlain by scour-resistant rock and possibly granitic rock. However, existing embankment fill located adjacent to the creek bed would have a high scour potential. Because there is no Caltrans

Bridge Inspection Report or Foundation Recommendation Memorandum for the location at the east-to-north and south-to-east connectors, a conclusion could not be made about the rate of change of the channel bed. The connectors should be monitored in the future for stream bed stability.

Geotechnical analysis at the Miners Ravine bridge indicates that soils generally will be resistant to scour. Hydraulic analysis determined the bridge not to be scour-critical. The bridge foundations were determined stable for calculated scour conditions and scour within the limits of footings or piles.

Floodplain Development

The proposed project primarily would include widening of the existing roadways and bridge structures. New connectors proposed to be constructed at the I-80/SR 65 interchange will serve only to connect the I-80 and SR 65 roadways, which would follow the existing alignments. Therefore, the project would not create new access to developed or undeveloped land and would not support incompatible floodplain development.

Traffic Interruptions from Flooding

Caltrans requires 2 feet of freeboard[1] above the 50-year flood flow or conveying the 100-year flood flow; the Central Valley Flood Protection Board freeboard requirement is 2 feet above the 100-year flood flow. Modeling for the proposed project indicates that all bridges associated with the project have been designed with sufficient freeboard to accommodate a 100-year flood. Therefore, the risk of traffic interruptions from flooding on bridges as a result of the proposed project is low.

2.8.3.2 No Build Alternative

The No Build Alternative would not place fill in floodplains or encroach upon floodplains and, therefore, would not affect floodplains or hydrology.

2.8.4 Avoidance, Minimization, and/or Mitigation Measures

None of the proposed alternatives would result in a significant encroachment; therefore, no measures are necessary. An encroachment permit from the Central Valley Flood Protection Board would be obtained as part of the permitting process.

2.8.5 References Cited

Federal Highway Administration. *Evaluating Scour at Bridges. Fifth Edition.* Hydraulic Engineering Circular No. 18. (Publication No. FHWA-HIF-12-003). Fort Collins, CO.

[1] Freeboard is the vertical distance between the lowest structural member and the water surface elevation of the design flood.

Available: http://www.fhwa.dot.gov/engineering/hydraulics/pubs/hif12003.pdf. Accessed: December 7, 2014.

WRECO. 2015a. *Bridge Design and Location Hydraulic Study Report*. Prepared for Placer County Transportation Planning Agency and CH2M HILL. Sacramento, CA. January.

WRECO. 2015b. *Drainage Impact Summary Report*. Prepared for Placer County Transportation Planning Agency and CH2M HILL. Sacramento, CA. January.

2.9 Water Quality

2.9.1 Regulatory Setting

2.9.1.1 Federal

Clean Water Act

In 1972, Congress amended the federal Water Pollution Control Act, making the addition of pollutants to 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 Standard Permits. There are two types of General Permits: Regional Permits and Nationwide Permits. Regional permits are issued for a general category of activities when they are similar 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 Nationwide Permit may be permitted under one of the USACE's Standard Permits. There are two types of Standard Permits: Individual

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

Permits and Letters of Permission. For Standard Permits, the USACE decision to approve is based on compliance with EPA's Section 404 (b)(1) Guidelines (Guidelines) (40 CFR 230), and whether the permit approval is in the public interest. The Guidelines were developed by 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 no practicable alternative exists that would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects to waters of the United States and not cause 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. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

2.9.1.2 State

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 include more than just waters of the United States, such as groundwater and surface waters not considered waters of the United States. Additionally, it 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 (State Water Board) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and for 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, the RWQCBs designate beneficial uses for all water body segments and then set the criteria necessary to protect these uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the State Water Board 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 that the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires

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

establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The State Water Board administers water rights; sets water pollution control policy; 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. RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollutant Discharge Elimination System Program

Municipal Separate Storm Sewer Systems (MS4)

Section 402(p) of the CWA requires issuance of NPDES permits for five categories of storm water discharges, including MS4s. An *MS4* is defined as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water." The State Water Board has identified Caltrans as an owner/operator of an MS4 under federal regulations. Caltrans' MS4 Permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The State Water Board or the RWQCB issues NPDES permits for 5 years, and permit requirements remain active until a new permit has been adopted.

Caltrans' MS4 Permit (Order No. 2012-0011-DWQ) was adopted on September 19, 2012 and became effective on July 1, 2013. The permit has three basic requirements.

1. Caltrans must comply with the requirements of the Construction General Permit (see below);
2. Caltrans must implement a year-round program in all parts of the state to effectively control storm water and non-storm water discharges; and
3. Caltrans' storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) BMPs, to the maximum extent practicable, and other measures the State Water Board determines necessary to meet the water quality standards.

To comply with the permit, Caltrans developed the statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including selection and implementation of BMPs. Further, in recent years, hydromodification control requirements and measures to encourage low impact development have been included as a component of new development permit requirements. The proposed project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

Construction General Permit

Construction General Permit (Order No. 2009-009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The Construction General Permit was amended by 2010-0014-DWQ and 2012-0006-DWQ on February 14, 2011 and July 17, 2012 respectively. 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 the activity has the potential to result in significant water quality impairment, 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 2009 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. In accordance with Caltrans' Standard Specifications, a Water Pollution Control Program (WPCP) is necessary for projects with a DSA of 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 U.S. 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 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.

2.9.1.3 Regional

Placer County Stormwater Quality Program

Placer County is a designated municipal permitee under the U.S. Environmental Protection Agency's NPDES, which regulates stormwater flows into natural water bodies. The NPDES regulations require permitted areas to implement specific activities and actions to eliminate or control stormwater pollution. Under the Phase I NPDES program, Placer County shares a permit with El Dorado County and the City of South Lake Tahoe for the Lake Tahoe watershed area. Under the Phase II NPDES program Placer County is permitted in the western county area and in the Truckee River Basin.

2.9.1.4 Local

City of Rocklin Stormwater Management Program

Rocklin has prepared a SWMP in order to comply with the requirements of the EPA's NPDES. The SWMP provides the frame works for public outreach, public involvement, illicit discharge and detection, management of construction site runoff, new development and redevelopment, and municipal operation.

City of Roseville Stormwater Management Program

Similarly, Roseville has prepared a SWMP in order to comply with the requirements of the EPA's NPDES. The SWMP provides the frame works for public outreach, public involvement, illicit discharge and detection, management of construction site runoff, new development and redevelopment, and municipal operation.

2.9.2 Affected Environment

The proposed project is located within the jurisdictional boundaries of the Central Valley RWQCB.

The analysis in this section is based on the following reports.

- *Appendix E Long Form Storm Water Data Report* (WRECO 2014)
- *Water Quality Assessment Report* (WRECO 2015)

2.9.2.1 Climate, Topography, and Soils

The project site has a Mediterranean climate characterized by cool, wet winters and hot, dry summers. Average daily high temperatures range from 54°F in January to 95°F in July and 94°F in August. Daily low temperatures range from 39°F in winter to 60°F in summer. Average yearly precipitation in the site vicinity (Roseville) is 25 inches.

The project site can be characterized by rolling hills with southwest-trending ridges and relatively gentle slope gradients. In the project area, I-80 is constructed at near-natural grade, with some cuts through ridges and fills across low-lying areas. SR 65 is mostly elevated by fills and bridges above natural grade from the interchange area to the northwest side of Antelope Creek near PM 5.4. Northwest of Antelope Creek to Pleasant Grove Boulevard, SR 65 is constructed at near-natural grade with some cuts and fills.

According to the Natural Resources Conservation Service Web Soil Survey, the soils in the project area primarily consist of soils with high runoff potential when thoroughly wet and soils with a moderate to slow infiltration rate, respectively, when thoroughly wet.

In the project vicinity, erosion from stormwater is the dominant erosion process rather than wind. Erosion potential from stormwater runoff is a function of three processes. The first involves the creation of runoff water by poor soil infiltration. The second is detachment of soil particles by raindrop impact or running water. The third involves the movement of soil particles by running water. Soil erosion potential is considered to be moderate for the majority soils (67%) in the project vicinity due to the rolling hill topography of the vicinity which increases runoff velocity, and the high runoff potential of the soil.

2.9.2.2 Surface Hydrology

The project site falls within the Sacramento River hydrologic region, and the project limits cross two hydrologic subareas (HSAs), Lower American (HSA #519.21) and Pleasant Grove (HSA #519.22) within the hydrologic unit: Valley-American. Valley American-Lower American includes Antelope Creek, Miners Ravine, Secret Ravine, and Sucker Ravine. Pleasant Grove includes Highland Ravine and the tributary to the south branch of Pleasant Grove Creek.

The project crosses or is adjacent to several water bodies. Table 2.9-1 presents a cumulative list of streams and creeks that cross or flow adjacent to I-80 and SR 65 within the project limits.

Table 2.9-1. Streams Crossing the Project Site

Stream Name	Crossing Type	Crossing Location
Antelope Creek	Bridge	SR 65 at the East Roseville Viaduct bridge immediately west of the Taylor Road and I-80/SR 65 interchange.
Highland Ravine	Culvert	SR 65 approximately 0.4 mile southeast of Pleasant Grove Boulevard (toward the I-80/SR 65 Interchange) as a double 72-inch culvert.
Miners Ravine	Bridge	I-80 immediately south of Atlantic Street near the Taylor Road off-ramp.
Secret Ravine	Longitudinal	Flows parallel to I-80 within the project limits, from the Taylor Road overcrossing (located 0.2 mile north of Roseville Parkway on I-80) to the project's northern limits at Rocklin Road.
Tributary to South Branch of Pleasant Grove Creek	Culvert	SR 65 farther southeast of Highland Ravine just before the Galleria Boulevard overcrossing.
Sucker Ravine	Culvert	Beneath Rocklin Road between Granite Drive and Shaw Court and beneath Lake Side Drive and Oakridge Street before being conveyed in a culvert beneath I-80 toward Secret Ravine. This culvert is located about 0.61 mile southwest of the Rocklin Road undercrossing.

2.9.2.3 Groundwater

The project site is within the North American sub-basin of the Sacramento Valley groundwater basin. The sub-basin is bounded by the Bear River to the north, the Feather River to the west, and the Sacramento River to the south. The eastern boundary represents the approximate edge of the alluvial basin, where little or no groundwater flows into or out of the groundwater basin from the rock of the Sierra Nevada. Groundwater generally flows southwesterly toward the Feather and Sacramento Rivers.

Regionally, groundwater levels range from approximately 45 feet above mean sea level (amsl) at the west end of the project to approximately 65 feet amsl at the east end. However, preliminary geotechnical data for the project site indicate that groundwater depth below the site is variable for the following reasons.

- Presence of several creek beds.
- Presence of alluvial sediments that extend through the central portion of the area.
- Hard, well consolidated sediments and hard rock at project perimeter.
- Significant changes in ground surface elevation across the site.

Groundwater should be expected near the elevation of water in the adjacent creeks. Depth to groundwater at the east-central portion of the project (adjacent to Secret Ravine) is from 10 to 25 feet, from 2 to 5 feet at the west end (at Miners Ravine), and from 0.5 to 9 feet at the northwest portion (East Roseville Viaduct [near Antelope Creek]).

2.9.2.4 Water Quality

Surface Water Quality

The existing quality of stormwater runoff from the project vicinity is likely typical of urban watersheds with similar land uses and may contain constituents such as landscaping chemicals (e.g., nitrates, phosphates, herbicides, and pesticides), automotive and traffic pollutants (e.g., oil, grease, metal brake dust, metal wear), trash and debris, pathogens (e.g., pet and wildlife waste), sediment with associated attached pollutants from soil erosion and aerial deposition of dust, and chemicals leaching from structures (e.g., calcium from limestone, metal from metal roofs and architectural features).

The *Central Valley RWQCB's Water Quality Control Plan (Basin Plan)* has designated the following beneficial uses[3] for the Lower American HSA (519.21).

[3] Beneficial uses are designated by the RWQCB as uses that provide the maximum benefit to the people of the state and are used to establish water quality objectives and discharge prohibitions

- MUN—Municipal & Domestic Water Supply
- AGR—Agricultural Supply
- IND—Industrial Service Supply
- REC-1—Water Contact Recreation
- REC-2—Non-contact Water Recreation
- WARM—Warm Freshwater Habitat
- COLD—Cold Freshwater Habitat
- MIGR—Fish Migration
- SPWN—Fish Spawning
- WILD—Wildlife Habitat

Miners Ravine is the only project receiving body listed on the 303(d) List of Impaired Water Bodies. This list identifies all waters where required pollution controls are not sufficient to attain or maintain applicable water quality standards and the development of a TMDL is required. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards. However, the unnamed tributary drains to Pleasant Grove Creek, which is listed on the 303(d) list and thus is included below. Impairments for these streams are listed below (Table 2.9-2).

Table 2.9-2. 303(d) Impairments for Streams Crossing the Project Site

Stream Name	Pollutant/Stressor	Source	TMDL Completion Date
Miners Ravine	Dissolved oxygen	Unknown	Estimated 2021
Pleasant Grove Creek	Dissolved oxygen	Unknown	Estimated 2021
	Pyrethroids	Urban runoff/storm sewers	Estimated 2021
	Sediment toxicity	Source unknown	Estimated 2021

TMDL = total maximum daily load.

Source: California 303(d) List and TMDL Priority Schedule (State Water Resources Control Board 2011).

Groundwater Quality

The Basin Plan has identified narrative and numerical groundwater objectives for the region including bacteria, chemical constituents, radioactivity, taste and odors, and toxicity. Unless otherwise stated, all groundwaters have the beneficial uses: at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).

Groundwater quality in the North American sub-basin varies from good to marginal. Analysis of groundwater quality data with respect to applicable water quality standards and guidelines for drinking and irrigation shows that elevated levels of total dissolved solids (TDS)/specific conductance, chloride, sodium, bicarbonate, boron, fluoride, nitrate, iron manganese, and arsenic may be of concern in some areas. Significant groundwater contamination issues exist at three sites within the sub-basin: the former McClellan Air Force Base (7 miles northeast of Sacramento, California), the UPRR rail yard in Roseville, and the Aerojet Superfund Site (near Rancho Cordova, 15 miles east of Sacramento). The closest of these sites to the project is the UPRR rail yard.

2.9.3 Environmental Consequences

2.9.3.1 Build Alternatives

The extent of effects associated with the build alternatives is shown in Table 2.9-3.

Table 2.9-3. Ground Disturbance and Impervious Surfaces Associated with Build Alternatives (acres)

Description	Alternative 1	Alternative 2	Alternative 3
Ground disturbance	147	151	156
Added impervious surface area	30	28	26

Construction

Construction of all build alternatives would involve land-disturbing activities, stockpiling, equipment use and storage, and potential spills that could result in temporary impacts on water resources within the project site or nearby. These activities have the potential to violate water quality standards or WDRs if sediment- or contaminant-laden runoff from disturbed work areas enters storm drains or other pathways leading to receiving waters, or if fuel or other construction chemicals are accidentally spilled or leaked into the water. Sources of sediment include earthwork, excavation, embankment/fill construction, in-water work, uncovered or improperly covered stockpiles, unstabilized slopes, and construction equipment not properly cleaned or maintained.

The delivery, handling, and storage of construction materials and wastes (e.g., concrete debris), as well as the use of heavy construction equipment, could result in stormwater contamination and thereby affect water quality. Construction activities may involve the use of chemicals and operation of heavy equipment that could result in accidental spills of hazardous materials (e.g., fuel and oil) during construction activities that could enter the groundwater aquifer or nearby surface water bodies via runoff or storm drains. Constituents in fuel, oil, and grease can be acutely toxic to aquatic organisms and/or bioaccumulate in the environment. Staging areas or building sites can be sources of pollution because of the use of paints, solvents, cleaning agents, and metals during construction. Impacts associated with metals in stormwater include toxicity to aquatic organisms, such as bioaccumulation, and potential contamination of drinking supplies.

Construction for all build alternatives could include dewatering. The Basin Plan and Section 401 Water Quality Certification prohibits the discharge waste that exceed water quality objectives/standards. Therefore, treatment is required if water quality objectives or discharge requirements stated in the 401 WQC are exceeded. For low threat discharge to land, dewatering must meet the conditions of Resolution R5-2013-0145 or, the State Water Resource Control Boards Water Quality Order No. 2003-0003-DWQ (WDRs). For low threat discharges to surface waters, the Central Valley RWQCB's (WDRs) may apply. Discharges covered by this General Order are either 4 months or less in duration or have a daily average discharge flow less than 0.25 million gallons per day. A project specific WDRs is required if either Order No. 2003-0003-DWQ or Order R5-2013-0074 is needed. However, dewatering discharge is not anticipated to be greater than 0.25 million gallons per day or last more than 4 months and thus would not require treatment before discharge or be associated with significant impacts. Therefore, a project-specific WDR is not required and construction site BMPs, such as those in Caltrans' Standard Specifications, would be considered sufficient to address any project impacts from the dewatering activities.

Temporary impacts related to construction would be lessened through compliance with applicable regulations. All build alternatives would disturb more than 1 acre of ground (Table 2.9-3). Therefore, preparation and implementation of a SWPPP will be required to comply with the NPDES Construction General Permit. The SWPPP would include BMPs to prevent or minimize stormwater pollution during construction activities and post construction.

Operations and Maintenance

Turbidity/Suspended Sediment

All build alternatives would add impervious surface area (Table 2.9-3). This increases the volume of unfiltered runoff not infiltrated or dispersed onto pervious surfaces. Additional runoff could result in direct discharge of sediment-laden stormwater from the roadway to receiving water bodies. However, permanent design pollution prevention BMPs would be implemented to reduce operations impacts related to sediment.

Oil, Grease, and Chemical Pollutants

All build alternatives could result in increased deposition of heavy metals due to increased traffic loads throughout the corridor. Heavy metals associated with vehicle tire and brake wear, oil and grease, and exhaust emissions are the primary pollutants associated with transportation corridors. Generally, highway stormwater runoff has the following pollutants: total suspended solids, nitrates, total nitrogen, phosphorus, ortho-phosphate, copper, lead, and zinc. These pollutants are dispersed from combustion products from fossil fuels, and the wearing of brake pads and tires. Impacts would be lessened through implementation of permanent design pollution prevention BMPs.

Erosion and Accretion Patterns

All build alternatives would add impervious surface area. This increase in impervious surface area could result in modification of existing receiving water body hydrographs by increasing the flow volumes and rates and peak durations from the loss of unpaved overland flow and native infiltration (hydromodification). These changes have the potential to cause bed and bank erosion, increased sediment transport and deposition, loss of habitat, and increased flooding. Impacts would be lessened through implementation of permanent design pollution prevention BMPs.

Groundwater Recharge

All build alternatives would add impervious surface area. This increase in impervious surface has the potential to reduce groundwater recharge to local aquifers by reducing the available area for infiltration. This reduction in local aquifer and groundwater recharge also has the potential to impact the beneficial uses of groundwater basins.

Of the three build alternatives, Build Alternative 1 would have the largest impact with an estimated new impervious area of 30 acres. The North American groundwater subbasin of the Sacramento Valley groundwater basin is 548 square miles, therefore the Project would only increase the impervious area by 0.009%. While this minimal increase in impervious area would reduce the available area for infiltration of stormwater, groundwater impacts would be minimal.

2.9.3.2 No Build Alternative

The No Build Alternative would not add capacity or reduce congestion. This alternative could result in permanent water quality impacts from increasing congestion. Greater congestion would lead to increased deposition of particulates from exhaust and heavy metals from braking. The build alternatives also may increase deposition from increased traffic loads. It is unclear which alternative would result in greater deposition.

2.9.4 Avoidance, Minimization, and/or Mitigation Measures

The State Water Board has issued Caltrans a Statewide NPDES Permit (Order No. 2012-0011-DWQ). This permit regulates the storm water and non-storm water discharges associated with project construction activities and discharges associated with normal maintenance and operations of Caltrans facilities. The permit also serves as a State of California WDR. Compliance with this permit requires implementation of BMPs that achieve the performance standards of best available technology economically achievable/best conventional pollutant control technology to reduce or eliminate storm water pollution. BMPs will be implemented during construction and operations to limit sediments and pollutants from affecting drainages and to diminish erosion in the project area. BMPs are described further below.

Water Quality Protection During Construction

The Construction General Permit (Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ and 2012-0006-DWQ) is applicable to all entities disturbing more than an acre of soil. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre of total land area (such as this project) must comply with the provisions of the Construction General Permit and develop and implement an effective SWPPP. Caltrans' requires submission of a Notice of Intent to the RWQCB at least 30 days prior to construction and preparation of the SWPPP prior to the beginning of construction. Implementation of the SWPPP starts with the commencement of construction and continues through the completion of the project. Upon completion of the project, Caltrans must submit a Notice of Termination to the RWQCB, to indicate that construction is complete.

The SWPPP would include the following elements:

- Project Description – The Project description includes maps and other information related to construction activities and potential sources of pollutants.
- Minimum Construction Control Measures – These measures may include limiting construction access routes, stabilization of areas denuded by construction, and using sediment controls and filtration.
- Erosion and Sediment Control – The SWPPP is required to contain a description of soil stabilization practices, control measures to prevent a net increase in sediment load in stormwater, controls to reduce tracking sediment onto roads, and controls to reduce wind erosion.
- Non-Stormwater Management – The SWPPP includes provisions to reduce and control discharges other than stormwater.
- Post-Construction Stormwater Management – The SWPPP includes a list of stormwater control measures that provide ongoing (permanent) protection for water resources.
- Waste Management and Disposal – The SWPPP includes a waste management section including equipment maintenance waste, used oil, batteries, etc. All waste must be disposed of as required by state and federal law.
- Maintenance, Inspection, and Repair – The SWPPP requires an ongoing program to ensure that all controls are in place and operating as designed.
- Monitoring – This provision requires documented inspections of the control measures.
- Reports – The contractor will prepare an annual report on the construction project and submit this report on July 15 each year. This report will be submitted on the Storm Water Multiple Application and Report Tracking System website to the SWRCB.
- Training – The SWPPP provides documentation on the training and qualifications of the designated Qualified SWPPP Developer and Qualified SWPPP Practitioner. Trained personnel must do inspections, maintenance, and repair of construction site BMPs.
- Construction Site Monitoring Program – The SWPPP includes a Construction Site Monitoring Program detailing the procedures and methods related to the visual monitoring and sampling and analysis plans for non-visible pollutants, sediment and turbidity, pH and bioassessment.

The following minimum BMPS would be necessary for the project to comply with the Construction General Permit:

- Soil Stabilization
  - Hydroseeding
  - Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets,
  - Hydraulic Mulch
- Sediment Control
  - Fiber Rolls

  - Silt Fence
  - Sediment Trap
  - Gravel Bag Berm
  - Check Dams
  - Storm Drain Inlet Protection
- Tracking Control Practices
  - Temporary Construction Entrance
- Non-stormwater Controls
  - Dewatering Operations
  - Material and Equipment Use over Water
  - Clear Water Diversion
  - Temporary Stream Crossing
  - Potable Water/Irrigation
- Water Management and Materials Pollution Control
  - Concrete Waste Management
  - Hazardous Waste Management and Contaminated Soil Management

Because Caltrans and the construction contractor must comply with conditions stipulated in water quality permits for the project, no additional measures are required.

Water Quality Protection During Project Operation and Maintenance

The Caltrans MS4 permit contains provisions to reduce, to the maximum extent practicable, pollutant loadings from the facility once construction is complete. Thus, design features or BMPs would be developed and incorporated into the project design and operations prior to the project construction. These measures would reduce the suspended particulate loads, and thus pollutants associated with the particles, from entering waterways. Additionally, an operation and maintenance program would be implemented for permanent control measures.

Low impact development measures are proposed to reduce the rate of runoff, filter pollutants, and allow infiltration into the ground. The proposed measures would address peak flow attenuation impacts can include structural measures, such as detention, underground storage, and non-structural measures, through the modification of proposed treatment BMPs to accommodate flow and volume control.

Caltrans approved treatment BMPs/low impact development measures that have been studies and verified to remove targeted design constituents and provide general pollutant removal include:

- Biofiltration Systems

- Infiltration Devices
- Detention Devices
- Dry Weather Flow Division
- Gross Solids Removal devices (GSRDs)
- Media Filters
- Multi-Chamber Treatment Train
- Wet Basins

The Caltrans Maintenance Unit would be responsible for maintaining the treatment BMPs discussed above. The Maintenance Stormwater Coordinator would be involved in the design review of any permanent stormwater treatment BMPs and would need to approve any such devices at the end of the plans, specifications, and estimate phase. The Caltrans Maintenance Unit would be able to provide guidance on the following project-related issues to ensure BMPs function as needed:

- Drainage patterns (particularly known areas of flooding, debris, etc.)
- Stability of slopes and roadbed (help determine if the Project can be built and maintained economically)
- Possible material borrow or spoil sites
- Concerns of the local residents
- Existing and potential erosion problems
- Facilities within the right-of-way that will affect alternative designs
- Special problems such as deer crossings, endangered species, etc.
- Whether facilities are safe to maintain
- Known environmentally sensitive areas
- Frequency of traction sand use and estimate of sand quantity applied annually

Also see the measure to *Protect Water Quality and Minimize Sedimentation Runoff in Wetlands and Other Waters* in Section 2.17, “Wetlands and Other Waters.”

2.9.5 References Cited

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2.10 Geology/Soils/Seismic/Topography

2.10.1 Regulatory Setting

This section 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. The Caltrans Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans' projects. Structures are designed using 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 to estimate the seismic demands and structural capabilities. For more information, please see Caltrans' Division of Engineering Services, Office of Earthquake Engineering, SDC.

2.10.1.1 Federal

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."

2.10.1.2 State

Topographic and geologic features are protected under CEQA and the state regulations described below.

Alquist-Priolo Earthquake Fault Zoning Act

California's Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (Public Resources Code [PRC] Section 2621 et seq.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act and renamed in 1994, is intended to reduce risks to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy[1] across the traces of active faults and strictly regulates construction in the corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as *active*, and establishes a process for reviewing building proposals in and adjacent to earthquake fault zones.

Under the Alquist-Priolo Act, faults are zoned, and construction along or across them is strictly regulated if they are "sufficiently active" and "well defined." A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the act as referring to approximately the last 11,000 years). A fault is considered well defined if its trace can be identified clearly by a trained

[1] With reference to the Alquist-Priolo Act, a *structure for human occupancy* is defined as one "used or intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate of more than 2,000 person-hours per year" (CCR Title 14, Div. 2, Section 3601[e]).

geologist at the ground surface, or in the shallow subsurface using standard professional techniques, criteria, and judgment (Bryant and Hart 2007).

Seismic Hazards Mapping Act

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act—the state is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards; and cities and counties are required to regulate development within mapped seismic hazard zones.

Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites within seismic hazard zones until appropriate site-specific geologic and/or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans. Geotechnical investigations conducted within Seismic Hazard Zones must incorporate standards specified by California Geological Survey Special Publication 117a, *Guidelines for Evaluating and Mitigating Seismic Hazards* (California Geological Survey 2008).

Clean Water Act Section 402 General Permit for Construction and Other Land Disturbance Activities (General Order 2009-0009-DWQ)

The CWA is discussed in detail in Section 2.9, "Water Quality." However, because CWA Section 402 is directly relevant to grading activities, additional information is provided herein.

Section 402 of the CWA mandates that certain types of construction activity comply with the requirements of EPA's NPDES program. EPA has delegated to the State Water Board the authority for the NPDES program in California, where it is implemented by the state's nine RWQCBs.

Dischargers whose projects disturb 1 or more acres of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the General Order 2009-0009-DWQ (as amended by Order No. 2010-0014-DWQ and 2012-0006-DWQ). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. Construction General Permit applicants are required to prepare a Notice of Intent and a SWPPP, and to implement and maintain BMPs to avoid adverse effects to receiving water quality as a result of construction activities, including earthwork.

Coverage under the Construction General Permit is obtained by submitting permit registration documents to the State Water Board that include a risk-level assessment and a site-specific SWPPP identifying an effective combination of erosion control, sediment control, and non-storm water BMPs. The Construction General Permit requires that the SWPPP define a program of regular inspections of the BMPs and, in some cases, sampling of water quality parameters.

Because the proposed project would result in the disturbance of an area greater than 1 acre, the project applicant will need to obtain coverage under the NPDES General Construction Activity Storm Water Permit and obtain a state NPDES Stormwater Permit from the Central Valley RWQCB.

2.10.1.3 Local

City of Rocklin

The City of Rocklin General Plan addresses seismic and geologic hazards in its Community Safety Element (City of Rocklin 2012). The following goals and policies are applicable to the project.

> **Goal for Community Safety.** To minimize danger from hazards and to protect residents and visitors from earthquake, fire, flood, other natural disasters, and human-created hazards such as train derailment, industrial accidents, acts of war or terrorism, and accidental release of harmful materials.
>
> **Policy S-20.** Provide for seismic safety and structural integrity in residential, commercial, industrial and public facilities through Building Code enforcement.
>
> **Policy S-21.** Require site-specific geotechnical studies of development proposals in areas subject to landslide potential, erosion, and/or slope instability.

City of Roseville

The City of Roseville General Plan 2025 addresses seismic and geologic hazards in its Safety Element (City of Roseville 2010). The following goals and policies are applicable to the project.

> **Goal 1.** Minimize injury and property damage due to seismic activity and geologic hazards.
>
> **Policy 3.** Minimize soil erosion and sedimentation by maintaining compatible land uses, suitable building designs, and appropriate construction techniques.
>
> **Policy 4.** Comply with state seismic and building standards in the design and siting of critical facilities including police and fire stations, school facilities, hospitals, hazardous material manufacture and storage facilities, bridges, and large public assembly halls.
>
> **Policy 5.** Create and adopt slope development standards prior to or as part of the planning process for any area identified as having significant slope.

2.10.2 Affected Environment

This section is a summary of the analysis documented in the *Structures Preliminary Geotechnical Report* prepared for the project (Blackburn Consulting 2014). The report is available on the project website at http://8065interchange.org/.

2.10.2.1 Regional Geology

Placer County is on the eastern margin of the Great Valley Geomorphic Province. The Great Valley is bounded by the Cascade and Klamath Ranges to the north, the Coast Ranges to the west, and the Sierra Nevada to the east. Thick sequences of alluvial (stream), lacustrine (lake), and marine (ocean) sediments are deposited on the valley floor. The thickness of these deposits ranges from a thin veneer at the margins of the valley to thousands of feet in the middle of the valley.

2.10.2.2 Site Geology

The project site is underlain by several geologic units. These units are shown in the geologic map prepared for the project (Figure 2.10-1).

The Rocklin Pluton (a granitic intrusive formation) underlies the northeastern portion of the project site, immediately west of the Rocklin Road interchange. The weathering of this unit ranges from intensely weathered to decomposed, to a depth of up to 10 feet.

The Mehrten Formation underlies the western portion of SR 65. This unit is a volcanic deposit of Miocene age (5 to 20 million years old); in the project area, it is made up of andesitic, volcanic mudflow breccia, and cobble conglomerate. Weak claystones may be present near the base of the Mehrten Formation, particularly at the eastern portion of the I-80/SR 65 interchange.

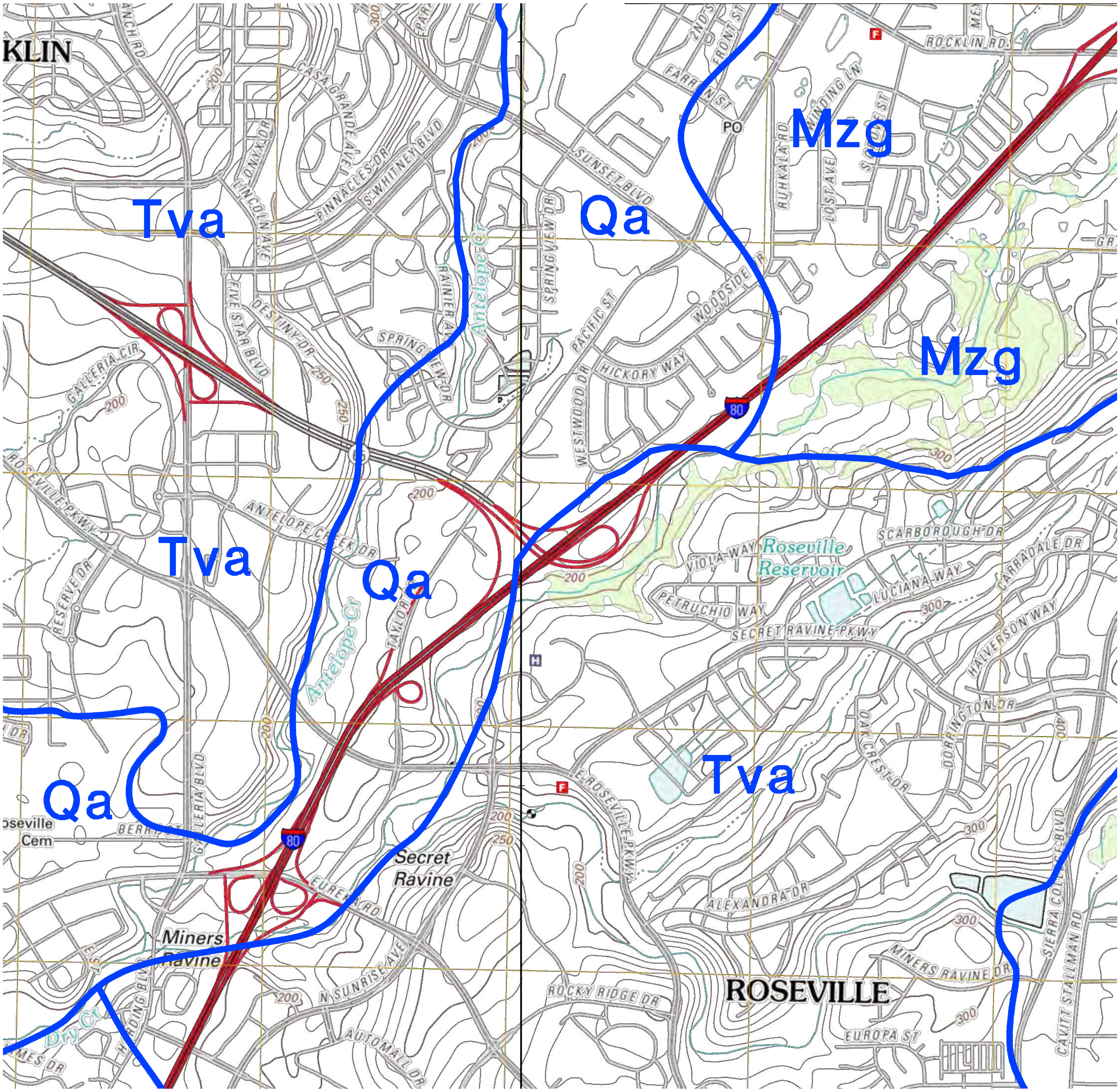
The Riverbank and Turlock Lake Formations underlie much of I-80 at the project site. These units are alluvial deposits formed during the Late to Middle Pleistocene (more than 150 million years ago) and are made up of sands, gravels, and clays.

More recent alluvial deposits are likely present in the shallow drainages that cross the project site, such as Secret Ravine and Miners Ravine. These deposits are made up primarily of loose sand and gravel.

Table 2.10-1, which is reproduced from the geotechnical report prepared for the project (Blackburn Consulting 2014), describes the subsurface soil and rock conditions expected along the alignment.

2.10.2.3 Primary Seismic Hazards

The State of California considers two aspects of earthquake events primary seismic hazards: surface fault rupture (disruption at the ground surface as a result of fault activity) and seismic ground shaking.



L E G E N D

Qa - Alluvium (Riverbank and Turlock Lake Formations)

Tva - Andesitic, volcanic mudflows, breccia, and sediments (Mehrten Formation)

Mzg - Granitic rock of the Rocklin Pluton

- Approximate Geologic Contact

Base Source: USGS Roseville and Rocklin Quadrangles, 7.5 Minute Series topographic, 1:24000, dated 2012.
Geologic Source: Modified after Livingston, 1974, and Loyd, 1995.

N

0 1,000 2,000 3,000 4,000 5,000
Feet

Source: Blackburn Consulting, 2013.

Graphics ... 00189.11 (12-05-14) tm

Figure 2.10-1
Geologic Map

Surface Fault Rupture

The risk of fault rupture in the project area is very low. No faults are mapped at or near the project site, and the site is not in a Fault Rupture Hazard Zone, as defined by the State of California. The nearest fault, the Deadman Fault of the Foothills Fault System, is approximately 9 miles to the east.

Table 2.10-1. Preliminary Subsurface Conditions

General Project Area	Planned Structures in Area	General Soil and Rock Conditions
East End, I-80 between South SR 65/East I-80 Connector and Rocklin Road; Approximate PM 4.7 to 6.1	• No new bridge structures are planned in this area • Retaining walls along eastbound I-80	Underlain by granitic rock that transitions to andesitic volcanic deposits and alluvial deposits at the west end. Very stiff/dense silt and sand associated with weathered granitic rock and alluvial deposits are anticipated. Isolated occurrence of shallow, hard, granitic rock can occur. Moderately hard sandstone and conglomerate associated with andesitic volcanics are anticipated at the west end of this area.
South Interchange Area, I-80 between South SR 65/East I-80 Connector Ramp and South SR 65/West I-80 Connector Ramp; Approximate PM 4.1 to 4.7	• E80/N65 Connector • 80/65 HOV Connector • S65/E80 Connector • T–Undercrossing at EB/WB 80 • CD EB 80 On-Ramp – CD NB 65 On-Ramp	Transition area between engineered fill placed for ramps and abutments, andesitic volcanics that consist of moderately hard breccia and sandstone, and alluvium that consists of medium dense to dense sands, and hard silts and clays.
Northwest End, SR 65 between 80/65 Connector and northwest end of East Roseville Viaduct; Approximate PM R5.1 to R5.4	• East Roseville Viaduct Widening	Underlain by alluvial deposits that typically consist of dense sands and very stiff to hard silts and clays. At the northwest end of this area (northwest side of Antelope Creek), there is a transition to andesitic volcanics that consist of moderately hard, breccia and sandstone. Significant depth of engineered fill is present at the south viaduct abutment.
West End, I-80 between South SR 65/West I-80 Connector and Miners Ravine; Approximate PM 2.9 to 4.1	• S 65/W 80 Connector • 80/65 HOV Connector • Taylor Road Overcrossing (Replace) • Roseville Parkway Tieback Wall • Eureka Road On-Ramp UC • Miners Ravine EB Off- Ramp Widening • Miners Ravine Bridge	Underlain by alluvial deposits that typically consist of medium dense to dense sands and very stiff to hard silts and clays. At the east and west ends of this area, andesitic volcanics that consist of breccia, conglomerate, sandstone, and siltstone are present at the surface and at relatively shallow depths below alluvial deposits. Significant depths of engineered fill are present at existing ramps and abutments.
West End, I-80 between Miners Ravine and Douglas Blvd.; Approximate PM 1.9 to 2.9	• No new bridge structures are planned in this area	Underlain by andesitic volcanic deposits. Moderately hard breccia, sandstone and conglomerate are anticipated very shallow depths. The west end, near Douglas Blvd, transitions to alluvial deposits expected to consist of medium dense to dense sands and very stiff to hard silts and clays.

Source: Blackburn Consulting 2014

Strong Ground Shaking

The peak ground acceleration at the project site is 0.21 acceleration of gravity (g). This is a relatively low level of ground-shaking hazard for California. As a point of comparison, probabilistic peak horizontal ground acceleration values for the San Francisco Bay Area range from 0.4g to more than 0.8g.

2.10.2.4 Secondary Seismic Hazards

Secondary seismic hazards refers to seismically induced landsliding, liquefaction, and related types of ground failure. These hazards are addressed briefly below.

Slope Stability Hazards

For most of the project site, the potential for seismic slope instability, such as landslides and mudslides, is very low. This assessment is based on the geologic conditions at the site and past performance.

In the eastern portion of the I-80/SR 65 interchange, slope stability is an issue because weak claystones may be present near the base of the Mehrten Formation. These claystones can affect slope stability and design parameters for new structures.

Liquefaction

Liquefaction is the process in which soils and sediments lose shear strength and fail during seismic ground shaking. The susceptibility of an area to liquefaction is determined largely by the depth to groundwater and the properties (e.g., texture and density) of the soil and sediment within and above the groundwater.

The potential for detrimental liquefaction at the project site is low. This assessment is based on the soils present in the shallow subsurface where structures will be located. In these locations, the soils are medium dense to very dense granular soils; very stiff to hard, cohesive soils; and/or soft rock. These soils are not subject to liquefaction.

Seismic Settlement

Seismic settlement is the densification of granular soil above the water table caused by ground shaking. This process results in lowering of the ground surface.

The potential for detrimental seismic settlement at the project site is low. This assessment is based on the soil and rock types that occur in the shallow subsurface at the project site, which are medium dense to dense soils and rock, and the relatively low ground motion projected for the area.

2.10.2.5 Landslides

The risk of slope instability triggered by (nonseismic) factors, such as heavy precipitation, is low except for the eastern portion of the I-80/SR 65 interchange area, where the possible occurrence of claystone can affect slope stability. The native soils are expected to be stable at slopes of 2 horizontal:1 vertical (2H:1V) or flatter.

2.10.2.6 Erosion

The sedimentary rocks in the project area (i.e., the Mehrten, Riverbank, and Turlock Lake Formations and the alluvial deposits in drainages) are susceptible to erosion when disrupted.

The volcanic and granitic rocks in the project area are not susceptible to erosion.

2.10.2.7 Expansive Soil

Expansive soils have not yet been evaluated during the geotechnical investigation. However, expansive soils could occur locally in the project area (Fischer pers. comm.).

2.10.3 Environmental Consequences

2.10.3.1 Build Alternatives

Seismic Hazards

The risk of strong seismic ground shaking in the project area is low. Compliance with the appropriate building regulations would ensure that the viaduct, roads, walls, and other project features are not damaged as a result of seismic activity. The project would comply with Caltrans' SDC to ensure that earthquake design and construction measures are implemented.

The risk of secondary seismic hazards related to slope instability is low for most of the project site but is uncertain for the eastern portion of the I-80/SR 65 interchange. In this area, slope stability is an issue because weak claystones may be present. This area will be evaluated further and addressed during final design. All structures would be designed using the Caltrans SDC to meet the minimum seismic requirements for highway bridges designed in California.

The risk of secondary seismic hazards related to liquefaction and seismic settlement is low. In addition, structures would be designed using the Caltrans' SDC to meet the minimum seismic requirements for highway bridges designed in California.

Landsliding

The risk of slope instability triggered by (nonseismic) factors, such as heavy precipitation, is low except for the eastern portion of the I-80/SR 65 interchange area, where the possible occurrence of claystone can affect slope stability. Native soils are expected to be stable at slopes of 2H:1V or flatter. Cut-and-fill slopes in native soils and engineered fill would be designed to have slopes no greater than 2H:1V, which is considered stable for the conditions at the project site.

Erosion

Ground-disturbing earthwork associated with construction at the project site may increase soil erosion rates and/or loss of topsoil. Compliance with the erosion-related requirements applicable to the project would ensure that the construction activities do not result in significant erosion. These requirements are described in the Caltrans *Construction Site Best Management Practices (BMPs) Manual* and the *Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual.*

Expansive Soil

Expansive soil, as defined in Table 18-1 of the Uniform Building Code (1994), can occur locally within the project area; the potential impact on project structures will be evaluated during final design. All construction and engineered fills will comply with Caltrans’ Standard Specifications, and all construction will compact the roadway subgrade in accordance with Caltrans’ Standard Specifications.

2.10.3.2 No Build Alternative

There are no known seismic issues related to the existing viaduct, roads, or other structures. The No Build Alternative would not result in adverse effects related to strong ground motion, liquefaction, slope instability, or seismic settlement.

Because the No Build Alternative would not involve soil disturbance, soil erosion would not increase.

2.10.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

2.10.5 References Cited

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2.10.5.1 Personal Communications

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2.11 Paleontology

2.11.1 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.

The Paleontological Resources Preservation Act (16 USC 470aaa) prohibits excavation, removal, or damage of any paleontological resources located on federal land under the jurisdiction of the Secretaries of the Interior or Agriculture without first obtaining an appropriate permit. The statute establishes criminal and civil penalties for fossil theft and vandalism on federal lands.

According to 23 USC 1.9(a), the use of federal-aid funds must be in conformity with federal and state law.

Appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state are authorized by 23 USC 305, in compliance with 16 USC 431–433 above and state law.

Under California law, paleontological resources are protected by CEQA.

2.11.2 Affected Environment

The regional and local geology of the project area are described in Section 2.10, “Geology/Soils/Seismic/Topography.” As described in that section, the geologic units immediately underlying the project site are granitic rock of the Rocklin Pluton, the Mehrten Formation, the Turlock Lake Formation, and the Riverbank Formation—and recent alluvial deposits in the shallow drainages.

2.11.2.1 Paleontological Sensitivity

The assessment of paleontological sensitivity (i.e., the potential to contain scientifically important paleontological resources) followed standard Caltrans’ criteria (California Department of Transportation 2014). Caltrans criteria use three categories to describe the likelihood that a geologic unit contains significant fossil materials—high potential, low potential, and no potential, defined as shown in Table 2.11-1. The paleontological sensitivity of the units immediately underlying the project site is shown in Table 2.11-2.

Table 2.11-1. California Department of Transportation Paleontological Sensitivity Terminology

Caltrans Sensitivity Designation	Characteristics of Geologic Units in This Category
High potential (high sensitivity)	This category consists of rock units known to contain important vertebrate, invertebrate, or plant fossils anywhere within their geographic extent, including sedimentary rock units that are suitable for the preservation of fossils, as well as some volcanic and low-grade metamorphic rock units. This category includes rock units with the potential to contain abundant vertebrate fossils; a few significant fossils (large or small vertebrate, invertebrate, or plant fossils) that may provide new and significant taxonomic, phylogenetic, ecologic, and/or stratigraphic data; areas that may contain datable organic remains older than Recent, including Neotoma (sp.) middens; and areas that may contain unique new vertebrate deposits, traces, and/or trackways. Fossiliferous deposits with very limited geographic extent or an uncommon origin (e.g., tar pits and caves) are given special consideration and ranked as highly sensitive.
Low potential (low sensitivity)	This category includes sedimentary rock units that are potentially fossiliferous but have not yielded significant fossils in the past; have not yet yielded fossils, but have the potential to contain fossil remains; or contain common and/or widespread invertebrate fossils of species whose taxonomy, phylogeny, and ecology are well understood. *Note that sedimentary rocks expected to contain vertebrate fossils are considered highly sensitive, because vertebrates are generally rare and found in more localized strata.*
No potential (no sensitivity)	This category includes rock units and deposits either too young to contain fossils or are of intrusive igneous origin, most extrusive igneous rocks, and moderate- to high-grade metamorphic rocks.

Table 2.11-2. Summary of Paleontological Sensitivity of Geologic Units Underlying the Project Site

Geologic Unit	Age (in years)	Paleontological Description	Paleontological Sensitivity
Granitic rock of the Rocklin Pluton	Mesozoic (65 to 250 million)	No potential to contain paleontological resources because it is a plutonic rock	None
Mehrten Formation	Miocene (5 to 20 million)	Contains significant fossils, such as extinct horse, primitive rhinoceros, camel, and tortoise (University of California Museum of Paleontology 2014a)	High
Turlock Lake Formation	Late to Middle Pleistocene (more than 150,000)	Contains significant fossils, such as extinct horse, ground sloths (Jefferson's ground sloth and Harlan's ground sloth), saber-toothed cat, Armbruster's wolf, llama, deer, camels, mammoth, smooth-tooted pocket gopher, turtle, and tortoise (Dundas et al. 1996)	High
Riverbank Formation	Late to Middle Pleistocene (more than 150,000)	Contains significant fossils, such as mammoth, bison, camel, horse, ground sloth, dire wolf, rodents, moles, and bony fish (University of California Museum of Paleontology 2014b)	High
Recent alluvial deposits	Holocene (likely less than 5,000)	Not applicable because these deposits are considered too young to contain fossils	Low

Note: See Section 2.10, "Geology/Soils/Seismic/Topography" for further information on geologic units.

2.11.3 Environmental Consequences

2.11.3.1 Build Alternatives

Paleontological Resources

If fossils are present in the project area, they could be damaged by earth-disturbing activities (i.e., excavation and grading) during construction. Several geologic units that underlie the project site have a high sensitivity for paleontological resources; therefore, fossils could be present. These units are the Mehrten Formation, the Riverbank Formation, and the Turlock Lake Formation (Table 2.12-2). Substantial damage to or destruction of significant paleontological resources, as defined by the Society of Vertebrate Paleontology (2010), would be an adverse effect. Implementation of avoidance and minimization measures would reduce this effect.

2.11.3.2 No Build Alternative

No ground disturbance would occur under the No Build Alternative; therefore, paleontological resources would not be affected.

2.11.4 Avoidance, Minimization, and/or Mitigation Measures

Educate Construction Personnel in Recognizing Fossil Material

All construction personnel receive training provided by a qualified professional paleontologist experienced in teaching non-specialists to ensure that construction personnel can recognize fossil materials in the event that any are discovered during construction.

Stop Work if Substantial Fossil Remains Are Encountered during Construction

If substantial fossil remains (particularly vertebrate remains) are discovered during earth-disturbing activities, activities will stop immediately until a State-registered professional geologist or qualified professional paleontologist can assess the nature and importance of the find and a qualified professional paleontologist can recommend appropriate treatment. Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may include preparation of a report for publication describing the finds. The project proponent will ensure that recommendations regarding treatment and reporting are implemented.

Resource Stewardship Measures

The following will be added to the project's standard specification.

If paleontological resources are discovered at the job site, do not disturb the material and immediately:

1. Stop all work within a 60-foot radius of the discovery
2. Protect the area

3. Notify the Resident Engineer

The project proponent investigates and modifies the dimensions of the protected area if necessary.

Do not take paleontological resources from the job site. Do not resume work within the specified radius of the discovery until authorized. A specification alerting the construction contractor that paleontological monitoring will occur during activities that will disturb native sediments will also be added to the project's specifications.

2.11.5 References Cited

California Department of Transportation. 2014. *California Department of Transportation, Standard Environmental Reference*. Volume 1, Chapter 8, “Paleontology.” Available: <http://www.dot.ca.gov/ser/vol1/sec3/physical/Ch08Paleo/chap08paleo.htm>. Accessed: December 5, 2014.

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University of California Museum of Paleontology. 2014b. Advanced Specimen Search, Riverbank Formation. Available: <http://ucmpdb.berkeley.edu/advanced.html>. Accessed: November 19, 2014.

2.12 Hazardous Waste/Materials

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.

2.12.1 Regulatory Setting

2.12.1.1 Federal

The primary federal laws regulating to hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). The purpose of CERCLA, often referred to as "Superfund," is to identify and clean up abandoned contaminated sites so that public health and welfare are not compromised. 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, EO 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.

2.12.1.2 State

California regulates hazardous materials, waste, and substances under the authority of the California Health and Safety Code and is 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 Act also restricts disposal of wastes and requires clean-up of wastes that are below hazardous waste concentrations but could affect groundwater and surface water quality. California regulations that address waste management and prevention and clean-up 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.

2.12.2 Affected Environment

This section is a summary of the analysis documented in the *Initial Site Assessment (ISA) Update* prepared for the project (Blackburn Consulting 2014). The report is available on the project website at http://8065interchange.org/. Table 2.12-1 contains a list of technical reports related to hazardous waste and contamination that were prepared for the project.

Table 2.12-1. Hazardous Waste/Contamination Reports Prepared for the Proposed Project

Report	Author	Date	Type & Coverage
Initial Site Assessment (ISA) Update	Blackburn Consulting	September 2014	Comprehensive; project footprint
Radius Map with GeoTech	Environmental Data Resources, Inc.	July 2014	Agency database search, historical aerial maps and topographic maps; project footprint
Aerially Deposited Lead and Traffic Stripe Paint Site Investigation Report	Geocon Consultants	July 2008	ADL and traffic stripes; 2009 project footprint
Initial Site Assessment Eureka Road/I-80 Improvement Project	Blackburn Consulting	November 2008	Comprehensive; 2009 project footprint
Hazardous Waste Revised Evaluation for a Preliminary Environmental Analysis (PEAR) Report	Caltrans	March 2009	Comprehensive; 2009 project footprint

2.12.2.1 Background on Hazardous Waste/Materials Potentially Found at Project Location

The existing conditions for hazardous waste/materials presented below are potentially present at the project location, as discussed in the ISA and the other reports prepared for the project (Table 2.12-1).

Site Reconnaissance and Access Limitations

A site visit was conducted on May 9, 2013. The reconnaissance was conducted to note current land uses and potential indicators of hazardous waste/contamination within the existing and potentially expanded Caltrans right-of-way. Observation of acquisition parcels was limited to those areas visible from publicly accessible areas.

The southeast portion of APN 015-162-007 was not accessible or visually observable due to a locked gate at the end of Stonehouse Court. The Edwin Purdy House was visible from the adjacent parking lot. A power station, small office building, large garage, several vehicles, and large cargo containers were also present on the site.

Aerially Deposited Lead

Aerially deposited lead (ADL) can be found in the surface and near-surface soils along nearly all roadways because of the historical use of tetraethyl lead in motor vehicle fuels. Areas of primary concern are soils along routes that have had high vehicle emissions from large traffic volumes or congestion during the period when leaded gasoline was in use (generally prior to 1986). Typically, ADL is found in shoulder areas and has high solubility when subjected to the low pH conditions of waste characterization tests. Shoulder soils along urban and heavily travelled rural highways are commonly above the soluble threshold limit concentration criteria.

Investigations for ADL for the proposed project along I-80 included collecting soil samples adjacent to the roadway. Results indicate that the average levels of lead found along I-80 within project limits are below levels requiring regulatory action. Soils along SR 65 and the I-80 interchange are not likely to contain significant ADL concentrations; however, the highway has been open to traffic since the mid-1980s, just before the removal of lead from automobile fuels. There is the potential that soils along the road contain elevated lead levels.

Based on a review of aerial photos and historical topographic maps, Taylor Road has been in use as a primary route since at least 1941. No soil sampling was conducted along Taylor Road as part of previous investigations. There is the potential that soils along the road contain elevated lead levels.

Yellow and White Traffic Striping

Yellow and white traffic striping and markings are located along the entire length of the I-80/SR 65/Taylor Road corridors. Caltrans studies have determined that yellow/white thermoplastic striping and painted markings may contain elevated concentrations of lead and chromium, depending on the age of the striping (manufactured before 2005) and painted markings (manufactured before 1997). Disturbing either yellow or white pavement markings by grinding or sandblasting can expose workers to lead and/or chromium.

Asbestos-Containing Materials

The National Emissions Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR 61[M]) and Federal Occupational Safety and Health Administration (OSHA) classify asbestos-containing materials (ACMs) as any materials or products that contain more than 1 percent asbestos. Nonfriable ACMs are classified by the NESHAPs as either Category I or II material, including materials sometimes found in bridges, rail shims, pipes, pipe coverings, expansion joint facings, and certain cement products.

Regulated ACMs, which are a hazardous waste when friable, are classified as any materials that contain more than 1 percent asbestos by dry weight and are any of the following.

- Friable (can be crumbled, pulverized, or reduced to powder by hand pressure);
- A Category I material that has become friable;
- A Category I material that has been subjected to sanding, grinding, cutting, or abrading; or
- A Category II nonfriable material with a high probability of becoming crumbled, pulverized, or reduced to a powder during demolition or renovation activities.

Activities that disturb materials containing any amount of asbestos are subject to certain requirements of the California Division of Occupational Safety and Health (Cal/OSHA) asbestos standard found in 8 CCR 1529. Typically, removal or disturbance of more than 100 square feet of materials containing more than 1 percent asbestos must be performed by a registered asbestos abatement contractor, but associated waste labeling is not required if the materials contain 1 percent or less asbestos. When the asbestos content of materials exceeds 1 percent, virtually all requirements of the standard become effective.

Materials containing more than 1 percent asbestos are also subject to NESHAPs. Regulated ACMs (friable ACMs and nonfriable ACMs that will become friable during demolition operations) must be removed from structures before they are demolished. Certain nonfriable ACMs and materials containing 1 percent or less asbestos may remain in highway structures, such as guardrail and bridges, during demolition; however, waste handling/disposal issues and Cal/OSHA work requirements may make this cost-prohibitive. With respect to potential worker exposure, notification, and registration requirements, Cal/OSHA defines *ACMs* as construction materials that contain more than 1 percent asbestos (8 CCR 341.6).

Although not indicated by as-built plans, project utility openings in bridges and other structures may contain ACM.

Lead-Containing Paint

Construction activities, including demolition, that disturb materials or paints containing any amount of lead are subject to certain requirements of the Cal/OSHA lead standard contained in 8 CCR 1532.1. Deteriorated paint is defined by 17 CCR 35022 as a surface coating that is crackling, chalking, flaking, chipping, peeling, not intact, failed, or otherwise separating from a component. Demolition of a deteriorating lead-containing paint (LCP) component would require waste characterization and appropriate disposal. Intact LCP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams before disposal.

Potential hazards exist to workers who remove or cut through LCP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with LCP. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring or respiratory protection may be required during the demolition of materials coated with LCP.

Although not noted in as-built plans, utility openings of bridge structures and other steel structures could be coated with LCP.

Treated Wood Waste

Treated wood is wood with preservative chemicals that protect it from insect attack and fungal decay during its use. Typical uses in the highway environment include sign posts, metal beam guardrail wood posts, and lagging on retaining walls. The chemical preservatives used are hazardous and pose a risk to human health and the environment. Arsenic, chromium, copper, creosote, and pentachlorophenol are among the chemicals used. These chemicals are known to be toxic or carcinogenic. Harmful exposure to these chemicals may result from dermal contact with treated wood waste (TWW) or from inhalation or ingestion of TWW particulate (e.g., sawdust and smoke) as this material is handled.

Pole-Mounted Electrical Transformers

Pole-mounted electrical transformers associated with overhead electrical services are located along the project alignment. Whether any of these transformers contain polychlorinated biphenyls (PCBs), which are typically associated with pole-mounted transformers, is unknown. Two PG&E/SMUD power towers are located within the proposed acquisition area near Roseville Golfland-Sunsplash.

Mine Tailings at Miners Ravine

In the ISA for the Eureka Road/I-80 Improvements Project (Blackburn 2008), mine tailings (spoils from historic mining) were identified within that project's footprint at Miners Ravine. A suggested approach to address contaminated mine spoils was recommended in that report. No evidence of mine tailings in the interchange area was identified for this project.

2.12.2.2 Hazardous Waste/Material Conditions by Parcel

Environmental Data Resources Database Search

Environmental Data Resources performed a search of federal, state, and local databases for the project footprint and the surrounding area (Appendix C in the 2014 ISA). The search includes a review of county, state, and federal databases for sites located within the project area and a 1-mile radius from the approximate outline of the project area and within the project area. The records review identified three sites with potentially hazardous material conditions at or immediately adjacent to the project area: Two of the sites, Alta Sierra Body Shop and Venture Out Recreational Vehicles are located on one parcel (APN 015-162-005). The third site is Roseville Golfland-Sunsplash (APN 015-450-079). These sites and their potential hazards are described below.

APN 015-162-007 (full acquisition) Stonehouse Court

Project plans include full acquisition of this parcel. Review of historical aerial photography and fence line reconnaissance shows a residence at the end of Stonehouse Court. The southeast portion of APN 015-162-007 was not accessible or visually observable due to a locked gate at the end of Stonehouse Court. The Edwin Purdy House was visible from the adjacent parking lot. A power station, small office building, large garage, several vehicles, and large cargo containers were also present on the site. Real estate records indicate that the home was built in 1928. Common issues associated with homes of this era include ACM, LBP, leach fields, septic tanks, and heating oil tanks. Acquisition of this parcel is included in all three build alternatives.

APN 015-162-005 (adjacent parcel) Alta Sierra Body Shop/Venture Out Recreational Vehicles

There are no plans to acquire any portion of this parcel; however, the parcel is immediately adjacent to the project footprint for all three build alternatives. Alta Sierra Body Shop is located at 2020 Taylor Road and is listed in the HIST UST database (the State hazardous substance storage container database). Six registered underground storage tanks (USTs) are listed for this site, including two 1,000-gallon unleaded gasoline tanks and four 1,000-gallon regular gasoline tanks that were installed in 1971. No violations are noted in the searched records.

Also located at 2020 Taylor Road, Venture Out Recreational Vehicles is listed in the HIST UST, HIST CORTESE, and LUST (leaking underground storage tank) databases. A gasoline release was discovered in a LUST in 1990. No information on the quantity of release or corrective action was noted in the file. The release was listed as “soil only,” and the case was closed in 1992.

APN 015-450-079 (partial acquisition): Roseville Golfland-Sunsplash

A portion of this parcel would be acquired as part of the proposed project for Alternatives 2 and 3. This parcel is developed as Roseville Golfland-Sunsplash. A 1,000-gallon aboveground storage tank (AST) is located between the parking structure and the racetrack and is stored within a spill containment area. No unauthorized releases have been reported.

2.12.3 Environmental Consequences

The ISA and site investigation reports identified the following potentially hazardous materials/waste conditions.

- Contamination associated with traffic or roadway maintenance:
  - Based on review of aerial photos and historic topographic maps, Taylor Road has been in use as a primary route since at least 1941. Therefore, it is possible that ADL at levels exceeding hazardous waste criteria could occur in soils along Taylor Road within the project area;
  - The I-80/SR 65 interchange has been open to traffic since the mid-1980s. Therefore, it is possible that ADL could occur in soils along the I-80 and SR 65 interchange within the project area; and
  - Lead or chromium associated with removal of existing yellow/white traffic striping.
- Potential contamination associated with removal or modification of facilities or structures:
  - ACM may be encountered during demolition;
  - LCP associated with steel structures or utility openings may be encountered during demolition;
  - TWW may be encountered during demolition;
  - PCBs or other hazardous materials may be associated with removal or relocation of power towers; and
  - Potential hazardous materials may be associated with historic homes (e.g., ACM, LCP, leach fields, septic tanks, and heating oil).
- Contamination associated with identified potentially hazardous waste facilities:
  - Past soil contamination due to a gasoline release from a LUST located on an adjacent parcel;
  - Six USTs, including two 1,000-gallon unleaded gasoline tanks and four 1,000-gallon regular gasoline tanks located on adjacent parcel; and
  - A 1,000-gallon AST on a partial acquisition parcel for Alternatives 2 and 3.

The following environmental consequences may result from construction and operation of the project.

2.12.3.1 Build Alternatives

Soil Contamination

All Build Alternatives

Humans and the environment could be exposed to soil contamination during construction activities under all build alternatives. Six USTs are located at Alta Sierra Body Shop (APN 015-162-005), including two 1,000-gallon unleaded gasoline tanks and four 1,000-gallon regular gasoline tanks. All are registered, and no violations were noted in the searched records. The risk of hazardous materials impacts associated with this business is low.

APN 015-162-005 is also the site of a gasoline release documented in 1990 as a result of a LUST associated with Venture Out Recreational Vehicles. No information on the quantity of release or corrective action was noted in the file. The release was listed as "soil only," and the case was closed in 1992. Acquisition of this parcel is not a part of the proposed project; it is immediately adjacent to the project limits for all three build alternatives. Although the Venture Out Recreational Vehicles case is considered closed, soil testing for contaminants will be necessary to determine the extent and nature of possible contamination. During construction of the project, the potential for human exposure (i.e., construction workers) to existing contaminated soils would occur mainly during soil-disturbing activities nearby.

Mine tailings (spoils from historic mining) were identified at Miners Ravine. However, no evidence of mine tailings was identified in the interchange area for this project. As a result, impacts on soil or groundwater involving mine tailings is low.

Alternatives 2 and 3

In addition to the above, humans and the environment could be exposed to soil contamination during construction activities for Alternatives 2 and 3. A 1,000-gallon AST located at Roseville Golfland-Sunsplash parcel (APN 015-450-079) sits between the parking structure and the racetrack and is stored within a spill containment area. No unauthorized releases have been reported. Due to the distance of the AST from the acquisition area and its location within a spill containment area, the risk of hazardous material impacts on the proposed acquisition area is low.

Unknown Hazardous Materials

All Build Alternatives

The potential exists under all build alternatives for exposure of construction workers or nearby sensitive land uses to *previously unknown* hazardous materials during construction activities. The project area generally has a moderate risk of previously unreported hazardous materials that could be discovered during construction of any of the build alternatives. All three build alternatives include full acquisition of APN 015-162-007 (Edwin Purdy House). The southeast portion of this parcel was not accessible or visually observable due to a locked gate at the end of Stonehouse Court. The Edwin Purdy House was visible from the adjacent parking lot. A power station, small office building, large garage, several vehicles, and large cargo containers were also present on the site. Review of historical aerial photography and fence line reconnaissance shows a residence at the end of Stonehouse Court, and real estate records indicate that the house was built in 1928. Common issues associated with homes of this era include ACM, LCP, leach fields, septic tanks, and heating oil tanks. During construction of the project, the potential for human exposure (i.e., construction workers) to potentially hazardous materials would occur mainly during demolition of existing structures and/or soil-disturbing activities.

Other Known Hazardous Materials

All Build Alternatives

The project area generally has the potential for hazardous materials in the form of ADL along Taylor Road; lead or chromium in yellow/white pavement striping; TWW associated with metal beam guardrail posts; ACM in various bridge components; PCBs in pole-mounted transformers, LCP in utility openings or on steel structures, and gasoline-contaminated soil that could be encountered or released during construction of any of the build alternatives unless measures are taken to avoid that release. Construction workers could be exposed to hazardous materials during ground-disturbing activities such as grading, demolition/replacement of structures, and/or roadbed resurfacing at any of the areas known to contain hazardous substances.

Release of Hazardous Materials

All Build Alternatives

Humans and the environment could be exposed to hazardous conditions from the accidental release of hazardous materials during construction activities. Construction would involve the use of heavy equipment, involving small quantities of hazardous materials (e.g., petroleum and other chemicals used to operate and maintain construction equipment) that may result in hazardous conditions in the project area. These hazards are applicable to any of the build alternatives.

2.12.3.2 No Build Alternative

No construction would take place under the No Build Alternative; therefore, there would be no potential to expose workers or nearby land uses to soil contamination or hazardous materials from construction activities. The No Build Alternative would not result in right-of-way acquisition or construction disturbance. Therefore, this alternative would not result in any direct effect regarding hazardous sites.

2.12.4 Avoidance, Minimization, and/or Mitigation Measures

Conduct Site Assessment

The project proponent will conduct additional site assessments of the road right-of-way adjacent to APN 015-162-005 prior to construction, and of 015-162-007 prior to acquisition and construction, to determine the extent and nature of possible contamination and implement appropriate avoidance or remediation measures according to state and federal regulations. Additional assessment of 015-162-007, private property proposed for acquisition, was not possible during the preparation of the environmental document because landowner permission was not available. To reduce the potential of encountering unexpected contamination, further assessment will include obtaining additional information about the contamination history of the parcels, conducting a site inspection and owner interview, and review of local agency files.

Develop and Implement Plans to Address Worker Health and Safety

As necessary, and as required by Caltrans and federal and state regulations, plans such as a health and safety plan, BMPs, and/or an injury and illness prevention plan will be prepared and implemented to address worker safety when working with potentially hazardous materials, including potential ACMs, LCPs, TWW, lead or chromium in traffic stripes, ADL, and other construction-related materials within the right-of-way during any soil-disturbing activity.

If project components are removed that may contain TWW (e.g., sign posts, metal beam guardrail wood posts, and lagging on retaining walls), the contractor must prepare and submit a safety and health work practices plan for handling TWW approved by an American Board of Industrial Hygiene Certified Industrial Hygienist. TWW must be disposed of in an approved TWW facility. Construction workers who handle this material must be provided training that includes the following.

- All applicable requirements of Title 8 CCR;
- Procedures for identifying and segregating TWW;
- Safe handling practices;
- Requirements of Title 22 CCR, Division 4.5, Chapter 34; and
- Proper disposal methods.

Coordinate with Utility Companies for Relocation of Towers

Discussions with the utility companies has been initiated and both SMUD and PG&E have provided as-built drawings and clearance requirements. Before removal or relocation of the two PG&E/SMUD power towers located within the proposed acquisition area near Roseville Golfland-Sunsplash, utility owners will check the pole-mounted transformers for the presence of PCBs or other hazardous materials. If PCBs or other hazardous materials are present, the utility owner will handle remediation and disposal according to federal and state regulations. Identification and remediation of old transformers is the responsibility of the utility owner. Therefore, coordination between the construction contractor and power companies will occur before project activities involving the power towers commence.

Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow/White Traffic Striping along Existing Roadways

As required by Caltrans' standard special provisions, the construction contractor will sample and test yellow/white traffic striping scheduled for removal to determine whether lead or chromium is present. All aspects of the project associated with removal, storage, transportation, and disposal will be in strict accordance with appropriate regulations of the California Health and Safety Code. The stripes will be disposed of at a Class 1 disposal facility. The responsibility of implementing this measure will be outlined in the contract between Caltrans and the construction contractor. Implementing this measure will minimize potential effects from these hazardous materials.

Perform Soil Testing and Dispose of Soils Contaminated with ADL Appropriately

Soil testing for ADL contamination will be conducted in the project area along I-80, SR 65, and Taylor Road prior to construction work.

Soils in the project limits identified as having hazardous levels of ADL will be disposed of or reused according to federal and state regulations. Soils within the right-of-way that contain hazardous waste concentrations of ADL may be reused under the authority of variances issued by the California Department of Toxic Substances Control. These variances include stockpiling, transporting, and reusing soils with concentrations of lead below maximum allowable levels in the project right-of-way. Stockpiling, transporting and reusing of soil will also be conducted following Caltrans' standard special provisions.

Develop a Lead and Asbestos Abatement Plan

If structures are to be removed or renovated as part of the project, a hazardous materials survey will be conducted prior to demolition or significant renovation. If lead or asbestos is found in these structures, an abatement plan will be developed prior to removal or renovation. The abatement plan will provide for a California-certified asbestos consultant and California Department of Health Services–certified lead project designer to prepare hazardous materials specifications for abatement of the ACM and LCP. This specification should be the basis for selecting qualified contractors to perform the proposed asbestos and lead abatement work. Caltrans will retain a California-licensed asbestos abatement contractor to perform the abatement of any asbestos-containing construction materials and LCP deemed potentially hazardous. Abatement of hazardous building materials will be completed prior to any work on these structures.

2.12.5 References Cited

Blackburn Consulting. 2014. *Initial Site Assessment (ISA) Update – Interstate 80/State Route 65 Interchange (80/65 IC) Improvement Project*. Prepared for CH2M HILL. September.

2.13 Air Quality

2.13.1 Regulatory Setting

The federal Clean Air Act (CAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion state law. These laws, and related regulations by EPA and the California Air Resources Board (ARB), 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 California ambient air quality standards (CAAQS) 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, 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 NEPA. In addition to this environmental analysis, a parallel “Conformity” requirement under the CAA also applies.

Conformity Requirement

The conformity requirement is based on CAA Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) 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 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 carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM10 and PM2.5), and in some areas (although not in California), sulfur dioxide (SO_2). California has attainment 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 CAA 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 analyses use travel demand and emission models to determine whether the implementation of those projects would conform to emission budgets or other tests at various analysis years, showing that requirements of the CAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the CAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept, scope, and "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and the FTIP, the proposed project meets regional conformity requirements for purposes of project-level analysis.

Conformity analysis at the project-level includes verification that the project is included in the regional conformity analysis and a "hot-spot" analysis if an area is "nonattainment" or "maintenance" for carbon monoxide (CO) and/or particulate matter (PM10 or PM2.5). A region is "nonattainment" if one or more of the monitoring stations in the region measures a violation of the relevant standard and the EPA officially designates the area as nonattainment. Areas that were previously designated as nonattainment areas but subsequently meet the standard may be officially redesignated to attainment by EPA, and are then called "maintenance" areas. "Hot-spot" analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA purposes. Conformity does include some specific procedural and documentation standards for projects that require a "hot-spot" analysis. In general, projects must not cause the "hot-spot"-related standard to be violated, and must not cause any increase in the number and severity of violations in nonattainment areas. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

2.13.2 Affected Environment

This section is a summary of the analysis documented in the *Air Quality Study Report* (ICF International 2014a) and the *Air Quality Conformity Analysis* prepared for the project (ICF International 2014b). The report is available on the project website at http://8065interchange.org/.

2.13.2.1 Topography and Climate

The project is located in Placer County, California, which spans three air basins; however, the project is located entirely in the Sacramento Valley Air Basin (SVAB). The SVAB includes Sacramento, Shasta, Tehama, Butte, Glenn, Colusa, Sutter, Yuba, and Yolo Counties, as well as parts of Solano and Placer Counties. The SVAB is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada. The San Joaquin Valley Air Basin lies to the south.

The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During winter, the North Pacific storm track intermittently dominates valley weather, and fair weather alternates with periods of extensive clouds and precipitation. Also characteristic of winter weather in the valley are periods of dense and persistent low-level fog, which is most prevalent between storms. The frequency and persistence of heavy fog in the valley diminishes with the approach of spring. The average yearly temperature range for the Sacramento Valley is between 20 and 115° Fahrenheit (°F), with summer high temperatures often exceeding 90°F and winter low temperatures occasionally dropping below freezing.

Prevailing wind in the Sacramento Valley is generally from the southwest due to marine breezes flowing through the Carquinez Strait. The Carquinez Strait is the major corridor for air moving into the Sacramento Valley from the west. Incoming airflow strength varies daily, with a pronounced diurnal cycle. Figure 2.13-1 indicates the predominant wind direction in the region based on meteorological data from Sacramento Executive Airport. Influx strength is weakest in the morning and increases in the evening hours. Associated with the influx of air through the Carquinez Strait is the Schultz Eddy. The Schultz Eddy is an eddy formed when mountains on the valley's western side divert incoming marine air. The eddy contributes to the formation of a low-level southerly jet between 500 and 1,000 feet above the surface that is capable of speeds in excess of 35 mph. This jet is important for air quality in the Sacramento Valley because of its ability to transport air pollutants over large distances.

The SVAB's climate and topography contribute to the formation and transport of ozone precursors—reactive organic gases (ROG) and nitrogen oxides (NO_X)—throughout the region. The region experiences temperature inversions that limit atmospheric mixing and trap pollutants; high pollutant concentrations result near the ground surface. Generally, the lower the inversion base height from the ground and the greater the temperature increase from base to top, the more pronounced the inhibiting effect of the inversion will be on pollutant dispersion. Consequently, the highest concentrations of photochemical pollutants occur from late spring to early fall when photochemical reactions are greatest because of intensifying sunlight and lowering altitude of daytime inversion layers. Surface inversions (those at altitudes of 0 to 500 feet above sea level) are most frequent during winter, and subsidence inversions (those at 1,000 to 2,000 feet above sea level) are most common in summer.

2.13.2.2 Existing Air Quality

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards (AAQS) that the State of California and the federal government have established for several different pollutants. For some pollutants, separate standards have been set for different measurement periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). Table 2.13-1 shows the state and federal standards for a variety of pollutants, as well as the attainment status of the project area in Placer County.

Table 2.13-1. California and National Ambient Air Quality Standards

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Placer County (project area)	
			California	National	California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	NA	180	NA	NA	NA	NA	NA
		8 hours	0.070	0.070	137	137	If exceeded	If fourth-highest 8-hour concentration in a year, averaged over 3 years, is greater than the standard	Nonattainment	Severe nonattainment
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year	Attainment	Moderate maintenance
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year	Attainment	Moderate maintenance
(Lake Tahoe only)		8 hours	6	NA	7,000	NA	If equaled or exceeded	NA	NA	NA
Nitrogen dioxide	NO_2	Annual Mean[a]	0.030	0.053	57	100	If exceeded	If exceeded on more than 1 day per year	Attainment	Attainment/ unclassified
		1 hour	0.18	0.100	339	188	If exceeded	If the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area exceeds the standard	Attainment	Attainment/ unclassified
Sulfur dioxide	SO_2	24 hours	0.04	NA	105	NA	If exceeded	NA	Attainment	NA
		3 hours	NA	NA	NA	NA	NA	NA	Attainment	NA
		1 hour	0.25	0.075	655	196	If exceeded	If the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area exceeds the standard	Attainment	Attainment/ unclassified
Hydrogen sulfide	H_2S	1 hour	0.03	NA	42	NA	If equaled or exceeded	NA	Unclassified	NA

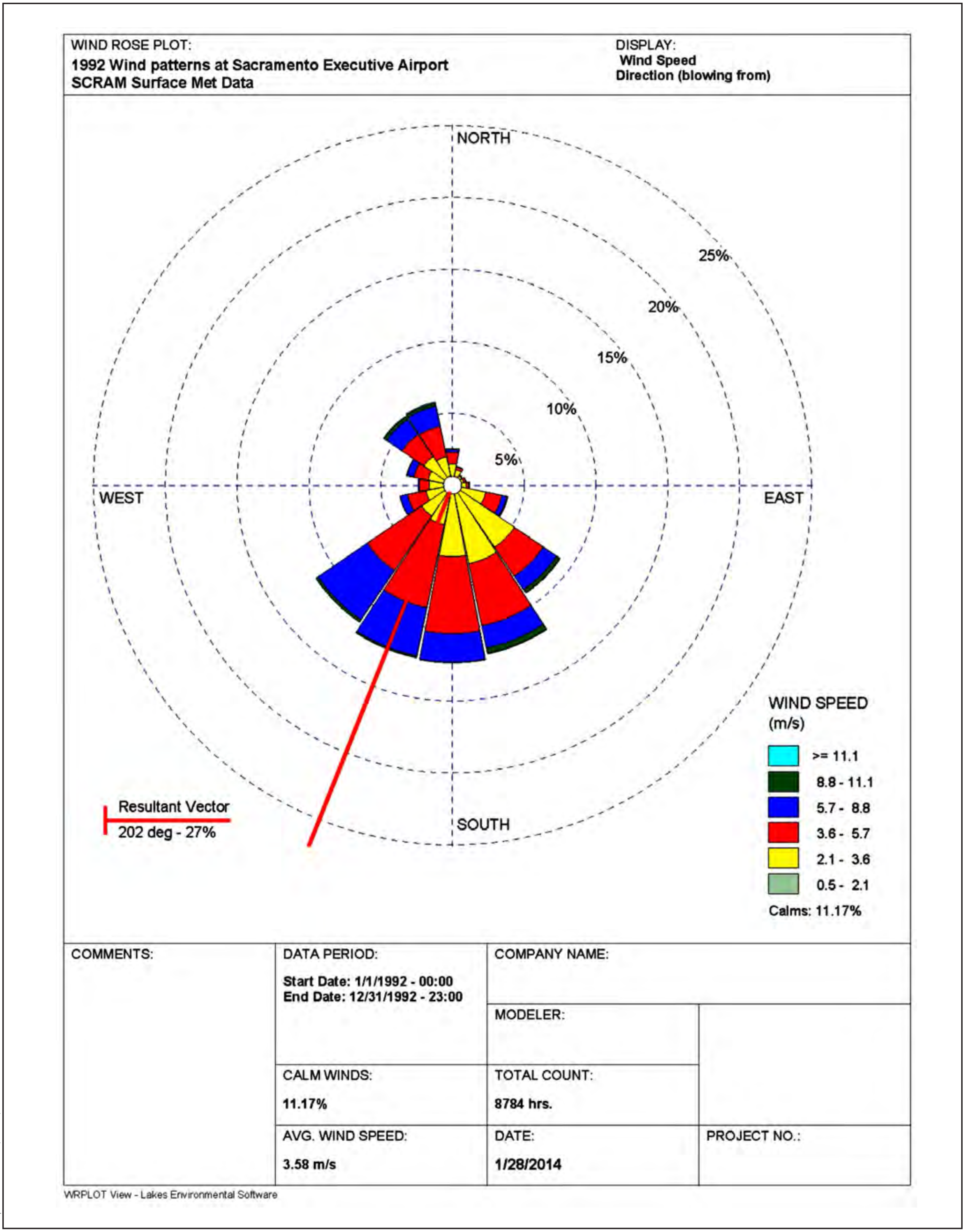

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Figure 2.13-1
Wind Rose Plot—Sacramento Executive Airport

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Placer County (project area)	
			California	National	California	National	California	National	California	National
Vinyl chloride	C_2H_3Cl	24 hours	0.01	NA	26	NA	If equaled or exceeded	NA	No information available	NA
Inhalable particulate matter	PM10	Annual Mean[a]	NA	NA	20	NA	If exceeded	NA	Nonattainment	NA
		24 hours	NA	NA	50	150	If exceeded	If exceeded on more than 1 day per year	Nonattainment	Attainment
	PM2.5	Annual Mean[a]	NA	NA	12	15.0	If exceeded	If the 3-year average of the weighted annual mean from single or multiple community-oriented monitors exceeds the standard	Attainment	Nonattainment
		24 hours	NA	NA	NA	35	NA	If less than 98% of the daily concentrations, averaged over 3 years, is equal to or less than the standard	NA	Nonattainment
Sulfate particles	SO_4	24 hours	NA	NA	25	NA	If equaled or exceeded	NA	Attainment	NA
Lead particles	Pb	Calendar quarter	NA	NA	NA	1.5	NA	If exceeded on more than 1 day per year	NA	NA
		30-day average	NA	NA	1.5	NA	If equaled or exceeded	NA	Attainment	NA
		Rolling 3-month average	NA	NA	NA	0.15	NA	Averaged over a rolling 3-month period	Attainment	Attainment

Notes:

National standards shown are the primary (public health) standards. All equivalent units are based on a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr; ppm (parts per million) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[a] Measurements are averaged over an annual or multi-annual period (refer to the violation criteria for additional information).

NA = not applicable.

Sources*:* California Air Resources Board 2014a, 2014b; U.S. Environmental Protection Agency 2013b.

The nearest air quality monitoring station in the vicinity of the project that reported pollutant concentrations between 2010 and 2012 is the North Sunrise Boulevard monitoring station, located at 151 North Sunrise Boulevard in Roseville, which is approximately 0.65 mile south of the project. The North Sunrise Boulevard station monitors for O_3, NO_2, PM10, and PM2.5. As there are no monitors for CO located within Placer County, monitoring data for CO were taken from the nearest monitoring station, located at North Highlands-Blackfoot Way in Sacramento County (7 miles south of the project).

Air quality monitoring data from the North Sunrise Boulevard and North Highlands-Blackfoot Way monitoring stations are summarized in Table 2.13-2. These data represent air quality monitoring data for the last 3 years (2010–2012) for which complete data are available.

As shown in Table 2.13-2, the North Sunrise Boulevard monitoring station has experienced 29 violations of the state 1-hour O_3 standard, 72 violations of the state 8-hour O_3 standard, no violations of the state NO_2 standards, no violations of the federal 24-hour PM10 standard, 6.1 violations of the state 24-hour PM10 standard, and 6.1 violations of the federal 24-hour PM2.5 standard during the 3-year monitoring period.

EPA has classified the SVAB portion of Placer County as a severe nonattainment area with regard to the federal 8-hour O_3 standard. With regard to the federal CO and PM2.5[1]standards, EPA has classified the SVAB portion of Placer County as a moderate maintenance and nonattainment area, respectively. EPA has classified all of Placer County as an attainment area with regard to the federal PM10 standard (U.S. Environmental Protection Agency 2013b).

The ARB has classified the SVAB portion of Placer County as a serious nonattainment area for the state 1-hour O_3 standard. The ARB has classified all of Placer County as a nonattainment area for the state 8-hour O_3 and PM10 standards. With regard to the state CO and PM2.5 standards, the ARB has classified the SVAB portion of Placer County as an attainment area (California Air Resources Board 2014b).

2.13.2.3 Sensitive Receptors

S*ensitive receptors* are defined as facilities or land uses that include members of the population which are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of sensitive receptors include schools, hospitals, and residential areas. Primary pollutants of concern to sensitive receptors are CO, diesel particulate matter (DPM), and, to a lesser extent, odors or odorous compounds such as ammonia and sulfur dioxide. Sensitive receptors would not be directly affected by emissions of regional pollutants, such as ozone precursors (ROG and NO_X).

[1] The 24-hour PM2.5 standard was lowered from 35 micrograms per cubic meter ($\mu g/m^3$) to 12.0 $\mu g/m^3$ in 2012, and EPA issued their final attainment status designations for the 12.0 $\mu g/m^3$ standard on January 15, 2013.

Table 2.13-2. Ambient Air Quality Monitoring Data Measured at the Roseville–North Sunrise Boulevard and North Highland Sacramento Monitoring Stations

Pollutant Standards	2010	2011	2012
O_3 (Roseville – North Sunrise Boulevard)			
Maximum 1-hour concentration (ppm)	0.124	0.109	0.108
Maximum 8-hour concentration (ppm)	0.105	0.094	0.092
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	9	11	9
CAAQS 8-hour (>0.070 ppm)	21	23	28
Nitrogen Dioxide (NO_2) (Roseville – North Sunrise Boulevard)			
State maximum 1-hour concentration (ppm)	0.071	0.066	0.055
State second-highest 1-hour concentration (ppm)	0.062	0.056	0.054
Annual average concentration (ppm)	0.010	0.011	0.010
Number of days standard exceeded			
CAAQS 1-hour (0.18 ppm)	0	0	0
Carbon Monoxide (CO) (Sacramento County – North Highlands-Blackfoot Way)			
Maximum 8-hour concentration (ppm)	1.16	1.87	1.54
Maximum 1-hour concentration (ppm)[c]	3.1	2.3	2.1
Number of days standard exceeded[a]			
NAAQS 8-hour (≥9 ppm)	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0
NAAQS 1-hour (≥35 ppm)[c]	0	0	0
Particulate Matter (PM_{10})[b] (Roseville – North Sunrise Boulevard)			
National[c] maximum 24-hour concentration ($\mu g/m^3$)	36.3	56.5	43.2
National[c] second-highest 24-hour concentration ($\mu g/m^3$)	33.1	30.8	28.0
State[d] maximum 24-hour concentration ($\mu g/m^3$)	35.1	58.8	44.8
State[d] second-highest 24-hour concentration ($\mu g/m^3$)	32.4	30.5	27.5
National annual average concentration ($\mu g/m^3$)	15.2	17.3	15.1
State annual average concentration ($\mu g/m^3$)[e]	15.4	17.5	15.3
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 $\mu g/m^3$)[f]	0.0	0.0	0.0
CAAQS 24-hour (>50 $\mu g/m^3$)[f]	0.0	6.1	0.0
Particulate Matter (PM2.5) (Roseville – North Sunrise Boulevard)			
National[c] maximum 24-hour concentration ($\mu g/m^3$)	27.3	42.3	16.1
National[c] second-highest 24-hour concentration ($\mu g/m^3$)	20.3	23.0	14.9
State[d] maximum 24-hour concentration ($\mu g/m^3$)	60.1	50.4	28.0
State[d] second-highest 24-hour concentration ($\mu g/m^3$)	38.0	39.6	27.5
National annual average concentration ($\mu g/m^3$)	6.6	8.5	6.4
State annual average concentration ($\mu g/m^3$)[e]	10.9	10.7	9.5
Number of days standard exceeded[a]			
NAAQS 24-hour (>35 $\mu g/m^3$)	0.0	6.1	0.0

Notes:
CAAQS = California ambient air quality standards.
NAAQS = national ambient air quality standards.
– = insufficient data available to determine the value.
ppm = parts per million.
$\mu g/m^3$ = micrograms per cubic meter.

An exceedance is not necessarily a violation.
Measurements usually are collected every 6 days.
National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.
State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California approved samplers.
State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored.
Sources: California Air Resources Board 2014a; U.S. Environmental Protection Agency 2013a.

The project area is located within an existing urban environment that includes a number of sensitive receptors, such as single- and multi-family homes, medical facilities, recreational land uses, child care facilities, and schools. Sensitive receptors near the project area are shown on Figure 2.13-2). Please refer to the *Air Quality Study Report* for a detailed description of sensitive receptors.

2.13.3 Environmental Consequences

2.13.3.1 Build Alternatives

Regional Conformity

The I-80/SR 65 Interchange Improvements Project is included in the regional emissions analysis conducted by Sacramento Area Council of Governments (SACOG) for the conforming 2016 Metropolitan Transportation Plan (MTP)/Sustainable Communities Strategy (SCS) and 2015-2018 MTIP, Amendment #20 (SACOG IDs PLA25440, PLA25648, PLA25649, PLA25601, PLA25602, and PLA25603). The 2015-2018 MTIP, Amendment #20, and the corresponding air quality conformity analysis were approved by FHWA and FTA on March 8, 2016. The design concept and scope of the proposed project is consistent with the project description in the 2016 MTP/SCS, 2015/18 FTIP, and SACOG's regional emissions analysis. Accordingly, it can be concluded that the project's operational emissions (which include the O_3 precursors ROG and NO_X) meet the transportation conformity requirements imposed by the EPA and SMAQMD and would not be expected to exacerbate O_3 nonattainment conditions. Therefore, regional conformity requirements are satisfied. A copy of the letter from FHWA confirming regional conformity is included in Appendix F.

Project-Level Conformity

Carbon Monoxide

Existing year (2012), construction year (2020), and design year (2040) conditions were modeled to evaluate CO concentrations relative to the NAAQS and CAAQS. CO concentrations were estimated at four roadway intersections within the project area. These roadway intersections and segments were modeled because they represent the roadway intersections that would have the worst LOS and highest traffic volumes. Traffic data provided by Fehr & Peers (2014) indicate that peak-period volumes and delay at the affected intersections would typically be highest under Alternative 3. Accordingly, CO concentrations were modeled for Alternative 3 to evaluate the highest potential CO impacts of all build alternatives. Since congestion and traffic volumes are forecasted to be lower under Alternatives 1 and 2, CO concentrations under these alternatives would likewise be lower than those estimated for Alternative 3.

Table 2.13-3 summarizes the results of the intersection CO modeling, which indicate that CO concentrations are not anticipated to exceed the 1- or 8- hour NAAQS or CAAQS under Alternative 3 and the No Build Alternative. Consequently, CO concentrations under all build alternatives are not expected to exceed the 1- or 8- hour NAAQS or CAAQS.

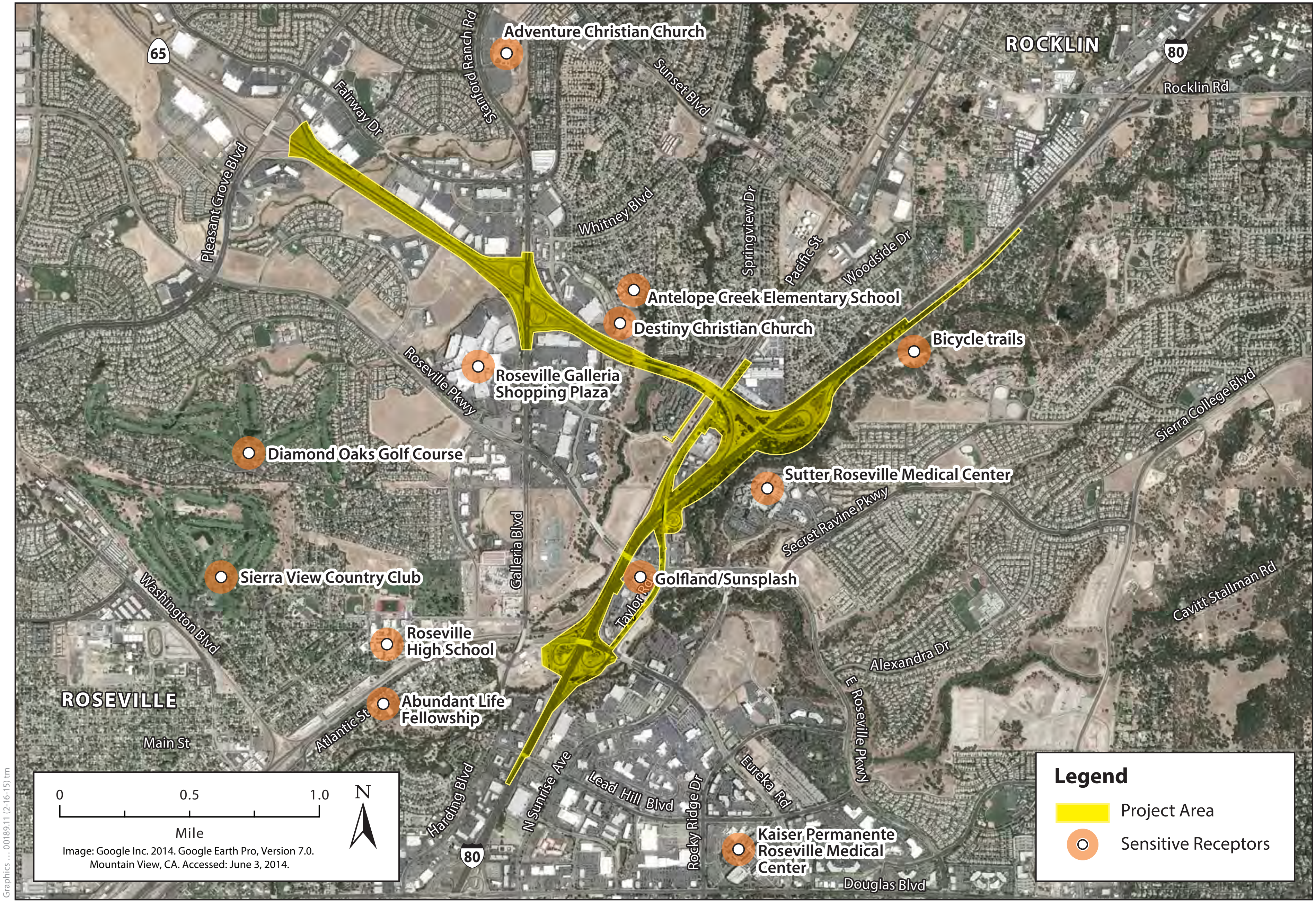

Figure 2.13-2
Sensitive Receptors

Table 2.13-3. CO Modeling Concentration Results (parts per million)

	Receptor[a]	Existing (2012)		Construction Year (2020) No Build		Construction Year (2020) Alternative 3		Design Year (2040) No Build		Design Year (2040) Alternative 3	
		1-hr CO[b]	8-hr CO[c]	1-hr CO[b]	8-hr CO[c]	1-hr CO[b]	8-hr CO[c]	1-hr CO[b]	8-hr CO[c]	1-hr CO[b]	8-hr CO[c]
Stanford Ranch Road/ Five Star Boulevard	1	4.9	3.2	3.7	2.4	3.7	2.4	3.0	1.9	3.1	1.9
	2	5.2	3.4	3.9	2.5	3.9	2.5	3.1	1.9	3.2	2.0
	3	6.0	4.0	4.4	2.9	4.3	2.8	3.3	2.1	3.4	2.2
	4	5.8	3.8	4.3	2.8	4.2	2.7	3.3	2.1	3.4	2.2
Creekside Ridge Drive/ Roseville Parkway	5	7.1	4.7	4.9	3.2	4.5	2.9	3.6	2.3	3.5	2.2
	6	6.8	4.5	4.7	3.1	4.4	2.9	3.5	2.2	3.5	2.2
	7	6.3	4.2	4.4	2.9	4.1	2.6	3.3	2.1	3.3	2.1
	8	5.4	3.6	4.1	2.6	3.9	2.5	3.2	2.0	3.2	2.0
Taylor Road/ Roseville Parkway	9	6.4	4.3	4.5	2.9	4.6	3.0	3.6	2.3	3.6	2.3
	10	6.1	4.0	4.3	2.8	4.3	2.8	3.5	2.2	3.5	2.2
	11	5.6	3.7	4.1	2.6	4.1	2.6	3.4	2.2	3.4	2.2
	12	5.2	3.4	3.9	2.5	4.0	2.6	3.3	2.1	3.3	2.1
I-80 EB/ Eureka Road/ Taylor Road	13	5.8	3.8	4.4	2.9	4.5	2.9	3.2	2.0	3.5	2.2
	14	5.9	3.9	4.6	3.0	4.7	3.1	3.3	2.1	3.6	2.3
	15	5.7	3.8	4.3	2.8	4.4	2.9	3.2	2.0	3.5	2.2
	16	5.3	3.5	3.9	2.5	4.0	2.6	3.1	1.9	4.3	2.8

NA = not applicable.

[a] Consistent with Caltrans CO Protocol, receptors are located at 3 meters from the intersection, at each of the four corners to represent the nearest location in which a receptor could potentially be located adjacent to a traveled roadway. The modeled receptors indicated in Table 2.13-3 (Receptors 1–16) are not representative of the actual sensitive receptors indicated in Figure 2.1 3-2. All intersections modeled have two intersecting roadways.

[b] Average 1-hour background concentration between 2010 and 2012 was 2.5 ppm (California Air Resources Board 2014a).

[c] Average 8-hour background concentration between 2010 and 2012 was 1.5 ppm (U.S. Environmental Protection Agency 2013a).

CO = carbon monoxide; EB = eastbound

PM2.5

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 required only for projects identified as a project of air quality concern (POAQC), as defined in 40 CFR 93.123(b)(1). As described below, the project does not meet any of the project types considered to be a POAQC by EPA's final rule. Accordingly, the project is not considered to be a POAQC, and project-level particulate matter conformity determination requirements are thus satisfied.

The project underwent interagency consultation through SACOG's Project Level Conformity Group (PLCG), which issued concurrence that the project is not a POAQC on April 23, 2013. Appendix F contains the documentation submitted to SACOG's PLCG used to support its concurrence, as well as concurrence letters from EPA and FHWA dated May 6, 2013 that the project is not a POAQC.

Additional Environmental Analysis

Roadway Vehicle Emissions

Long-term air quality impacts are those associated with motor vehicles operating on the roadway network, predominantly those operating in the project vicinity. Emission of ROG, NO_X, CO, PM10, and PM2.5 for existing year (2012), construction year (2020), and design year (2040) with- and without-project conditions were evaluated through modeling conducted using Caltrans' CT-EMFAC model and vehicle activity data provided by the project traffic engineer, Fehr & Peers (Milam pers. comm.[a]).

Table 2.13-4 summarizes the modeled emissions by scenario and compares build emissions to no build and existing conditions. The differences in emissions between with- and without-project conditions represent emissions generated directly from implementation of the build alternatives. Vehicular emission rates are anticipated to lessen in future years due to continuing improvements in engine technology and the retirement of older, higher-emitting vehicles.

Table 2.13-4. Estimated Criteria Pollutant Emissions from Operation of I 80/SR 65 Interchange Improvements Project (pounds per day)

Alternative	Daily VMT	ROG	NO_X	CO	PM10	PM2.5
2012 Existing	5,144,317	2,383	7,000	24,612	641	304
2012 + Alternative 1[a]	5,192,584	2,402	7,064	24,786	647	307
2012 + Alternative 2[a]	5,180,124	2,396	7,049	24,715	645	306
2012 + Alternative 3[a]	5,188,621	2,398	7,057	24,733	646	306
2020 No Build	5,887,102	1,527	2,929	14,005	670	290
2020 Alternative 1	5,900,892	1,530	2,935	14,028	671	290
2020 Alternative 2	5,897,332	1,529	2,934	14,016	671	290
2020 Alternative 3	5,899,760	1,530	2,935	14,020	671	290
2040 No Build	7,744,063	1,511	2,609	12,794	876	378
2040 Alternative 1	7,792,330	1,520	2,623	12,852	881	380
2040 Alternative 2	7,779,870	1,518	2,618	12,825	880	379
2040 Alternative 3	7,788,367	1,519	2,620	12,833	881	380
Comparison to Existing *(Alternative emissions minus Existing emissions)*[b]						
Alternative 1	48,267	19	65	173	6	3
Alternative 2	35,807	13	50	103	4	2
Alternative 3	44,304	15	58	121	5	2

Alternative	Daily VMT	ROG	NO_X	CO	PM10	PM2.5
Comparison to No Build *(Alternative emissions minus No Build emissions)*[b]						
2020 Alternative 1	13,791	3	6	22	2	1
2020 Alternative 2	10,231	2	5	11	1	0
2020 Alternative 3	12,658	3	6	15	1	1
2040 Alternative 1	48,267	9	14	58	5	2
2040 Alternative 2	35,807	7	10	30	4	2
2040 Alternative 3	44,304	8	12	39	5	2
PCAPCD Threshold	-	82	82	-	*82*	-

PCAPCD = Placer County Air Pollution Control District.

[a] Evaluates the net project impact on vehicle miles traveled (VMT) under existing conditions. For this analysis, net VMT under the project was derived using design year (2040) conditions and added to VMT under existing conditions. The analysis was undertaken to support the project-level CEQA document.

[b] Values represent the difference in emissions among the Build Alternatives and existing or no build conditions. Positive values indicate a net increase in emissions.

Emissions associated with implementation of the project were obtained by comparing with-project emissions to without-project emissions. Because Caltrans has statewide jurisdiction, and the setting for projects varies so extensively across the state, Caltrans has not developed, and has no intention to develop, thresholds of significance for CEQA. Further, because most air district thresholds have not been established by regulation or by delegation down from a federal or state agency with regulatory authority over Caltrans, Caltrans is not required to adopt those thresholds in Caltrans' documents. Nevertheless, project-level operational emissions are presented in Table 2.13-4 and Placer County Air Pollution Control District (PCAPCD) criteria pollutant thresholds are provided for reference. A comparison of existing-plus-project conditions also is presented.

Implementation of the build alternatives would increase all criteria pollutants compared to the existing conditions and the No Build Alternative in 2020 and 2040. This increase is due to improved traffic operations under the project, which in turn increases demand and associated VMT on the transportation network. Future year peak-period traffic volumes are forecasted to exceed available capacity in many locations on I-80 and SR 65 under the No Build Alternative. The build alternatives would expand capacity in these locations, which would reduce travel times and induce more vehicle travel. Accordingly, because delay would be reduced under the build alternatives, VMT and resultant vehicle emissions would increase.

Construction Emissions

Implementation of Alternatives 1 through 3 would result in the construction of widened roads, overcrossings, and ramps, as well as intersection improvements and the removal of existing ramp connections. Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/subgrade construction, and paving activities and construction worker commuting patterns. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and prevailing weather.

The Sacramento Metropolitan Air Quality Management District's Roadway Construction Emissions Model (RCEM) (Version 7.1.5.1) was used to estimate construction-related O_3 precursors ROG and NO_X, CO, PM10, PM2.5, and CO_2 emissions from construction activities. As shown in Tables 8 thorough 10 in the *Air Quality Study Report*, several construction phases are anticipated to occur concurrently. To provide a realistic, yet conservative scenario, maximum daily emissions were estimated assuming that all equipment would operate at the same time during periods of overlap among the various construction phases. Daily emissions estimates for overlapping construction phases were therefore added to obtain the maximum total project-related construction impact. Because of this conservative assumption, actual emissions could be less than those forecasted. If construction is delayed or occurs over a longer time period, emissions could be reduced because of (1) a more modern and cleaner burning construction equipment fleet mix; and/or (2) a less intensive build-out schedule (i.e., fewer daily emissions occurring over a longer time interval).

Tables 2.13-5 through 2.13-7 summarize estimated maximum daily emissions levels in each of the 15 construction years for Alternatives 1 thorough 3, respectively. As noted earlier, Caltrans has not developed, and has no intention to develop, thresholds of significance for CEQA. Nevertheless, PCAPCD thresholds of significance are provided for reference.

Table 2.13-5. Estimated Unmitigated Criteria Pollutant Emissions from Construction of Alternative 1 (pounds per day)[a]

Year	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total
2020	11	115	80	0	5	5	0	5	5
2021	6	62	45	46	3	49	10	2	12
2022	9	86	80	46	4	48	10	3	12
2023	9	86	80	18	4	22	4	3	7
2024	6	53	52	18	2	21	4	2	6
2025	8	78	79	10	3	13	2	3	5
2026	6	49	52	10	2	12	2	2	4
2027	8	78	79	2	3	6	0	3	4
2028	6	49	52	2	2	4	0	2	2
2029	9	84	79	92	4	96	19	4	23
2030	9	84	79	92	4	96	19	4	23
2031	5	46	52	92	2	94	19	2	21
2032	10	90	90	78	5	83	16	4	20
2033	7	61	67	78	3	81	16	3	19
2034	8	78	79	9	3	12	2	3	5
2035	6	49	52	9	2	11	2	2	4
PCAPCD Threshold	*82*	*82*	-	-	-	*82*	-	-	-

PCAPCD = Placer County Air Pollution Control District.

[a] The RCEM only includes annual emission factors through 2025. Accordingly, emissions in 2026 through 2034 were modeled using 2025 emission factors. Since emission factors are expected to decline overtime as a result of regulations and continuing improvements in engine technology, emissions presented for 2026 through 2034 likely overestimate potential air quality impacts.

Table 2.13-6. Estimated Unmitigated Criteria Pollutant Emissions from Construction of Alternative 2 (pounds per day)[a]

Year	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total
2020	11	115	80	0	5	5	0	5	5
2021	6	63	45	46	3	49	10	2	12
2022	9	86	80	46	4	48	10	3	12
2023	9	86	80	42	4	45	9	3	12
2024	6	53	52	42	2	44	9	2	11
2025	8	78	79	10	3	13	2	3	5
2026	6	49	52	10	2	12	2	2	4
2027	14	126	128	64	6	70	13	5	19
2028	8	73	79	64	3	68	13	3	16
2029	9	79	79	82	4	86	17	3	20
2030	9	79	79	82	4	86	17	3	20
2031	5	44	52	82	2	84	17	2	19
2032	13	121	124	66	6	72	14	5	19
2033	9	48	52	28	2	30	6	2	8
2034	9	85	90	36	4	39	8	3	10
2035	6	49	52	9	2	11	2	2	4
PCAPCD Threshold	*82*	*82*	-	-	-	*82*	-	-	-

PCAPCD = Placer County Air Pollution Control District.

[a] The RCEM only includes annual emission factors through 2025. Accordingly, emissions in 2026 through 2034 were modeled using 2025 emission factors. Since emission factors are expected to decline overtime as a result of regulations and continuing improvements in engine technology, emissions presented for 2026 through 2034 likely overestimate potential air quality impacts.

Table 2.13-7. Estimated Unmitigated Criteria Pollutant Emissions from Construction of Alternative 3 (pounds per day)[a]

Year	ROG	NO_X	CO	PM10			PM2.5		
				Dust	Exhaust	Total	Dust	Exhaust	Total
2020	11	115	80	0	5	5	0	5	5
2021	6	63	45	46	3	49	10	2	12
2022	9	86	80	46	4	48	10	3	12
2023	9	86	80	17	4	21	3	3	7
2024	6	53	52	17	2	19	3	2	6
2025	8	78	79	10	3	14	2	3	5
2026	6	49	52	10	2	12	2	2	4
2027	14	126	128	22	6	28	5	5	10
2028	8	73	79	22	3	26	5	3	8
2029	9	85	79	80	4	84	17	4	20
2030	9	85	79	80	4	84	17	4	20
2031	5	46	52	80	2	82	17	2	19
2032	13	123	124	62	6	68	13	5	18
2033	9	81	85	62	4	66	13	3	16
2034	8	78	52	9	3	12	2	3	5
2035	6	49	52	9	2	11	2	2	4
PCAPCD Threshold	*82*	*82*	-	-	-	*82*	-	-	-

PCAPCD = Placer County Air Pollution Control District.

[a] The RCEM only includes annual emission factors through 2025. Accordingly, emissions in 2026 through 2034 were modeled using 2025 emission factors. Since emission factors are expected to decline overtime as a result of regulations and continuing improvements in engine technology, emissions presented for 2026 through 2034 likely overestimate potential air quality impacts.

Construction activities are subject to requirements found in the *Standard Specifications for Construction of Local Streets and Roads* (California Department of Transportation 2010). Section 14-9.02 includes specifications relating to air pollution control by complying with air pollution control rules, regulations, ordinances, and statutes that apply to work performed under contract, including air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code Section 10231). Section 14-9.03 addresses dust control and palliative requirements. Implementation of Caltrans' Standard Specifications and measures to control dust during construction would help to minimize air quality impacts from construction activities.

Asbestos

According to the California Department of Conservation's 2000 publication, *A General Location Guide for Ultramafic Rocks in California*, and PCAPCD mapping (Placer County Air Pollution Control District 2008), there are no geologic features normally associated with naturally occurring asbestos (NOA) (i.e., serpentine rock or ultramafic rock near fault zones) in or near the project area (California Department of Conservation 2000). As such, there is no potential for impacts related to NOA emissions during construction activities. However, construction activities that involve the demolition of any building or structure containing asbestos would be subject to EPA's National Emissions Standards for Hazardous Air Pollutants (NESHAP) and ARB's Airborne Toxic Control Measures (ATCMs).

Mobile Source Air Toxics

Annual average daily traffic (AADT) on SR 65 and I-80 under 2040 design year conditions will vary between 137,300 and 217,800, depending on the location. Based on this information, it is estimated that mainline AADT would be above FHWA's mobile source air toxics (MSAT) AADT threshold of 140,000. The project is also located within 500 feet of sensitive receptors, which is the ARB's recommended screening distance for potential land use conflicts among sensitive receptors and freeways (California Air Resources Board 2005). Based on the FHWA's 2012 MSAT guidance, this project is considered a project with higher potential MSAT effects, and a quantitative analysis of MSAT emissions is required (U.S. Federal Highway Administration 2012). Therefore, an evaluation of MSAT emissions for existing (2012), construction year (2020), and design year (2040) conditions was performed using the CT-EMFAC model and the traffic data presented in Table 7 in the *Air Quality Study Report*.

Table 2.13-8 presents modeled MSAT emissions by scenario and compares build emissions to no build and existing conditions. The differences in emissions between with- and without-project conditions represent emissions generated directly from implementation of the project. The build alternatives would not affect acetaldehyde, acrolein, or butadiene emissions relative to the No Build Alternative. However, they would slightly increase DPM emissions under 2020 conditions and benzene and DPM emissions under 2040 conditions. Implementation of Alternative 1 would also slightly increase formaldehyde emissions, relative to the No Build Alternative, under 2040 conditions. All alternatives would slightly increase benzene and DPM, relative to existing conditions; Alternative 1 would also slightly increase acetaldehyde and formaldehyde.

Table 2.13-8. Estimated MSAT Emissions for the I-80/SR 65 Interchange Improvements Project (pounds per day)

Alternative	Acetaldehyde	Acrolein	Benzene	Butadiene	Formaldehyde	DPM
2012 Existing	22	2	36	8	55	103
2012 + Alternative 1[a]	22	2	36	8	55	104
2012 + Alternative 2[a]	22	2	36	8	55	104
2012 + Alternative 3[a]	22	2	36	8	55	104
2020 No Build	9	1	17	4	23	24
2020 Alternative 1	9	1	17	4	23	24
2020 Alternative 2	9	1	17	4	23	24
2020 Alternative 3	9	1	17	4	23	24
2040 No Build	12	1	18	4	29	37
2040 Alternative 1	12	1	18	4	30	37
2040 Alternative 2	12	1	18	4	29	37
2040 Alternative 3	12	1	18	4	29	37
Comparison to Existing *(Alternative emissions minus Existing emissions)*[b]						
Alternative 1	0.1	0.0	0.2	0.0	0.2	1.1
Alternative 2	0.0	0.0	0.1	0.0	0.0	1.0
Alternative 3	0.0	0.0	0.1	0.0	0.0	1.0
Comparison to No Build *(Alternative emissions minus No Build emissions)*[b]						
2020 Alternative 1	0.0	0.0	0.0	0.0	0.0	0.1
2020 Alternative 2	0.0	0.0	0.0	0.0	0.0	0.1
2020 Alternative 3	0.0	0.0	0.0	0.0	0.0	0.1
2040 Alternative 1	0.0	0.0	0.1	0.0	0.1	0.3
2040 Alternative 2	0.0	0.0	0.1	0.0	0.0	0.3
2040 Alternative 3	0.0	0.0	0.1	0.0	0.0	0.3

DPM = diesel particulate matter.
MSAT = mobile source air toxics.

[a] Evaluates the net project impact on vehicle miles traveled (VMT) under existing conditions. For this analysis, net VMT under the project was derived from the design (2040) year analysis and added to VMT under existing conditions. The analysis was undertaken to support the project-level CEQA document.

[b] Values represent the difference in emissions among the Build Alternatives and existing or no build conditions. Positive values indicate a net increase in emissions.

While the analysis provided in Table 2.13-8 indicates no meaningful differences in MSAT emissions between the alternatives, consistent with Council on Environmental Quality (CEQ) regulations regarding incomplete or unavailable data (40 CFR 1502.22[b]), Appendix E contains a discussion explaining how current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts that could result from a transportation project in a way that would be useful to decision makers.

2.13.3.2 No Build Alternative

The increased congestion under the No Build Alternative, compared with the Build Alternatives, would likely result in worsened air quality.

2.13.4 Avoidance, Minimization, and/or Mitigation Measures

Implement Control Measures for Construction Emissions of Fugitive Dust

Standard Specification Section 14, "Environmental Stewardship" addresses the construction contractor's responsibility on many items of concern, such as air pollution; protection of lakes, streams, reservoirs, and other waterbodies; use of pesticides; safety; sanitation; convenience for the public; and damage or injury to any person or property as a result of any construction operation. Section 14-9.02 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 Section 10231). Section 14-9.03 is directed at controlling dust. The Caltrans Standard Specifications are incorporated into all Caltrans' construction contracts.

To the extent practicable, the following additional measures will be implemented to control dust based on the PCAPCD Fugitive Dust Control Requirements, when the measures have not already been incorporated in, and do not conflict with, the requirements of Caltrans' Standard Specifications, special provisions, the NPDES permit, the Biological Opinions, the CWA Section 404 permit, CWA Section 401 Certification, and other permits issued for the project. The following excerpt is taken from the PCAPCD Fugitive Dust Control Requirements Fact Sheet (Placer County Air Pollution Control District 2013).

> For areas to be disturbed of any size, Rule 228, Fugitive Dust, Section 400 establishes standards to be met by activities generating fugitive dust. Minimum dust control requirements, summarized below, are to be initiated at the start and maintained throughout the duration of construction:
>
> 401.1 – Unpaved areas subject to vehicle traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered. In geographic ultramafic rock units, or when naturally occurring asbestos, ultramafic rock, or serpentine is to be disturbed, the cover material shall contain less than 0.25 percent asbestos as determined using the bulk sampling method for asbestos in Section 502.
>
> 401.2 – The speed of any vehicles and equipment traveling across unpaved areas must be no more than 15 miles per hour unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment traveling more than 15 miles per hour from emitting dust exceeding Ringelmann 2[2] or visible emissions from crossing the project boundary line.
>
> 401.3 – Storage piles and disturbed areas not subject to vehicular traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile.
>
> 401.4 – Prior to any ground disturbance, including grading, excavating, and land clearing, sufficient water must be applied to the area to be disturbed to prevent emitting dust exceeding Ringelmann 2 and to minimize visible emissions from crossing the boundary line.
>
> 401.5 – Construction vehicles leaving the site must be cleaned to prevent dust, silt, mud, and dirt from being released or tracked off site.
>
> 401.6 – When wind speeds are high enough to result in dust emissions crossing the boundary line, despite the application of dust mitigation measures, grading and earthmoving operations shall be suspended.

[2] Ringelmann is a scale for measuring the density of smoke, where Ringelmann 0, 1, 2, 3, 4, and 5 are equivalent to an opacity of 0, 20, 40, 60, and 100.

401.7 – No trucks are allowed to transport excavated material off-site unless the trucks are maintained such that no spillage can occur from holes or other openings in cargo compartments, and loads are either;

401.7.1 Covered with tarps; or

401.7.2 Wetted and loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than six inches from the top and that no point of the load extends above the top of the cargo compartment.

402 – A person shall take actions such as surface stabilization, establishment of a vegetative cover, or paving, to minimize wind-driven dust from inactive disturbed surface areas.

In addition, Rule 228 requires that all projects must minimize and clean-up the track-out of bulk material or other debris onto public paved roadways. For 1 acre and less disturbed surface area in areas that are not "Most Likely" to contain naturally occurring asbestos (NOA) according to PCAPCD's NOA hazard maps, and where NOA has not been found, only these minimum dust measures must be met (i.e., no Dust Control Plan is required).

For projects where greater than 1 acre of the site's surface will be disturbed, a Dust Control Plan must be submitted to PCAPCD for approval prior to the start of earth-disturbing activities if this requirement has been established as a Condition of Approval of a discretionary permit.

2.13.5 Climate Change

Climate change is analyzed in Chapter 3. Neither EPA nor FHWA has issued explicit guidance or methods to conduct project-level greenhouse gas analysis. As stated on FHWA's climate change website (http://www.fhwa.dot.gov/hep/climate/index.htm), climate change considerations should be integrated throughout the transportation decision-making process–from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will aid decision making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

Because additional requirements are set forth in California legislation and executive orders on climate change, the issue is addressed in the Chapter 3 of this environmental document and may be used to inform the NEPA decision. The four strategies set forth by FHWA to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours travelled.

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2.13.6.1 Personal Communications

Milam, Ronald T. (A). Principal in Charge of Technical Development. Fehr & Peers, Roseville, California. March 17, 2014 — Email message to Claire Bromund of ICF International regarding I-80/SR 65 Updated SACMET VMT runs.

2.14 Noise and Vibration

2.14.1 Regulatory Setting

NEPA and 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 analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

2.14.1.1 California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will result in a noise impact. If a proposed project is determined to cause a significant noise impact under CEQA, 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 CFR 772 noise analysis; please see Chapter 3 of this document for further information on noise analysis under CEQA.

2.14.1.2 National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA (and Caltrans, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated 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 2.14-1 lists the NAC for use in the NEPA 23 CFR 772 analysis.

Table 2.14-1. Noise Abatement Criteria for NEPA Analysis

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[a]	67 (Exterior)	Residential.
C[a]	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.
F	No NAC—reporting only	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (e.g., water resources, water treatment, and electrical), and warehousing.
G	No NAC—reporting only	Undeveloped lands that are not permitted.

Leq(h) = hourly equivalent sound level
NAC = noise abatement criteria.

[a] Includes undeveloped lands permitted for this activity category.

Source: 23 CFR 772.

Figure 2.14-1 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

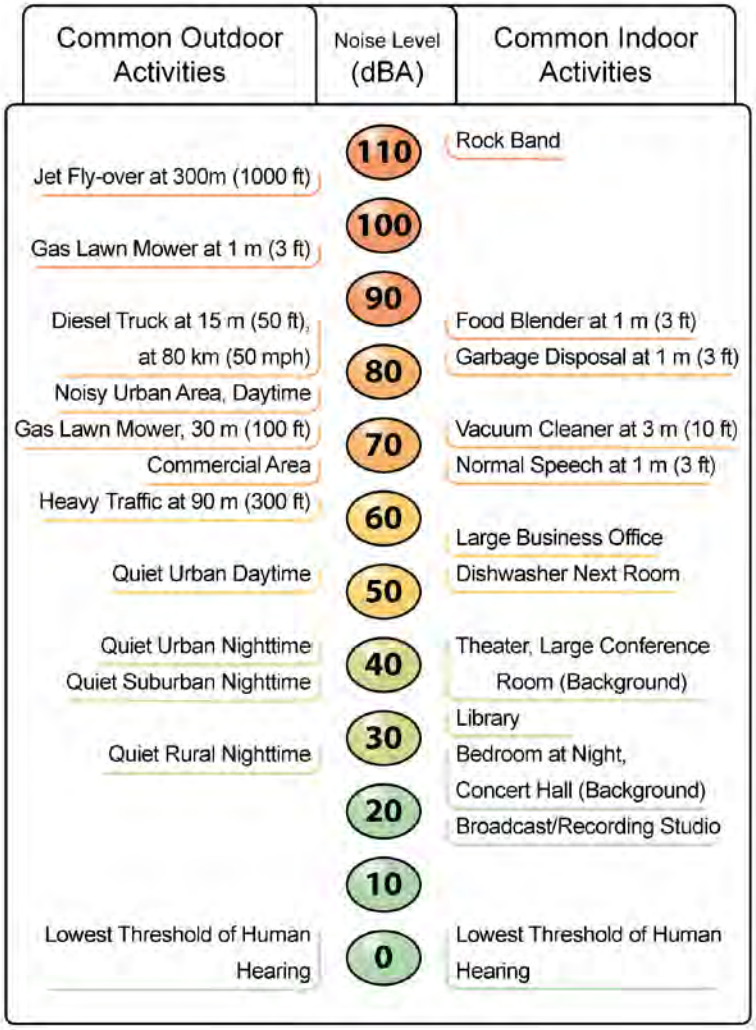

Figure 2.14-1. Noise Levels of Common Activities

According to Caltrans' *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 a 12 dBA or more increase) 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 result in noise impacts, 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.

Caltrans' 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 the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include the noise reduction design goal, residents' acceptance, and the cost per benefited residence. To meet the noise reduction design goal, a barrier must provide at least 7 dB of noise reduction at one or more benefited receptors. This design goal applies to any receptor and is not limited to affected receptors.

2.14.2 Affected Environment

This section is a summary of the analysis documented in the *Noise Study Technical Report* (NSR) (ICF International 2015a) prepared for the proposed project. The NSR discusses potential noise impacts and related noise abatement measures associated with construction and operation of mainline and interchange improvements on I-80 and SR 65. The NSR was prepared to comply with 23 CFR 772, *Procedures for Abatement of Highway Traffic Noise*, and Caltrans' noise analysis policies as described in the *Traffic Noise Analysis Protocol*. The report is available on the project website at http://8065interchange.org/.

2.14.2.1 Land Uses and Sensitive Receptors

Single-family and multi-family residences were identified as Activity Category B land uses in the project area. Outdoor recreational uses, schools, places of worship, parks, and cemeteries were identified as Activity Category C land uses. Outdoor areas associated with hotels were identified as Activity Category E land uses. Several commercial (Activity Category F) and undeveloped (Activity Category G) land uses are not subject to noise impacts, as described in Table 2.14-1. I-80 runs east to west and SR 65 runs north to south. The project area was divided into three subareas, as described below. Figure 2.14-2 identifies the land use types in the project area.

South of I-80: Much of the project area south of I-80 consists of commercial use, undeveloped, open space, and park use. Two hotels with outdoor swimming pools (Activity Category E) are located near the Douglas Boulevard interchange. Two hotels are located adjacent to the Taylor Road interchange, one with an outdoor swimming pool and one with an outdoor ball court. Olympus Pointe Sculpture Park and walking trails (Activity Category C) are adjacent to Atlantic Street and Taylor Road. The Golfland-Sunsplash miniature golf course and water park (Activity Category C) are located adjacent to Roseville Parkway. Sutter Roseville Medical Center includes a ball court (Activity Category C) located near the I-80/SR 65 interchange. The Phoenician apartment complex and two other residential subdivisions (Activity Category B) are set back over 500 feet from I-80. Another residential neighborhood is located on Rustic Hills Drive, near the northern terminus of the project.

Northeast of the I-80/SR 65 interchange: This subarea lies north of I-80 and east of SR 65. The subarea consists primarily of single-family and multi-family residences (Activity Category B) and commercial uses (Activity Category F). Rocklin Mobile Home Park (Activity Category B) is located near the northern terminus of the project. A cemetery (Activity Category C) is located off Kannasto Road near the northern terminus of the project. Woodside Park (Activity Category C) is located adjacent to I-80 within a large residential neighborhood adjacent to the I-80/SR 65

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Figure 2.14-2
Noise Prediction Locations and Evaluated Noise Barriers
Sheet 1

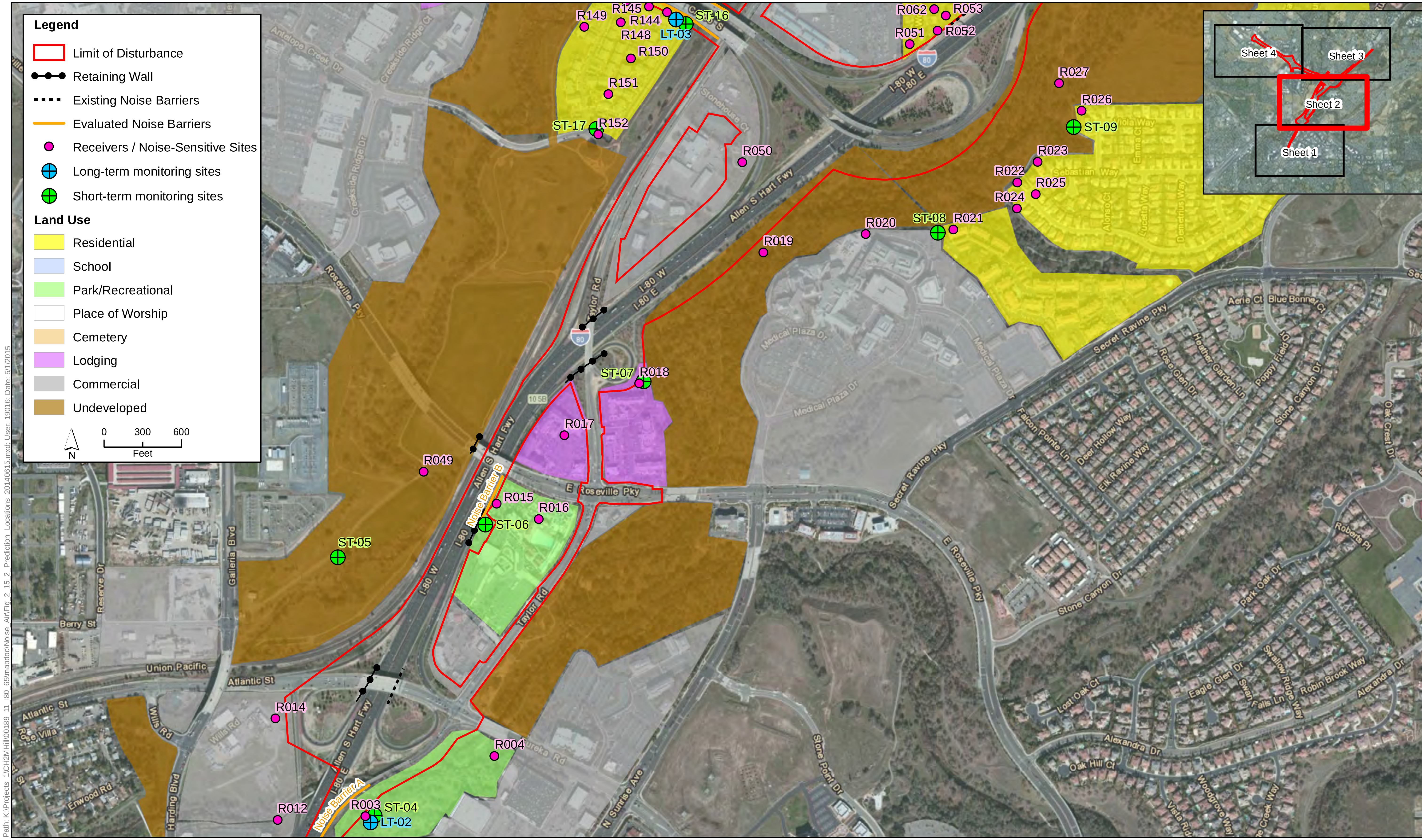

Figure 2.14-2
Noise Prediction Locations and Evaluated Noise Barriers
Sheet 2

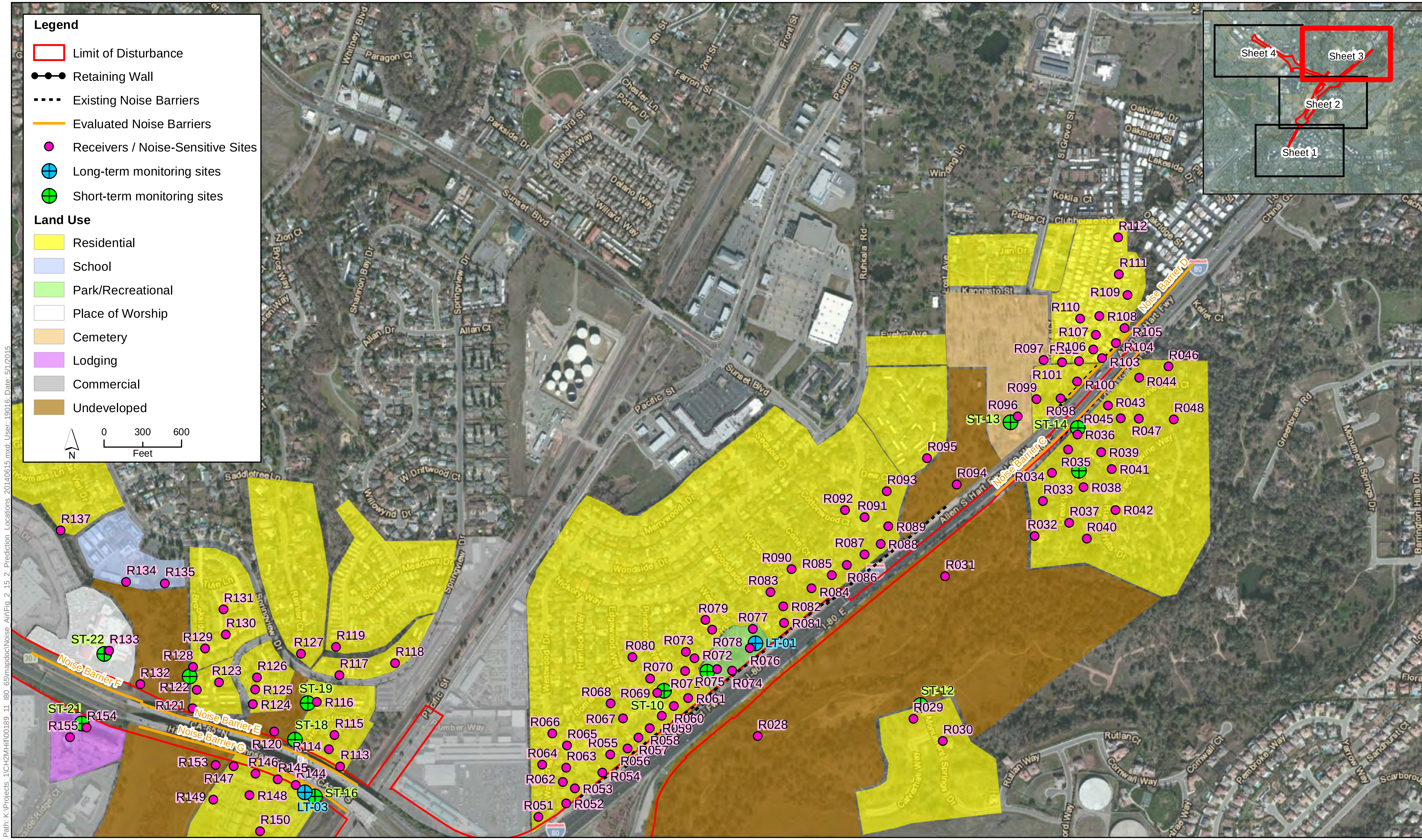

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Figure 2.14-2
Noise Prediction Locations and Evaluated Noise Barriers
Sheet 3

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Figure 2.14-2
Noise Prediction Locations and Evaluated Noise Barriers
Sheet 4

interchange. There are a series of existing soundwalls with heights of 12 to 14 feet along the neighborhood frontage to I-80. West of Taylor Road, SR 65 is on an elevated structure, adjacent to several multi-family and apartment housing complexes (Activity Category B), including Hearthstone, Springview Village, Placer West, and Woodstream. Each of these complexes includes common outdoor use areas such as swimming pools and playgrounds. Destiny Christian Church includes a playground (Activity Category C) with a line-of-sight to SR 65. Antelope Creek Elementary School (Activity Category C) is set back over 500 feet from SR 65.

Northwest of the I-80/SR 65 interchange: This subarea lies north of I-80 and west of SR 65. The subarea consists primarily of commercial uses (Activity Category F) and park uses (Activity Category C). The Galleria at Roseville shopping center, offices, and apartments are located west of Galleria Boulevard. The Galleria apartment buildings and condominiums (Activity Category B) are set back over 500 feet from SR 65. Several hotels with outdoor swimming pools are located along both the SR 65 and I-80 frontage (Activity Category E). The Preserve at Creekside apartment complex (Activity Category B) is located adjacent to the East Roseville Viaduct near the I-80/SR 65 interchange. The Antelope Creek bicycle trail (Activity Category C) extends through much of the area. John Adams Academy includes an outdoor playground (Activity Category C) with a line-of-sight to I-80. Several hotels with outdoor swimming pools are located near the Douglas Road interchange, as well as a multi-family residential neighborhood, set back approximately 500 feet from I-80.

2.14.2.2 Noise Monitoring

The existing noise environment was characterized based on the short- and long-term noise monitoring that was conducted in the project area.

Long-term monitoring was conducted at three locations. The purpose of the long-term noise measurement was to determine the changes in noise levels within the project area throughout a typical day. Sound level data were collected from Monday, December 10 to Wednesday, December 12, 2012. Long-term monitoring site locations are shown in Figure 2.14-2.

Long-term monitoring site LT-01 was located within Woodside Park off of Westwood Drive in Rocklin. The monitor was attached to a tree near a basketball court. A sound wall with a nominal height of 14 feet extends along the frontage of the park facing I-80. The worst-hour noise level measured was 62.8 dBA Leq(h) [hourly equivalent sound level] during the 7 a.m. hour. Long-term monitoring site LT-02 was located within Olympus Pointe Sculpture Park in Roseville. The monitor was attached to a tree within 100 feet of the Cosmos sculpture in the center of the park, facing I-80. The worst-hour noise level measured was 68.2 dBA Leq(h) during the 1 p.m. hour. Long-term monitoring site LT-03 was located within the Preserve at Creekside apartment complex in Roseville. The monitor was attached to a tree approximately 75 feet from the edge of the East Roseville Viaduct. The worst-hour noise level measured was 60.9 dBA Leq(h) during the 1 p.m. hour.

Results of short-term noise monitoring are shown in Table 2.14-2. All measurements were 15 minutes in duration. Traffic noise was observed to be the dominant ambient noise source at all sites. Short-term monitoring locations are shown in Figure 2.14-2.

Table 2.14-2. Summary of Short-Term Measurements

Receptor	Address	Land Uses/ Activity Category	Start Date/ Time	Leq
ST-01	Best Western Plus, 220 Harding Boulevard, Roseville	Hotel/E	12/11/12 9:00 AM	63.2
ST-02	Breuner Drive, Roseville	Duplex residential/B	12/11/12 9:00 AM	63.2
ST-03	John Adams Academy, 1 Sierra Gate Plaza, Roseville	School/C	12/11/12 10:38 AM	63.9
ST-04	Olympus Point Sculpture Park, Roseville	Park/C	12/11/12 10:38 AM	61.7
ST-05	Antelope Creek Trail, Roseville	Park/C	12/12/12 10:43 AM	61.5
ST-06	Golfland-Sunsplash, Taylor Road	Recreation area/C	12/12/12 10:43 AM	64.9
ST-07	Residence Inn, 1930 Taylor Road, Roseville	Hotel/E	12/12/12 12:00 PM	56.9
ST-08	Phoenician Apartments, 1501 Secret Ravine Parkway, Roseville	Multi-family residential/B	12/10/12 4:20 PM	53.7
ST-09	Emerald Creek Subdivision, Roseville	Residential/B	12/10/12 4:21 PM	56.4
ST-10	3228 Westwood Drive, Rocklin	Residential/B	12/10/12 12:06 PM	53.8
ST-11	Woodside Park, Rocklin	Park/C	12/10/12 12:47 PM	56.3
ST-12	Monument Spring Road, Rocklin	Residential/B	12/12/12 1:19 PM	56.7
ST-13	Cemetery, Kannasto Street, Rocklin	Cemetery/C	12/12/12 1:19 PM	59.0
ST-14	China Garden Road, Rocklin	Residential/B	12/12/12 3:19 PM	60.4
ST-15	6375 Rustic Hills Drive, Rocklin	Residential/B	12/10/12 3:19 PM	55.6
ST-16	Preserve at Creekside Apartments, Roseville	Multi-family residential/B	12/11/12 3:35 PM	66.7
ST-17	Preserve at Creekside Apartments, Roseville	Multi-family residential/B	12/12/12 12:00 PM	58.4
ST-18	Hearthstone Apartments, Rocklin	Multi-family residential/B	12/11/12 3:30 PM	62.8
ST-19	Springview Village Apartments, Rocklin	Multi-family residential/B	12/11/12 4:08 PM	56.5
ST-20	Placer West Apartments, Rocklin	Multi-family residential/B	12/11/12 2:54 PM	57.8
ST-21	Homewood Suites, 401 Creekside Ridge Court, Roseville	Hotel/E	12/11/12 4:08 PM	64.2
ST-22	Destiny Christian Church, 6900 Destiny Drive, Rocklin	Place of worship/C	12/11/12 2:18 PM	69.7
ST-23	Office Park, 516 Gibson Drive, Roseville	Offices-outdoor use/E	12/11/12 12:02 PM	61.0
ST-24	Terrace Apartments, Gibson Drive, Roseville	Multi-family residential/B	12/11/12 12:02 PM	57.7

2.14.3 Environmental Consequences

The proposed project is a Type 1 project as defined in 23 CFR 772 because it would physically alter both the vertical and horizontal alignment of an existing highway. To determine whether the project would result in a noise impact that requires consideration of noise abatement, traffic noise levels under existing and design year (2040) conditions were predicted using the FHWA Traffic Noise Model (TNM), Version 2.5. TNM is a computer model based on two FHWA reports: FHWA-PD-96-009 and FHWA-PD-96-010. Key inputs to the traffic noise model were the locations of roadways, shielding features (e.g., topography and buildings), noise barriers, and receptors, and ground type. Three-dimensional representations of these inputs were developed using computer-aided design drawings, aerials, and topographic contours provided by the project engineer. Traffic data for the project was obtained from the *Transportation Analysis Report* prepared by Fehr & Peers (2014) for the project.

2.14.3.1 Build Alternatives

The following discussion applies to all build alternatives.

Exposure of Noise Sensitive Land Uses to Increased Traffic Noise

Traffic noise levels for design year (2040) no-build conditions range from 48 to 78 dBA Leq(h). Under design year build conditions, predicted traffic noise levels range from 49 to 79 dBA Leq(h). This range of noise levels applies to all three build alternatives. Traffic noise levels would approach or exceed the NAC for residential use (Activity Category B) at 271 dwelling units under all three build alternatives. For all three build alternatives, several Activity Category C land uses would be affected, including seven parks, two playgrounds (one at a school and one at a place of worship), and an outdoor recreational area. One outdoor swimming pool at a hotel would be affected (Activity Category E).

Traffic noise levels are predicted to exceed the NAC at Activity Category B, Activity Category C, and Activity Category E land uses in the project area under design year conditions. This is considered to result in an adverse effect due to increased traffic noise, and noise abatement must be considered.

Exposure of Noise-Sensitive Land Uses to Construction Noise

During construction of the project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Construction noise is regulated by provisions in Section 14-8.02, "Noise Control," of the Caltrans Standard Specifications.

Two types of short-term noise impacts would occur during project construction. The first type would be from construction crew commutes and the transport of construction equipment and materials to the project site, which would incrementally raise noise levels on access roads leading to the site. The pieces of heavy equipment for grading and construction activities would be moved onsite, would remain for the duration of each construction phase, and would not add to the daily traffic volume in the project vicinity. The maximum noise level from a single truck passby would have an upper range of 87 dBA Lmax (maximum sound level) at a distance of 50 feet. However, the projected construction traffic would be minimal when compared to existing traffic volumes on other affected streets, and the associated long-term noise level change would not be perceptible. Therefore, construction-related worker commutes and equipment transport noise impacts would be short term and would not be adverse.

The second type of short-term noise impact would be caused by construction activities. Construction is performed in distinct steps, each of which has its own mix of equipment and consequently its own noise characteristics. These various sequential phases would change the character of the noise generated and the noise levels along the project alignment as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 2.14-3 lists typical construction equipment noise levels (Lmax) recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor.

Table 2.14-3. Typical Construction Equipment Noise Levels

Type of Equipment	Range of Maximum Sound Levels (dBA Lmax at 50 feet)	Suggested Typical Maximum Sound Levels for Analysis (dBA Lmax at 50 feet)
Pile drivers	81 to 96	93
Rock drills	83 to 99	96
Jackhammers	75 to 85	82
Pneumatic tools	78 to 88	85
Pumps	74 to 84	80
Scrapers	83 to 91	87
Haul trucks	83 to 94	88
Cranes	79 to 86	82
Portable generators	71 to 87	80
Rollers	75 to 82	80
Dozers	77 to 90	85
Tractors	77 to 82	80
Front-end loaders	77 to 90	86
Hydraulic backhoe	81 to 90	86
Hydraulic excavators	81 to 90	86
Graders	79 to 89	86
Air compressors	76 to 89	86
Trucks	81 to 87	86

dBA = A-weighted decibels
Lmax = maximum instantaneous noise level
Source: Bolt, Beranek & Newman 1987.

Typical equipment noise levels at a distance of 50 feet from an active construction area range up to 96 dBA Lmax during the noisiest construction phases. Bridge construction would require the use of pile drivers. As shown in Table 2.14-3, pile-driving generates typical noise levels of 93 dBA Lmax at a distance of 50 feet.

Earthmoving equipment includes excavation machinery such as backfillers, bulldozers, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings.

Construction of the proposed project is expected to require the use of earthmovers, bulldozers, paving machines, water trucks, dump trucks, concrete trucks, rollers, and pickup trucks. Typical noise levels associated with the use of construction equipment are estimated between 80 and 88 dBA Lmax at a distance of 50 feet from the active construction area for the grading phase. As seen in Table 2.14-3, the maximum noise level generated by each earthmover is assumed to be approximately 86 dBA Lmax at 50 feet from the earthmover in operation. Each bulldozer would generate approximately 85 dBA Lmax at 50 feet. The maximum noise level generated by water trucks and pickup trucks is approximately 86 dBA Lmax at 50 feet from these vehicles. Each doubling of the sound source with equal strength increases the noise level by 3 dBA.

Each piece of construction equipment operates as an individual point source. The worst-case composite noise level at the nearest residence during this phase of construction would be 91 dBA Lmax (at a distance of 50 feet from an active construction area).

Construction noise would be short term, intermittent, and overshadowed by local traffic noise. No adverse noise impacts from construction are anticipated because construction would be conducted in compliance with provisions in Section 14-8.02, “Noise Control,” of the Caltrans Standard Specifications, and applicable local noise standards.

2.14.3.2 No Build Alternative

Exposure of Noise-Sensitive Land Uses to Increased Traffic Noise

Under the No Build Alternative, noise levels associated with traffic would increase in the future, as traffic congestion associated with growth increases (Table 2.14-3). There would be no adverse effect due to increased traffic noise from the interchange improvements, because the project would not be built in the design year.

2.14.4 Avoidance, Minimization, and/or Mitigation Measures

2.14.4.1 Noise Abatement Evaluation under 23 CFR 772

According to 23 CFR 772(13)(c), federal funding may be used for the following abatement measures.

- Construction of noise barriers, including acquisition of property rights, either within or outside the highway right-of-way. Landscaping is not a viable noise abatement measure.
- Traffic management measures including, but not limited to, traffic control devices and signage for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive lane designations.
- Alteration of horizontal and vertical alignments.
- Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to preempt development that would be adversely affected by traffic noise.

- Noise insulation of Activity Category D land use facilities. Post-installation maintenance and operational costs for noise insulation are not eligible for federal-aid funding.

Each noise barrier was evaluated for feasibility based on its achievable noise reduction. For each noise barrier found to be acoustically feasible, reasonable cost allowances were calculated. The unit cost allowance currently is $64,000 per benefited residence. Total allowances are calculated by multiplying the cost allowance per residence by the number of benefited residences. More detail is provided in the *Noise Study Technical Report* available on the project website at http://8065interchange.org/.

For any noise barrier to be considered reasonable from a cost perspective, the estimated cost of the noise barrier should be equal to or less than the total cost allowance calculated for the barrier. The cost calculations of the noise barrier should include all items appropriate and necessary for construction of the barrier, such as traffic control, drainage modification, and retaining walls.

The design of noise barriers is preliminary and has been conducted at a level appropriate for environmental review, not for final design of the project. Preliminary information on the physical location, length, and height of noise barriers is provided in this report. If pertinent parameters change substantially during final project design, preliminary noise barrier designs may be modified or eliminated from the final project. A final decision on the construction of noise abatement will be made upon completion of the project design.

The following is a discussion of noise barriers evaluated in the TNM for each of the project subareas. The barrier discussions apply to all build alternatives. Any differences in results between build alternatives for a given barrier design are described where applicable. Noise barriers are shown in Figure 2.14-2.

South of I-80

Noise Barrier A

The traffic noise modeling results indicate that noise levels of up to 67 dBA Leq(h) are predicted at Olympic Pointe Sculpture Park. Traffic noise levels would increase by up to 1 dB relative to existing conditions, which would not result in a substantial increase in noise levels. However, traffic noise levels would approach or exceed the NAC for Activity Category C land use at one receiver location. Therefore, traffic noise impacts are predicted to occur, and noise abatement must be considered.

An acoustical analysis was conducted for Noise Barrier A, which would extend along the edge-of-shoulder of the eastbound I-80 off-ramp to Eureka Road. The total length of the barrier would be 870 feet. At a height of 20 feet, the barrier would provide up to 6 dB of noise reduction, which would not meet the design goal of 7 dB. While the design goal cannot be achieved for this barrier, the minimum noise reduction requirement of 5 dB can be achieved, benefiting one receiver location at the park (Activity Category C). Therefore, the barrier is considered feasible. Calculated noise reductions and reasonable allowances for each barrier height are summarized in Table 2.14-4.

Table 2.14-4. Summary of Reasonableness Determination Data—Barrier A

Location: Olympus Pointe Sculpture Park, Roseville						
Predicted Sound Level without Barrier						
Design receptor:	R003 (Park use)					
Design year noise level, dBA Leq(h):	66 dBA (Alternatives 1–3)					
Design year noise level minus existing noise level:	1 dBA					
Design Year with Barrier	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**	**18-Foot Barrier**	**20-Foot Barrier**
Barrier noise reduction, dB	2	4	5	5	6	6
Barrier design goal met?	No	No	No	No	No	No
Number of benefited receivers	0	0	1	1	1	1
Reasonable allowance per benefited receiver	$64,000	$64,000	$64,000	$64,000	$64,000	$64,000
Total reasonable allowance	$0	$0	$64,000	$64,000	$64,000	$64,000

Noise Barrier B

The traffic noise modeling results indicate that noise levels of up to 68 dBA Leq(h) are predicted at the Golfland miniature golf course. Traffic noise levels would increase by up to 2 dB relative to existing conditions, which would not result in a substantial increase in noise levels. However, traffic noise levels would approach or exceed the NAC for Activity Category C land use at one receiver location. Therefore, traffic noise impacts are predicted to occur, and noise abatement must be considered.

An acoustical analysis was conducted for Noise Barrier B, which would extend along the top of the I-80 right-of-way near the termination of the I-80 eastbound Eureka Road slip on-ramp. The barrier would be a total length of 370 feet. The barrier would meet the noise reduction design goal of 7 dB at a height of 16 feet. Calculated noise reductions and reasonable allowances for each barrier height are summarized in Table 2.14-5.

Table 2.14-5. Summary of Reasonableness Determination Data—Barrier B

Location: Golfland miniature golf course, Roseville					
Predicted Sound Level without Barrier					
Design receptor:	R015 (Recreational use)				
Design year noise level, dBA Leq(h):	68 dBA (Alternatives 1–3)				
Design year noise level minus existing noise level:	2 dBA				
Design Year with Barrier	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**
Barrier noise reduction, dB	5	5	6	6	7
Barrier design goal met?	No	No	No	No	Yes
Number of benefited receivers	1	1	1	1	1
Reasonable allowance per benefited residence	$64,000	$64,000	$64,000	$64,000	$64,000
Total reasonable allowance	$64,000	$64,000	$64,000	$64,000	$64,000

Noise Barrier C

The traffic noise modeling results indicate that noise levels of up to 72 dBA Leq(h) are predicted at the residential neighborhood on Rustic Hills Drive. Traffic noise levels would increase by up to 2 dB relative to existing conditions, which would not result in a substantial increase in noise levels. However, traffic noise levels would approach or exceed the NAC for Activity Category B land use at five receiver locations representing a total of 10 residential units. Therefore, traffic noise impacts are predicted to occur, and noise abatement must be considered.

An acoustical analysis was conducted for Noise Barrier C, which would extend along I-80 eastbound adjacent to the northern terminus of the project. The barrier would replace the existing wall that currently extends along a portion of the neighborhood frontage. Noise Barrier C would extend the existing wall by 610 linear feet to the west, for a total wall length of 1,530 feet. The barrier would meet the noise reduction design goal of 7 dB at a height of 12 feet. Calculated noise reductions and reasonable allowances for each barrier height are summarized in Table 2.14-6.

Table 2.14-6. Summary of Reasonableness Determination Data—Barrier C

Location: Rustic Hills Drive, Rocklin					
Predicted Sound Level without Barrier					
Design receptor:	R035 (Single-family residential)				
Design year noise level, dBA Leq(h):	72 dBA (Alternatives 1–3)				
Design year noise level minus existing noise level:	2 dBA				
Design Year with Barrier	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**
Barrier noise reduction, dB	5	6	8	9	9
Barrier design goal met?	No	No	Yes	Yes	Yes
Number of benefited receivers	2	4	7	10	10
Reasonable allowance per benefited residence	$64,000	$64,000	$64,000	$64,000	$64,000
Total reasonable allowance	$128,000	$256,000	$448,000	$640,000	$640,000

Northeast of the I-80/SR 65 Interchange

Noise Barrier D

The traffic noise modeling results indicate that noise levels of up to 78 dBA Leq(h) are predicted at Rocklin Mobile Home Park. Traffic noise levels would increase by up to 2 dB relative to existing conditions, which would not result in a substantial increase in noise levels. However, traffic noise levels would approach or exceed the NAC for Activity Category B land use at nine receiver locations representing a total of 53 residential units. Therefore, traffic noise impacts are predicted to occur, and noise abatement must be considered.

An acoustical analysis was conducted for Noise Barrier D, which would extend along I-80 westbound adjacent to the northern terminus of the project. The barrier would replace the existing wall that currently extends along a portion of the neighborhood frontage. Noise

Barrier D would be 1,450 feet in total length. The barrier would meet the noise reduction design goal of 7 dB at a height of 12 feet. Calculated noise reductions and reasonable allowances for each barrier height are summarized in Table 2.14-7.

Table 2.14-7. Summary of Reasonableness Determination Data—Barrier D

Location: Rocklin Mobile Home Park					
Predicted Sound Level without Barrier					
Design receptor:	R105 (Residential – mobile home park)				
Design year noise level, dBA Leq(h):	78 dBA (Alternatives 1–3)				
Design year noise level minus existing noise level:	2 dBA				
Design Year with Barrier	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**
Barrier noise reduction, dB	3	5	7	10	11
Barrier design goal met?	No	No	Yes	Yes	Yes
Number of benefited receivers	0	4	13	13	20
Reasonable allowance per benefited residence	$64,000	$64,000	$64,000	$64,000	$64,000
Total reasonable allowance	$0	$256,000	$832,000	$832,000	$1,280,000

Noise Barrier E

The traffic noise modeling results indicate that noise levels of up to 69 dBA Leq(h) are predicted at multi-family residential apartment buildings and condominiums adjacent to the East Roseville Viaduct. Traffic noise levels would increase by up to 4 dB relative to existing conditions, which would not result in a substantial increase in noise levels. However, traffic noise levels would approach or exceed the NAC for Activity Category B land use at three receiver locations representing a total of 64 residential units and for Activity Category C land use at 1 receiver location representing park use. Therefore, traffic noise impacts are predicted to occur, and noise abatement must be considered.

An acoustical analysis was conducted for Noise Barrier E, which would extend along the northbound SR 65 structure edge-of-pavement. The total length of Noise Barrier E would be 1,870 feet. For safety reasons, noise barriers with footings located within 15 feet of travel lanes cannot exceed 14 feet in height. However, because SR 65 is on an elevated structure in this area, it is possible to break the receiver line-of-sight to heavy truck exhaust stacks with a lower wall. Noise Barrier E would meet the noise reduction design goal of 7 dB at a height of 10 feet. Calculated noise reductions and reasonable allowances for each barrier height are summarized in Table 2.14-8.

Table 2.14-8. Summary of Reasonableness Determination Data—Barrier E

Location: North of SR 65, east of Stanford Ranch Road				
Predicted Sound Level without Barrier				
Design receptor:	R113 (Multi-family residential)			
Design year noise level, dBA Leq(h):	69 dBA (Alternatives 2 and 3); 67 dBA (Alternative 1)			
Design year noise level minus existing noise level:	4 dBA			
Design Year with Barrier	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**
Barrier noise reduction, dB	6	7	7	8
Barrier design goal met?	No	Yes	Yes	Yes
Number of benefited receivers	235	250	263	279
Reasonable allowance per benefited residence	$64,000	$64,000	$64,000	$64,000
Total reasonable allowance	$15,040,000	$16,000,000	$16,832,000	$17,856,000

Noise Barrier F

The traffic noise modeling results indicate that noise levels of up to 71 dBA Leq(h) are predicted at the outdoor playground at Destiny Christian Church. Traffic noise levels would increase by up to 2 dB relative to existing conditions, which would not result in a substantial increase in noise levels. However, traffic noise levels would approach or exceed the NAC for Activity Category C land use at one receiver location. Therefore, traffic noise impacts are predicted to occur, and noise abatement must be considered.

An analysis was conducted for Noise Barrier F, which would extend along northbound SR 65 within the right-of-way. The total length of the barrier would be 950 feet. At a height of 20 feet, the barrier would provide up to 6 dB of noise reduction, which would not meet the design goal of 7 dB. While the design goal cannot be achieved for this barrier, the minimum noise reduction requirement of 5 dB can be achieved, benefiting one receiver location at the playground (Activity Category C). Therefore the barrier is considered feasible. Calculated noise reductions and reasonable allowances for each barrier height are summarized in Table 2.14-9.

Table 2.14-9. Summary of Reasonableness Determination Data—Barrier F

Location: Destiny Christian Church						
Predicted Sound Level without Barrier						
Design receptor:	R133 (Playground – place of worship)					
Design year noise level, dBA Leq(h):	71 dBA (Alternatives 1-3)					
Design year noise level minus existing noise level:	2 dBA					
Design Year with Barrier	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**	**18-Foot Barrier**	**20-Foot Barrier**
Barrier noise reduction, dB	3	4	5	5	6	6
Barrier design goal met?	No	No	No	No	No	No
Number of benefited receivers	0	0	1	1	1	1
Reasonable allowance per benefited residence	$64,000	$64,000	$64,000	$64,000	$64,000	$64,000
Total Reasonable Allowance	$0	$0	$64,000	$64,000	$64,000	$64,000

Northwest of the SR 65 Interchange

Noise Barrier G

The traffic noise modeling results indicate that noise levels of up to 70 dBA Leq(h) are predicted at multi-family residential apartment buildings and condominiums adjacent to the elevated section of SR 65 east of Stanford Ranch Road. Traffic noise levels would increase by up to 9 dB relative to existing conditions, which would not result in a substantial increase in noise levels. However, traffic noise levels would approach or exceed the NAC for Activity Category B land use at six receiver locations representing a total of 144 residential units. Therefore, traffic noise impacts are predicted to occur, and noise abatement must be considered.

An acoustical analysis was conducted for Noise Barrier G, which would extend along the southbound SR 65 structure edge-of-pavement. The total length of Noise Barrier G would be 1,800 feet. For safety reasons, noise barriers with footings located within 15 feet of travel lanes cannot exceed 14 feet in height. However, because SR 65 is on an elevated structure in this area, it is possible to break the receiver line-of-sight to heavy truck exhaust stacks with a lower wall. Noise Barrier G would meet the noise reduction design goal of 7 dB at a height of 10 feet. Calculated noise reductions and reasonable allowances for each barrier height are summarized in Table 2.14-10.

Table 2.14-10. Summary of Reasonableness Determination Data—Barrier G

Location: South of SR 65, east of Stanford Ranch Road				
Predicted Sound Level without Barrier				
Design receptor:	R146 (Multi-family residential)			
Design year noise level, dBA Leq(h):	74 dBA (Alternatives 2 and 3); 73 dBA (Alternative 1)			
Design year noise level minus existing noise level:	4 dBA			
Design Year with Barrier	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**
Barrier noise reduction, dB	6	7	7	8
Barrier design goal met?	No	Yes	Yes	Yes
Number of benefited receivers	128	128	128	128
Reasonable allowance per benefited residence	$64,000	$64,000	$64,000	$64,000
Total reasonable allowance	$8,192,000	$8,192,000	$8,192,000	$8,192,000

Noise Barrier H

The traffic noise modeling results indicate that noise levels of up to 69 dBA Leq(h) are predicted at the outdoor playground at John Adams Academy on Harding Boulevard. Traffic noise levels would increase by up to 2 dB relative to existing conditions, which would not result in a substantial increase in noise levels. However, traffic noise levels would approach or exceed the NAC for Activity Category C land use at one receiver location. Therefore, traffic noise impacts are predicted to occur, and noise abatement must be considered.

An acoustical analysis was conducted for Noise Barrier H, which would extend along the school frontage facing I-80 westbound. The total length of the barrier would be 860 feet. The barrier would meet the noise reduction design goal of 7 dB at a height of 12 feet. Calculated noise reductions and reasonable allowances for each barrier height are summarized in Table 2.14-11.

Table 2.14-11. Summary of Reasonableness Determination Data—Barrier H

Location: John Adams Academy, Harding Boulevard					
Predicted Sound Level without Barrier					
Design receptor:	R011 (School playground)				
Design year noise level, dBA Leq(h):	69 dBA (Alternatives 1–3)				
Design year noise level minus existing noise level:	2 dBA				
Design Year with Barrier	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**
Barrier noise reduction, dB	4	5	7	8	8
Barrier design goal met?	No	No	Yes	Yes	Yes
Number of benefited receivers	0	1	1	1	1
Reasonable allowance per benefited residence	$64,000	$64,000	$64,000	$64,000	$64,000
Total reasonable allowance	$0	$64,000	$64,000	$64,000	$64,000

Noise Abatement Decision Report

A *Noise Abatement Decision Report* (ICF International 2015b) was prepared to include noise abatement construction cost estimates that were prepared by the project engineer based on site-specific conditions. The report is available on the project website at http://8065interchange.org/. These cost estimates were compared to total reasonableness allowances for noise barriers, as shown in Table 2.14-12. As shown in the table, Noise Barriers A, B, F, and H did not meet the design goal or the cost of the barrier was not reasonable.

The recommended height of Noise Barrier C is 14 feet. This height would match the existing noise barrier along the neighborhood frontage of Rustic Hills Drive and would meet both the noise abatement and noise reduction criteria. At a height of 14 feet, Noise Barrier C would benefit 10 residences at a reasonable allowance of $64,000 per residence, yielding a total reasonable allowance of $640,000. The estimated construction cost to build the 14-foot barrier is $223,495, which is within the barrier cost allowance.

The recommended height of Noise Barrier D is 16 feet. This height would meet both the noise abatement and noise reduction criteria. At a height of 16 feet, Noise Barrier D would benefit 20 residences at a reasonable allowance of $64,000 per residence, yielding a total reasonable allowance of $1,280,000. The estimated construction cost to build the 16-foot barrier is $590,317, which is within the barrier cost allowance.

The recommended height of Noise Barrier E is 14 feet. This height would meet both the noise abatement and noise reduction criteria. At a height of 14 feet, Noise Barrier E would benefit 279 residences at a reasonable allowance of $64,000 per residence, yielding a total reasonable allowance of $17,856,000. The estimated construction cost to build the 14-foot barrier is $564,117, which is within the barrier cost allowance.

The recommended height of Noise Barrier G is 10 feet. This height would meet both the noise abatement and noise reduction criteria. At a height of 10 feet, Noise Barrier G would benefit 128 residences at a reasonable allowance of $64,000 per residence, yielding a total reasonable allowance of $8,192,000. The estimated construction cost to build the 10-foot barrier is $399,000, which is within the barrier cost allowance.

Based on the studies completed to date, the project proponent intends to incorporate noise abatement in the form of Noise Barriers C, D, E and G, at the heights recommended above. Calculations based on preliminary design data show that the barriers will reduce noise levels by 5 to 11 dBA for 437 residences at a cost of $1,776,929. If during final design conditions have substantially changed, noise abatement may not be necessary. The final decision on noise abatement will be made upon completion of the project design and the public involvement processes.

Table 2.14-12. Summary of Cost Reasonableness of Evaluated Barriers

Noise Barrier	Type	Barrier Height (feet)	Total Noise-Sensitive Receptors Benefited	Barrier Length (feet)	Barrier Surface Area (sq feet)	Barrier Cost Allowance (dollars per benefited receptor)	Barrier Cost Allowance (total dollars)	Engineer's Cost Estimate (total dollars)	Design Goal Met?	Is Barrier Cost-Reasonable?
A (Alt. 3)	Miners Ravine bridge (widen – Alt 3)	14	1	870	12,180	$64,000	$64,000	$262,450	No	No
A (Alt. 3)	Miners Ravine bridge (widen – Alt 3)	16	1	870	13,920	$64,000	$64,000	$297,250	No	No
A (Alt. 1 & 2)	Miners Ravine bridge (existing bridge – Alt 1 & 2)	14	1	870	12,180	$64,000	$64,000	$612,450	No	No
A (Alt. 1 & 2)	Miners Ravine bridge (existing bridge – Alt 1 & 2)	16	1	870	13,920	$64,000	$64,000	$647,250	No	No
B	On grade (along EB I-80)	8	1	370	2,960	$64,000	$64,000	$85,267	No	No
B	On grade (along EB I-80)	10	1	370	3,700	$64,000	$64,000	$101,967	No	No
B	On grade (along EB I-80)	12	1	370	4,440	$64,000	$64,000	$118,667	No	No
B	On grade (along EB I-80)	14	1	370	5,180	$64,000	$64,000	$135,367	No	No
B	On grade (along EB I-80)	16	1	370	5,920	$64,000	$64,000	$151,117	Yes	No
C	On grade (along EB I-80)	8	2	612	4,896	$64,000	$128,000	$140,630	No	No
C	On grade (along EB I-80)	10	4	612	6,120	$64,000	$256,000	$168,210	No	Yes
C	On grade (along EB I-80)	12	7	612	7,344	$64,000	$448,000	$195,790	Yes	Yes
C	**On grade (along EB I-80)**	**14**	**10**	**612**	**8,568**	**$64,000**	**$640,000**	**$223,370**	**Yes**	**Yes**
C	On grade (along EB I-80)	16	10	612	9,792	$64,000	$640,000	$249,400	Yes	Yes
D	On grade (along WB I-80)	10	4	1,450	14,500	$64,000	$256,000	$398,067	No	No
D	On grade (along WB I-80)	12	13	1,450	17,400	$64,000	$832,000	$463,367	Yes	Yes

Noise Barrier	Type	Barrier Height (feet)	Total Noise-Sensitive Receptors Benefited	Barrier Length (feet)	Barrier Surface Area (sq feet)	Barrier Cost Allowance (dollars per benefited receptor)	Barrier Cost Allowance (total dollars)	Engineer's Cost Estimate (total dollars)	Design Goal Met?	Is Barrier Cost-Reasonable?
D	On grade (along WB I-80)	14	13	1,450	20,300	$64,000	$832,000	$528,667	Yes	Yes
D	**On grade (along WB I-80)**	**16**	**20**	**1,450**	**23,200**	**$64,000**	**$1,280,000**	**$590,317**	**Yes**	**Yes**
E	East Roseville Viaduct (on NB widen)	8	235	1,870	14,960	$64,000	$15,040,000	$339,717	No	Yes
E	East Roseville Viaduct (on NB widen)	10	250	1,870	18,700	$64,000	$16,000,000	$414,517	Yes	Yes
E	East Roseville Viaduct (on NB widen)	12	263	1,870	22,440	$64,000	$16,832,000	$489,317	Yes	Yes
E	**East Roseville Viaduct (on NB widen)**	**14**	**279**	**1,870**	**26,180**	**$64,000**	**$17,856,000**	**$564,117**	**Yes**	**Yes**
F	On grade (along NB SR-65)	14	1	950	13,300	$64,000	$64,000	$346,583	No	No
F	On grade (along NB SR-65)	16	1	950	15,200	$64,000	$64,000	$386,983	No	No
G	East Roseville Viaduct (on SB widen)	8	128	1,800	14,400	$64,000	$8,192,000	$327,000	No	Yes
G	**East Roseville Viaduct (on SB widen)**	**10**	**128**	**1,800**	**18,000**	**$64,000**	**$8,192,000**	**$399,000**	**Yes**	**Yes**
G	E. Roseville Viaduct (on SB widen)	12	128	1,800	21,600	$64,000	$8,192,000	$471,000	Yes	Yes
G	East Roseville Viaduct (on SB widen)	14	128	1,800	25,200	$64,000	$8,192,000	$543,000	Yes	Yes
H	On grade (along WB I-80)	10	1	860	8,600	$64,000	$64,000	$236,308	No	No
H	On grade (along WB I-80)	12	1	860	10,320	$64,000	$64,000	$275,058	Yes	No
H	On grade (along WB I-80)	14	1	860	12,040	$64,000	$64,000	$313,808	Yes	No
H	On grade (along WB I-80)	16	1	860	13,760	$64,000	$64,000	$350,383	Yes	No

Bold and underline indicates recommended noise barrier.

2.14.4.2 Minimize Noise Effects from Construction

Standard Caltrans procedures include implementation of the following measures to minimize the temporary noise effects from construction.

- All equipment will have sound-control devices that are no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust.
- The construction contractor will implement appropriate additional noise measures, including changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources.

2.14.5 References Cited

Bolt, Beranek & Newman. 1987. Noise Control for Buildings and Manufacturing Plants.

Fehr & Peers. 2014. *Transportation Analysis Report – I-80/SR 65 Interchange Improvements*. Roseville, CA.

ICF International. 2015a. *Noise Study Report – I-80/SR 65 Interchange Improvements Project, Placer County, Interstate 80 and State Route 65*. Sacramento, CA. May.

ICF International. 2015b. *Noise Abatement Decision Report – I-80/SR 65 Interchange Improvements Project, Placer County, Interstate 80 and State Route 65*. Sacramento, CA. May.

2.15 Energy

2.15.1 Regulatory Setting

NEPA (42 USC Part 4332) requires identification of all potentially significant impacts on the environment, including energy impacts.

The CEQA Guidelines (Appendix F, Energy Conservation) state that EIRs 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.

2.15.2 Affected Environment

The proposed improvements at the I-80/SR 65 interchange are regionally important in order to reduce future traffic congestion, improve operations and safety, and comply with current Caltrans and local agency design standards.

2.15.3 Environmental Consequences

2.15.3.1 Build Alternatives

Each of the build alternatives would require temporary energy consumption during construction, including fuel for construction and personnel equipment and vehicles, and electricity for night lighting. During operation of the project, the build alternatives would improve overall network performance compared to no-build conditions, which would improve fuel efficiency. The improved HOV connectors may also encourage ridesharing. The build alternatives would not result in direct, indirect, or unavoidable impacts on energy demand or energy resources. When balancing the energy used during construction and operation against the energy saved by relieving congestion and other transportation efficiencies, the project would not result in substantial energy impacts.

2.15.3.2 No Build Alternative

The No Build Alternative would not result in substantial energy impacts, although as noted, continued congestion and other transportation inefficiencies under the No Build Alternative would result in increased energy demands. Interchange improvements would not be implemented.

2.15.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

Biological Environment

2.16 Natural Communities

This section discusses natural communities of special concern. The focus is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors 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 are discussed in Section 2.20, "Threatened and Endangered Species." Wetlands and other waters also are discussed in Section 2.17.

2.16.1 Regulatory Setting

2.16.1.1 City of Roseville Tree Preservation Ordinance

Chapter 19.66 (Tree Preservation) of the Roseville Municipal Code includes regulations controlling the removal and preservation of trees within the City of Roseville. A tree permit is required to conduct specific work or regulated activities within the protected zone of a protected tree or to remove a protected tree. A protected tree is defined in the Roseville Municipal Code as a native oak tree equal to or greater than 6 inches diameter at breast height (dbh), measured as a total of a single trunk or multiple trunks. The protected zone is demarcated as the largest radius of the circle formed by the protected tree's dripline plus 1 foot; the radius is measured as the distance from the base of the tree trunk to the greatest extent of the tree's dripline (the furthest horizontal extent of branches).

Under the ordinance, native oaks are defined as valley oaks, blue oaks, interior live oaks, and their hybrids. Tree permit conditions include compensation for work conducted within the protected zone of protected trees. Compensation may consist of a combination of planting replacement trees, relocating trees that would be removed, implementing a revegetation plan, or paying an in-lieu mitigation fee. An arborist survey will be conducted as part of the permitting process to identify oak trees that meet the City's definition of a protected tree.

2.16.1.2 City of Roseville Open Space Preserve Overarching Management Plan

The City of Roseville Open Space Preserve Overarching Management Plan (OSPOMP) was adopted in August 2011 to standardize monitoring and management of the City's vernal pool and wetland preserves (ECORP Consulting 2011). The plan provides a city-wide approach to open space management, maintenance, and monitoring. It applies to all open space managed by the City within the city limits.

The OSPOMP refers to both Open Space Preserve and General Open Space. *Open Space Preserve* is land that was required to be set aside as part of a regulatory permitting action. These lands are primarily vernal pool grassland or riparian corridors protected because of the presence of waters of the United States or endangered species. *General Open Space* areas are owned by the City and were set aside because of City policy or to meet Specific Plan restrictions. Section 10.14 of the OSPOMP states that activities prohibited in Preserve areas may occur only with USACE and USFWS approval, and that such approval may include a permit.

In the BSA, Miners Ravine and Secret Ravine are considered to be part of the Olympus Point Preserve, which is labeled as an Open Space Preserve in the OSPOMP. Highland Reserve, which contains Highland Ravine and adjacent areas that are managed as annual grassland, also is designated as an Open Space Preserve.

2.16.1.3 City of Rocklin Oak Tree Preservation Ordinance and Guidelines

The City of Rocklin regulates the removal of native oak trees under its Oak Tree Preservation Ordinance and Oak Tree Preservation Guidelines (Rocklin Municipal Code, Section 17.77.100). A permit is required for the removal of native oaks with a dbh of 6 inches or more; for trees with multiple trunks, this size requirement must be met by the measurement of the largest trunk. Native oaks with a dbh of 24 inches or greater are considered heritage trees. Mitigation for the removal of protected trees may consist of onsite or offsite replanting of approved replacement oak trees, or a contribution to the Rocklin Oak Tree Preservation Fund. Additionally, oak trees that will be preserved during project construction must be protected prior to grading activities by installing fencing that is at least 4 feet high at a distance of 3 feet outside the dripline. The fencing must be maintained for the duration of project construction. An arborist survey will be conducted as part of the permitting process to identify oak trees that are subject to the preservation ordinance.

2.16.2 Affected Environment

This section is based on the *Preliminary Wetland Delineation Report* (ICF International 2014a) and *Natural Environment Study Report* (ICF International 2014b) prepared for the proposed project. The reports are available on the project website at http://8065interchange.org/. This section presents findings of these reports as they relate to natural communities within the biological study area (BSA).

The BSA generally comprises the limits of disturbance (including areas to accommodate temporary construction activities and staging) and undeveloped habitats within 100 feet of these limits to account for potential indirect effects on nearby aquatic resources and elderberry shrubs. The BSA also includes an area up to 250 feet from the limits of disturbance where vernal pools are present. The extent of the BSA is shown in Figures 2.16-1a–f, 2.16-2a–f, 2.16-3a–f, 2.16-4a-h, 2.16-5a-h, and 2.16-6a-h. Approximately two-thirds of the BSA consists of highways, commercial development, and residential areas. The remainder consists of graded parcels, designated Open Space with bike/pedestrian trails areas (i.e., Antelope Creek Trail, Miners Ravine Trail), and natural areas (e.g., grasslands, oak woodland, and streams). The BSA has a relatively high level of historical and ongoing disturbance.

Figure 2.16-1a
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 1

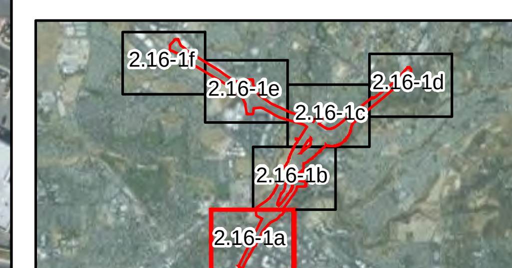
- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area

Land Cover Types

- Developed
- Disturbed/Graded
- Annual Grassland
- Oak Woodland
- Riparian Forest
- Perennial Stream
- Intermittent Stream
- Ephemeral Drainage
- Riparian Forest/Shrub Wetland
- Emergent Wetland
- Seasonal Wetland
- Vernal Pool

Other Sensitive Resources

- Open Space Preserve - City Owned
- Elderberry Shrub Location
- Active Bat Roosts
- Historical Nesting Site of Purple Martin



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Imagery Source: ESRI 2014

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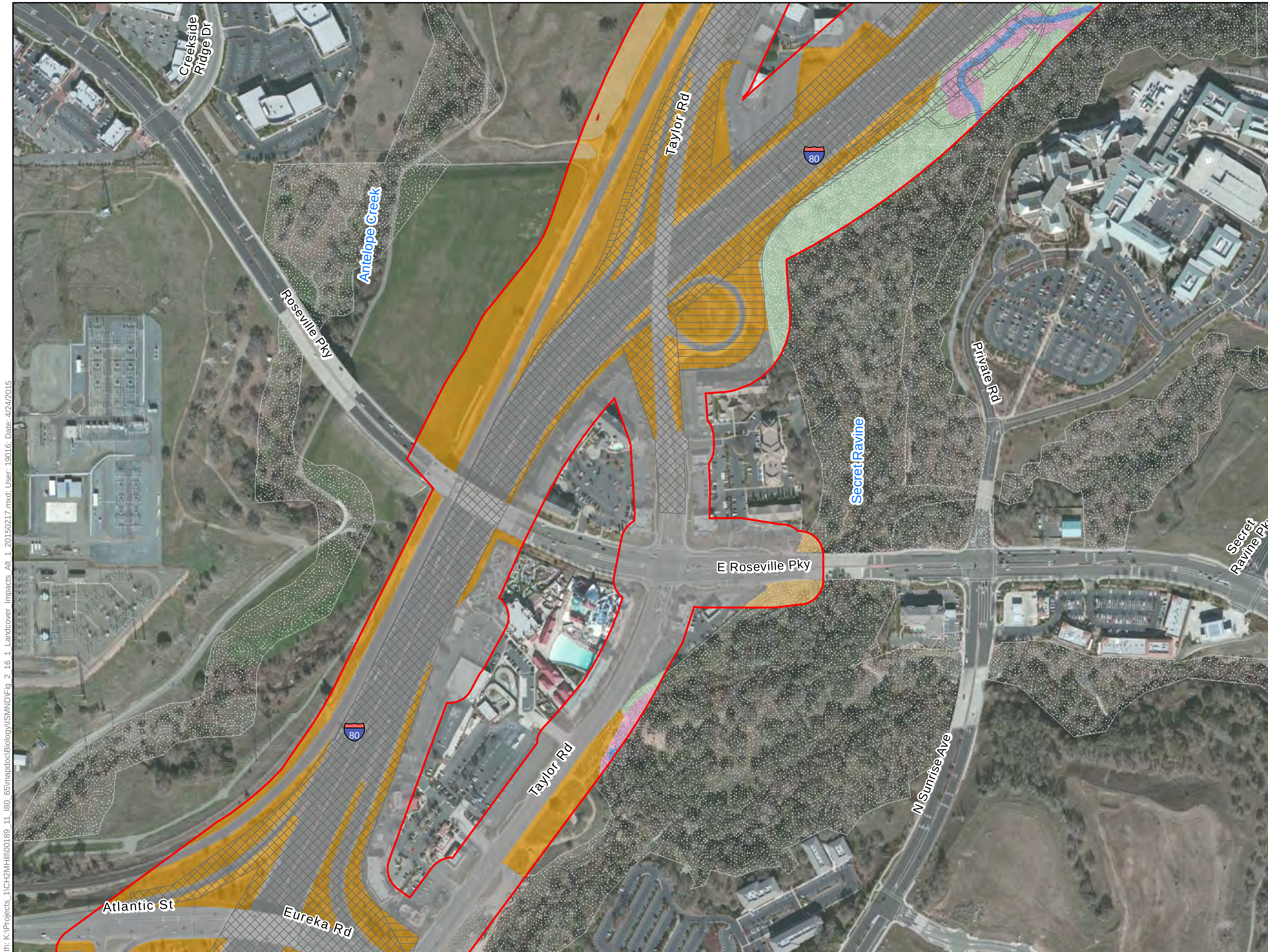

Figure 2.16-1b
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 1

Biological Study Area
Permanent Impact Area
Temporary Impact Area

Land Cover Types

Developed
Disturbed/Graded
Annual Grassland
Oak Woodland
Riparian Forest
Perennial Stream
Intermittent Stream
Ephemeral Drainage
Riparian Forest/Shrub Wetland
Emergent Wetland
Seasonal Wetland
Vernal Pool

Other Sensitive Resources

Open Space Preserve - City Owned
Elderberry Shrub Location
Active Bat Roosts
Historical Nesting Site of Purple Martin

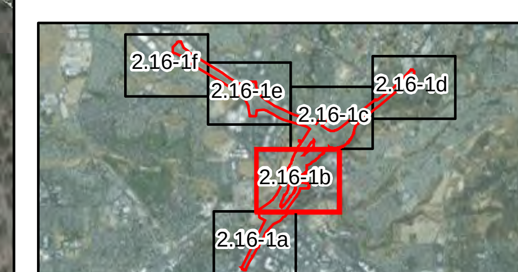

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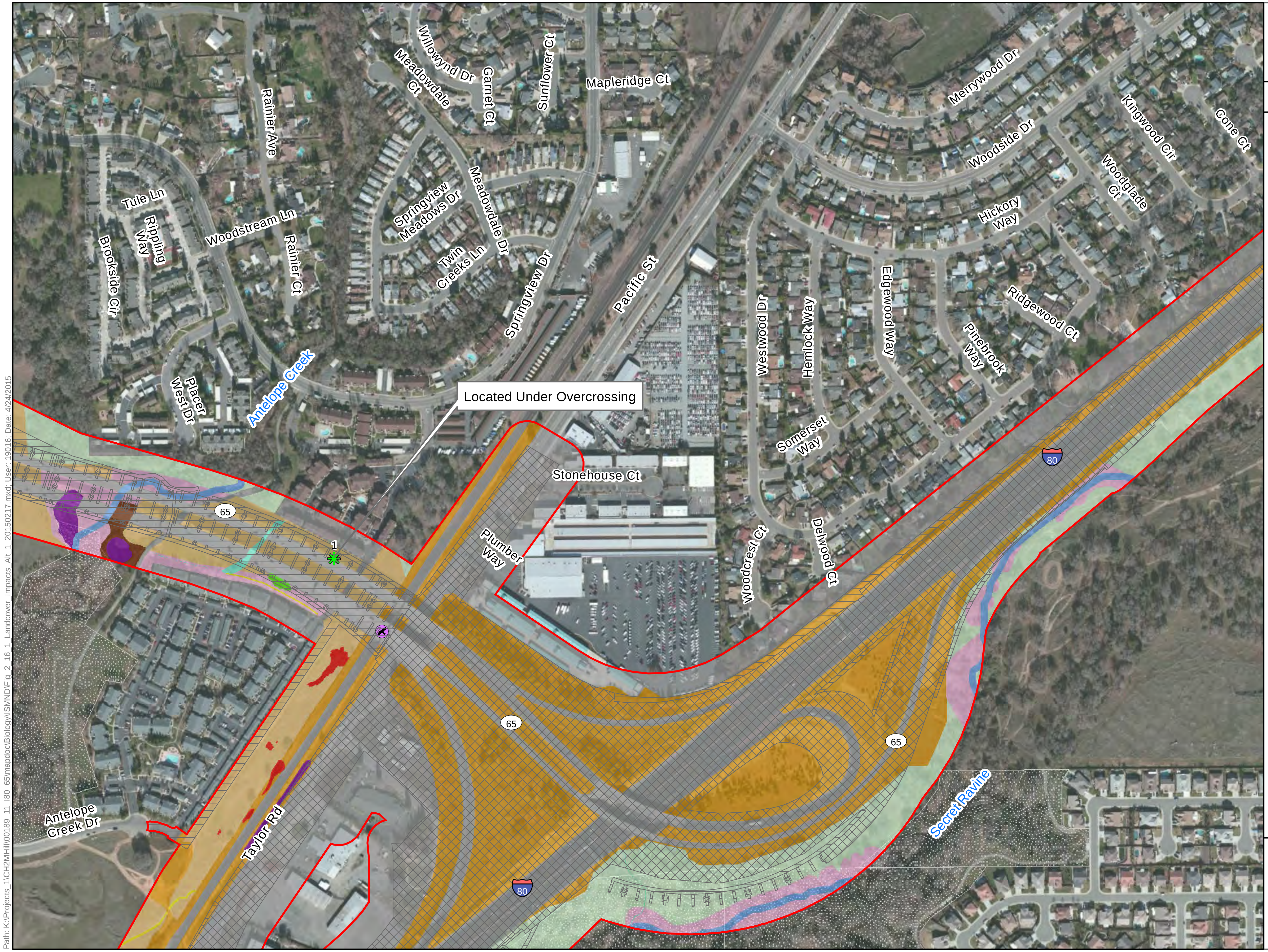
Figure 2.16-1c
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 1



- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area

Land Cover Types

- Developed
- Disturbed/Graded
- Annual Grassland
- Oak Woodland
- Riparian Forest
- Perennial Stream
- Intermittent Stream
- Ephemeral Drainage
- Riparian Forest/Shrub Wetland
- Emergent Wetland
- Seasonal Wetland
- Vernal Pool

Other Sensitive Resources

- Open Space Preserve - City Owned
- Elderberry Shrub Location
- Active Bat Roosts
- Historical Nesting Site of Purple Martin

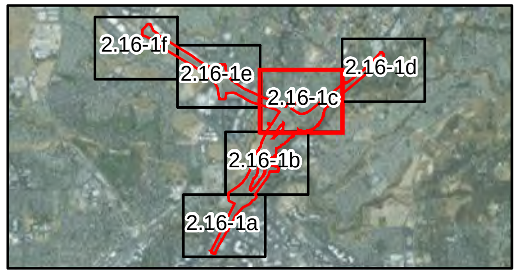


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Figure 2.16-1d
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 1

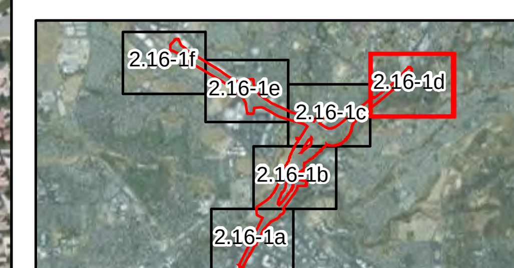
- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area

Land Cover Types

- Developed
- Disturbed/Graded
- Annual Grassland
- Oak Woodland
- Riparian Forest
- Perennial Stream
- Intermittent Stream
- Ephemeral Drainage
- Riparian Forest/Shrub Wetland
- Emergent Wetland
- Seasonal Wetland
- Vernal Pool

Other Sensitive Resources

- Open Space Preserve - City Owned
- Elderberry Shrub Location
- Active Bat Roosts
- Historical Nesting Site of Purple Martin



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Data Source: ICF Surveys 2013 & 2014
Imagery Source: ESRI 2014

Figure 2.16-1e
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 1

Biological Study Area
Permanent Impact Area
Temporary Impact Area

Land Cover Types

Developed
Disturbed/Graded
Annual Grassland
Oak Woodland
Riparian Forest
Perennial Stream
Intermittent Stream
Ephemeral Drainage
Riparian Forest/Shrub Wetland
Emergent Wetland
Seasonal Wetland
Vernal Pool

Other Sensitive Resources

Open Space Preserve - City Owned
Elderberry Shrub Location
Active Bat Roosts
Historical Nesting Site of Purple Martin

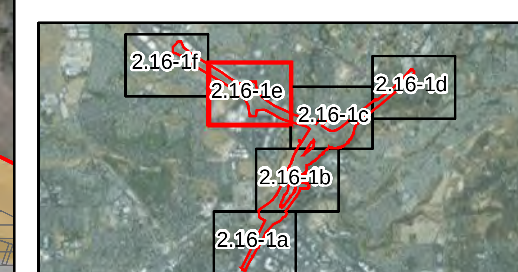

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Figure 2.16-1f
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 1

Biological Study Area
Permanent Impact Area
Temporary Impact Area

Land Cover Types

Developed
Disturbed/Graded
Annual Grassland
Oak Woodland
Riparian Forest
Perennial Stream
Intermittent Stream
Ephemeral Drainage
Riparian Forest/Shrub Wetland
Emergent Wetland
Seasonal Wetland
Vernal Pool

Other Sensitive Resources

Open Space Preserve - City Owned
Elderberry Shrub Location
Active Bat Roosts
Historical Nesting Site of Purple Martin

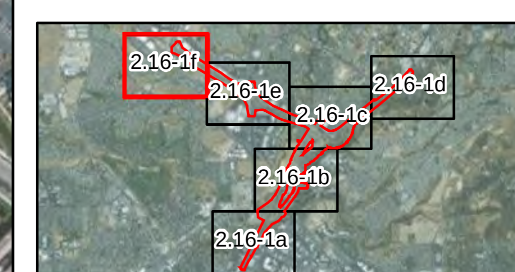

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Figure 2.16-2a
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2

- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area

Land Cover Types

- Developed
- Disturbed/Graded
- Annual Grassland
- Oak Woodland
- Riparian Forest
- Perennial Stream
- Intermittent Stream
- Ephemeral Drainage
- Riparian Forest/Shrub Wetland
- Emergent Wetland
- Seasonal Wetland
- Vernal Pool

Other Sensitive Resources

- Open Space Preserve - City Owned
- Elderberry Shrub Location
- Active Bat Roosts
- Historical Nesting Site of Purple Martin

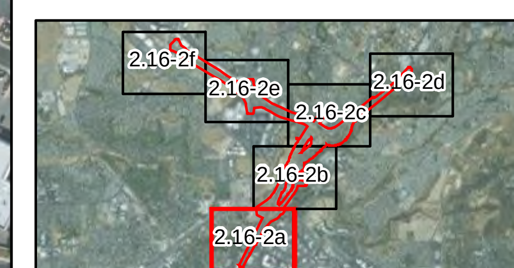

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Figure 2.16-2b
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2

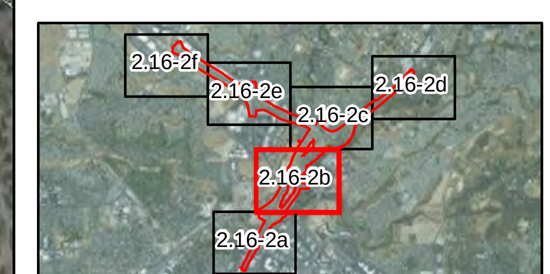
- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area

Land Cover Types

- Developed
- Disturbed/Graded
- Annual Grassland
- Oak Woodland
- Riparian Forest
- Perennial Stream
- Intermittent Stream
- Ephemeral Drainage
- Riparian Forest/Shrub Wetland
- Emergent Wetland
- Seasonal Wetland
- Vernal Pool

Other Sensitive Resources

- Open Space Preserve - City Owned
- Elderberry Shrub Location
- Active Bat Roosts
- Historical Nesting Site of Purple Martin



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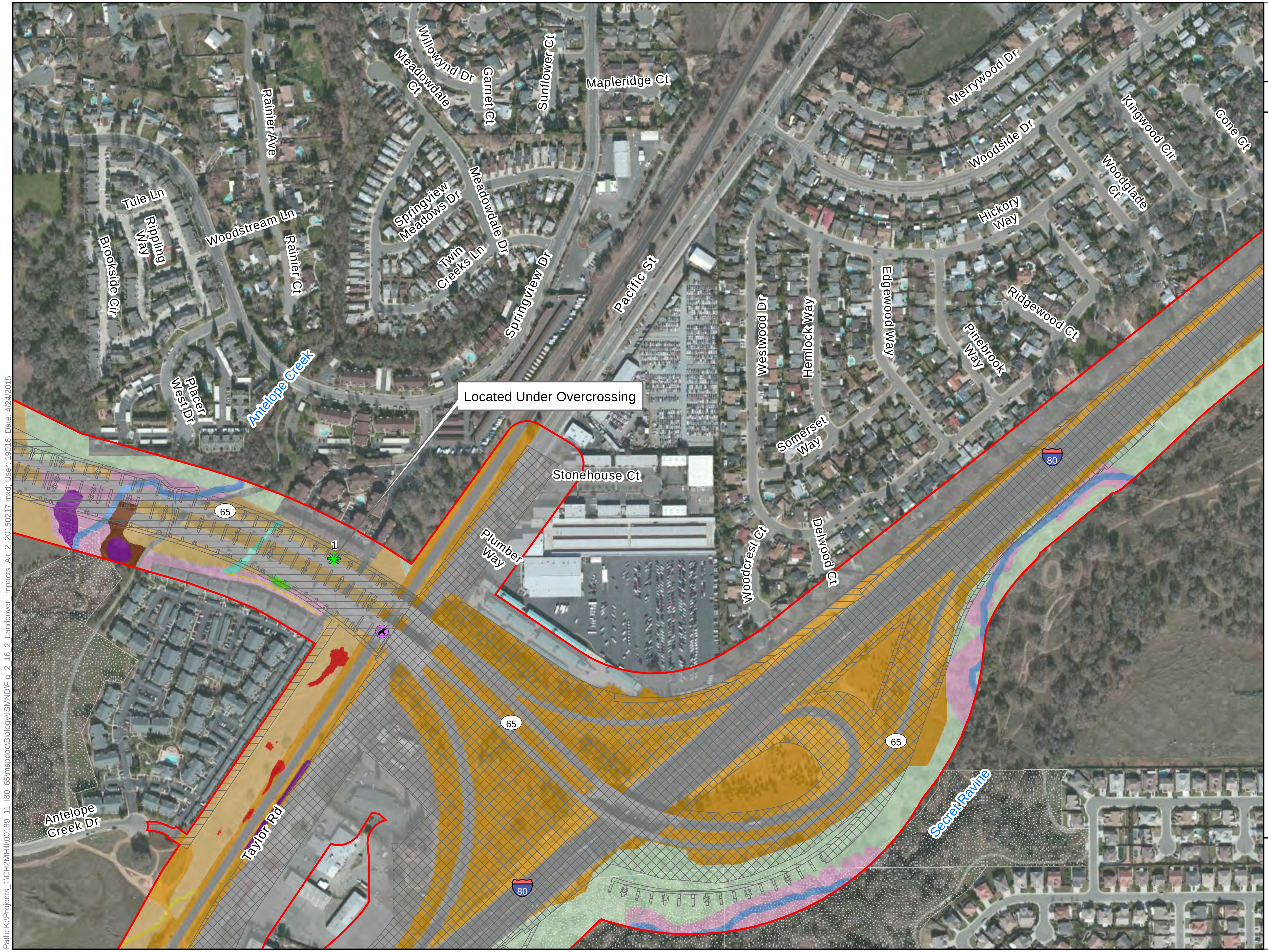

Figure 2.16-2c
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2

- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area

Land Cover Types

- Developed
- Disturbed/Graded
- Annual Grassland
- Oak Woodland
- Riparian Forest
- Perennial Stream
- Intermittent Stream
- Ephemeral Drainage
- Riparian Forest/Shrub Wetland
- Emergent Wetland
- Seasonal Wetland
- Vernal Pool

Other Sensitive Resources

- Open Space Preserve - City Owned
- Elderberry Shrub Location
- Active Bat Roosts
- Historical Nesting Site of Purple Martin

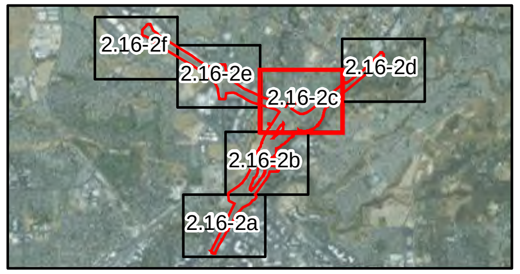

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Figure 2.16-2d
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

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Figure 2.16-2e
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2

- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area

Land Cover Types

- Developed
- Disturbed/Graded
- Annual Grassland
- Oak Woodland
- Riparian Forest
- Perennial Stream
- Intermittent Stream
- Ephemeral Drainage
- Riparian Forest/Shrub Wetland
- Emergent Wetland
- Seasonal Wetland
- Vernal Pool

Other Sensitive Resources

- Open Space Preserve - City Owned
- Elderberry Shrub Location
- Active Bat Roosts
- Historical Nesting Site of Purple Martin

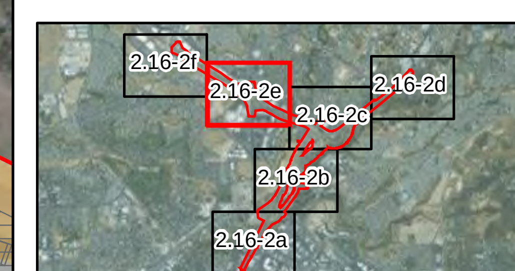

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Figure 2.16-2f
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2

- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area

Land Cover Types

- Developed
- Disturbed/Graded
- Annual Grassland
- Oak Woodland
- Riparian Forest
- Perennial Stream
- Intermittent Stream
- Ephemeral Drainage
- Riparian Forest/Shrub Wetland
- Emergent Wetland
- Seasonal Wetland
- Vernal Pool

Other Sensitive Resources

- Open Space Preserve - City Owned
- Elderberry Shrub Location
- Active Bat Roosts
- Historical Nesting Site of Purple Martin

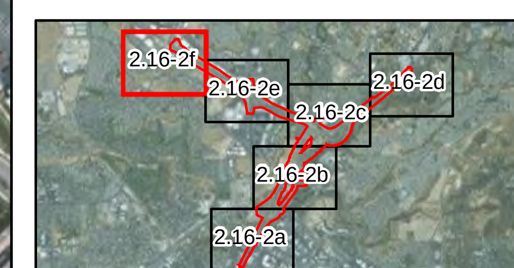

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Figure 2.16-3a
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3

Biological Study Area
Permanent Impact Area
Temporary Impact Area

Land Cover Types

Developed
Disturbed/Graded
Annual Grassland
Oak Woodland
Riparian Forest
Perennial Stream
Intermittent Stream
Ephemeral Drainage
Riparian Forest/Shrub Wetland
Emergent Wetland
Seasonal Wetland
Vernal Pool

Other Sensitive Resources

Open Space Preserve - City Owned
Elderberry Shrub Location
Active Bat Roosts
Historical Nesting Site of Purple Martin

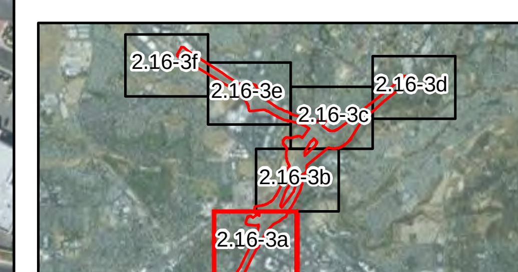

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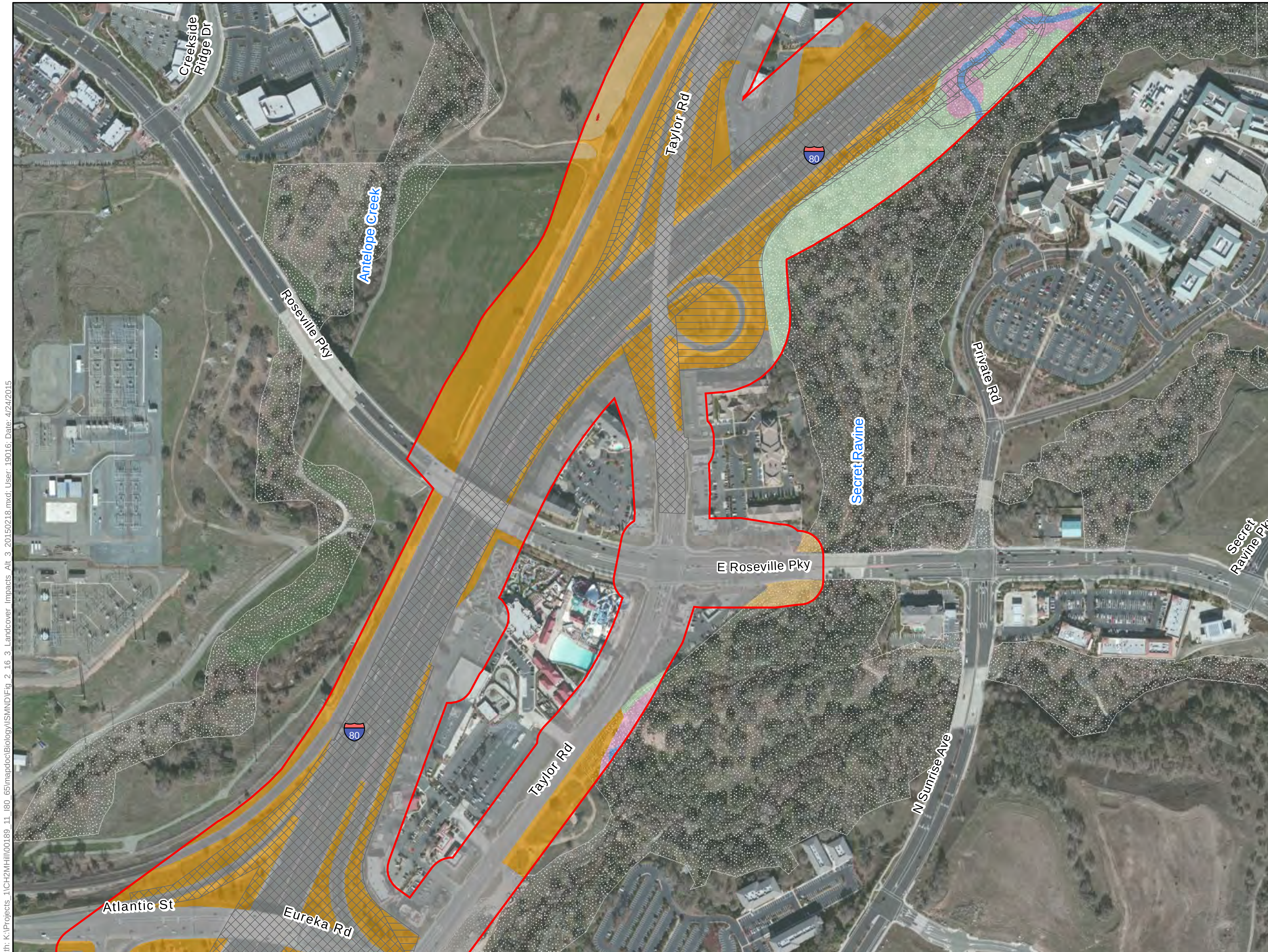
Figure 2.16-3b
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3



- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area

Land Cover Types

- Developed
- Disturbed/Graded
- Annual Grassland
- Oak Woodland
- Riparian Forest
- Perennial Stream
- Intermittent Stream
- Ephemeral Drainage
- Riparian Forest/Shrub Wetland
- Emergent Wetland
- Seasonal Wetland
- Vernal Pool

Other Sensitive Resources

- Open Space Preserve - City Owned
- Elderberry Shrub Location
- Active Bat Roosts
- Historical Nesting Site of Purple Martin

Notes:

Data Source: ICF Surveys 2013 & 2014
Imagery Source: ESRI 2014

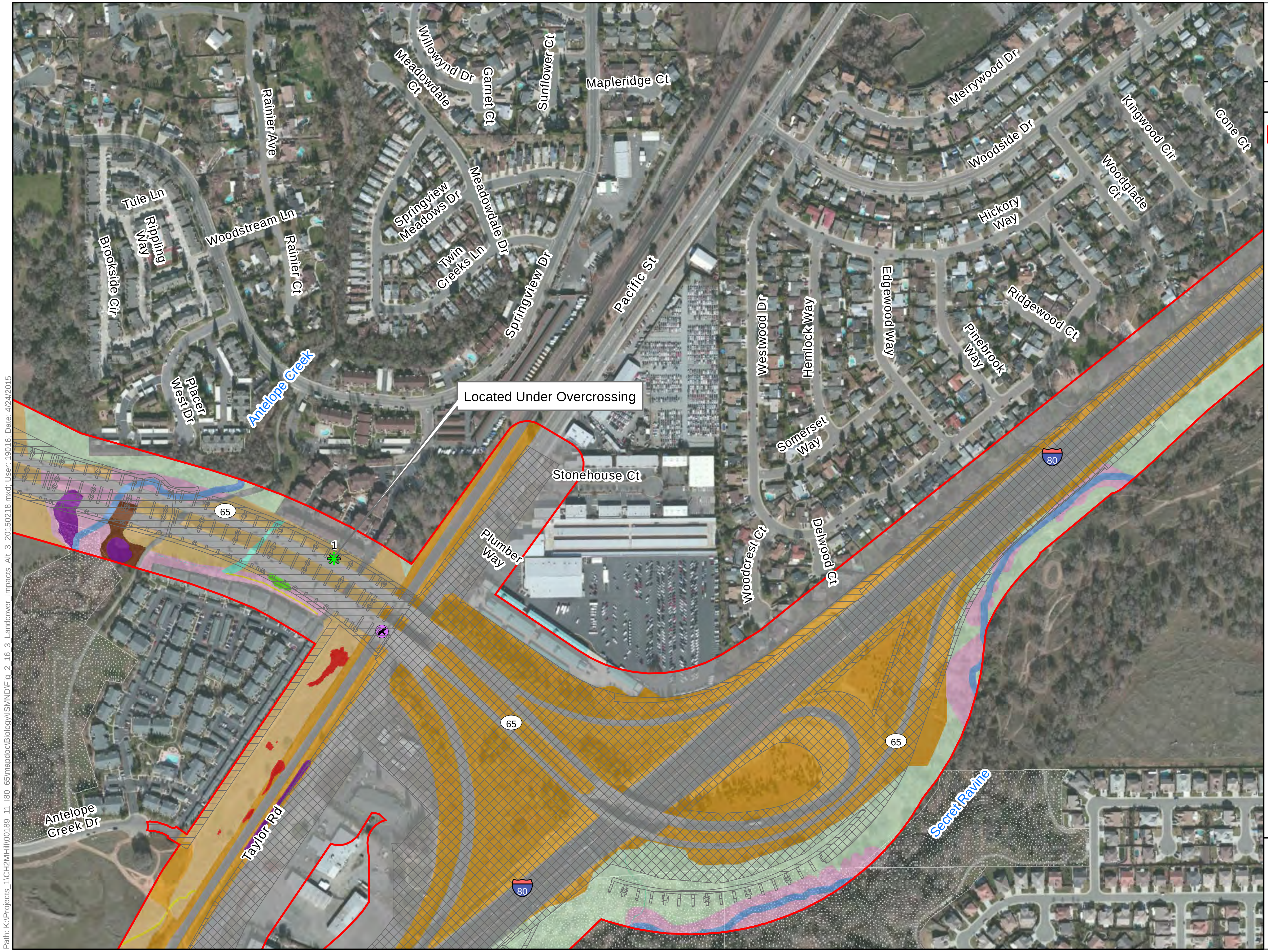


Figure 2.16-3c
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3

Biological Study Area
Permanent Impact Area
Temporary Impact Area

Land Cover Types

Developed
Disturbed/Graded
Annual Grassland
Oak Woodland
Riparian Forest
Perennial Stream
Intermittent Stream
Ephemeral Drainage
Riparian Forest/Shrub Wetland
Emergent Wetland
Seasonal Wetland
Vernal Pool

Other Sensitive Resources

Open Space Preserve - City Owned
Elderberry Shrub Location
Active Bat Roosts
Historical Nesting Site of Purple Martin

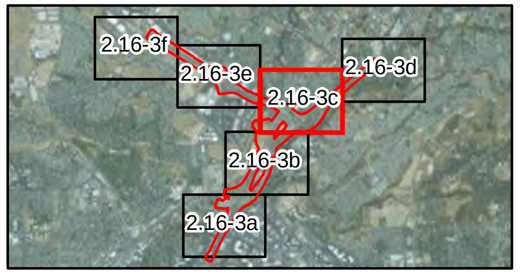


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Figure 2.16-3d
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3

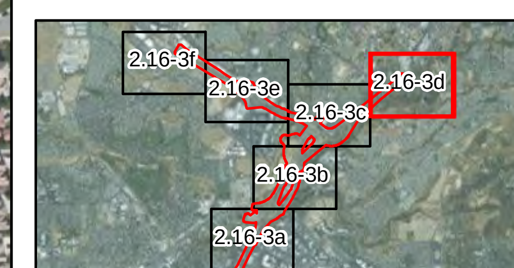
- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area

Land Cover Types

- Developed
- Disturbed/Graded
- Annual Grassland
- Oak Woodland
- Riparian Forest
- Perennial Stream
- Intermittent Stream
- Ephemeral Drainage
- Riparian Forest/Shrub Wetland
- Emergent Wetland
- Seasonal Wetland
- Vernal Pool

Other Sensitive Resources

- Open Space Preserve - City Owned
- Elderberry Shrub Location
- Active Bat Roosts
- Historical Nesting Site of Purple Martin



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Notes:
Data Source: ICF Surveys 2013 & 2014
Imagery Source: ESRI 2014

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Figure 2.16-3e
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3

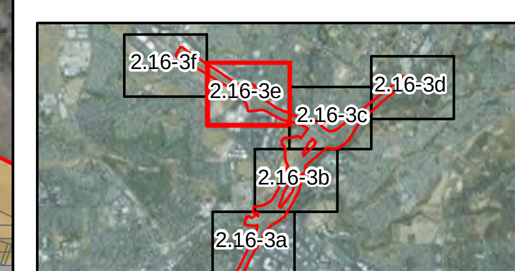
- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area

Land Cover Types

- Developed
- Disturbed/Graded
- Annual Grassland
- Oak Woodland
- Riparian Forest
- Perennial Stream
- Intermittent Stream
- Ephemeral Drainage
- Riparian Forest/Shrub Wetland
- Emergent Wetland
- Seasonal Wetland
- Vernal Pool

Other Sensitive Resources

- Open Space Preserve - City Owned
- Elderberry Shrub Location
- Active Bat Roosts
- Historical Nesting Site of Purple Martin



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Notes:

Data Source: ICF Surveys 2013 & 2014
Imagery Source: ESRI 2014

Figure 2.16-3f
Biological Resource and Project Impacts
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3

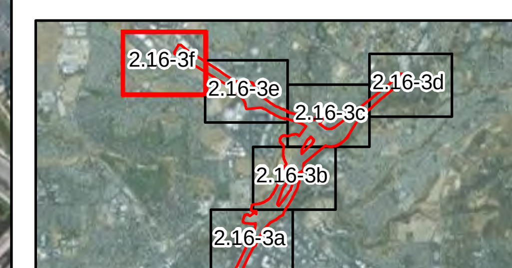
Biological Study Area
Permanent Impact Area
Temporary Impact Area

Land Cover Types

Developed
Disturbed/Graded
Annual Grassland
Oak Woodland
Riparian Forest
Perennial Stream
Intermittent Stream
Ephemeral Drainage
Riparian Forest/Shrub Wetland
Emergent Wetland
Seasonal Wetland
Vernal Pool

Other Sensitive Resources

Open Space Preserve - City Owned
Elderberry Shrub Location
Active Bat Roosts
Historical Nesting Site of Purple Martin



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Notes:

Data Source: ICF Surveys 2013 & 2014
Imagery Source: ESRI 2014

Figure 2.16-4a
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 1

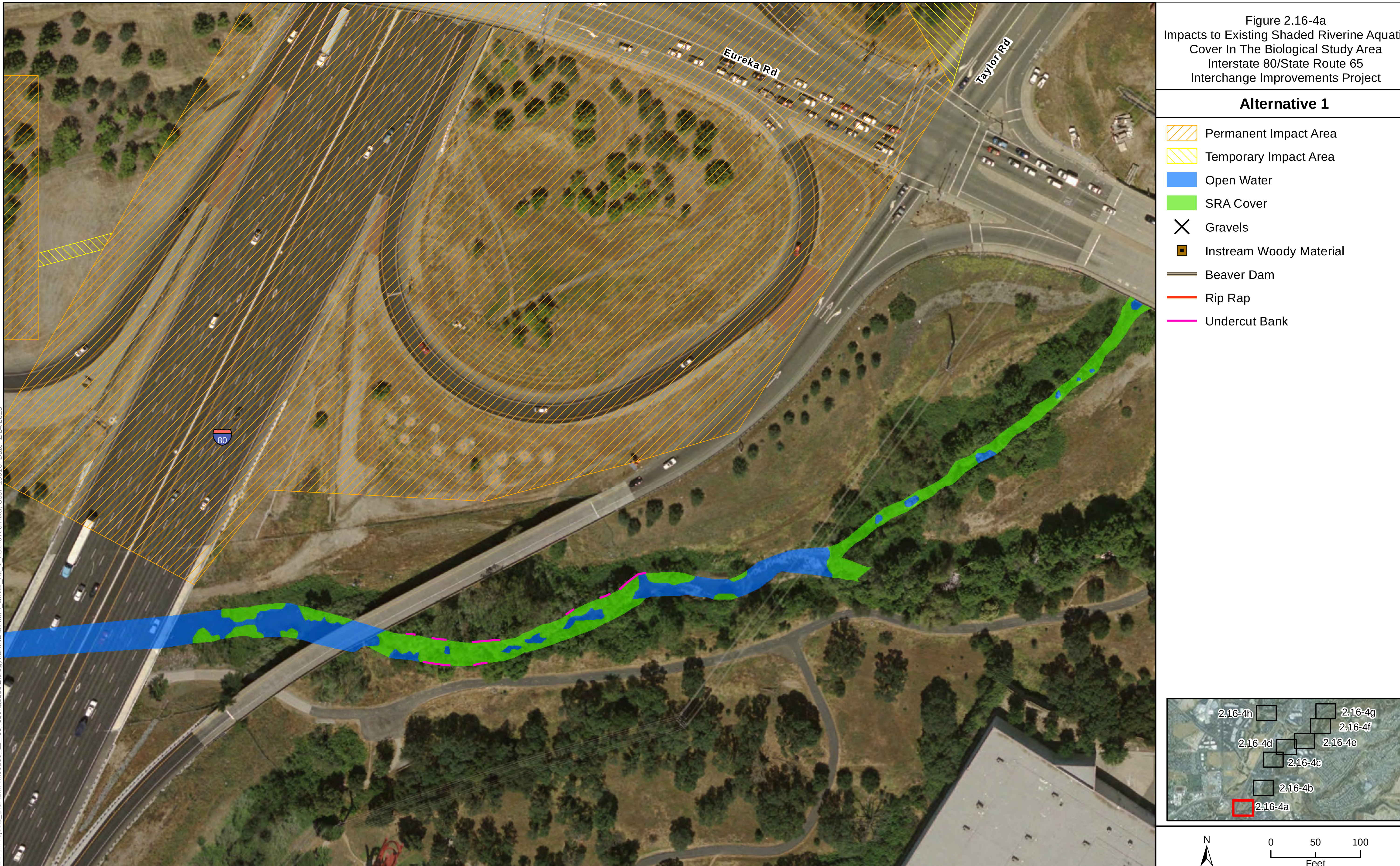

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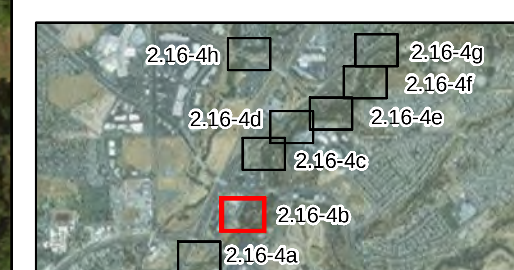
Figure 2.16-4b
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 1

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank



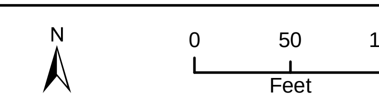


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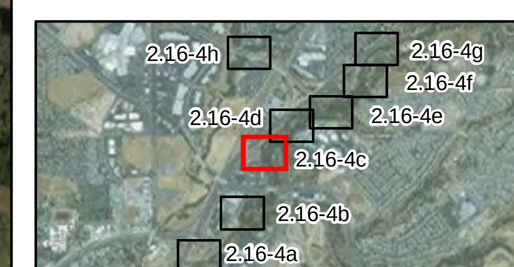
Figure 2.16-4c
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65 Interchange Improvements Project

Alternative 1

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank



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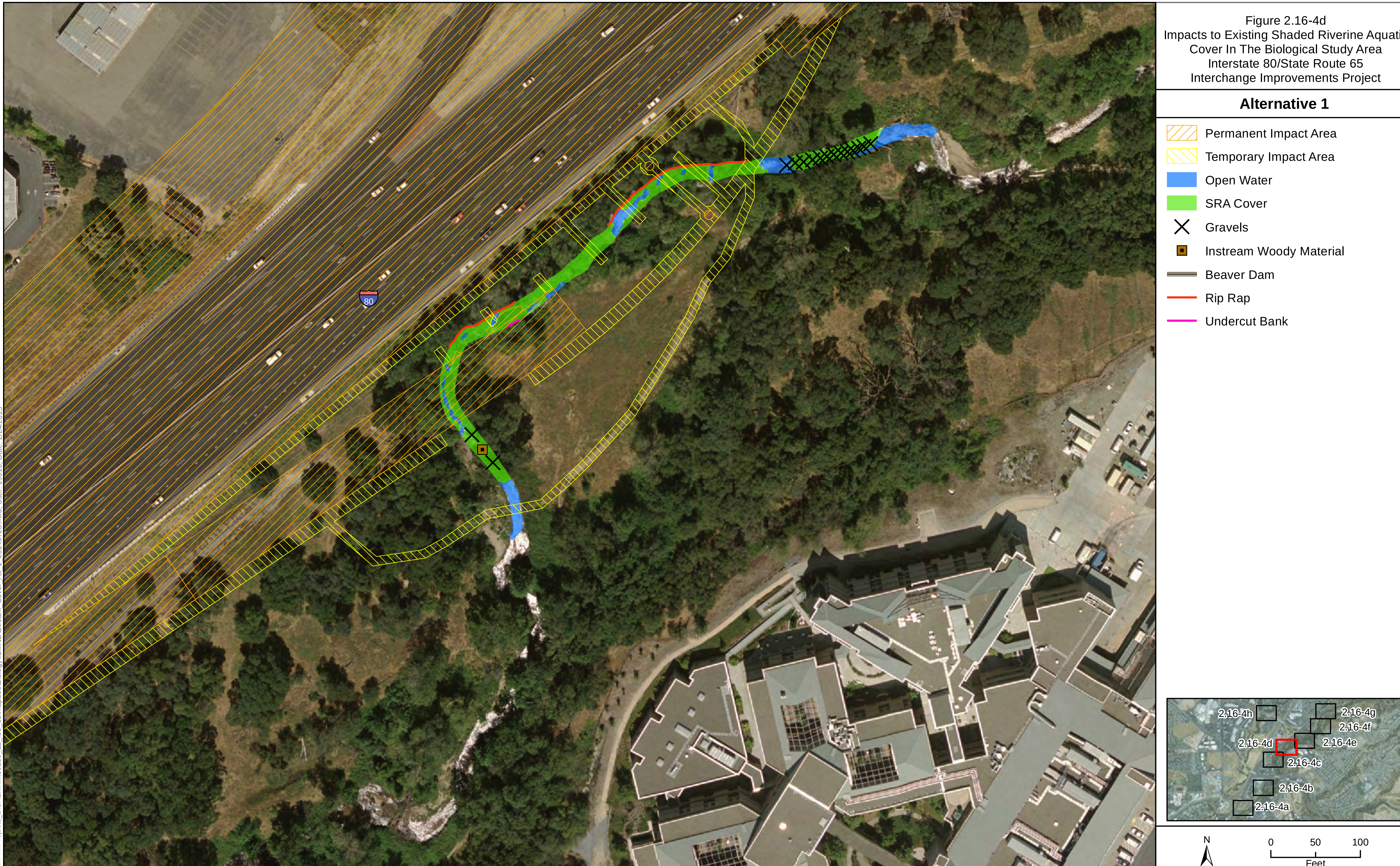
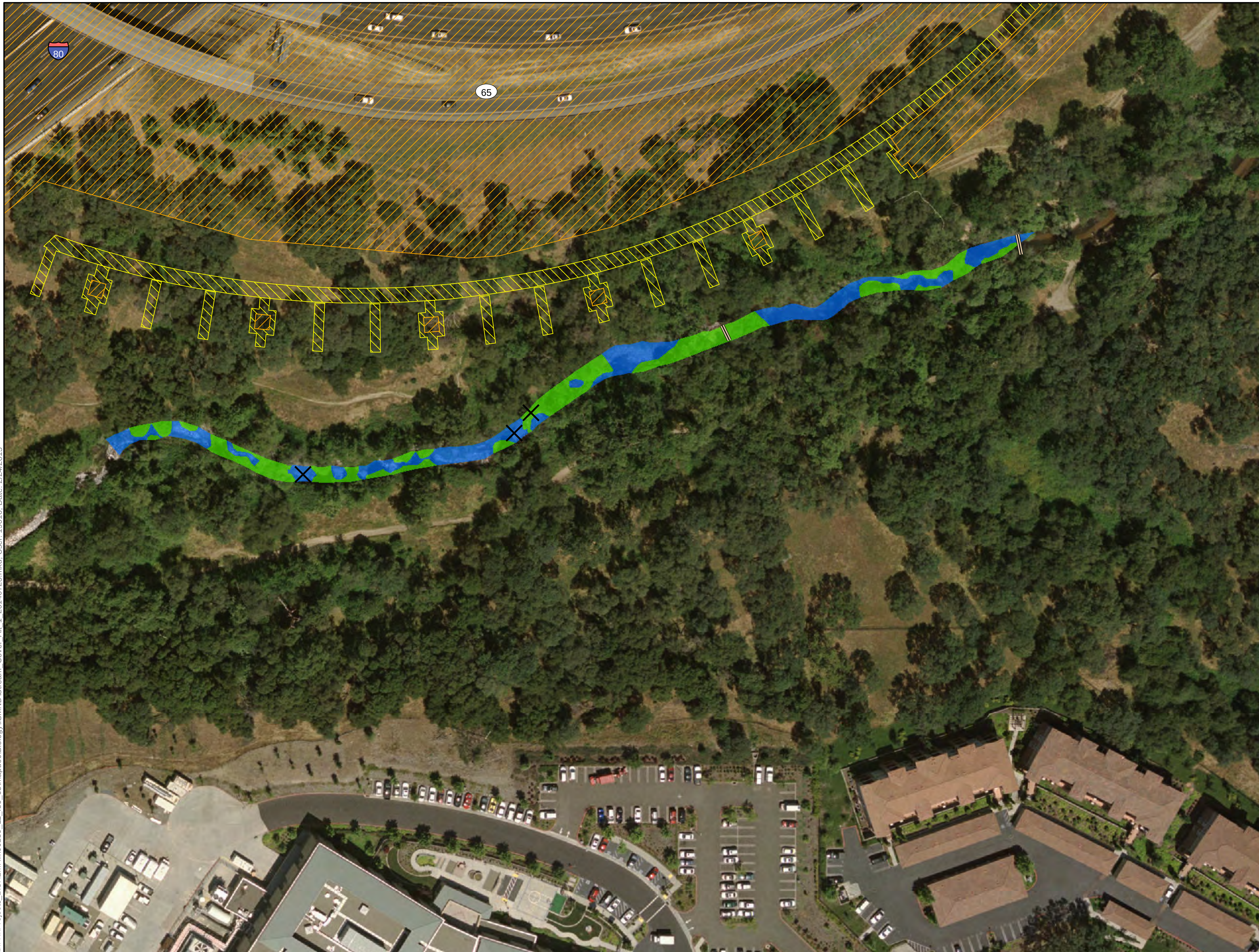


Figure 2.16-4d
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65 Interchange Improvements Project

Figure 2.16-4e
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 1



- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

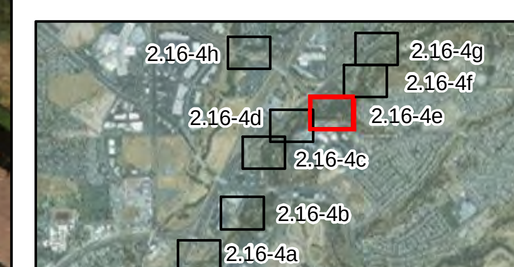


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Figure 2.16-4f
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 1

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

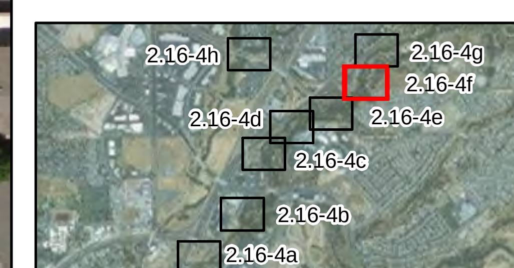

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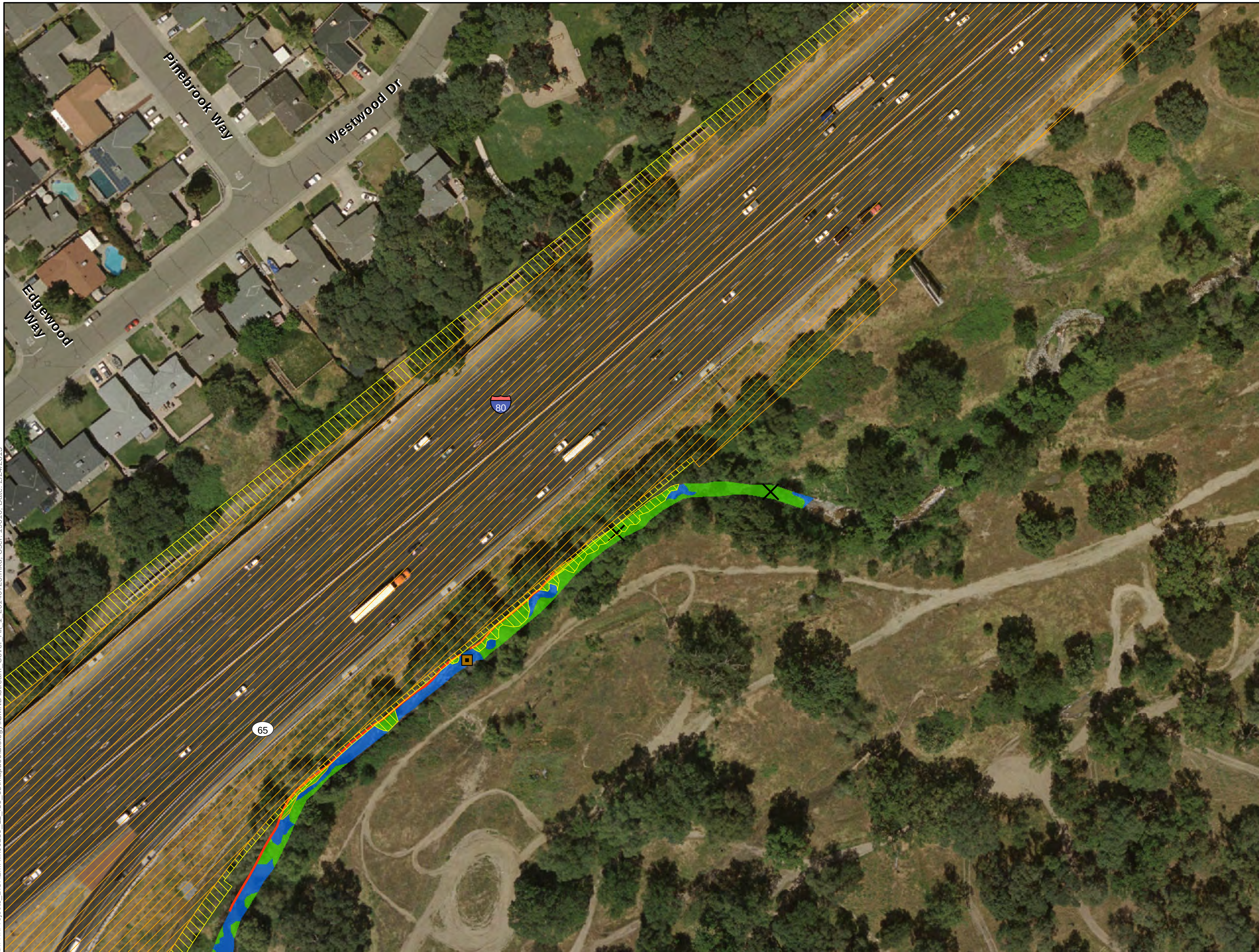
Figure 2.16-4g
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 1



- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

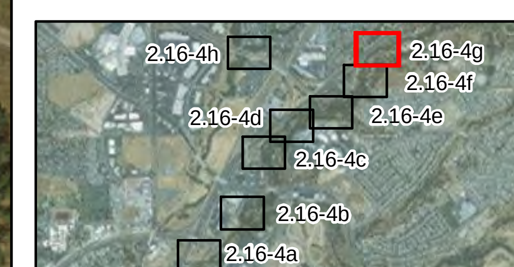


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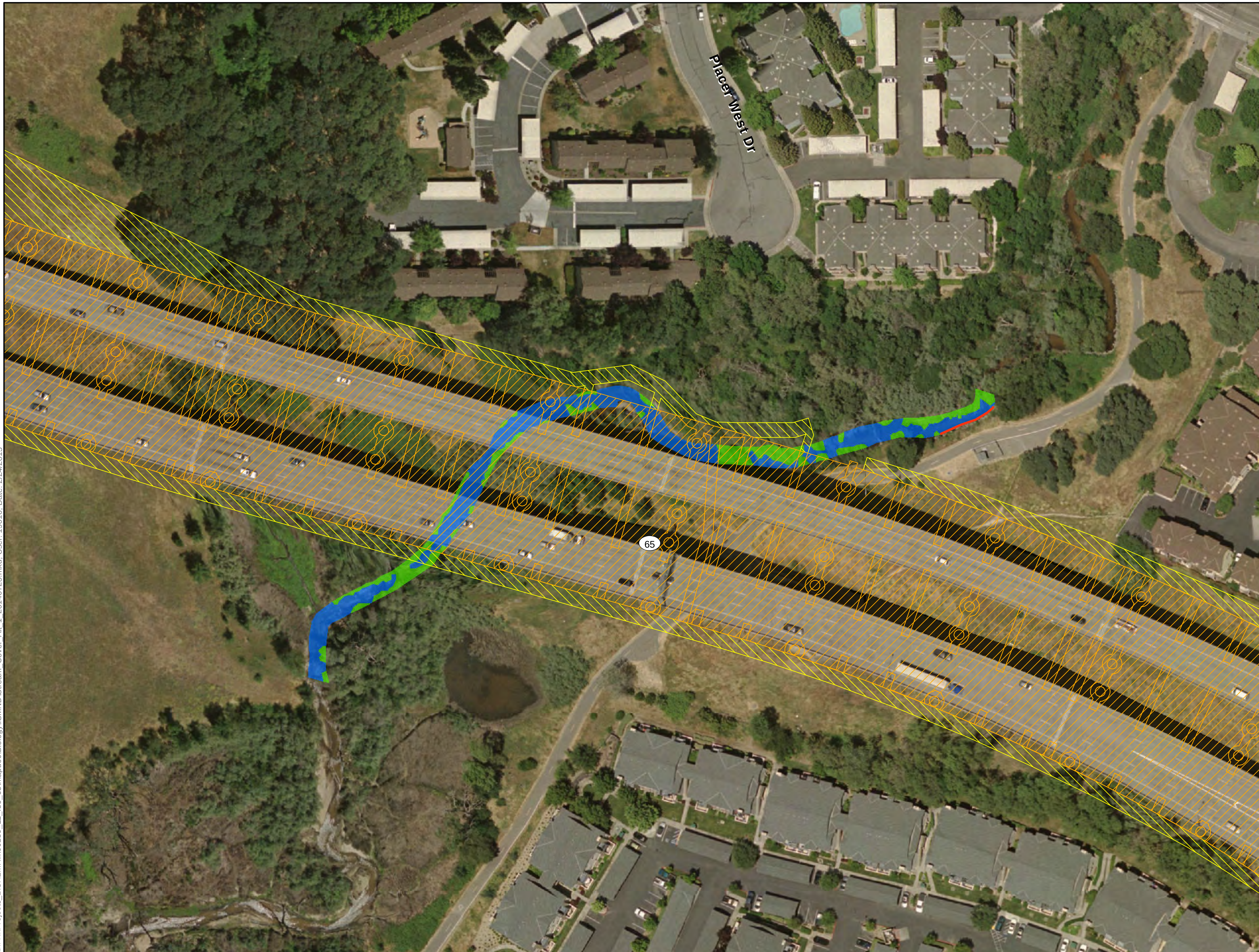
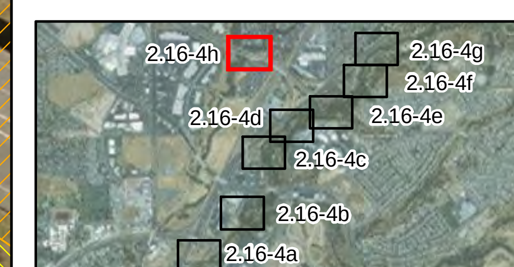
Figure 2.16-4h
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project



Alternative 1

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank



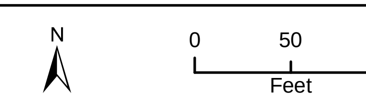


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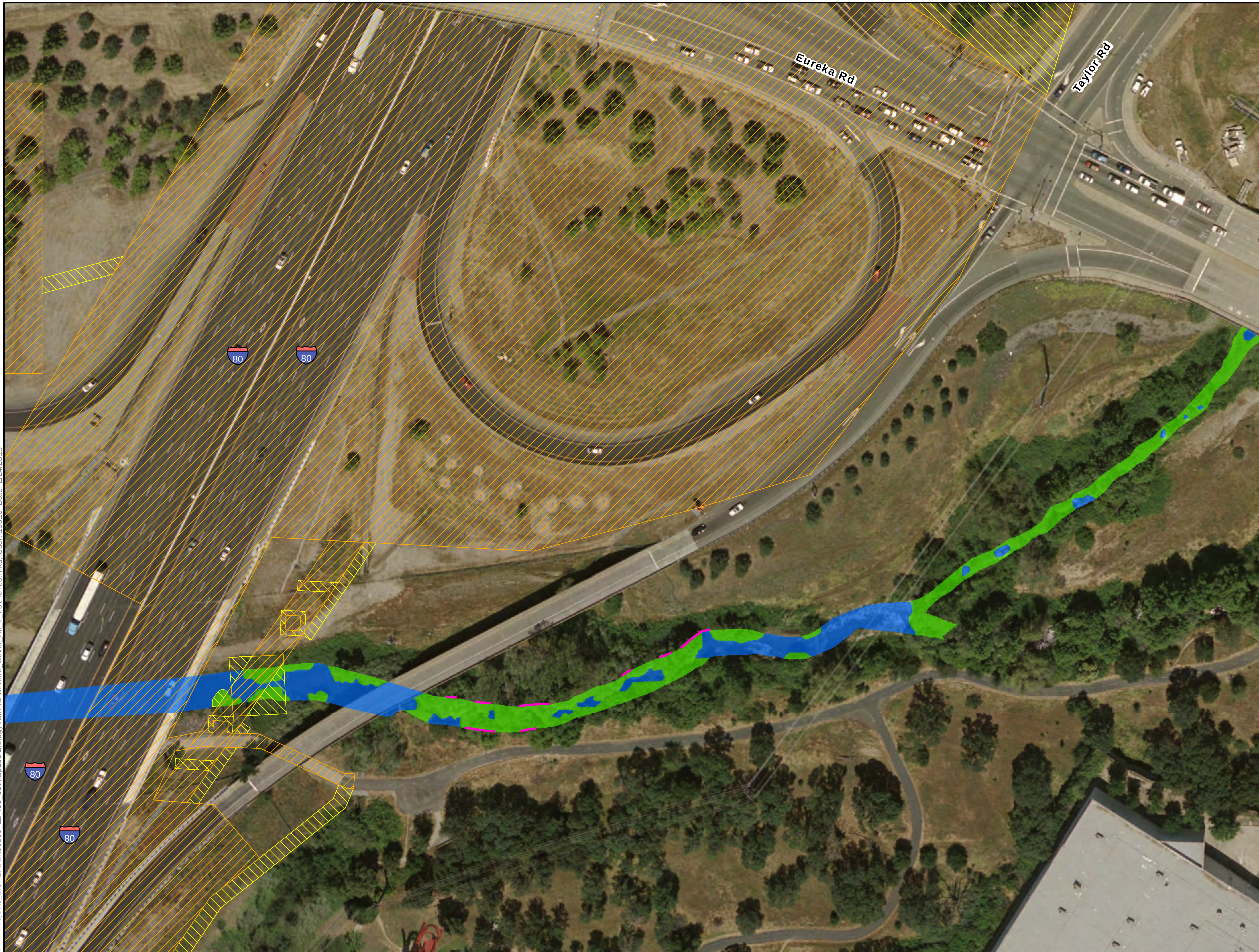
Figure 2.16-5 a
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2



- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

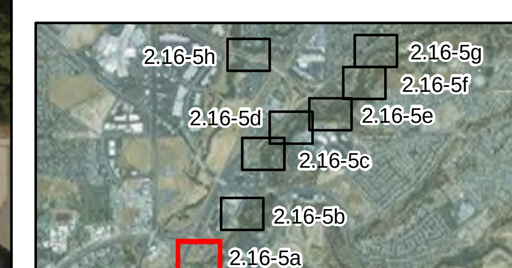


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Figure 2.16-5 b
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

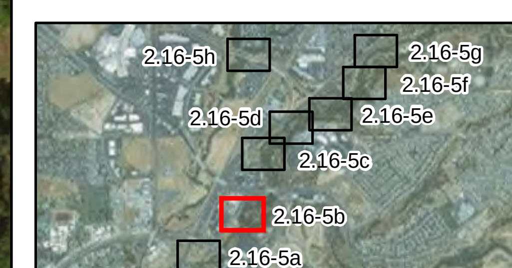

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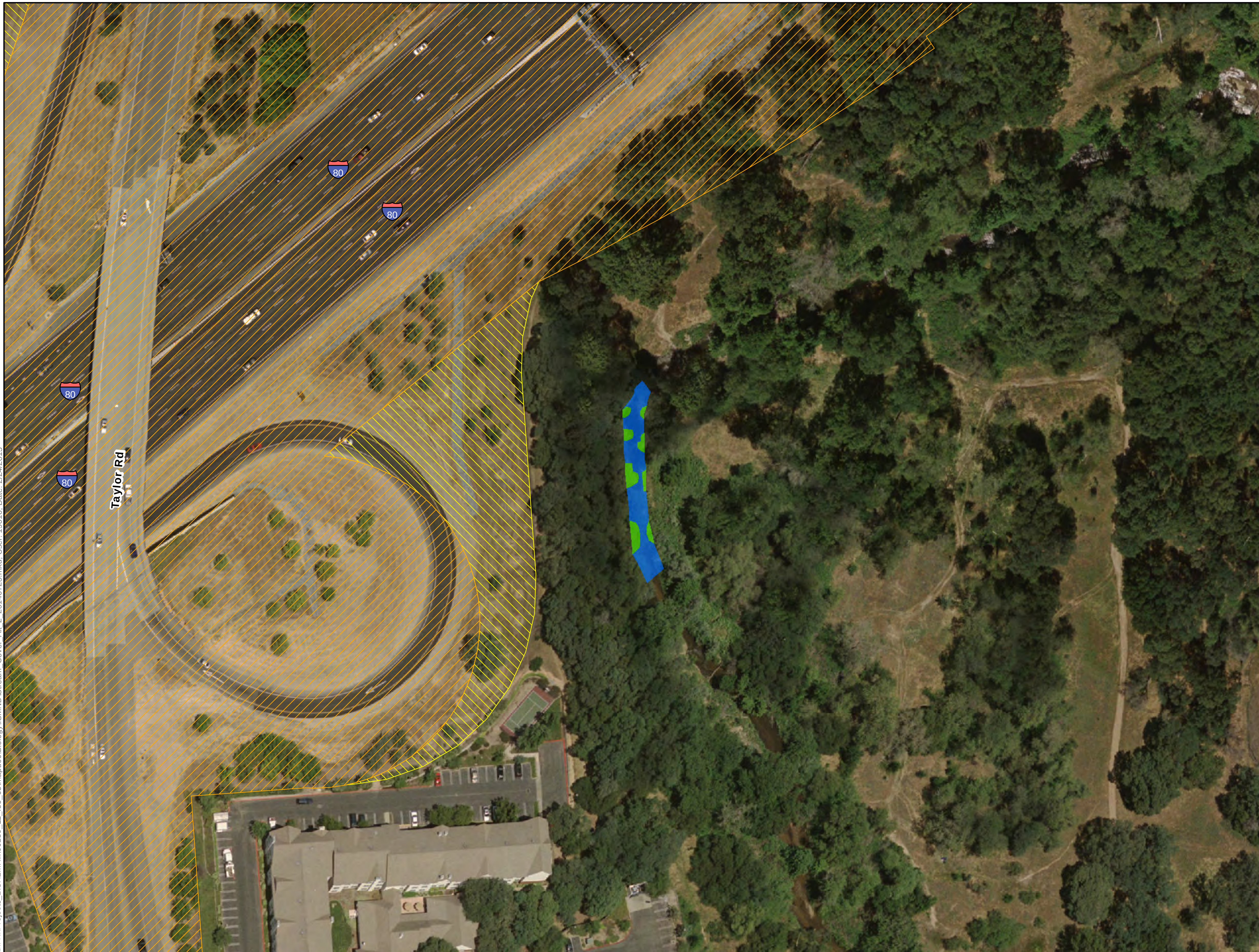
Figure 2.16-5 c
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank



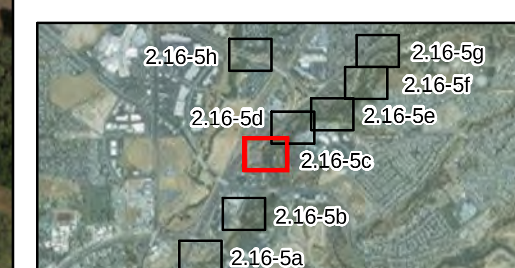


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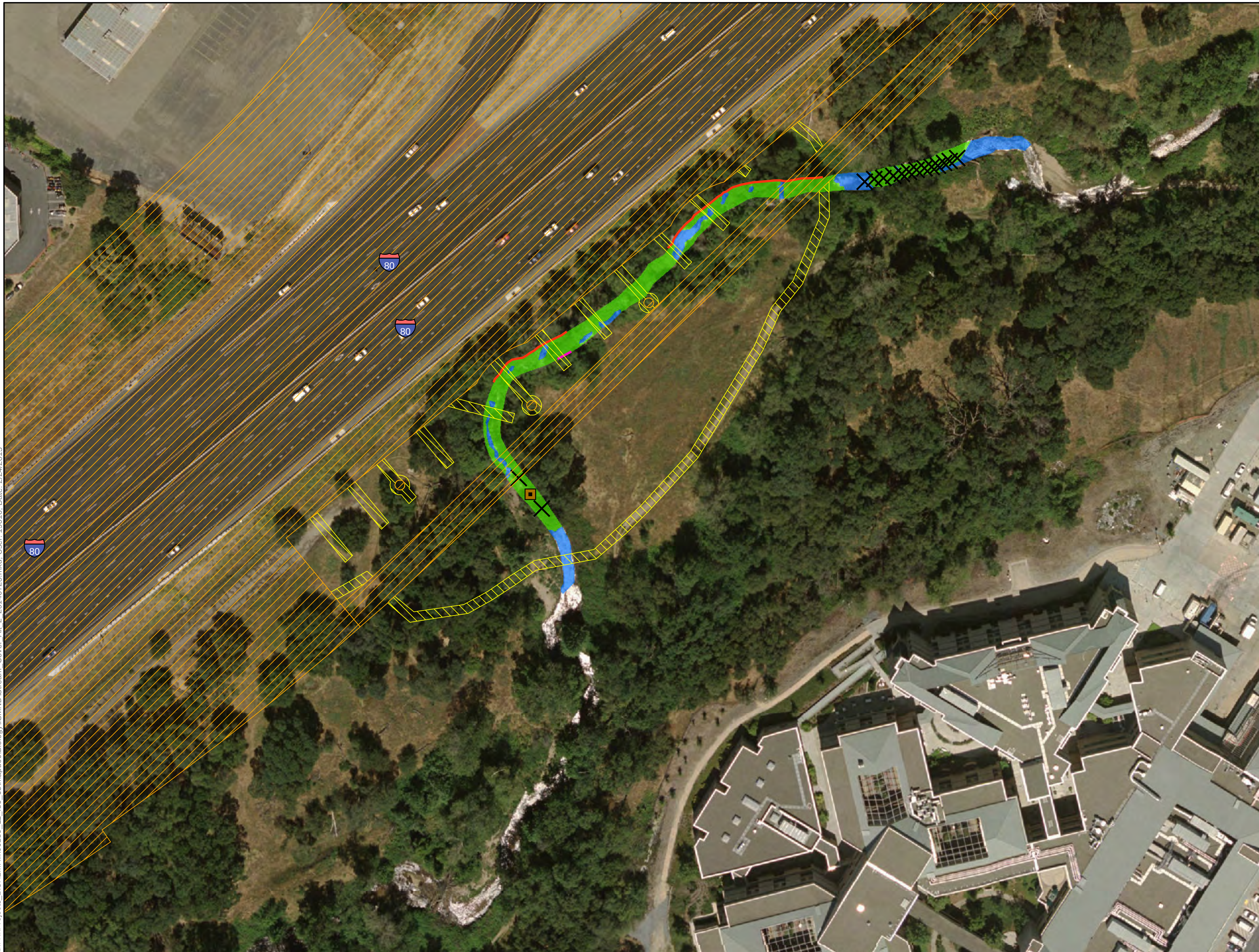
Figure 2.16-5 d
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2



- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

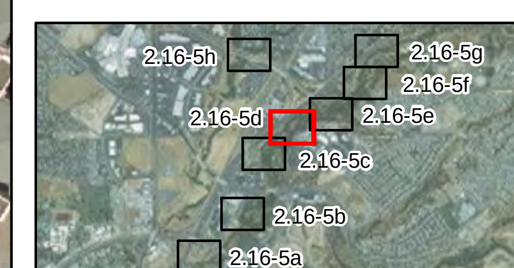


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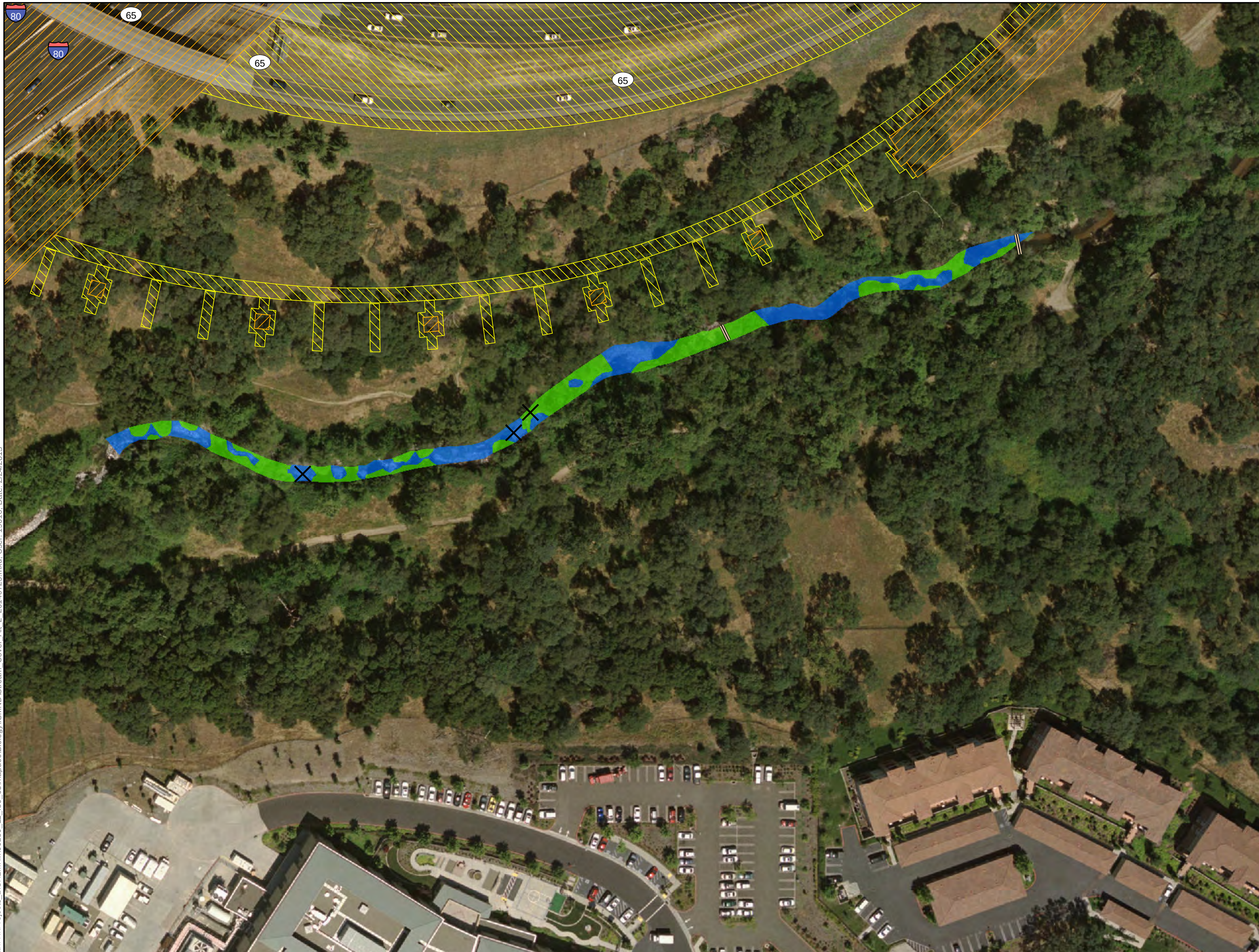
Figure 2.16-5 e
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2



Permanent Impact Area
Temporary Impact Area
Open Water
SRA Cover
Gravels
Instream Woody Material
Beaver Dam
Rip Rap
Undercut Bank

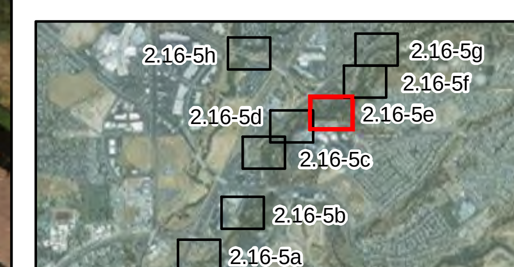


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Figure 2.16-5 f
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

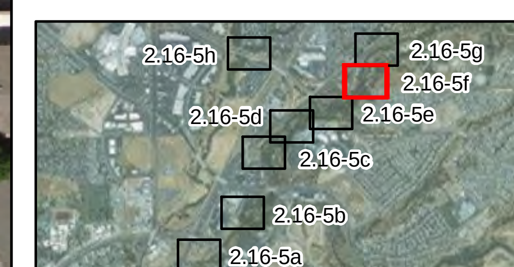

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Figure 2.16-5 g
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

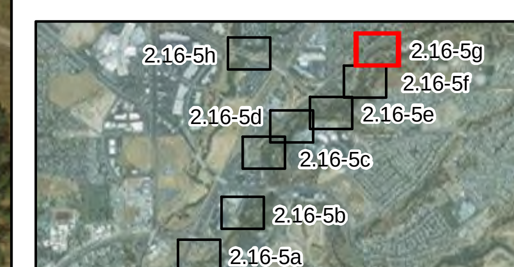

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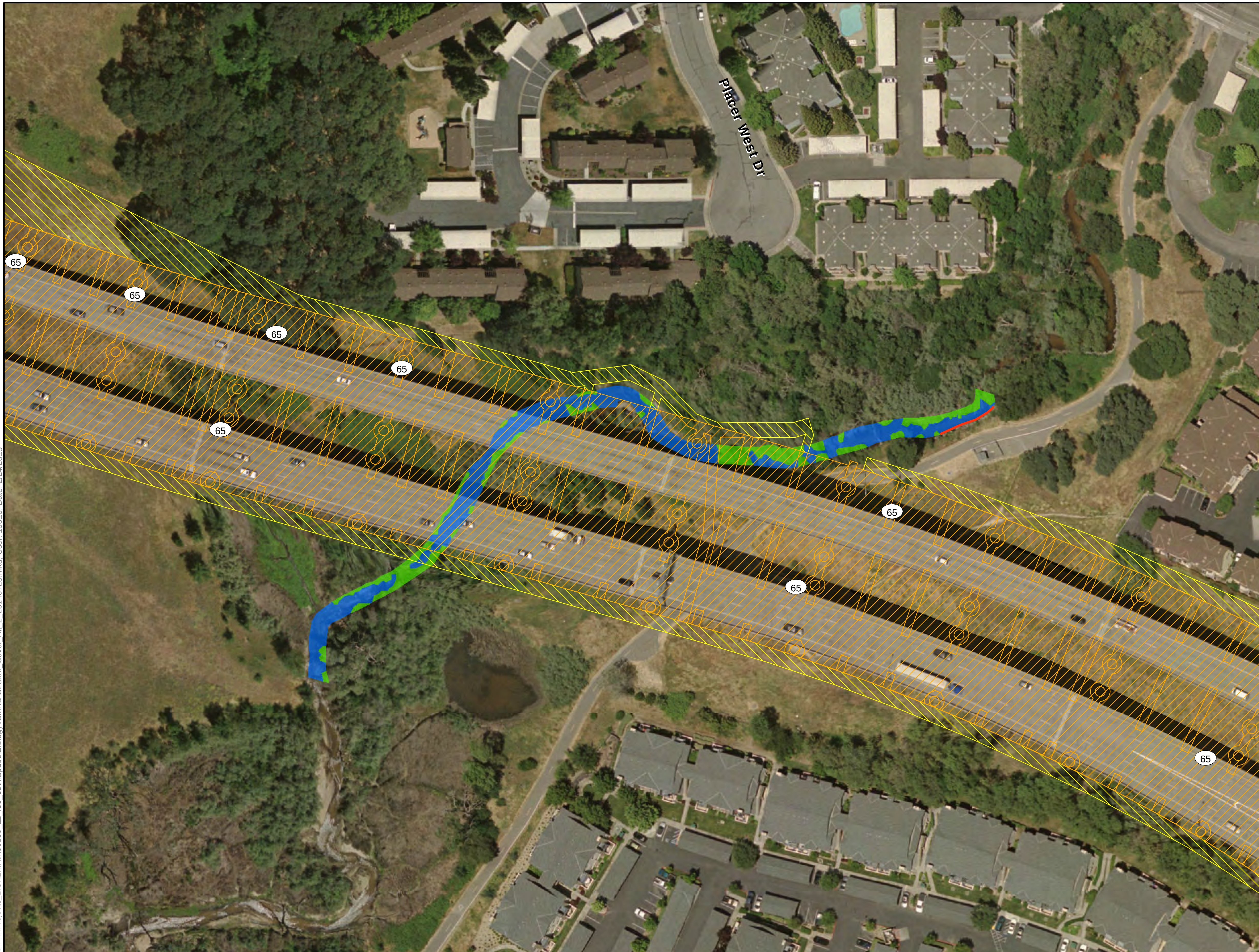
Figure 2.16-5 h
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 2



- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

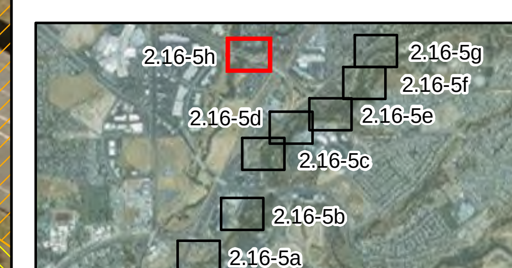


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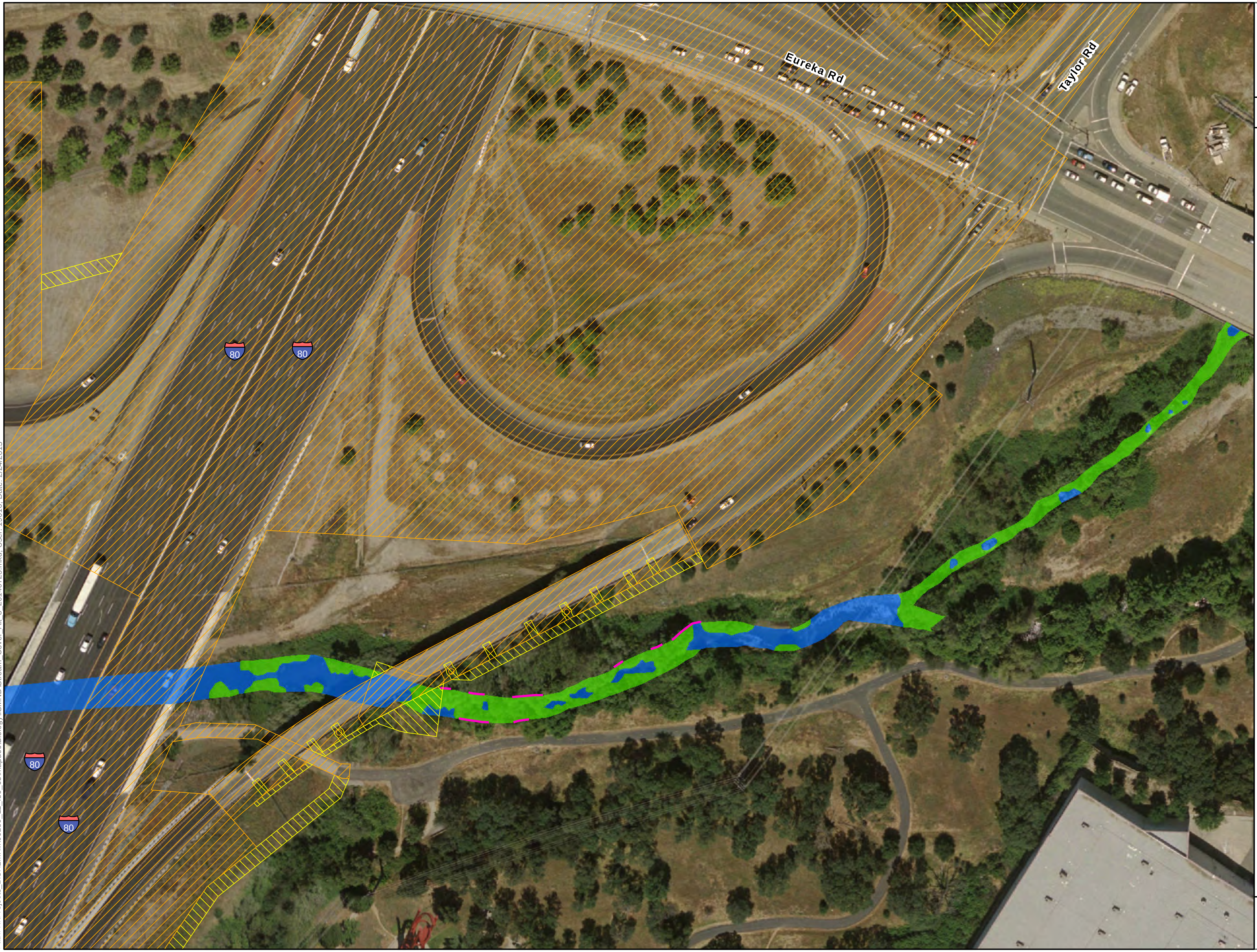
Figure 2.16-6 a
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank



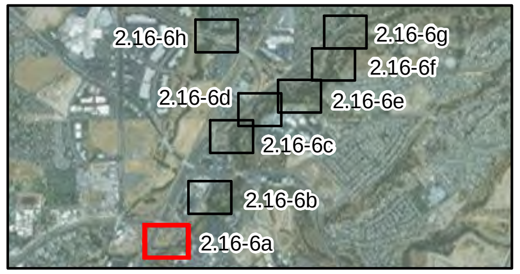


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Figure 2.16-6 b
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

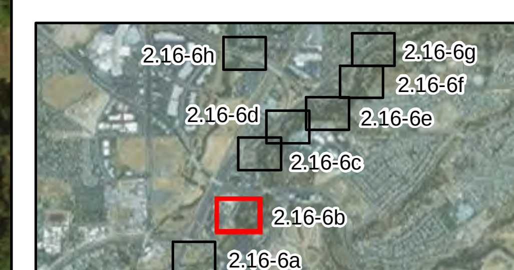

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Figure 2.16-6 c
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

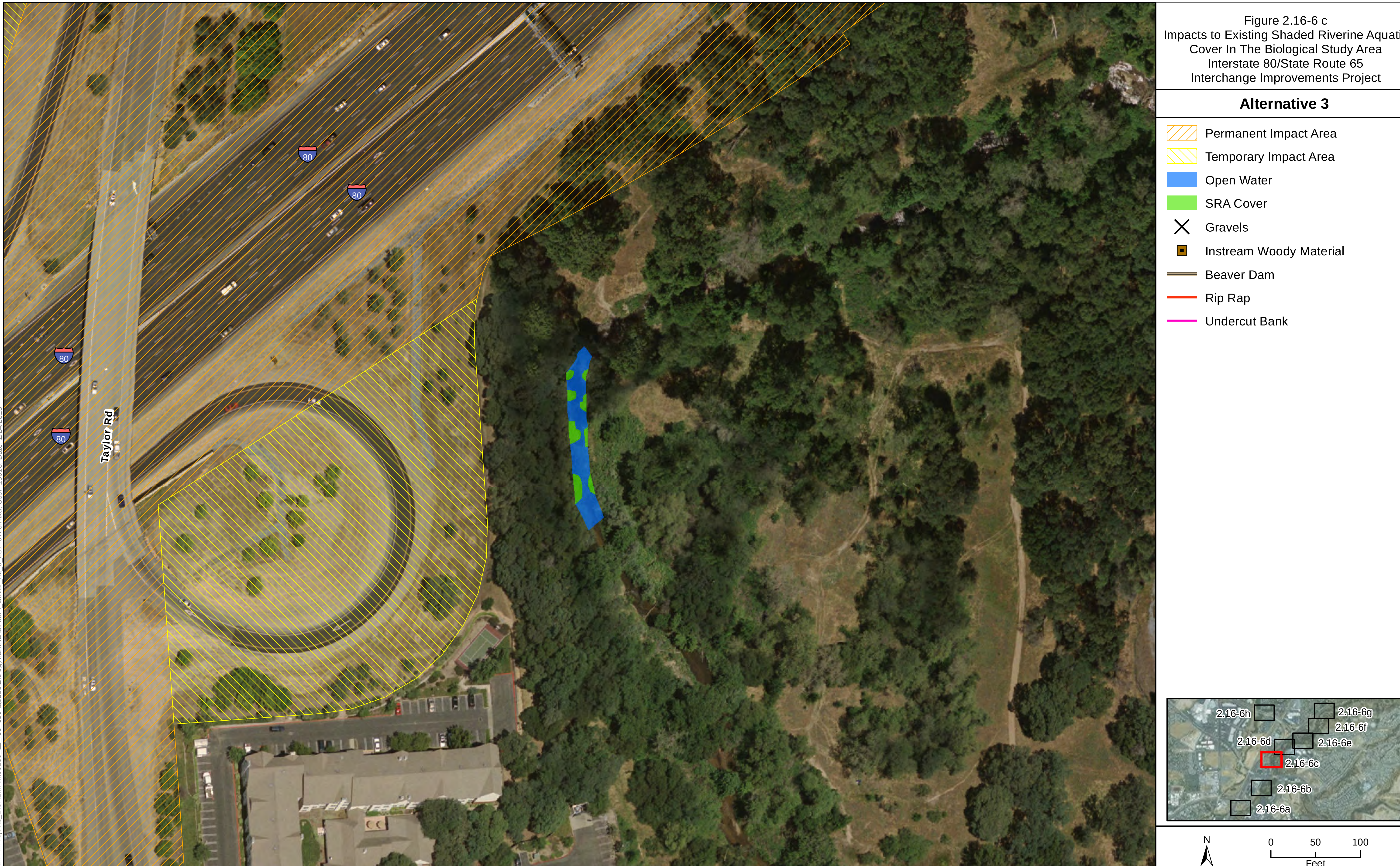

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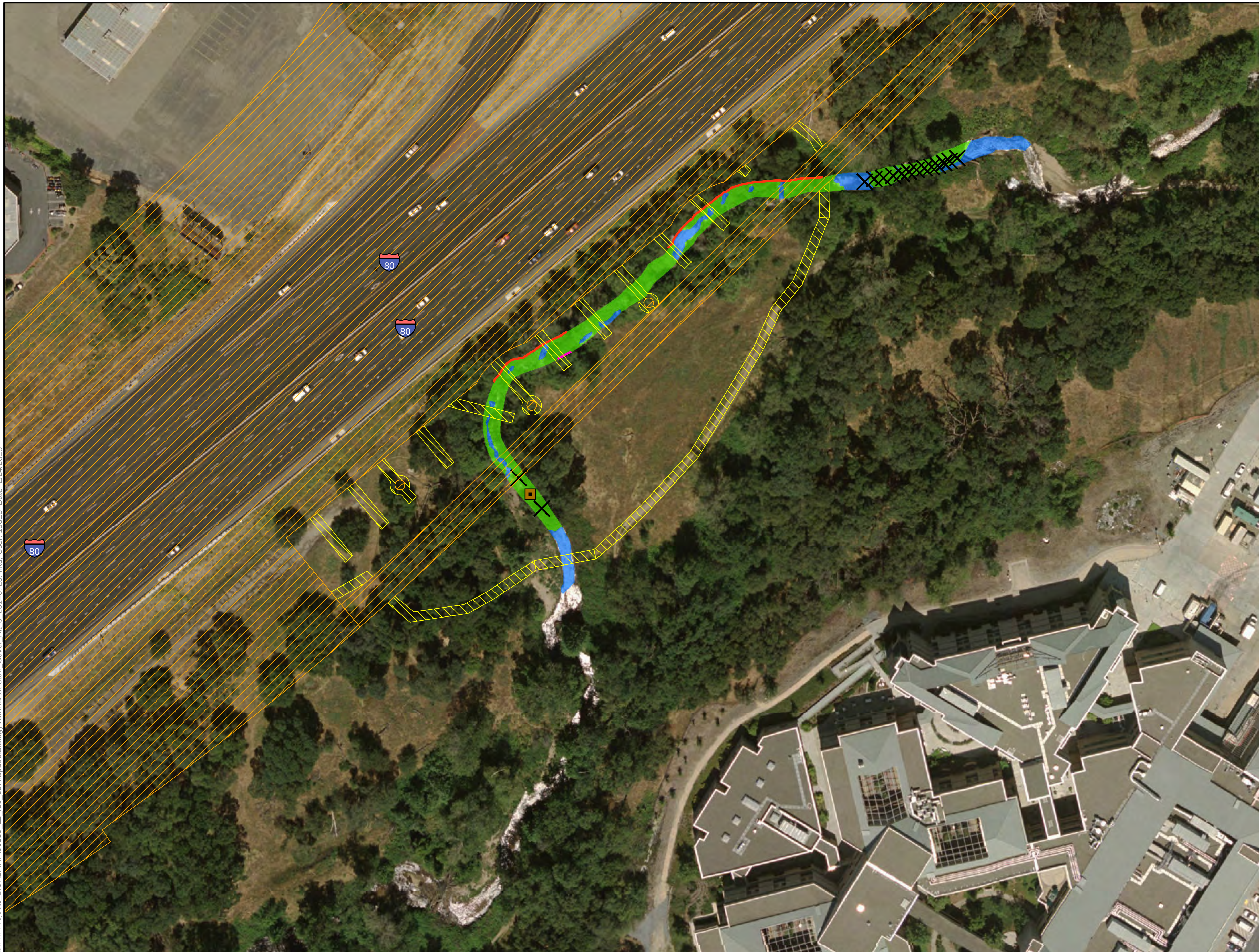
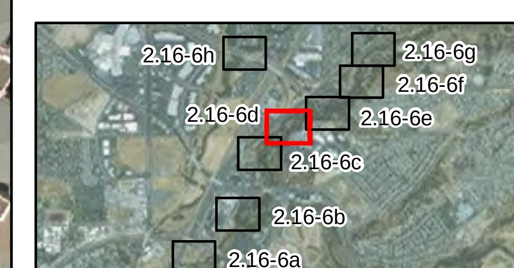
Figure 2.16-6 d
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project



Alternative 3

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank



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Feet

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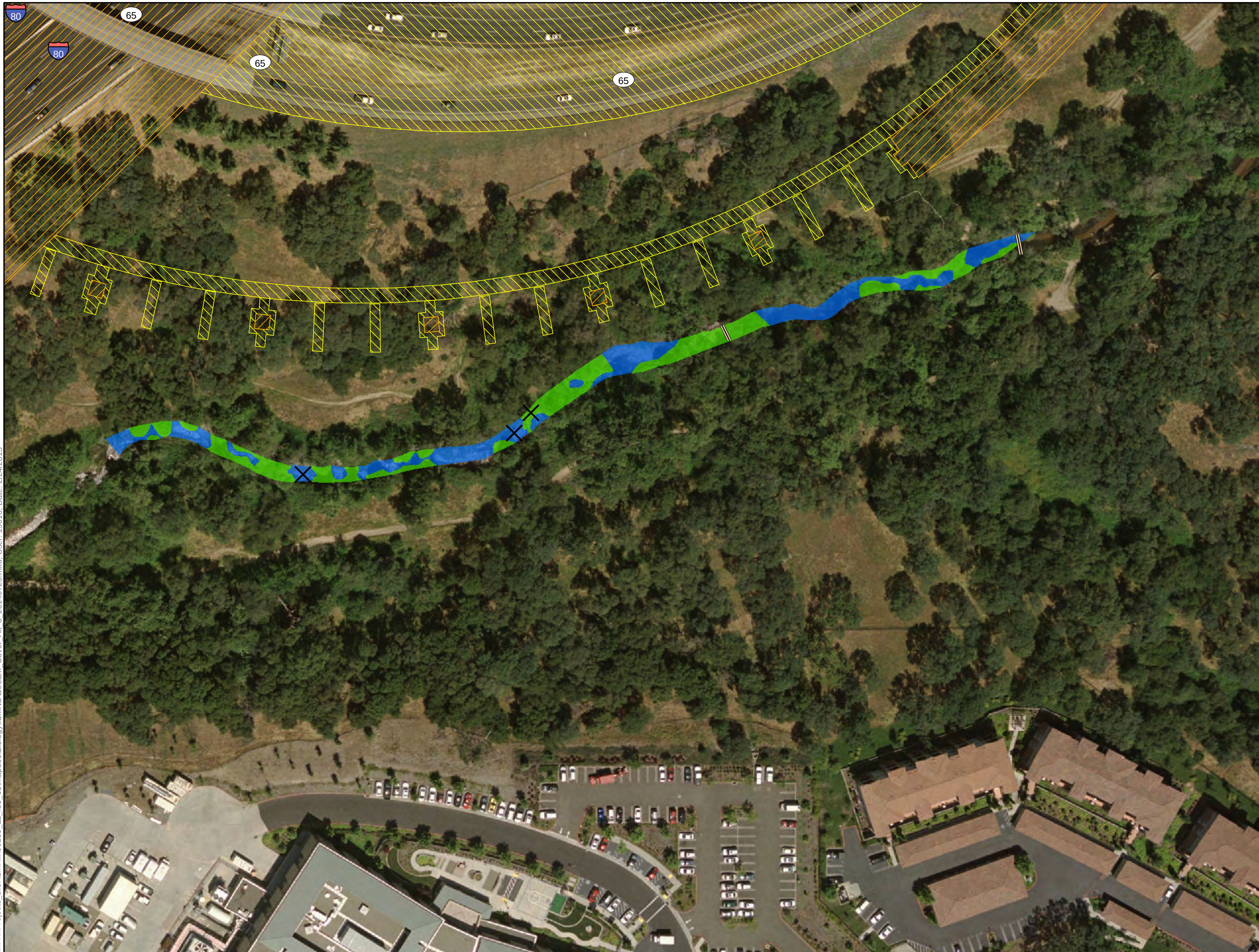
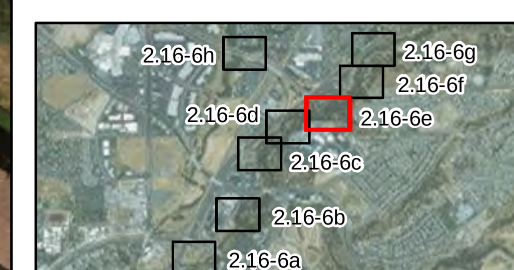


Figure 2.16-6 e
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank



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Feet

Path: K:\Projects_1\CH2MHill\00189_11_I80_65\mapdoc\Biology\ISMND\Stream_Cover_Alt_3_20140725.mxd; User: 19016; Date: 2/24/2015

Figure 2.16-6 f
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3

- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

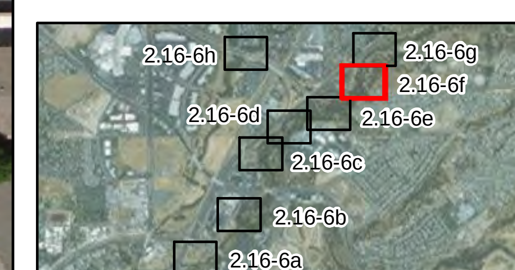

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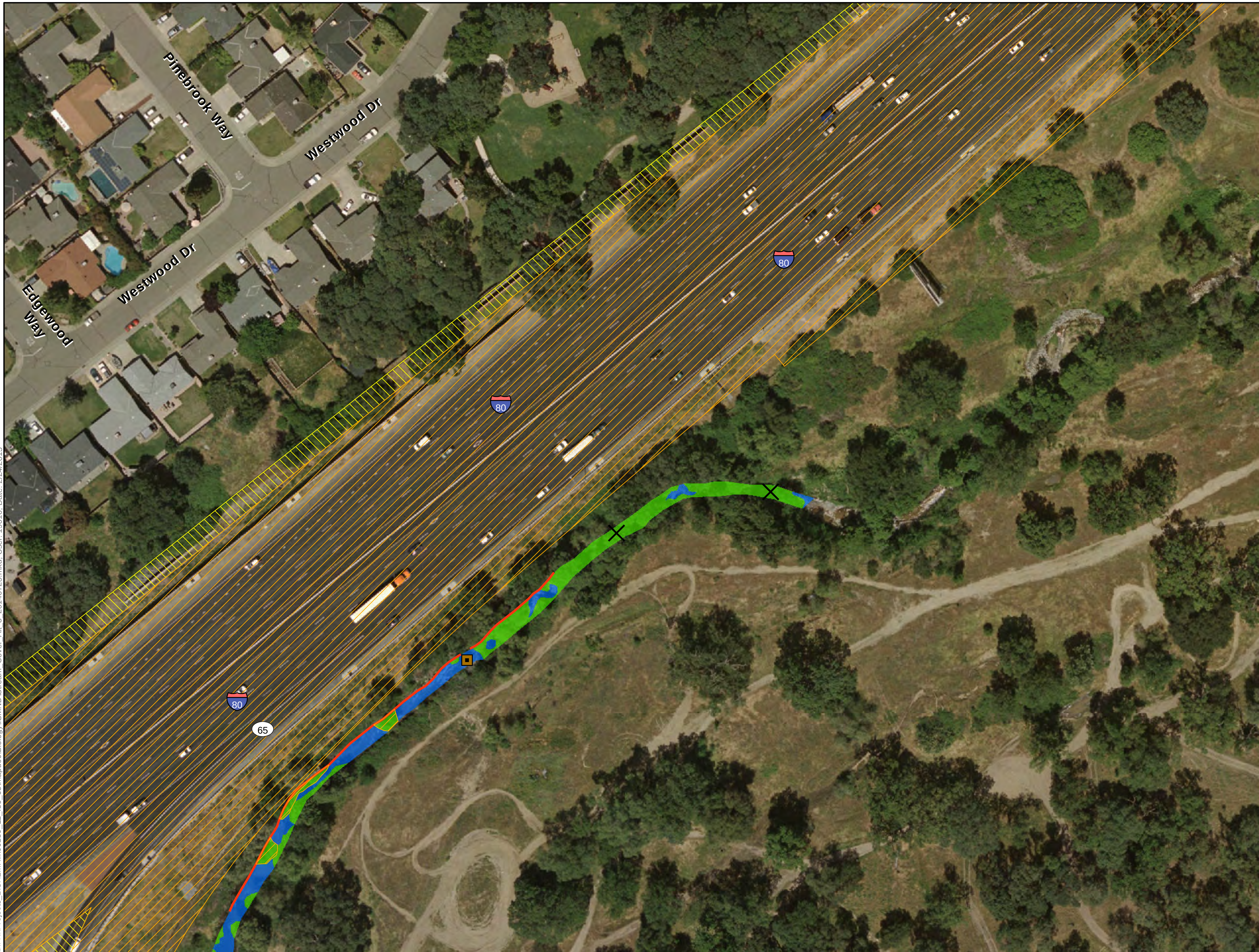
Figure 2.16-6 g
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3



- Permanent Impact Area
- Temporary Impact Area
- Open Water
- SRA Cover
- Gravels
- Instream Woody Material
- Beaver Dam
- Rip Rap
- Undercut Bank

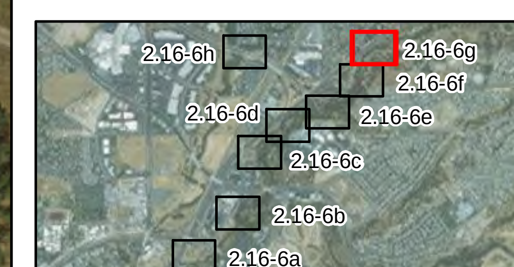


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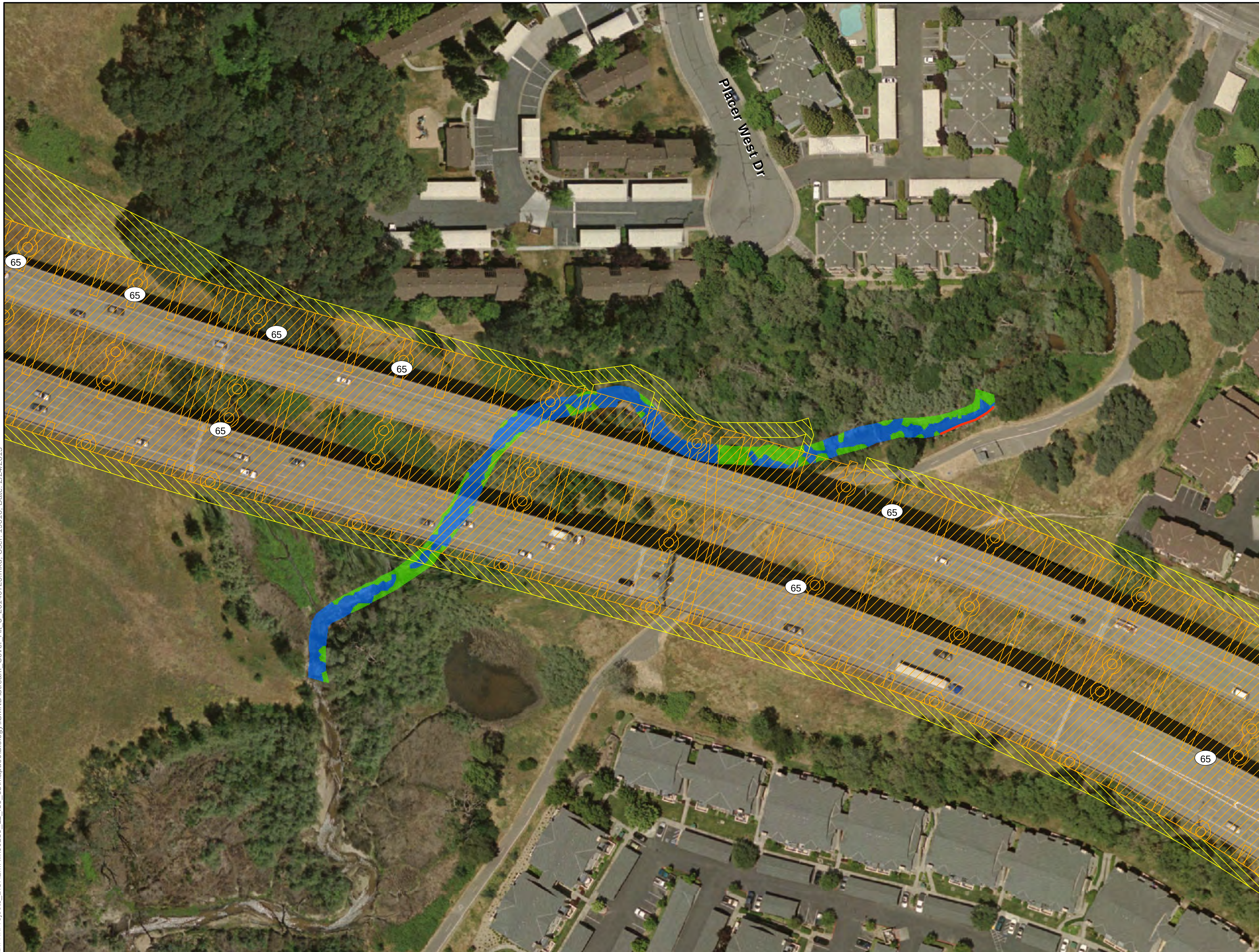
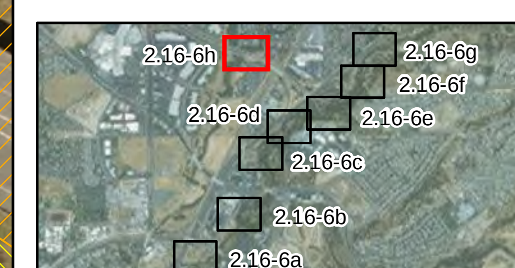
Figure 2.16-6 h
Impacts to Existing Shaded Riverine Aquatic Cover In The Biological Study Area
Interstate 80/State Route 65
Interchange Improvements Project

Alternative 3



Permanent Impact Area
Temporary Impact Area
Open Water
SRA Cover
Gravels
Instream Woody Material
Beaver Dam
Rip Rap
Undercut Bank



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The BSA supports both common natural communities and natural communities of special concern. Common natural communities are habitats with low species diversity that are widespread, reestablish naturally after disturbance, or support primarily non-native species. These communities generally are not protected by agencies unless the specific site is habitat for or supports special-status species (e.g., raptor foraging or nesting habitat, upland habitat in a wetland watershed). The only common natural community in the BSA is annual grassland.

Natural communities of special concern are vegetation communities considered sensitive because of their high species diversity, high productivity, unusual nature, limited distribution, or declining status. Local, state, and federal agencies consider these communities important. The CNDDB contains a current list of rare natural communities throughout the state. The vegetation communities in the BSA that meet the criteria for natural communities of special concern are non-wetland riparian forest and oak woodland. These species are discussed below. Wetlands and waters of the United States may also qualify as natural communities of special concern. These communities are discussed in Section 2.17.

2.16.2.1 Non-Wetland Riparian Forest

Riparian forest in the BSA occurs along the upper banks and floodplains of Antelope Creek, Miners Ravine, and Secret Ravine. The overstory of riparian forest contains valley oak (*Q. lobata*), Fremont cottonwood (*Populus fremontii*), Oregon ash (*Fraxinus latifolia*), black willow (*Salix gooddingii*), red willow (*S. laevigata*), and arroyo willow (*S. lasiolepis*). Common species in the understory are buttonwillow (*Cephalanthus occidentalis*), narrow-leaf willow (*S. exigua*), Himalayan blackberry (*Rubus armeniacus*), California blackberry (*R. ursinus*), and mugwort (*Artemisia douglasiana*). The invasive red sesbania (*Sesbania punicea*) shrub was observed in the riparian forest along Secret Ravine. The invasive giant reed (*Arundo donax*) was observed in the riparian forest along Antelope Creek. The invasive pokeweed (*Phytolacca americana*) was observed in the riparian forest along Secret Ravine. The riparian forest along Miners Ravine contains multiple blue elderberry shrubs, habitat for the federally threatened Valley elderberry longhorn beetle (VELB). The areas of riparian forest that exhibited positive indicators of all three federal wetland criteria are discussed in Section 2.17.2.4, “Riparian Forest/Shrub Wetland.”

2.16.2.2 Oak Woodland

Oak woodland occurs on slopes in Miners Ravine and Secret Ravine, as well as upslope of the west side of Antelope Creek. The overstory of this community is dominated by interior live oak (*Q. wislizeni*) and blue oak (*Q. douglasii*). Representative species present in the understory are hedge parsley (*Torilis arvensis*), hedgehog dogtail grass (*Cynosurus echinatus*), broadleaf filaree, purple clarkia (*Clarkia purpurea*), toyon (*Heteromeles arbutifolia*), and wall bedstraw (*Galium parisiense*).

2.16.2.3 Wildlife Migration Corridors

The BSA consists of predominantly disturbed and developed areas along SR 65, I-80, Taylor Road, Pacific Street, and associated on-ramps and off-ramps. These existing roadways generally do not provide wildlife migration corridors; however, resident wildlife species may traverse the BSA along streams that culvert under or parallel these roadways. Many of the stream channels in the BSA are within or border Open Space Preserves in the City of Roseville (Figures 2.16-1a–f, 2.16-2a–f, and 2.16-3a–f) that could be used as movement corridors to access larger open space areas outside the city limits. Therefore, streams and associated riparian and oak woodlands in the BSA provide significant wildlife dispersal and movement corridors through a largely built environment. Streams in the BSA also provide important movement corridors for fish. While fish passage is not obstructed by artificial structures in the BSA, beaver dams are present and depending on flow conditions can affect the movement of adult and juvenile fish within the BSA. Fish passage is a primary constituent element of critical habitat for Central Valley steelhead, which occurs in the BSA (see Section 2.20, "Threatened and Endangered Species").

2.16.3 Environmental Consequences

2.16.3.1 Build Alternatives

Each of the build alternatives would result in permanent and temporary impacts on vegetation communities that would qualify as natural communities of special concern, including, non-wetland riparian forest and oak woodland. Native trees are present within these community types and are discussed below.

The following assumptions were used in assessing the magnitude of possible impacts on non-wetland riparian forest and oak woodland.

- Impacts on riparian and oak woodland communities were determined by overlaying preliminary footprints for permanent project features and temporary work areas (e.g., access roads, falsework, equipment staging) onto aerial photographs of mapped habitats (Figures 2.16-1a–f, 2.16-2a–f, and 2.16-3a–f). Impact acreages presented in this section are intended to provide worst-case scenario; actual impacts are expected to be less based on avoidance of trees and other vegetation within temporary work areas.
- Oak woodland and riparian forest were generally mapped as polygons based on canopy cover and include both treed and treeless areas. Impacts within these habitats are approximate and do not account for canopy that extends outside the project footprint from a tree that could be removed by the project.
- Temporary construction impacts within oak woodland and riparian habitats may include some tree trimming, but removal of trees will be avoided to the extent practical.
- Temporary construction (e.g., temporary access roads) that requires tree removal within riparian forest and oak woodland habitats will be mitigated at the same ratio as permanent impacts to account for the time required for habitat regeneration.

The other common natural community that would be affected by the project alternatives is annual grassland. The loss of annual grassland vegetation in the BSA is not considered an adverse effect from a botanical standpoint, because this habitat is common and is not considered a sensitive community type. Wetlands and other waters of the United States are discussed in Section 2.17.

Non-Wetland Riparian Forest

Non-wetland riparian forest in the BSA occurs along Antelope Creek, Miners Ravine, and Secret Ravine. Riparian communities are considered sensitive locally, regionally, and statewide because of their habitat value and declining distribution. CDFW has adopted a no-net-loss policy for riparian habitat values. USFWS mitigation policy identifies California’s riparian habitats in Resource Category 2 (habitat is of high quality and is relatively scarce or becoming scarce on a national basis or in the ecoregion) and no net loss of existing habitat value is recommended (46 FR 7644). Additionally, riparian forest contains native trees that are subject to the tree preservation ordinances of the City of Roseville and City of Rocklin.

Construction of the project would result in trimming or removal of non-wetland riparian forest vegetation. Permanent structures (e.g., piers and bents) and bridges/crossings with low vertical clearance or very wide footprints would result in permanent impacts on riparian vegetation and associated shaded riverine aquatic (SRA) cover for fish habitat through exclusion, shading, and rain shadow effects (SRA cover is discussed further in Section 2.19, “Animal Species”). State and federal agencies will require avoidance, minimization, and compensatory mitigation for the loss of riparian habitat. The loss or disturbance of riparian forest vegetation is considered adverse because this vegetation provides a variety of important ecological functions and values.

Table 2.16-1 summarizes the impacts on non-wetland riparian forest by build alternative.

Table 2.16-1. Impacts on Non-Wetland Riparian Forest by Build Alternative

	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Non-wetland riparian forest	1.152	0.331	1.039	0.461	1.059	0.540

Oak Woodland

Oak woodland in the BSA occurs upslope of the west side of Antelope Creek and along Miners Ravine and Secret Ravine. The overstory of oak woodland in the BSA typically consists of blue oak and interior live oak but also contains valley oak.

Construction of the project would result in trimming or removal of oak woodland habitat. For the purposes of this analysis, all oak woodland disturbance and tree removal are considered permanent impacts because of the time required for habitat regeneration, even if the project construction component (e.g., access roads) requiring the disturbance or removal is considered a temporary impact.

Table 2.16-2 summarizes the impacts on oak woodland by build alternative.

Table 2.16-2. Impacts on Oak Woodland by Build Alternative

	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Oak woodland	0	6.368	0	6.141	0	6.174

Protected Trees

The BSA contains numerous native oak trees that would qualify for protection under the tree preservation ordinances of the City of Roseville or the City of Rocklin. Native oak species known to occur in the BSA are valley oaks, interior live oaks, and blue oaks.

Most of the protected trees that would be affected by implementation of the proposed project occur within the non-wetland riparian forest and oak woodland. The project proponent will retain a certified arborist to conduct a tree survey in order to quantify the number of protected trees that would be affected by implementation of each project alternative.

Habitat Fragmentation

The BSA consists of habitats along existing transportation corridors (i.e., roads and bridges). Modification and loss of habitat resulting from the proposed project will not result in the isolation of habitat or separation of previously continuous habitat into smaller patches. Therefore, the proposed project is not expected to result in habitat fragmentation and fragmentation is not discussed further.

2.16.3.2 No Build Alternative

The No Build alternative would not result in habitat modification or increases in impervious surfaces or overwater structure (shade). Therefore, the No Build Alternative would not directly affect natural communities.

2.16.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures will ensure that the project avoids, minimizes or mitigates effects on non-wetland riparian and oak woodland in and adjacent to the construction area and compensates for the loss of habitat that would be caused by all three build alternatives. Additional measures may be agreed upon during the project permitting process.

Install Fencing and/or Flagging to Avoid and Protect Sensitive Biological Resources

Prior to construction, the construction contractor will install high-visibility orange construction fencing and/or flagging, as appropriate, along the perimeter of the work area adjacent to ESAs (e.g., riparian vegetation, wetlands, streams, special-status species habitat, and active bird nests). Where specific buffer distances are required for sensitive biological resources (e.g., wetlands, elderberry shrubs, special-status species habitats, active bird nests, and protected trees), they are specified under the corresponding measures below. The project proponent will ensure that the final construction plans show the locations where fencing will be installed. The plans also will define the fencing installation procedure. At the discretion of the project proponent, the project proponent or the construction contractor will ensure that the fencing is maintained throughout the duration of the construction period. If the fencing is removed, damaged, or otherwise compromised during the construction period, construction activities will cease until the fencing is repaired or replaced. The project's special provisions package will provide clear language regarding acceptable fencing material and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within ESAs.

Conduct Mandatory Environmental Awareness Training for Construction Personnel

Before any work occurs in the project area, including grading and tree removal, a qualified biologist (familiar with the resources to be protected) will be retained to conduct a mandatory contractor/worker environmental awareness training for construction personnel. The awareness training will be provided to all construction personnel (contractors and subcontractors) to brief them on the need to avoid effects to sensitive biological resources (e.g., riparian vegetation, wetlands, special-status species, nesting birds, and protected trees) adjacent to construction areas and the penalties for not complying with applicable state and federal laws and permit requirements. The biologist will inform all construction personnel about the life history and habitat requirements of special-status species with potential for occurrence onsite, the importance of maintaining habitat, and the terms and conditions of the biological opinion or other authorizing document (e.g., letter of concurrence). Proof of this instruction will be submitted to the project proponent, and other overseeing agencies (i.e., CDFW, USFWS, and National Marine Fisheries Service (NMFS), as appropriate.

The environmental training also will cover general restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on sensitive biological resources during project construction. General restrictions and guidelines that must be followed by construction personnel are listed below.

- Project-related vehicles will observe the posted speed limit on hard-surfaced roads and a 10-mph speed limit on unpaved roads or access areas during travel within the project limits.
- Project-related vehicles and construction equipment will restrict off-road travel to the designated construction area.
- Vegetation clearing and construction operations will be limited to the minimum necessary in areas of temporary access work areas and staging.
- All food-related trash will be disposed of in closed containers and removed from the project site at least once a week during the construction period. Construction personnel will not feed or otherwise attract wildlife to the project site.
- No pets or firearms will be allowed on the project site.

- To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service vehicles or construction equipment outside designated staging areas.
- The training also will include identifying the BMPs written into construction specifications for avoiding and minimizing the introduction and spread of invasive plants (see Section 2.21) and the rationale behind their implementation during project construction.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

A qualified biologist will be retained to monitor all construction activities that involve ground disturbance (e.g., vegetation removal, grading, excavation, bridge construction) within or adjacent to Environmentally Sensitive Areas (ESAa) (e.g., riparian vegetation, wetlands, streams, special-status species habitat, and active bird nests). The purpose of the monitoring is to ensure that measures identified in this report are properly implemented to avoid and minimize effects on sensitive biological resources and to ensure that the project complies with all applicable permit requirements and agency conditions of approval. The biologist will ensure that fencing around ESAs remains in place during construction and that no construction personnel, equipment, or runoff/sediment from the construction area enters ESAs. The monitor will complete daily logs, and a final monitoring report will be prepared at the end of each construction season that will be submitted to the project proponent and other overseeing agencies (i.e., CDFW, USFWS, and NMFS), as appropriate.

Compensate for the Temporary and Permanent Loss of Non-Wetland Riparian Forest (including SRA Cover)

The final compensation plan for the permanent and temporary loss of non-wetland riparian forest, including areas considered SRA cover habitat, will be more fully developed as part of consultation with NMFS and additional coordination with the City of Roseville Open Space manager and environmental coordinator. Compensation for the impacts on riparian forest will depend on the amount and location of SRA and the availability and feasibility of onsite restoration along Miners Ravine, Secret Ravine, and Antelope Creek.

The project proponent will compensate for temporary and permanent impacts on non-SRA riparian forest at a minimum ratio of 2:1 and on SRA riparian forest habitat at a minimum of 3:1. For non-SRA riparian habitat, the project proponent may choose to purchase mitigation bank credits at a locally approved bank or compensate by restoring or enhancing riparian forest at onsite and/or offsite locations within the Dry Creek watershed. Each of these options is described below.

- **Mitigation Bank Credit Purchase.** If this option is chosen for non-SRA riparian forest habitats, the project proponent will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The amount to be paid will be the fee that is in effect at the time the fee is paid. The mitigation will be approved by CDFW and may be modified during the permitting process.

- **Onsite and/or Offsite Restoration in the Dry Creek Watershed.** This option may be chosen for non-SRA riparian forest and will be required for riparian forest identified as SRA cover. Onsite restoration will be required for all areas temporarily disturbed by construction. For onsite or offsite replacement plantings, an onsite mitigation planting plan will be prepared that includes a species list and number of each species, planting locations, and maintenance requirements. Plantings will consist of cuttings taken from local plants or plants grown from local material. Planted species for the mitigation plantings will be similar to those removed from the project area and will include native species, such as valley oak, Fremont cottonwood, Oregon ash, black willow, red willow, and arroyo willow. The final planting plan will be developed based on results of the arborist survey for species to be removed. All plantings will be fitted with exclusion cages or other suitable protection from herbivory. Plantings will be irrigated for up to 3 years or until established.

For riparian habitat restored onsite, it should occur in the same year as construction. Plantings will be monitored annually for 3 years or as required in the project permits. If 75 percent of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the 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. Riparian forest compensation will be consistent with the requirements of the City of Roseville and City of Rocklin tree ordinances to ensure compensation for losses of individual protected trees.

To provide a more accurate estimate of tree loss, an arborist survey will be conducted upon completion of 90% design plans for each phase of the project. In addition to a description of the tree, the arborist survey report will include the precise location of the trunk and size of the dripline for all trees whose trunk or canopy overlap with the project footprint.

To satisfy NMFS and compensate for the loss of SRA cover, this measure will include the following:

- Replace affected SRA cover vegetation at a 3:1 replacement ratio by planting native riparian trees in temporary impact areas and along existing unshaded banks. This linear distance will provide a 3:1 replacement ratio (i.e., 3 linear feet replaced for every 1 foot affected).
- Plant native riparian trees onsite to the maximum extent practicable, followed by planting on adjacent reaches of affected streams to minimize the need for offsite mitigation.
- Plant riparian trees that are intended to provide SRA cover along the water's edge at summer low flows and at levels sufficiently dense to provide shade along at least 85 percent of the bank's length when the plant reaches maturity.
- Ensure that riparian plantings intended for SRA cover mitigation are planted within 10 feet (horizontal distance) of the summer wetted channel. This maximum planting distance will ensure that riparian plantings will contribute to SRA cover once they approach maturity.
- Monitor and evaluate the revegetation success of riparian plantings intended for SRA cover mitigation as described above.

Compensate for the Permanent Loss of Oak Woodland

The project proponent will compensate for the permanent loss of oak woodland at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings for oak woodland may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin).

If onsite or offsite replacement planting will occur, a mitigation planting plan will be prepared that includes a species list and number of each species, planting locations, and maintenance requirements. Plantings will consist of cuttings taken from local plants or plants grown from local material. Planted species for the mitigation plantings will be similar to those removed from the project area and will include native species, such as interior live oak, blue oak, valley oak, ceanothus (*Ceanothus* sp.), toyon (*Heteromeles arbutifolia*), and other locally appropriate species. The final planting plan will be developed based on results of the arborist survey for species to be removed. All plantings will be fitted with exclusion cages or other suitable protection from herbivory. Plantings will be irrigated for up to 3 years or until established.

Plantings will be monitored annually for 3 years or as required in the project permits. If 75 percent of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the 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.

Oak woodland compensation will be consistent with the requirements of the City of Roseville and City of Rocklin tree ordinances to ensure compensation for losses of individual oak trees.

To provide a more accurate estimate of tree loss, an arborist survey will be conducted upon completion of 90% design plans for each phase of the project. In addition to a description of the tree, the arborist survey report will include the precise location of the trunk and size of the dripline for all trees whose trunk or canopy overlap with the project footprint.

2.16.5 References Cited

ECORP Consulting. 2011. *City of Roseville Open Space Preserve Overarching Management Plan*. Final Draft. August 5, 2011. Available: http://www.roseville.ca.us/lp/supersize/OSPOMP_8.3.2011_Final.pdf. Accessed September 25, 2014.

ICF International. 2014a. *Delineation of Potential Waters of the United States, Including Wetlands for the I-80/SR 65 Interchange Improvements Project*. Prepared for CH2M HILL. Sacramento, CA. May.

——. 2014b. *Natural Environment Study Report – I-80/SR 65 Interchange Improvements Project, Placer County, Interstate 80 and State Route 65*. Sacramento, CA. November.

2.17 Wetlands and Other Waters

2.17.1 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 CWA (33 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. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) 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 USACE with oversight by EPA.

The USACE issues two types of 404 permits: General and Standard Permits. There are two types of General Permits: Regional Permits and Nationwide Permits. Regional Permits are issued for a general category of activities when they are similar 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 Nationwide Permit may be permitted under one of USACE's Standard Permits. There are two types of Standard Permits: Individual Permits and Letters of Permission. For Standard Permits, the USACE decision to approve is based on compliance with EPA's Section 404(b)(1) Guidelines (40 CFR 230) and on whether permit approval is in the public interest. The Guidelines were developed by EPA in conjunction with 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 USACE may not issue a permit if a LEDPA to the proposed discharge would have lesser effects on waters of the United States and would not result in any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this EO states that a federal agency, such as FHWA or Caltrans as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds that (1) there is no practicable alternative to the construction; and (2) the proposed project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the State Water Resources Control Board, the RWQCBs, and CDFW. California Fish and Game Code (CFGC) Sections 1600–1607 require any agency proposing 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 (LSAA) is 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 USACE may or may not be included in the area covered by a LSAA obtained from the CDFW.

The RWQCBs were established under the Porter-Cologne Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by WDRs 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 that may result in a discharge to waters of the United States. This is most frequently required in tandem with a Section 404 permit request. Please see Section 2.9, “Water Quality” for more details.

2.17.2 Affected Environment

A delineation of potential jurisdictional wetland and other waters of the United States within the BSA was performed on October 30, November 13, and November 15, 2012, and on February 28 and March 7, 2013 (ICF International 2014). The delineation was conducted using the routine onsite determination method described in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the supplemental procedures and wetland indicators provided in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (U.S. Army Corps of Engineers 2008). Results of the delineation were submitted to the USACE on March 4, 2015. Field verification site visits with the USACE and the project wetland biologist were conducted in May of 2015 and the USACE verified the delineation on November 13, 2015.

This section is a summary of the analysis documented in the wetland delineation report prepared for this project (ICF International 2014a). The report is available on the project website at http://8065interchange.org/. The following wetlands and waters of the United States and waters of the State were delineated in the BSA and are considered jurisdictional by the USACE, RWQCB, and CDFW.

2.17.2.1 Perennial Stream

Perennial streams have flows year-round. The four perennial streams in the BSA are Antelope Creek, Miners Ravine, Secret Ravine, and Highland Ravine (see Figures 2.16-1a–f, 2.16-2a–f, and 2.16-3a–f). Segments of all four perennial streams are located within areas designated as Open Space. Additional information about the perennial streams is provided in the wetland delineation report.

2.17.2.2 Intermittent Stream

The four intermittent streams in the BSA are characterized by a relatively well-defined channel and convey water on a somewhat consistent basis during the wetter times of the year. The sources of flows for the intermittent streams are precipitation and sheet flow from the adjacent uplands, including the abutting retail and residential areas. Two of the intermittent streams occur east of Antelope Creek, and one is located south of Miners Ravine.

2.17.2.3 Ephemeral Drainage

The five ephemeral drainages in the BSA are characterized by less well-defined channels (i.e., more swale-like) and convey water only during, and for a short duration following, precipitation events. Ephemeral drainages occur in the western portion of the BSA in the vicinity of SR 65.

2.17.2.4 Riparian Forest/Shrub Wetland

Riparian forest/shrub wetlands in the BSA consist of areas within riparian habitat that meet all three federal wetland criteria (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology). The riparian forest/shrub wetlands are located on the east side of Antelope Creek, in the southern portion of the BSA, and southwest of the Galleria Boulevard/ Stanford Ranch Road interchange. The vegetative composition of riparian forest/shrub wetlands is similar to riparian forest.

2.17.2.5 Emergent Wetland

Emergent wetlands in the BSA are characterized by the presence of emergent vegetation and perennial hydrology. The emergent wetlands occur near Antelope Creek, between Taylor Road and the railroad tracks, southeast of Highland Ravine, and on the southern side of SR 65 west of the Galleria Boulevard/Stanford Ranch Road interchange. The vegetation in emergent wetlands includes narrowleaf cattail (*Typha angustifolia*), pennyroyal (*Mentha pulegium*), false waterpepper (*Persicaria hydropiperoides*), hardstem bulrush (*Schoenoplectus acutus*), rough cocklebur (*Xanthium strumarium*), and variable flatsedge (*Cyperus difformis*).

2.17.2.6 Seasonal Wetland

Seasonal wetlands in the BSA lack the plant species identified below as typically occurring in vernal pools. Additionally, although some of the plant species that inhabit seasonal wetlands also occur in emergent wetlands, the seasonal wetlands lack the perennial hydrology of the emergent wetlands (i.e., the seasonal wetlands are inundated only during wetter times of year). The seasonal wetlands occur in the portion of the BSA adjacent to SR 65. Herbaceous species in seasonal wetlands include spike rush (*Eleocharis macrostachya*), tall flatsedge (*C. eragrostis*), narrowleaf cattail, Bermuda grass (*Cynodon dactylon*), pennyroyal, dallis grass (*Paspalum dilatatum*), curly dock (*Rumex crispus*), Italian ryegrass, brome fescue (*Festuca bromoides*), and hairy willowherb (*Epilobium ciliatum*).

2.17.2.7 Vernal Pool

Vernal pools are a type of seasonal wetland; however, not all seasonal wetlands are vernal pools. Vernal pools in the BSA were distinguished from areas designated as seasonal wetlands based on their vegetative composition and hydrology. The vegetation in areas identified as vernal pools includes one or more of the following species that are typically found only in vernal pools: coyote thistle (*Eryngium castrense*), doublehorn calicoflower (*Downingia bicornuta* var. *picta*), horned downingia (*D. ornatissima* var. *ornatissima*), annual hairgrass (*Deschampsia danthonioides*), smooth goldfields (*Lasthenia glaberrima*), vernal pool buttercup (*Ranunculus bonariensis* var. *trisepalus*), stalked popcornflower (*Plagiobothrys stipitatus* var. *micranthus*), and whitehead navarretia (*Navarretia leucocephala* ssp. *leucocephala*). In terms of hydrology, areas identified as vernal pools exhibited a greater depth of ponding compared to seasonal wetlands and remained inundated for a longer duration than seasonal wetlands. Many of the vernal pools in the BSA are located in the grassland that is south of the east terminus of Antelope Creek Drive. The rest of the vernal pools are located inside the cloverleaf loops on SR 65 at the exit for Stanford Ranch Road/Galleria Boulevard.

2.17.3 Environmental Consequences

2.17.3.1 Build Alternatives

Each of the build alternatives would result in permanent and temporary effects on wetlands and waters of the United States and waters of the State, including riparian forest/scrub wetland, emergent wetland, seasonal wetland, vernal pool, perennial stream, intermittent stream, and ephemeral drainage. Figures 2.16-1a–f, 2.16-2a–f, and 2.16-3a–f depict the locations of each wetland and other waters type within the BSA for each alternative.

Effects to wetlands and other waters were considered to be permanent if construction of the proposed project would result in placement of permanent fill into these features. Temporary impacts on wetlands also would occur during access for project construction, including placement of temporary fill (falsework) to construct the East Roseville Viaduct. Additional indirect impacts caused by sedimentation or modification of hydrology could occur in portions of wetlands or other waters that lie outside the project footprint.

All wetlands and drainages in the BSA qualify as both waters of the United States and waters of the State, which are regulated under the CWA and the Porter-Cologne Act. Therefore, the project proponent will comply with the CWA by obtaining a permit from the Sacramento District of the USACE, and with the Porter-Cologne Act by obtaining a permit from the Central Valley RWQCB before discharging fill into, or excavating within, federally and state-regulated waters and wetlands. The project proponent will either obtain an individual permit from the USACE or authorization under a Nationwide Permit to comply with Section 404 of the CWA. The project proponent will also obtain water quality certification from Central Valley RWQCB to comply with Section 401 of the CWA and the Porter-Cologne Act.

The functions and values of the wetlands in the BSA are considered moderate to low in consideration of multiple factors, such as the extent of past and ongoing disturbance, proximity to roadways, plant community composition, scenic value, recreation opportunities, and abundance within the region. The riparian forest/scrub wetlands and vernal pool in the BSA are considered to have relatively moderate functions and values on the basis of their declining abundance in the region, higher proportion of native plant species, and for the riparian forest/shrub wetlands, recreation opportunities (e.g., bike trails, birdwatching). The seasonal and emergent wetlands in the BSA are considered to have relatively low functions and values because they are not unique or unusual in the region, have lower proportions of native species and plant diversity, and do not provide recreation opportunities. The proposed project is not expected to result in significant changes to the functions and values of wetlands in the BSA because permanent impacts will be small (totaling 0.275 acre) and temporarily disturbed areas will be restored to pre-project conditions.

Impacts on wetlands and other waters are common to all build alternatives. Table 2.17-1 summarizes the impacts on wetland type by build alternative.

Table 2.17-1. Impacts on Wetlands and Other Waters by Build Alternative

Wetland Type	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Riparian forest/scrub wetland	0.181	0.004	0.181	0.004	0.181	0.004
Emergent wetland	0.194	0.116	0.194	0.116	0.194	0.116
Seasonal wetland	0.066	0.115	0.066	0.115	0.066	0.115
Vernal pool*	0	0.043**	0	0.043**	0	0.043**
Perennial stream	0.056	0.034	0.000	0.004	0.000	0.007
Intermittent stream	0.000	0.003	0.000	0.003	0.000	0.003
Ephemeral drainage	0	0	0	0	0	0

* = Habitat for federally listed vernal pool fairy shrimp and vernal pool tadpole shrimp will be mitigated as part of the compensatory mitigation for vernal pool fairy shrimp and vernal pool tadpole shrimp (described in Section 2.20).

**= For purposes of calculating impacts on vernal pools and based on the sensitive nature of vernal pool hydrology, the entire pool was considered permanently affected even if temporary or permanent disturbance would occur to only a portion of the pool.

2.17.3.2 No Build Alternative

The No Build Alternative would not result in habitat modification or increases in impervious surfaces or overwater structure (shade). Therefore, the No Build Alternative would not directly affect wetlands or other waters. However, the No Build Alternative could result in indirect impacts on water quality relative to existing conditions from increased traffic congestion (WRECO 2015).

2.17.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures will avoid, minimize, and mitigate the permanent and temporary effects on wetlands and other waters of the U.S. and waters of the State that would be caused by all three alternatives, as listed in Table 2.17-1. The compensatory measures mitigate for the permanent loss of wetlands and of other waters of the U.S. and waters of the State in compliance with the CWA and Porter Cologne Act.

Install Fencing and/or Flagging to Avoid and Protect Sensitive Biological Resources

Please refer to the discussion of this measure in Section 2.16.

Conduct Mandatory Environmental Awareness Training for Construction Personnel

Please refer to the discussion of this measure in Section 2.16.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please refer to the discussion of this measure in Section 2.16.

Protect Water Quality and Minimize Sedimentation Runoff in Wetlands and Other Waters

The construction contractor will comply with all construction site BMPs specified in the SWPPP and any other permit conditions to minimize the introduction of construction-related contaminants and mobilization of sediment in wetlands and other waters in and adjacent to the project area. These BMPs will address soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-storm water management, and waste management practices. The BMPs will be based on the best conventional and best available technology.

The project is subject to storm water quality regulations established under the NPDES program, described in Section 402 of the CWA. In California, the NPDES program requires that any construction activity disturbing 1 or more acres comply with the statewide General Permit, as authorized by the State Water Board. The General Permit requires elimination or minimization of non-storm water discharges from construction sites and development and implementation of a SWPPP for the site. The primary elements of the SWPPP include the following.

- Description of site characteristics–including runoff and streamflow characteristics and soil erosion hazard—and construction procedures.
- Guidelines for proper application of erosion and sediment control BMPs.
- Description of measures to prevent and control toxic materials spills.
- Description of construction site housekeeping practices.

In addition to these primary elements, the SWPPP will specify that the extent of soil and vegetative disturbance will be minimized by control fencing or other means and that the extent of soil disturbed at any given time will be minimized. The SWPPP must be retained at the construction site.

The BMPs will be selected to achieve maximum sediment removal. The BMPs will represent the best available technology that is economically achievable and are subject to review and approval by Caltrans. Routine inspections of the construction area will be performed to verify that the BMPs are properly implemented and maintained.

The BMPs will include, but are not limited to, the following.

- Conduct all earthwork or foundation activities involving wetlands and other waters in the dry season (generally between June 15 and October 15, may vary based on weather). Conduct all in-water work within streams that provide anadromous fish habitat (Antelope Creek, Miners Ravine, and Secret Ravine) between June 15 and October 15.
- Use only equipment in good working order and free of dripping or leaking engine fluids when working in and around drainages and wetlands. Perform all vehicle maintenance at least 300 feet from all drainages and wetlands. Conduct any necessary equipment washing where the water cannot flow into drainages or wetlands.
- Develop a Hazardous Material Spill Prevention Control and Countermeasure Plan before construction begins. The plan will include strict onsite handling rules to keep construction and maintenance materials from entering the river, including procedures related to refueling, operating, storing, and staging construction equipment, as well as preventing and responding to spills. The plan also 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.
- Prohibit the following types of materials 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, and heavily chlorinated water.
- Measure baseline turbidity, pH, specific conductance, and temperatures in Antelope Creek, Miners Ravine, and Secret Ravine. As required by the Central Valley RWQCB, avoid exceeding water quality standards specified in the Water Quality Control Plan for the Sacramento and San Joaquin River Basins over the natural background conditions.
- Prevent discharge of turbid water to Antelope Creek, Miners Ravine, Secret Ravine, and tributary drainages during any construction activities by filtering the discharge first using a filter bag, diverting the water to a settling tank or infiltration areas, and/or treating the water in a manner to ensure compliance with water quality requirements prior to discharging water to Antelope Creek, Miners Ravine, Secret Ravine or any drainage ditch, wetland, or other aquatic habitat.
- Prevent discharge of concrete to Antelope Creek, Miners Ravine, Secret Ravine or any other aquatic habitat as concrete is being poured, as required by the NPDES permit.
- Dispose of any surplus concrete rubble, asphalt, or other rubble from construction at a local landfill.
- Prepare and implement an erosion and sediment control plan for the proposed project. The plan will include the provisions and protocols listed below. The SWPPP for the project will detail the applications and type of measures and the allowable exposure of unprotected soils.

- Make discharge from dewatering operations, if needed, and runoff from disturbed areas conform to the water quality requirements of the waste discharge permit issued by the Central Valley RWQCB.
- Apply temporary erosion control measures, such as sandbagged silt fences, throughout construction of the proposed project that 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 roads will be swept daily following construction activities.
- Conduct periodic maintenance of erosion and sediment control measures.
- Plant an appropriate seed mix of native or naturalized species on disturbed areas upon completion of construction.
- 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.
- 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.
- Contain soil and filter runoff from disturbed areas by berms, vegetated filters, silt fencing, straw wattles, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area.
- Use 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 revegetation or other ground cover) to control erosion from disturbed areas as necessary.
- Avoid earth or organic material from being deposited or placed where it may be directly carried into nearby wetlands or other waters.

The project proponent also will obtain a 401 Water Quality Certification from the Central Valley RWQCB and an LSAA from CDFW that may contain additional BMPs and water quality measures to ensure the protection of water quality.

Compensate for Temporary and Permanent Impacts on Wetlands

To compensate for temporary and permanent project impacts on seasonal wetland, freshwater emergent wetland, and riparian forest/scrub wetland, the project proponent will purchase credits at an approved mitigation bank to ensure no net loss of wetland functions and values. Vernal pool mitigation will be coordinated with compensatory mitigation for listed vernal pool fairy shrimp and vernal pool tadpole shrimp, such that mitigation for loss of listed species habitat does not duplicate mitigation for loss of USACE-jurisdictional vernal pool habitat. Mitigation banks with service areas for Placer County include Laguna Terrace East Conservation Bank, Reeds

Creek Vernal Pool Preserve, Twin Cities Conservation Bank and Preserve, Toad Hill Ranch Mitigation Bank, and Western Placer Schools Conservation Bank. The minimum wetland compensation ratio will be 1:1 (1 acre of wetland habitat credit for every 1 acre of impact) to ensure no-net-loss of wetland habitat functions and values.

The construction contractor will be required to implement the conditions and requirements of state and federal permits that will be obtained for the proposed project.

Compensate for Placement of Permanent Fill in Waters of the United States/Waters of the State

The project proponent will compensate for the permanent fill of other waters of the United States and waters of the State (a direct impact associated with roadway construction). Temporarily disturbed waters of the United States will be returned to pre-construction condition following construction. The project proponent will purchase compensatory credits at a USACE-approved mitigation bank to ensure no net loss of functions and values. As discussed previously, mitigation banks with service areas for Placer County include Laguna Terrace East Conservation Bank, Reeds Creek Vernal Pool Preserve, Twin Cities Conservation Bank and Preserve, Toad Hill Ranch Mitigation Bank, and Western Placer Schools Conservation Bank. The minimum other waters compensation ratio will be 1:1 (1 acre of other waters habitat credit for every 1 acre of permanent impact) to ensure no net loss of habitat functions and values.

The construction contractor will be required to implement the conditions and requirements of state and federal permits that will be obtained for the proposed project.

2.17.5 Wetlands Only Practicable Finding

Executive Order 11990 states that a federal agency may not undertake or provide assistance for new construction in wetlands unless the head of the agency finds that there is no practicable alternative and the proposed project includes all practicable measures to minimize harm.

Meeting the purpose and need for the proposed project requires modification of structures and construction of new interchange features at the location of the existing interchange. Due to the proximity of wetlands under and immediately adjacent to the interchange structures, the design parameters required for highway interchanges, and the urban development beyond the interchange, complete avoidance of wetlands is not possible. All feasible build alternatives would impact wetlands to the same degree.

Under the No-Build Alternative, no wetlands would be affected, but the No-Build Alternative does not meet the project purpose and need because it does not address the need for improved traffic operations during morning and evening peak periods, does not bring the interchange to current Caltrans design standards, and does not provide travel choices consistent with the complete streets policies of Caltrans and local agencies.

Practicable measures to minimize harm to wetlands are built into the project design as well as identified above in Section 2.17.4, "Avoidance, Minimization and/or Mitigation Measures."

Through extensive review and through coordination with resource agencies, the design of the project uses the least footprint possible, including the use of outriggers where feasible to avoid placement of structures in wetted channels.

Based on the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed project includes all practicable measures to minimize harm to wetlands that may result from such use.

2.17.6 References Cited

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. (Technical Report Y-87-1.) Vicksburg, MS: U.S. Army Waterways Experiment Station.

ICF International. 2014. *Delineation of Potential Waters of the United States, Including Wetlands for the I-80/SR 65 Interchange Improvements Project*. Prepared for CH2M HILL. Sacramento, CA. May.

U.S. Army Corps of Engineers. 2008a. *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region (Version 2.0)*. J. S. Wakeley, R. W. Lichvar, and C. V. Noble (eds.). (ERDC/EL TR-08-28.) U.S. Army Engineer Research and Development Center. Vicksburg, MS.

WRECO. 2015. *Water Quality Assessment Report – I-80/SR 65 Interchange Project, Placer County, California*. Prepared for Placer County Transportation Planning Agency and CH2M HILL. Sacramento, CA. January.

2.18 Plant Species

2.18.1 Regulatory Setting

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 federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see Section 2.20, "Threatened and Endangered Species" for detailed information about these species.

This section of the document discusses all the other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 USC Section 1531, et seq. See also 50 CFR 402. The regulatory requirements for CESA can be found at CFGC Section 2050, et seq. Caltrans projects are also subject to the Native Plant Protection Act, found at CFGC Sections 1900–1913, and CEQA, at California PRC Sections 2100–21177.

2.18.2 Affected Environment

This section is based on the *Natural Environment Study Report* (ICF International 2014) prepared for the project. The report is available on the project website at http://8065interchange.org/.

Botanical surveys in the BSA were conducted on May 15, May 16, October 30, November 13, November 15, 2012, and on February 28, March 7, and April 22, 2013. The early and late spring and fall surveys coincided with the identification periods of special-status plants determined to have the potential to occur in the project region.

Based on searches of the California Natural Diversity Database (CNDDB), the CNPS rare plant inventory, and USFWS lists of threatened endangered species for the project region, 17 special-status plant species were identified as occurring in the vicinity of the BSA (Table 2.18-1). The natural communities (see Section 2.16) in the BSA contain potential habitat for 12 of these 17 species. The remaining five species have microhabitat requirements (i.e., alkaline, gabbro, or serpentine soils) that are not present in the BSA or that occur at elevations substantially higher than the elevation of the BSA. Additionally, the relatively high level of historical and ongoing disturbance that is present in most of the BSA detracts from the quality of potential habitat for special-status plant species. No special-status plants were observed during 2012 and 2013 botanical surveys, and none have been previously reported in the BSA. Based on the field survey results and the lack of recorded occurrences in the BSA, special-status plant species are not expected to occur in the BSA.

2.18.3 Environmental Consequences

Special-status plants were not observed within the BSA during appropriately timed botanical surveys; therefore, special-status plants are not expected to occur in the BSA and would not be affected by the proposed project.

2.18.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

Table 2.18-1. Special-Status Plant Species Identified as Having the Potential to Occur in the Project Region, or That May Be Affected by the Proposed Project

Common Name *Scientific Name*	**Status[a]** Federal/State/ CRPR	**General Habitat Description**	**Blooming Period**	**Habitat Present/ Absent**	**Rationale**
California balsamroot *Balsamorhiza macrolepis*	–/–/1B.2	Sometimes on serpentine soils in chaparral, cismontane woodland, valley and foothill grassland; 295–5,101 feet	March–June	Present	Potential habitat present but not observed during surveys within blooming period. No serpentine soils present.
Stebbin's morning-glory *Calystegia stebbinsii*	E/E/1B.1	Serpentine or gabbro soils in chaparral openings, cismontane woodland; 606–3,576 feet	April–July	Absent	BSA substantially lower than species' elevation range and no serpentine or gabbro soils present. *No effect; not expected to result in take.*
Pine Hill ceanothus *Ceanothus roderickii*	E/R/1B.2	Serpentine or gabbro soils in chaparral or cismontane woodland; 803–2,066 feet	April–June	Absent	BSA substantially lower than species' elevation range and no serpentine or gabbro soils present. *No effect; not expected to result in take.*
Hispid bird's-beak *Chloropyron molle* ssp. *hispidum*	–/–/1B.1	Meadow and seeps, valley and foothill grassland, playa, on alkaline soils; 3–508 feet	June–September	Absent	Microhabitat requirements (i.e., alkaline soils) not met in BSA.
Brandegee's clarkia *Clarkia biloba* ssp. *brandegeeae*	–/–/4.2	Chaparral, cismontane woodland, lower coniferous forest, often on roadcuts; 246–3,001 feet	May–July	Present	Potential habitat present but not observed during surveys within blooming period.
Dwarf downingia *Downingia pusilla*	–/–/2.2	Vernal pools and mesic valley and foothill grasslands; below 1,459 feet	March–May	Present	Potential habitat present but not observed during surveys within blooming period.
Stinkbells *Fritillaria agrestis*	–/–/4.2	Chaparral, cismontane woodland, pinyon-juniper woodland, valley and foothill grassland, on clay, sometimes serpentinite substrate; 33–5,101 feet	March–June	Present	Potential habitat present but not observed during surveys within blooming period.
El Dorado bedstraw *Galium californicum* ssp. *sierrae*	E/R/1B.2	On gabbro soils in chaparral, cismontane woodland, lower montane coniferous forest; 328–1,919 feet	May–June	Absent	BSA substantially lower than species' elevation range and no gabbro soils present. *No effect; not expected to result in take.*
Boggs Lake hedge-hyssop *Gratiola heterosepala*	–/E/1B.2	Clay soils in areas of shallow water, lake margins of swamps and marshes, vernal pool margins; 33–7,791 feet	April–August	Present	Potential habitat present but not observed during surveys within blooming period. *Not expected to result in take.*

Common Name *Scientific Name*	Status[a] Federal/State/ CRPR	General Habitat Description	Blooming Period	Habitat Present/ Absent	Rationale
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	–/–/1B.2	Wet areas in valley and foothill grassland, vernal pool margins; 98–751 feet	March–May	Present	Potential habitat present but not observed during surveys within blooming period.
Red Bluff dwarf rush *Juncus leiospermus* var. *leiospermus*	–/–/1B.1	Seasonally wet areas in chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, vernal pools; 115–4,101 feet	March–May	Present	Potential habitat present but not observed during surveys within blooming period.
Legenere *Legenere limosa*	–/–/1B.1	Deep, seasonally wet habitats such as vernal pools, ditches, marsh edges, and river banks; below 2,887 feet	April–June	Present	Potential habitat present but not observed during surveys within blooming period.
Pincushion navarretia *Navarretia myersii* ssp. *myersii*	–/–/1B.1	Edges of vernal pools; 66–1,083 feet	April–May	Present	Potential habitat present but not observed during surveys within blooming period.
Sacramento Orcutt grass *Orcuttia viscida*	E/E/1B.1	Vernal pools; 98–328 feet	April–July	Present	Potential habitat present but not observed during surveys within blooming period. *No effect; not expected to result in take.*
Layne's butterweed *Packera layneae*	T/R/1B.2	Rocky serpentinite or gabbro soils in chaparral and foothill woodland; 656–3,281 feet	April–August	Absent	BSA substantially lower than species' elevation range and no serpentine or gabbro soils present. *No effect; not expected to result in take.*
Tahoe yellow cress *Rorippa subumbellata*	C/E/1B.1	Lower montane coniferous forest, meadows and seeps, on decomposed granitic beaches; 6,217–6,233 feet	May–September	Absent	No potential habitat present and BSA substantially lower than species' elevation range. *No effect; not expected to result in take.*
Sanford's arrowhead *Sagittaria sanfordii*	–/–/1B.2	Freshwater marshes, sloughs, canals, and other slow-moving water habitats; below 2,132 feet	May–October	Present	Potential habitat present but not observed during surveys within blooming period.

[a] **Status explanations:**

Federal

E = Listed as endangered under the federal ESA.
T = Listed as threatened under the federal ESA.
C = Species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded.
— = No listing status.

State

E = Listed as endangered under CESA.
R = Listed as rare under the CESA. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.
— = No listing status.

CRPR

1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.
4 = List 4 species: limited distribution; species on a watch list
.1 = Seriously endangered in California (over 80% of occurrences threatened—high degree and immediacy of threat).
.2 = Fairly endangered in California (20-80% occurrences threatened).

* = presumed extirpated in that county.

Note: In March, 2010, California Department of Fish and Game (now CDFW) changed the name of “CNPS List” or “CNPS Ranks” to “California Rare Plant Ranks (CRPR).” This was done to reduce confusion over the fact that CNPS and CDFW jointly manage the Rare Plant Status Review groups (300+ botanical experts from government, academia, non-governmental organizations, and the private sector) and that the rank assignments are the product of a collaborative effort and not solely a CNPS assignment.

2.18.5 References Cited

ICF International. 2014. *Natural Environment Study Report – I-80/SR 65 Interchange Improvements Project, Placer County, Interstate 80 and State Route 65*. Sacramento, CA. November.

2.19 Animal Species

2.19.1 Regulatory Setting

Many state and federal laws regulate impacts to wildlife. USFWS, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS), 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 federal or state Endangered Species Acts. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.20. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NMFS candidate species.

Federal laws and regulations relevant to wildlife include the following.

- NEPA
- Migratory Bird Treaty Act (MBTA)
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following.

- CEQA
- CFGC Sections 1600–1603
- CFGC Sections 4150 and 4152

2.19.1.1 California Fish and Game Code Sections 3503 and 3503.5 (Protection of Birds and Raptors)

Section 3503 of the CFGC prohibits killing of birds and destruction of bird nests. Section 3503.5 prohibits killing of raptor species and destruction of raptor nests. Typical violations include destruction of active bird and raptor nests as a result of tree removal, and failure of nesting attempts (loss of eggs or young) as a result of disturbance of nesting pairs caused by nearby human activity. The proposed project has the potential to adversely affect birds and raptors protected under Sections 3503 and 3503.5 of the CFGC.

2.19.1.2 California Fish and Game Code Sections 3511, 3513, 4700, 5050, and 5515 (Fully Protected Species)

CFGC Sections 3511, 3513, 4700, 5050 and 5515 pertain to fully protected wildlife species (birds in Sections 3511 and 3513, mammals in Section 4700, reptiles and amphibians in Section 5050, and fish in Section 5515) and strictly prohibit take of these species. CDFW cannot issue a take permit for fully protected species, except under narrow conditions for scientific research or the protection of livestock, or if a Natural Community Conservation Plan has been adopted. Specifically, Section 3513 prohibits any take or possession of birds designated by the

MBTA as migratory nongame birds except as allowed by federal rules and regulations pursuant to the MBTA. One fully protected bird species, white-tailed kite (*Elanus leucurus*), has the potential to nest in the BSA and be affected by the proposed project.

2.19.2 Affected Environment

This section is based on the *Natural Environment Study Report* (ICF International 2014) prepared for the project. The report is available on the project website at http://8065interchange.org/.

Surveys for terrestrial wildlife species in the BSA included a habitat-based assessment on May 15, 2012, and on July 23, 2014. Fisheries resources were evaluated on July 28 and August 4, 2014 by assessing in-stream conditions as well as shaded riverine aquatic (SRA) cover. On September 16, 2014, a site visit was conducted with Dylan Van Dyne, fish biologist and NMFS liaison for Caltrans, to discuss potential fish concerns related to the project. Non-listed wildlife and fish species that could be affected by the proposed project are discussed below.

2.19.2.1 Wildlife Species

The BSA provides habitat for an assemblage of wildlife species typical of valley grassland, oak woodland, and riparian forest communities. Numerous mammal species or evidence of use (i.e., scat, burrows) were observed in or near the BSA during the 2012 and 2014 field surveys. Species included black-tailed deer (*Odocoileus hemionus columbianus*), black-tailed hare (*Lepus californicus*), coyote (*Canis latrans*), California ground squirrel (*Spermophilus beecheyi*), western gray squirrel (*Sciurus griseus*), Botta's pocket gopher (*Thomomys bottae*), and raccoon (*Procyon lotor*). Numerous western fence lizards (*Sceloporus occidentalis*) were observed throughout the BSA. Wetland and stream habitats in the BSA also provide habitat for common amphibians and reptiles such as western toad (*Anaxyrus boreas*), Pacific tree frog (*Pseudacris regilla*), and western terrestrial garter snake (*Thamnophis elegans*). Common bird species observed throughout the BSA included northern mockingbird (*Mimus polyglottos*), red-winged blackbird (*Agelaius phoeniceus*), black phoebe (*Sayornis nigricans*), cliff swallow (*Petrochelidon pyrrhonota*), brewer's blackbird (*Euphagus cyanocephalus*), house finch (*Carpodacus mexicanus*), lesser goldfinch (*Carduelis psaltria*), mourning dove (*Zenaida macroura*), western scrub jay (*Aphelocoma californica*), oak titmouse (*Baeolophus inornatus*), American robin (*Turdus migratorius*), spotted towhee (*Pipilo maculatus*), acorn woodpecker (*Melanerpes formicivorus*), downy woodpecker (*Picoides pubescens*), Pacific-slope flycatcher (*Empidonax difficilis*), wild turkey (*Meleagris gallopavo*), American kestrel (*Falco sparverius*), red-shouldered hawk (*Buteo lineatus*), and turkey vulture (*Cathartes aura*).

Based on searches of the California Natural Diversity Database (CNDDB), the CNPS rare plant inventory, and USFWS lists of threatened and endangered species for the project region, 20 special-status wildlife species were determined to have the potential to occur in the project region (Table 2.19-1). Of these 20 species, seven species would not be affected by the project because the BSA lacks suitable habitat or is outside the species' known range (Table 2.19-1). Four of the 20 species are listed under FESA or CESA and are discussed in Section 2.20. Suitable habitat is present in the BSA for the remaining nine non-listed special-status wildlife described below.

Table 2.19-1. Special-Status Wildlife and Fish Known or with Potential to Occur in the Project Region, or That May Be Affected by the Proposed Project

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
Invertebrates				
Vernal pool fairy shrimp *Branchinecta lynchi*	T/–	Found in Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County; common in vernal pools; also found in sandstone rock outcrop pools.	Present	Suitable vernal pool habitat is present within the BSA between Taylor Road and the railroad corridor west of the existing East Roseville Viaduct. Vernal pool habitat is also present within the north and south SR 65 off-ramp loops at Galleria Boulevard and south of Pleasant Grove Boulevard on the east side of SR 65. *May affect, likely to adversely affect.*
Vernal pool tadpole shrimp *Lepidurus* packardi	E/–	Found from Shasta County south to Merced County; occurs in vernal pools and ephemeral stock ponds.	Present	Suitable vernal pool habitat is present within the BSA between Taylor Road and the railroad corridor west of the existing East Roseville Viaduct. Vernal pool habitat is also present within the north and south SR 65 off-ramp loops at Galleria Boulevard and south of Pleasant Grove Boulevard on the east side of SR 65. *May affect, likely to adversely affect*.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/–	Streamside habitats below 3,000 feet throughout the Central Valley; occurs in riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant.	Present	One elderberry shrub is present below the existing East Roseville Viaduct north of Taylor Road. Three shrubs are present along the south bank of Miners Ravine east of I-80 and south of Eureka Road. One additional shrub is present along China Garden Road in the east end of the BSA; however, this shrub was recently burned in a fire. *May affect, likely to adversely affect.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
Amphibians				
California red-legged frog *Rana aurora draytonii*	T/SSC	Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehema County to Fresno County; occurs in permanent and semipermanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation; may estivate in rodent burrows or cracks during dry periods.	Present	Suitable perennial aquatic habitat is present within the BSA. However, the species has not been previously documented within valley habitat in western Placer County. The closest California Natural Diversity Database occurrences are more than 35 miles northeast of the BSA within the nearby foothills (California Natural Diversity Database 2016). This species is not expected to be present within the BSA. *No effect; not expected to result in take.*
Western spadefoot *Spea hammondii*	–/SSC	Seasonal wetlands such as vernal pools and stock ponds in annual grasslands and oak woodlands within the Sierra Nevada foothills, Central Valley, and Coast Ranges.	Present	Suitable aquatic (vernal pools) and upland habitat is located between Taylor Road and the railroad corridor west of the existing East Roseville Viaduct. Vernal pools also are present in the SR 65 off-ramp loops at Galleria Boulevard; however, these pools are surrounded by developed areas that would not provide sufficient upland habitat to support western spadefoot. *Not expected to result in take.*
Reptiles				
Giant garter snake *Thamnophis couchi gigas*	T/T/–	Sloughs, canals, low-gradient streams, and freshwater marsh habitats with a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.	Absent	Urban streams within the BSA do not provide suitable habitat for giant garter snake. The closest known occurrence is approximately 13 miles to the west, within an agricultural ditch in rice field habitat. *No effect; not expected to result in take.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
Pacific pond turtle *Actinemys marmorata*	–/SSC	Occurs throughout California west of the Sierra-Cascade crest; found from sea level to 6,000 feet; does not occur in desert regions except for along the Mojave River and its tributaries; occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests.	Present	Suitable aquatic and upland habitat is present within and along Antelope Creek, Miners Ravine, and Secret Ravine within the BSA. *Not expected to result in take.*
Birds				
Bank swallow *Riparia riparia*	–/T	Occurs along the Sacramento River from Tehama County to Sacramento County, along the Feather and lower American Rivers, in the Owens Valley; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou Counties. Small populations near the coast from San Francisco County to Monterey County. Nests in bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam, along streams, coastal bluffs, and sand/gravel pits.	Absent	No suitable river or stream eroded bank habitat is present in BSA. *Not expected to result in take.*
Burrowing owl *Athene cunicularia hypugaea*	–/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast; level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows.	Present	Annual grassland along SR 65 in the northwest portion of the BSA provides potential breeding and wintering habitat. The closest document occurrence is 5 miles northwest of the BSA at a culvert under North Foothill Boulevard surrounded by open grassland habitat (ICF International 2014). Active nests will be avoided. *Not expected to result in take.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
California black rail *Laterallus jamaicensis coturniculus*	–/T, FP	Permanent resident in the San Francisco Bay and eastward through the Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial Counties; tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations. Recently discovered northern Sierra Nevada foothill population occupies shallow, densely vegetated freshwater wetlands.	Absent	No suitable freshwater marsh habitat is present within the BSA. *Not expected to result in take*.
Northern harrier *Circus cyaneus*	–/SSC	Occurs in grasslands, meadows, marshes, and seasonal and agricultural wetlands throughout lowland California.	Present	Emergent wetland and tall annual grasslands along SR 65 roadway provide potential nesting habitat for northern harrier. Active nests will be avoided. *Not expected to result in take.*
Osprey *Pandion haliaetus*	–/SSC	Nests in snags, trees, or utility poles near the ocean, large lakes, or rivers with abundant fish populations.	Absent	No suitable nesting or foraging habitat is present within the BSA. Possible migrant through the BSA. *Not expected to result in take.*
Purple martin *Progne subis*	–/SSC	Nests in abandoned woodpecker holes in oaks, cottonwoods, and other deciduous trees in a variety of wooded and riparian habitats; also nests in vertical drainage holes under elevated freeways and highway.	Present	Purple martins have been documented to nest in the drain holes within the SR 65 overcrossing at Taylor Road in the BSA. Only one pair have been documented in any given nest year. Project construction could indirectly disturb active nesting, but suitable nesting habitat would not be permanently affected. *Not expected to result in take.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
Swainson's hawk *Buteo swainsoni*	–/T	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley; highest nesting densities occur near Davis and Woodland, Yolo County; nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields.	Present	Oak woodland and riparian forest in the BSA provide suitable nesting habitat for the species. The closest known nest sites are approximately 4 miles to the west along Kaseberg and Pleasant Grove Creeks (CNDDB 2016). Annual grassland within open areas adjacent to SR 65 support suitable foraging areas for hawks. Active Swainson's hawk nests will be avoided. *Not expected to result in take.*
Tricolored blackbird *Agelaius tricolor*	–/E*	Permanent resident in the Central Valley from Butte County to Kern County; breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties; rare nester in Siskiyou, Modoc, and Lassen Counties; nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields; habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony.	Present	Emergent wetland and riparian shrub wetland along Antelope Creek in the BSA provide suitable nesting habitat for the species. The closest known nesting colony is on Orchard Creek approximately 5 miles northwest of the BSA (ICF International 2014). Active nests would be avoided. *Not expected to result in take.*
White-tailed kite *Elanus leucurus*	–/FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border; low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Present	Oak woodland and riparian forest in the BSA provide suitable nesting habitat for the species. The closest known nest site is approximately 2.5 miles to the west along Pleasant Grove Creek (CNDDB 2014). Annual grassland within open areas adjacent to SR 65 support suitable foraging areas. Active nests will be avoided. *Not expected to result in take.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
Mammals				
Pallid bat *Antrozous pallidus*	–/SSC	Occurs throughout California primarily at lower and mid-level elevations in a variety of habitats from desert to coniferous forest; most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Daytime roosts include rock outcrops, mines, caves, hollow trees, buildings, and bridges.	Present	Bridges and woodland habitats in the BSA provide suitable roosting areas for this species. Active roosts will be avoided. *Not expected to result in take.*
Silver-haired bat *Lasionycteris noctivagans*	–/SSC	Typically roosts in tree cavities, crevices and under loose bark; may also use leaf litter, buildings, mines, and caves; breeds in coastal and montane coniferous forests, valley foothill and montane riparian habitats; may occur in any habitat during migration.	Present	Bridges and woodland habitats in the BSA provide suitable roosting areas. Active roosts will be avoided. *Not expected to result in take.*
Townsend's big-eared bat *Corynorhinus* townsendii *townsendii*	–/P	Roosts in caves, tunnels, mines, and dark attics of abandoned buildings; very sensitive to disturbances and may abandon a roost after one onsite visit.	Absent	No suitable roosting habitat is present in the BSA. *Not expected to result in take.*
Western red bat *Lasiurus blossevillii*	–/SSC	Found throughout much of California at lower elevations; found primarily in riparian and wooded habitats; occurs at least seasonally in urban areas; day roosts in trees within the foliage; found in fruit orchards and sycamore riparian habitats in the Central Valley.	Present	Oak woodland and riparian forest habitat within the BSA provides suitable roost sites. Active roosts will be avoided. *Not expected to result in take.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
Fish				
Central Valley steelhead *Oncorhynchus mykiss*	T/–	Sacramento and San Joaquin Rivers and tributary Central Valley streams and rivers below impassable barriers; occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8 to 18 degrees (°) Celsius (C); habitat types are riffles, runs, and pools; adults spawn at head of riffles/tails of pools; young rear year-round for 1–4 years before emigrating to the ocean (Moyle 2002).	Present	Antelope Creek, Miners Ravine, and Secret Ravine provide suitable migration, spawning, and rearing habitat for Central Valley steelhead; Miners Ravine and Secret Ravine are designated critical habitat for the species. *May affect, not likely to adversely affect.*
Central Valley fall-/late fall–run Chinook salmon *Oncorhynchus tshawytscha*	–/SSC	Sacramento and San Joaquin Rivers and tributary Central Valley streams and rivers below impassable barriers; occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C; habitat types are riffles, runs, and pools; adults spawn at head of riffles/tails of pools; young rear for several months and emigrate to the ocean before summer (Moyle 2002).	Present	Antelope Creek, Miners Ravine, and Secret Ravine provide suitable migration, spawning, and rearing habitat for Central Valley fall-run Chinook salmon and are considered EFH for Chinook salmon. *Not expected to result in take.*
Sacramento River winter-run Chinook salmon *Oncorhynchus tshawytscha*	E/E	Mainstem Sacramento River below Keswick Dam (Moyle 2002); occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C; habitat types are riffles, runs, and pools (Moyle 2002); adults and juveniles migrate in the lower Sacramento River and through the Delta.	Absent	The BSA is not located within the current distribution of this run. The BSA is not included within designated critical habitat for this run. *No effect; not expected to result in take.*
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	T/T	Upper Sacramento River, Feather River, and Yuba River and several perennial tributaries of the Sacramento River (Battle, Butte, Clear, Deer, and Mill Creeks); has the same general habitat requirements as winter-run Chinook salmon; coldwater pools are needed for holding adults (Moyle 2002); adults and juveniles migrate in the lower Sacramento River and through the Delta.	Absent	The BSA is not located within the current distribution of this run. The BSA is not included within designated critical habitat for this run. *No effect; not expected to result in take.*

Common Name ***Scientific Name***	**Legal Status[a] (Federal/State/Other)**	**General Habitat Description**	**Habitat Present/Absent[b]**	**Rationale**
Delta smelt *Hypomesus transpacificus*	T/E	Found primarily in the Sacramento–San Joaquin Estuary but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay; occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand (Moyle 2002).	Absent	The BSA is located on an inland freshwater stream at an elevation of 160 feet above mean sea level. The BSA is not included within designated critical habitat for this species. *No effect; not expected to result in take.*
Lahontan cutthroat trout *Mylopharodon conocephalus*	T/-	Tributary streams in the San Joaquin drainage; large tributary streams in the Sacramento River and the main stem; resides in low to mid-elevation streams and prefer clear, deep pools and runs with slow velocities; also occurs in reservoirs.	Absent	The species occurs only in Great Basin streams on the east side of the Sierra Nevada crest. The BSA is not included within designated critical habitat for this species. *No effect; not expected to result in take.*

[a] Status explanations:

Federal

E = Listed as endangered under the federal Endangered Species Act.

E* = Notice of Findings to grant emergency status of *endangered* published by the California Fish and Game Commission on December 3, 2014. Effective dates for emergency listing are December 29, 2014 to June 30, 2015, subject to extension by Commission.

T = Listed as threatened under the federal Endangered Species Act.

D = Delisted from the federal Endangered Species Act.

– = No listing.

State

E = Listed as endangered under the California Endangered Species Act.

T = Listed as threatened under the California Endangered Species Act.

P = Proposed for listing as threatened or endangered under the California Endangered Species Act.

FP = Fully protected under the California Fish and Game Code.

SSC = Species of special concern in California.

– = No listing.

[b] Definitions:

Absent - no habitat present and no further work needed.

Habitat Present - habitat is, or may be present. The species may be present.

Present - the species is known to be present.

Western Spadefoot

The western spadefoot is designated as a state species of special concern. Western spadefoot range in length from 1.5 to 2.5 inches. They are dusky green or gray above and often have four irregular light-colored stripes on their back. The iris of the eye is usually a pale gold. The abdomen is whitish without any markings. Western spadefoots have a wedge-shaped, glossy black “spade” on each hind foot, used for digging. In California, western spadefoots historically ranged throughout the Central Valley and Coast Ranges and the coastal lowlands from San Francisco Bay southward to Mexico. The species has experienced severe population declines in the Sacramento Valley and a reduced density of populations in the eastern San Joaquin Valley.

Western spadefoots typically inhabit lowland habitats such as washes, floodplains of rivers, alluvial fans, playas, and alkali flats. This species also may be found in the foothills and mountain regions. Western spadefoots prefer areas of open vegetation and short grasses where the soil is sandy or gravelly. They are found in the valley and foothill grasslands, open chaparral, and pine-oak woodlands. Western spadefoots are primarily terrestrial, and require upland habitats for feeding and for burrowing during their long dry-season dormancy. They require wetlands for reproduction and have been observed in a variety of permanent and temporary wetlands, including rivers, creeks, pools in intermittent streams, vernal pools, and temporary rain pools. Larval development can be completed in 3 to 11 weeks but has been known to take up to 79 days from hatching to metamorphosis. Vernal pools and other temporary wetlands may be optimal for breeding due to the absence or reduced abundance of predators.

Within the BSA, emergent wetlands along SR 65, an intermittent drainage under the East Roseville Viaduct, and a large vernal pool southwest of the East Roseville Viaduct (Figures 2.16-1c, 2.16-2c, and 2.16-3c) provide potential breeding habitat for western spadefoot. Annual grassland in the vicinity of these aquatic resources provides upland habitat for adult spadefoots. Spadefoots are not expected to be present in disturbed/graded areas immediately adjacent to SR 65. The closest CNDDB occurrence for western spadefoot is located within the BSA and is a 1994 record from an emergent wetland located between the railroad tracks and Taylor Road, south of the East Roseville Viaduct.

Pacific Pond Turtle

Pacific pond turtle (western pond turtle or northwestern pond turtle) is a California species of special concern. Pacific pond turtle occurs throughout much of California except for east of the Sierra-Cascade crest and desert regions (with the exception of the Mojave River and its tributaries). Aquatic habitats used by Pacific pond turtles include ponds, lakes, marshes, rivers, streams, and irrigation ditches with a muddy or rocky bottom in grassland, woodland, and open forest areas. Pacific pond turtles spend a considerable amount of time basking on rocks, logs, emergent vegetation, mud or sand banks, or human-generated debris. Pacific pond turtles move to upland areas adjacent to watercourses to deposit eggs and overwinter. Turtles have been observed overwintering several hundred meters from aquatic habitat. In the southern portion of the range and along the central coast, Pacific pond turtles are active year-round. In the remainder of their range, these turtles typically become active in March and return to overwintering sites by October or November.

Antelope Creek, Miners Ravine, and Secret Ravine within the BSA represent suitable aquatic habitat for Pacific pond turtle. Annual grassland, oak woodland, and riparian forest habitat along these streams provide suitable upland nesting and overwinter habitat for pond turtles. No Pacific pond turtles were observed within the BSA during the 2012 and 2014 wildlife surveys.

Burrowing Owl

Western burrowing owl is a state species of special concern and is protected during its nesting season under the MBTA and CFGC Section 3503.5. Burrowing owl is a ground-nesting raptor that typically uses the burrows of other species, such as ground squirrels, for nesting, protection, and shelter. Burrowing owls are a year-round resident in a variety of grasslands, as well as in scrublands with a low density of trees and shrubs and low-growing vegetation. Burrowing owls that nest in the Central Valley may winter elsewhere. The primary habitat requirement of the burrowing owl is burrows appropriate for nesting. Burrowing owls usually nest in abandoned burrows, although they have been known to construct their own burrows in softer soils. In urban and agricultural areas, burrowing owls often use artificial burrows, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement, particularly pipes. This owl breeds from March through August and is most active while hunting during dawn and dusk.

Annual grassland in the BSA along SR 65 and the East Roseville Viaduct represents marginal wintering and breeding habitat for burrowing owls; however, owls are not expected to occur directly underneath the viaduct. This habitat is located adjacent to a high-density residential area that is heavily used by people, cats, and dogs. Annual grassland mapped along I-80 in the BSA occurs in small patches and is not expected to support burrowing owls. Overall, the potential for burrowing owls to be present within the BSA is low. No burrowing owls were observed within the BSA during 2012 and 2014 wildlife surveys.

White-Tailed Kite

White-tailed kite is a state species of special concern and is designated as fully protected under CFGC Section 3511. White-tailed kites occur in coastal and valley lowlands in California. They generally inhabit low-elevation grassland, savannah, oak woodland, wetlands, agricultural, and riparian habitats. Some large shrubs or trees are required for nesting and for communal roosting sites. Nest trees range from small, isolated shrubs and trees to trees in relatively large stands. White-tailed kites make nests of loosely piled sticks and twigs, lined with grass and straw, near the top of dense oaks, willows, and other tree stands. The breeding season lasts from February through October and peaks between May and August. They forage in undisturbed, open grassland, meadows, farmland, and emergent wetlands.

Riparian forest and oak woodlands in the BSA along Antelope Creek, Miners Ravine, and Secret Ravine provide suitable nesting habitat for white-tailed kite. The closest documented white-tailed kite nest site is located approximately 2.5 miles west of the BSA along Pleasant Grove Creek. Annual grassland in the BSA is patchy and provides marginal foraging habitat for white-tailed kites. White-tailed kites also would not be expected to forage under the existing East Roseville Viaduct. No white-tailed kites were observed in the BSA during the 2012 and 2014 wildlife surveys; however, kites were observed north of the BSA foraging in open grassland habitat along SR 65.

Northern Harrier

Northern harrier is a state species of special concern and is protected during its nesting season under the MBTA and CFGC Section 3503.5. Northern harrier is a year-round resident throughout the Central Valley and often is associated with open grassland habitats and agricultural fields. Nests are found on the ground in tall, dense herbaceous vegetation. Northern harrier nests from April to September, with peak activity in June and July. The breeding population has been reduced, particularly along the southern coast, because of the destruction of wetland habitat, native grassland, and moist meadows and from burning and plowing of nesting areas during early stages of breeding.

Annual grassland and emergent wetland in the northwestern portion of the BSA provide potential nesting substrate for northern harriers. Northern harriers were not observed during 2012 and 2014 wildlife surveys conducted within the BSA.

Purple Martin

Purple martin is a state species of special concern and is protected during its nesting season under the MBTA and CFGC Section 3503.5. Purple martin can be found throughout nearly the entire United States east of the Rocky Mountains. The once widespread Central Valley nesting population is now restricted to a bridge-nesting population within the Sacramento region. Since 2004, this population has declined from 173 pairs to 70 pairs in 2009, a 60-percent decrease. The Sacramento area martin population includes one Placer County breeding pair first documented in 2007. The purple martin is an early spring migrant from its wintering grounds in South America. Generally, purple martins inhabit open areas with an open water source nearby. Martins adapt well in and around people but are out-competed by starlings and sparrows in urban areas. Purple martins are colonial cavity nesters in abandoned woodpecker holes, human-made nest boxes, or cavities in other structures such as bridges and overpasses. Once established at a nest location, martins usually come back to the same site every year.

The only known nesting occurrence for purple martins in Placer County is from the East Roseville Viaduct within the BSA. Only one breeding pair has been previously documented—in a weep hole on the underside of the existing structure in 2007, in 2008, and then again in 2012. No purple martins were observed nesting in the East Roseville Viaduct during breeding surveys conducted in 2013 and 2014.

Based on 2014 wildlife surveys, all of the structures in the BSA support nesting swallows and black phoebe along ledges and in weep holes.

Other Migratory Birds

Other non-special-status birds protected under the MBTA could nest in trees, shrubs, grasses, or structures within the BSA. Cliff swallow and black phoebe were observed nesting on existing bridge structures during field surveys.

Pallid Bat

Pallid bat is found throughout most of California at low to middle elevations (6,000 feet). Pallid bats are found in a variety of habitats, including desert, brushy terrain, coniferous forest, and non-coniferous woodlands. Daytime roosts include rock outcrops, mines, caves, hollow trees, buildings, and bridges. Night roosts are commonly under bridges but also are in caves and mines. Hibernation may occur during late November through March. Pallid bats breed from late October through February, and one or two young are born in May or June. Existing bridge structures in the BSA provide potential roosting habitat for pallid bat.

Silver-Haired Bat

Silver-haired bats occur primarily in the northern portion of California and at higher elevations in the southern and coastal mountain ranges but may occur anywhere in California during their spring and fall migrations. They are associated with coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats. Silver-haired bats roost in trees almost exclusively in summer, and maternity roosts typically are located in woodpecker hollows or in gaps under bark. Maternal colonies range from several to about 75 individuals. Suitable habitat for silver-haired bat is present within riparian and oak woodlands in the BSA.

Western Red Bat

Western red bats occur throughout much of California at lower elevations. It is found primarily in riparian and wooded habitats but also occurs seasonally in urban areas. Western red bats roost in the foliage of trees that are often on the edge of habitats adjacent to streams, fields, or urban areas. This species breeds in August and September, and young are born in May through July. Suitable habitat for western red bat is present within riparian and oak woodlands in the BSA.

2.19.2.2 Fish Species

Antelope Creek, Miners Ravine, and Secret Ravine in the BSA fall within the Sacramento-San Joaquin Province (Central Valley Subprovince), one of six aquatic zoogeographic provinces in California, as defined by Moyle (2002). The Sacramento-San Joaquin Province is drained by the Sacramento and San Joaquin Rivers. Generally, four native fish assemblages can be recognized in Central Valley streams: rainbow trout assemblage, California roach assemblage, pikeminnow-hardhead-sucker assemblage, and deep-bodied fish assemblage. Based on its geographic location, the BSA lies in the zone characterized by the deep-bodied fish assemblage.

Fish species that could occur in this zone include Sacramento sucker (*Catostomus occidentalis*), California roach (*Lavinia symmetricus*), hardhead (*Mylopharodon conocephalus*), Sacramento pikeminnow (*Ptychocheilus grandis*), speckled dace (*Rhinichthys osculus*), riffle sculpin (*Cottus gulosus*), steelhead and resident rainbow trout (*Oncorhynchus mykiss*), and Chinook salmon (*O. tshawytscha*). Non-native sunfish (*Lepomis* spp.), blackbass (*Micropterus* spp.), and Western mosquitofish (*Gambusia affinis*) also may occur in this zone.

Historical information of fish species occurrence includes CDFW accounts documented in CDFW memoranda from the mid-1960s. According to these accounts, anglers in the mid-1960s commonly caught rainbow trout, sunfish, and brown bullhead catfish (*Ameiurus nebulosus*), while other species documented to occur in the Dry Creek drainage included lamprey, Sacramento pikeminnow, goldfish, Sacramento sucker, hitch, mosquitofish, Chinook salmon, and steelhead.

Presently, about 20 fish species, including freshwater and anadromous (sea-going) species, are found in Antelope Creek, Miners Ravine, and Secret Ravine; more than half of these species are introduced (Table 2.19-2).

Table 2.19-2. Fish Species Known or with Potential to Occur in the Biological Study Area

Common Name–Origin	Scientific Name
Native	
Steelhead	*Oncorhynchus mykiss*
Chinook salmon (fall-run)	*Oncorhynchus tshawytscha*
Pacific lamprey	*Lampetra tridentata*
Sacramento sucker	*Catostomus occidentalis*
Sacramento pikeminnow	*Ptychocheilus grandis*
Hitch	*Lavina exilicauda*
Non-Native	
Golden shiner	*Notemigonus crysoleucas*
Common carp	*Cyprinus carpio*
Goldfish	*Carassius auratus*
Fathead minnow	*Pimephales promelas*
Black bullhead	*Ameiurus melas*
Brown bullhead	*Ameiurus nebulosus*
Green sunfish	*Lepomis cyanellus*
Redear sunfish	*Lepomis microlophus*
Bluegill	*Lepomis macrochirus*
Largemouth bass	*Micropterus salmoides*
Smallmouth bass	*Micropterus dolomieu*
Spotted bass	*Micropterus punctulatus*
Western mosquitofish	*Gambusia affinis*

Sources: Placer County (2003), Titus (pers. comm.).

Based on a review of existing information, six special-status fish species initially were identified as having the potential to occur in the project region. Of the six special-status fish species listed in Table 2.19-1, four do not occur in the BSA because the area lacks suitable habitat for the species or is outside the species' known range. The remaining special-status fish species—Central Valley steelhead and Central Valley fall-/late fall–run Chinook salmon—occur in the BSA and could be affected by construction activities. In addition, two of the streams in the BSA—Miners Ravine and Secret Ravine—are designated as critical habitat for steelhead; Antelope Creek, Miners Ravine, and Secret Ravine are considered essential fish habitat (EFH) for Pacific salmon (i.e., Chinook salmon). Central Valley steelhead is federally listed as threatened and is discussed in Section 2.20, "Threatened and Endangered Species." Central Valley fall-/late fall–run Chinook salmon is discussed below. Because salmonids have relatively narrow habitat requirements related to adult migration, spawning, egg incubation, and fry and juvenile rearing relative to other native and non-native fish species, it is assumed that the following impact assessment also applies to non-salmonid species. It is further assumed that the proposed avoidance, minimization, and mitigation measures also would be protective of, and mitigate for potential impacts on, non-salmonid fish species.

Central Valley Fall-/Late Fall–Run Chinook Salmon

The Central Valley fall- and late fall–run Chinook evolutionarily significant unit (ESU) includes all naturally spawned populations of fall- and late fall–run Chinook salmon in the Sacramento and San Joaquin River basins and their tributaries east of Carquinez Strait (64 FR 50394). On September 16, 1999, after reviewing the best available scientific and commercial information, NMFS determined that listing Central Valley fall- and late fall–run Chinook salmon was not warranted. On April 15, 2004, the Central Valley fall- and late fall–run Chinook salmon ESU was identified by NMFS as a Species of Concern (69 FR 19975).

The Central Valley fall- and late fall–run Chinook salmon ESU is not listed under CESA. However, Central Valley late fall–run Chinook salmon were classified as a Class 2 Species of Special Concern by the California Department of Fish and Game (CDFG) (now CDFW) in 1995. *Class 2 Species of Special Concern* are species with low, scattered, or highly localized populations that require active management to prevent them from becoming Class 1 species (i.e., species that conform to the state definitions of threatened or endangered species).

The species has experienced substantial declines in distribution and abundance in the Central Valley relative to historical conditions. Factors that have contributed to the population decline of naturally-produced fall/late fall–run Chinook salmon in the Central Valley include loss and degradation of spawning and rearing habitat (including loss of SRA cover habitat), alteration of streamflows, overharvest, entrainment into water diversions, blockage of migration routes, exposure to toxins, and, possibly, loss of genetic viability from interbreeding with hatchery stocks.

The following discussion focuses on fall-run Chinook salmon only because late fall–run Chinook salmon do not occur in Antelope Creek, Miners Ravine, or Secret Ravine (they spawn in the upper Sacramento River where the water remains sufficiently cold and deep in summer to support rearing of juveniles). Adult fall-run Chinook salmon enter the Sacramento River from June through December, with a peak in September and October. Within the Dry Creek drainage, migration is dependent upon adequate flows and suitable water temperatures, which usually occur following storms in October or November. Adults spawn within a few days or weeks of reaching their spawning grounds. Chinook salmon deposit their eggs in redds (i.e., gravel nests) located in riffles, runs, and pool tails. Chinook salmon require relatively clean, cool (less than 56 ºF) well-oxygenated water to spawn successfully. Eggs generally hatch in 6–9 weeks, and yolk-sac larvae remain in the gravel for several more weeks. Newly emerged fry remain in shallow, lower velocity edgewaters. Shortly after emergence from the redds, most fry disperse downstream toward the Delta and into the San Francisco Bay estuary. Within Dry Creek and its tributaries, juvenile Chinook salmon tend to migrate from February through June, and migration of smolt peaks from March to May.

Since 1997, the Dry Creek Conservancy has been documenting the occurrence of adult Chinook salmon and redds in western Placer County streams, including Antelope Creek, Miners Ravine, and Secret Ravine, through limited spawning surveys. In fall 2013, 2 adult Chinook salmon carcasses were observed in lower Antelope Creek, and 15 live adults, 8 carcasses, and 5 redds were observed in Secret Ravine in stream segments extending from the confluence with Miners Ravine to Rocklin Road; no adult Chinook salmon or redds were observed in Miners Ravine.

Shaded Riverine Aquatic Cover

SRA cover habitat mapping surveys of Antelope Creek, Miners Ravine, and Secret Ravine were conducted on July 28 and August 4, 2014, by ICF biologists. SRA cover is the unique, near-shore aquatic cover that occurs at the interface between a stream or river and adjacent riparian habitat and is an essential component of salmonid habitat. Key features of this aquatic cover include the following.

- An adjacent bank composed of natural, often eroding substrate that supports overhanging riparian vegetation and vegetation that may protrude into the water.
- A stream channel with variable amounts of woody material and detritus and variable water velocity and depth.

SRA cover is composed of two components: overhead cover and instream cover. Overhead cover consists of overhanging riparian vegetation that provides important stream shading and contributes leaf litter and insects to the stream. Instream cover consists of submerged woody material (exposed roots, branches, and trunks), aquatic plants, substrate (gravel, cobble, and boulders), and undercut banks. Figures 2.16-4a–h show the location of SRA cover habitat (overhead and instream cover) that occurs within the BSA on Antelope Creek, Miners Ravine, and Secret Ravine.

A total of 899 linear feet (lf) of pre-project SRA cover vegetation (overhead cover) is located in the BSA on Antelope Creek, a total of 1,517 lf is located in the BSA on Miners Ravine, and a total of 3,694 lf is located in the BSA on Secret Ravine (Table 2.19-3). The existing overhead cover provides from 22 to 73 percent stream shade for the individual creek reaches in the BSA (Table 2.19-3). With respect to undercut banks (instream cover), a total of 168 lf of pre-project undercut banks is located in the BSA on Miners Ravine, while a total of 16 lf is located in the BSA on Secret Ravine; no undercut banks occur in the BSA on Antelope Creek (Table 2.19-3). A total of 815 lf of stream bank in the BSA is covered in riprap, although a majority of it is vegetated (Figures 2.16-4a–h). Whether vegetated or unvegetated, the riprap in the BSA precludes undercut banks from forming where it occurs.

2.19.3 Environmental Consequences

2.19.3.1 Build Alternatives

Each of the build alternatives would result in permanent and temporary impacts on habitat for non-listed special-status animals. Impacts are discussed below by species.

Table 2.19-3. Existing SRA Cover (Overhead Vegetation and Undercut Banks) in the Biological Study Area

Creek/Reach	Existing Stream Features		Existing Overhead Vegetation		Existing Undercut Bank (lf)
	Bank Length[a] (lf)	Stream Area (sf)	Bank Length[a] (lf)	Area (sf) (% shade)[b]	
Antelope Creek (Figure 2.16-4h)	1,767	17,018	899	5,404 (32%)	0
Miners Ravine (Figure 2.16-4a)	2,554	32,939	1,517	14,316 (43%)	168
Secret Ravine					
Reach 1 (Figure 2.16-4b)	194	767	58	169 (22%)	0
Reach 2 (Figure 2.16-4c)	147	182	80	97 (53%)	0
Reach 3 (Figure 2.16-4d)	1,709	13,846	1,286	10,097 (73%)	16
Reach 4 (Figure 2.16-4e)	1,602	15,221	834	7,136 (47%)	0
Reach 5 (Figures 2.16-4f and 2.16-4g)	2,328	17,964	1,436	9,819 (55%)	0
Secret Ravine subtotal	*5,980*	*47,980*	*3,694*	*27,318 (57%)*	*16*
Total[c]	**10,301**	**97,938**	**6,110**	**47,039 (48%)**	**184**

[a] Includes left and right banks.
[b] % shade calculated as area (sf) of existing overhead vegetation/stream area (sf) x 100.
[c] Overall project total.

Western Spadefoot

Construction activities such as excavation, grading, and stockpiling of soil could fill, remove, or otherwise alter suitable habitat for western spadefoot, or could result in their injury or mortality. Western spadefoots spend much of their life underground and therefore are not easily detectable. Western spadefoots could be unearthed or crushed during earthmoving activities. They could also become entrapped in open trenches or other project facilities. Improvements to northbound and southbound SR 65 and widening of the East Roseville Viaduct (including falsework and column construction) would result in permanent and temporary impacts on breeding habitat (emergent wetlands and intermittent streams) and temporary impacts on upland habitat (annual grassland) for spadefoots.

Table 2.19-4 summarizes the impacts on western spadefoot by build alternative.

Table 2.19-4. Impacts on Western Spadefoot by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Aquatic breeding habitat	0.308	0.119	0.308	0.119	0.313	0.119
Upland habitat	3.901	0.085	3.901	0.085	3.901	0.085

Note: For purposes of calculating aquatic and upland impacts, aquatic breeding habitat for western spadefoot includes emergent wetland and intermittent stream, and upland habitat consists of annual grassland.

The permanent loss of a small amount (0.204 acre) of aquatic and upland habitat is not expected to adversely affect the local western spadefoot population. However, because the population of spadefoots in the project region is expected to be relatively small due to the limited amount of suitable habitat in the vicinity of the project, loss of even a small number of individuals during construction could result in an adverse effect to the population.

Pacific Pond Turtle

Roadway improvements (including construction of piers, falsework, and temporary crossings) within Antelope Creek, Miners Ravine, and Secret Ravine would result in permanent loss and temporary disturbance of perennial streams that provide potential aquatic habitat for Pacific pond turtle. In-water work within and near perennial stream habitat could cause entrapment of pond turtles, resulting in their injury or mortality. Additionally, pond turtles and nests containing hatchlings or eggs could be crushed and killed during the movement of construction equipment in upland habitats (i.e., annual grassland, oak woodland, and riparian forest)—typically within 1,300 feet of aquatic sites. Because pond turtles are considered rare by CDFW, loss of individual turtles or nests containing eggs or young could result in an adverse effect to the local population.

Table 2.19-5 summarizes the impacts on Pacific pond turtle by build alternative.

Table 2.19-5. Impacts on Pacific Pond Turtle by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Aquatic habitat	0.056	0.034	0.000	0.004	0.000	0.007
Upland habitat	8.166	5.070	8.643	5.383	8.636	5.522

Note: For purposes of calculating impacts on Pacific pond turtle, aquatic habitat includes perennial stream and upland habitat consists of annual grassland, oak woodland, and riparian forest within 1,300 feet of perennial streams.

Burrowing Owl

Construction activities within annual grassland habitat in the BSA along SR 65 and the East Roseville Viaduct that occur during the nesting season (generally February 1 to August 31) or wintering season (September 1 through January 31) of burrowing owl could directly affect this species, if owls are present. Additionally, construction-generated noise has the potential to indirectly affect burrowing owls nesting near construction activities. Disturbance of burrows with active nests and indirect construction disturbance (i.e., noise, increased human presence) during the breeding season may result in nest abandonment and subsequent loss of eggs or young. Disturbance or loss of burrowing owls would be considered an adverse effect and would violate the MBTA and the CFGC.

Table 2.19-6 summarizes the impacts on burrowing owl by build alternative.

Table 2.19-6. Impacts on Burrowing Owl by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Nesting and foraging habitat	2.399	0.085	2.399	0.085	2.399	0.085

Note: For purposes of calculating impacts on burrowing owl, nesting and foraging habitat consists of annual grassland along SR 65 and the East Roseville Viaduct (excluding areas beneath the existing viaduct).

White-Tailed Kite

Construction activities associated with roadway improvements within or near oak woodland and riparian forest habitats could disturb an active white-tailed kite nest, if present in or near the construction area. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of an active white-tailed kite nest would violate the MBTA and CFGC Sections 3503.5 and 3511, and would be considered an adverse effect on the white-tailed kite.

Table 2.19-7 summarizes the impacts on white-tailed kite by build alternative.

Table 2.19-7. Impacts on White-Tailed Kite by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Nesting habitat	2.866	4.985	2.343	5.298	2.336	5.437
Foraging habitat	2.399	0.085	2.399	0.085	2.399	0.085

Note: For purposes of calculating impacts on white-tailed kite, nesting habitat consists of oak woodland and riparian forest and foraging habitat consists of annual grassland (excluding areas beneath the existing viaduct).

Northern Harrier

Construction activities associated with roadway improvements in annual grassland and emergent wetland habitat could disturb an active northern harrier nest, if present in or near the construction area. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of a northern harrier nest would violate the MBTA and CFGC Section 3503.5, and would be considered an adverse effect on northern harrier.

Table 2.19-8 summarizes the impacts on northern harrier by build alternative.

Table 2.19-8. Impacts on Northern Harrier by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	***Permanent (acres)***	***Temporary (acres)***	***Permanent (acres)***	***Temporary (acres)***	***Permanent (acres)***
Nesting and foraging habitat	2.593	0.201	2.593	0.201	2.593	0.201

Note: For purposes of calculating impacts on northern harrier, nesting and foraging habitat consists of annual grassland and emergent wetland (excluding areas beneath the existing viaduct).

Purple Martin

Construction activities associated with roadway improvements would remove or modify several existing structures, which could disturb an active purple martin or other bridge-nesting migratory bird nest. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of a purple martin nest would violate the MBTA and CFGC Section 3503.5. Because the population of purple martin in Placer County is expected to be very small (only one breeding pair has been previously documented), loss of adults or young would be considered adverse an adverse effect on purple martin.

Construction of the new overpass and bridge structures would replace nesting substrate lost due to structure removal. Therefore, no net loss of artificial nesting habitat would result from the proposed project.

Table 2.19-9 lists the existing structures within the BSA and summarizes the impacts on purple martin and other structure-nesting migratory birds by build alternative.

Table 2.19-9. Impacts on Purple Martin and Other Bridge-Nesting Birds by Build Alternative

Habitat	Alternative 1	Alternative 2	Alternative 3
East Roseville Viaduct	Nesting habitat would be affected	Nesting habitat would be affected	Nesting habitat would be affected
Eureka Road off-ramp over Miners Ravine	Nesting habitat would be removed	Nesting habitat would be removed	Nesting habitat would be removed
Taylor Road overcrossing at I-80	Nesting habitat would be removed	Nesting habitat would be removed	Nesting habitat would be removed
I-80 overcrossing at Miners Ravine	Nesting habitat would not be affected	Nesting habitat would not be affected	Nesting habitat would not be affected
Eastbound I-80 to northbound SR 65 connector	Nesting habitat would be removed	Nesting habitat would be removed	Nesting habitat would be removed
Southbound SR 65 to eastbound I-80 connector	Nesting habitat would be removed	Nesting habitat would be removed	Nesting habitat would be removed

Note: For purposes of assessing impacts on structure-nesting birds, suitable nesting habitat (concrete structures) were assumed to be affected if the structure would be modified and complete loss of nesting habitat assumed where structures would be removed.

Roosting Bats

The proposed project would result in the loss of mature trees, which provide potential roosting habitat for special-status bats (western red bat, silver-haired bat, and pallid bat) and other non-special-status bats. Tree removal/trimming and noise or other construction activities could result in injury, mortality, or disturbance of roosting bats if they are present in cavities, crevices, furrowed bark, or foliage of trees within or adjacent to construction areas. Removal or modifications to existing highway and bridge structures within the BSA could affect structure-roosting bats such as pallid bat and other non-special status bats (i.e., Mexican free-tailed bat [*Tadarida brasiliensis*], little brown bat [*Myotis lucifugus*], and Yuma myotis [*Myotis yumanensis*]).

Mortality of tree-roosting or structure-roosting bats during the maternity season or hibernation period that results from tree removal/trimming or other disturbances has the potential to affect a large number of bats and could substantially reduce the local populations of these species. Therefore, the project could adversely affect roosting bats.

No impacts on the known bat colony at the I-80 bridge over Miners Ravine are expected because this structure would not be modified.

Table 2.19-10 summarizes the impacts on roosting bats by build alternative.

Table 2.19-10. Impacts on Roosting Bats by Build Alternative

Habitat	Alternative 1	Alternative 2	Alternative 3
East Roseville Viaduct	Potential roosting habitat would be affected	Potential roosting habitat would be affected	Potential roosting habitat would be affected
Eureka Road off-ramp over Miners Ravine	Potential roosting habitat would be removed	Potential roosting habitat would be removed	Potential roosting habitat would be removed
Taylor Road overcrossing at I-80	Potential roosting habitat would be removed	Potential roosting habitat would be removed	Potential roosting habitat would be removed
I-80 overcrossing at Miners Ravine	Roosting habitat would not be affected	Roosting habitat would not be affected	Roosting habitat would not be affected
Eastbound I-80 to northbound SR 65 connector	Potential roosting habitat would be removed	Potential roosting habitat would be removed	Potential roosting habitat would be removed
Southbound SR 65 to eastbound I-80 connector	Potential roosting habitat would be removed	Potential roosting habitat would be removed	Potential roosting habitat would be removed

Note: For purposes of assessing impacts on structure-nesting bats, suitable nesting habitat (concrete structures) were assumed to be affected if the structure would be modified and complete loss of nesting habitat assumed where structures would be removed.

Central Valley Fall-/Late Fall–Run Chinook Salmon

Implementation of the proposed project could cause temporary and permanent adverse impacts on Central Valley fall-/late fall–run Chinook salmon and their habitat. Temporary impacts primarily are associated with construction activities, including impairment of water quality, disturbance or direct injury and mortality of fish, and temporary loss of habitat. Permanent impacts likely would continue to affect species over several generations, well after completion of the proposed project, and primarily are associated with permanent loss of vegetative cover and potentially undercut banks, reducing habitat complexity.

Temporary impacts include construction activities that could temporarily increase turbidity and suspended sediment in stream segments adjacent to and downstream of construction; temporarily increase water temperature; result in accidental spills of toxic substances used at construction sites, including gasoline, lubricants, and other petroleum-based products; and result in noise, vibrations, artificial light and other physical disturbances caused by heavy equipment operation that can harass fish, disrupt or delay normal activities, and cause direct 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 equipment operating over or adjacent to the water body.

Permanent impacts could include loss of vegetative cover and undercut banks as a result of direct removal or loss associated with long-term reductions in plant health and vigor from permanent shading caused by new highway structures (e.g., bridges, viaducts, and other elevated roadways) and potential changes in hydrology and water quality in affected waterbodies associated with increases in impervious surfaces.

No impact pile driving or stream dewatering would be required as part of project construction; therefore, related impacts on fish and the need for rescuing and relocating fish from affected habitats will be avoided. In addition, the project uses design options, including an outrigger concept for columns and/or shifting of the bent spacing, at stream crossings to avoid placement of columns below the ordinary high water mark of Secret Ravine, thereby avoiding direct impacts on the channel portion of Secret Ravine. Construction impacts on the wetted channels also will be avoided by using temporary platforms that span the channels above the ordinary high water mark to support temporary falsework while the elevated structures are being constructed adjacent to or over the channels. In-water work would be limited to constructing the two bridge columns in Antelope Creek associated with widening of the East Roseville Viaduct; however, juvenile Chinook salmon would not be present in affected habitats during summer, when in-water construction activities would occur.

Project impacts that would result from all three build alternatives on Central Valley fall-/late fall–run Chinook salmon and their habitat include potential adverse effects related to disturbance and direct injury, increased turbidity and sedimentation, potential discharges of contaminants, temporary and permanent loss of SRA cover, and changes to channel morphology and hydraulics. These potential impacts are discussed below.

Disturbance and Direct Injury

Noise, vibrations, artificial light, and other physical disturbances can harass fish, disrupt or delay normal activities, or 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 in or adjacent to the water body. However, survival may be altered if disturbance causes fish to leave protective habitat (e.g., causing increased exposure to predators) or is of sufficient duration and magnitude to affect growth and spawning success. In the absence of mitigation, injury or mortality may result from direct and indirect contact with humans and machinery and materials being placed in the stream.

Adult and juvenile Chinook salmon would be subject to potential harassment, injury, or mortality during work activities occurring in or near stream channels. Most adults and juveniles would be expected to move upstream or downstream of the immediate project area in response to disturbance. Displacement could reduce spawning success by causing adults to abandon redds or be delayed in reaching upstream spawning areas, and affect survival of young by increasing the exposure of juveniles to predators and possibly increasing competition with other juveniles, especially if suitable rearing habitat is limited or not readily available. Although juveniles are capable of actively moving away from disturbances, some juveniles may seek cover in active work areas, where they may be injured or killed by exposure to harmful levels of suspended sediment or other factors. Fry and small juveniles are at highest risk because of their tendency to hide in the substrate and reluctance to move away from protective nearshore habitat.

Short-term noise disturbance caused by construction vehicles and equipment, including drilling rigs and vibratory pile drivers, could occur during construction. The likely effects on adults, fry and juveniles would be avoidance of habitat adjacent to the construction area. Effects, however, are not expected to rise to a level that result in injury to or direct mortality of adults, fry or juveniles.

Temporary lighting of work areas to facilitate nighttime construction, especially at construction sites adjacent to or over waterways, may alter behavior of animals that prey on fish (e.g., piscivorous birds, mammals, and fish) in adjacent and affected habitats or may make fish more visible to predators, thereby leading to increased mortality of fish, particularly fry and juveniles, through increased predation.

Physical disturbance and injury are most likely to occur during in-water work. Project actions that involve in-water work include placing steel casings in the wetted channel of Antelope Creek to support construction activities associated with widening of the East Roseville Viaduct and installing rock slope protection to protect the foundations, piers, and adjacent banks from erosion. Under all three build alternatives, placement of these materials could result in temporary disturbance of, injury to, or mortality of fish that come in contact with equipment or construction materials during their installation. Injury to or mortality of fry and juveniles from direct contact with humans or machinery would not be expected to occur from these activities on Antelope Creek because in-water construction would be limited to the dry season when adult and juvenile Chinook salmon would not be present. No in-water construction or related activities would occur on Miners Ravine and Secret Ravine under any build alternative; therefore, direct physical disturbance and injury of fish in these streams will be avoided.

Erosion and Mobilization of Sediment

Vegetation clearing, earthwork, equipment operation, and highway and bridge construction activities associated with all three build alternatives would result in disturbance of soil and streambanks, potentially resulting in temporary increases in suspended sediments (turbidity) and sedimentation in Antelope Creek, Miners Ravine, and Secret Ravine. Additional potential sources of sediment that could cause increases in turbidity and sedimentation include unstabilized slopes, construction staging areas, and access roads; uncovered stockpiles; and improperly maintained (cleaned) construction equipment and surface roads used by equipment and vehicles exiting construction areas.

Elevated levels of suspended sediments have the potential to result in physiological, behavioral, and habitat effects. The severity of these effects depends on the sediment concentration, duration of exposure, and sensitivity of the affected life stage. Short-term increases in turbidity and suspended sediment may disrupt normal behavior patterns of fish, potentially affecting foraging, rearing, and migration. The level of disturbance also may cause juveniles to abandon protective habitat or reduce their ability to detect predators, potentially increasing their vulnerability to predators (e.g., piscivorous birds and fish). Previous studies have documented these effects. For example, juvenile salmonids have been observed to avoid streams that are chronically turbid or move laterally or downstream to avoid turbidity plumes. Bisson and Bilby (1982) reported that juvenile coho salmon avoid turbidities exceeding 70 nephelometric turbidity units (NTUs). Chronic exposure to high turbidity and suspended sediment may affect growth and survival by impairing respiratory function, reducing tolerance to disease and contaminants, and causing physiological stress. Sigler et al. (1984) found that prolonged exposure to turbidities between 25 and 50 NTUs resulted in reduced growth and increased emigration rates of juvenile coho salmon and steelhead compared to controls. Increased sediment delivery also can smother aquatic invertebrates (a fish food item), degrade forage and spawning habitat by covering or degrading the quality of gravel riffles, and reduce cover for juvenile fish by filling-in pools and the interstitial spaces of gravel, cobble, and boulder substrates.

Hazardous Materials and Contaminants

The proposed project could involve the storage, use, or discharge of toxic and other harmful substances near streams and other waterbodies (or in areas that drain to these waterbodies) that could result in contamination of these waterbodies and potentially affect fish and other aquatic organisms. Potential impacts range from avoidance of the project site to mortality, which could occur through exposure to lethal concentrations of contaminants or exposure to non-lethal levels that cause physiological stress and increased susceptibility to other sources of mortality (e.g., predation and disease). Project activities that could result in the accidental or unintentional runoff or discharge of toxic materials and other harmful substances to streams include the following.

- Potential accidental spill of petroleum products
- Operation of vehicles and equipment in or adjacent to stream channels or drainages
- Storage of pavement, petroleum products, concrete, and other construction materials
- Discharge of water from construction areas

- Potential accidental spill of drilling lubricants
- Disturbance and mobilization of contaminants with adsorbed[1] metals

The operation of heavy equipment, drilling rigs, cranes, and other construction equipment in or near the stream can result in accidental spills and leakage of fuel, lubricants, hydraulic fluids, and coolants. Asphalt, wet concrete, and other construction materials used on roads, bridges, and culverts may fall directly into streams or enter streams in surface water runoff. Other sources of contaminants include the discharges from vehicle and concrete washout facilities. In addition, resuspension of sediments with adsorbed metals during in-water construction potentially could lead to localized degradation of water quality and food resources. Resuspended particulate material also could be transported to downstream locations as a result of transport by flow, thus leading to potential degradation of water quality and food resources beyond the immediate construction area.

The potential magnitude of biological effects resulting from these accidental, unintentional, or intentional actions depends on a number of factors, including the proximity to the stream; the type, amount, concentration, and solubility of the contaminant; and the timing and duration of the discharge or channel disturbance. Contaminants can affect survival and growth rates, as well as the reproductive success of fish and other aquatic organisms. The level of effect depends on species and life stage sensitivity, duration and frequency of exposure, condition or health of individuals (e.g., nutritional status), and physical or chemical properties of the water (e.g., flow volume, temperature, and dissolved oxygen).

Loss of Aquatic Habitat

As described in Section 2.17, "Wetlands and Other Waters," all three build alternatives for the proposed project would result in the temporary and permanent loss of aquatic habitat area and volume in Antelope Creek, including potential foraging and rearing habitat for fry and juvenile fish. Installation of the two columns in Antelope Creek for the widened East Roseville Viaduct would result in the temporary and permanent loss of aquatic habitat (substrate and water column) equal to the cumulative area (substrate) and volume (water column) of the temporary casings and the permanent in-water columns. However, no temporary or permanent loss of spawning habitat area is anticipated because this segment of lower Antelope Creek is not likely to support suitable spawning habitat for salmonids based on the sandy substrate conditions that occur there. In addition, no disturbance to or loss of aquatic habitat (temporary or permanent) in Miners Ravine and Secret Ravine is anticipated because no in-water construction activities would occur in these streams.

Installation of steel casings to isolate the work area from the water column during center drilling and column construction would result in the temporary loss of aquatic habitat (substrate and water column) equal to the enclosed area and volume of the in-water casings. Assuming that a total of two steel casings with a maximum diameter of 10 feet each is used, the steel casings would result in a maximum temporary loss of approximately 160 square feet (0.0036 acre) of substrate habitat and approximately 315 cubic feet of water column habitat.

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[1] *Adsorption* is the adhesion of atoms, ions, or molecules from a gas, liquid, or dissolved solid to a surface, in this case a sediment particle.

Construction of the new columns for the viaduct would result in a net permanent loss of approximately 80 square feet (0.0018 acre) of substrate habitat and approximately 158 cubic feet of water column habitat. Affected substrate habitat consists primarily of sands and fines; no spawning gravels would be affected.

The temporary and permanent impact on the substrate and water column from constructing the new bridge piers in Antelope Creek would cause negligible long-term effects on rearing and foraging habitat for fry and juvenile fish because the amount of the habitat that would be permanently affected by the columns is small relative to the total available habitat.

Loss of SRA Cover

Undercut banks and overhead cover provide fish with protection from predators. In addition, canopy cover (overhanging vegetation) maintains shade that is necessary to reduce thermal input and provides an energy input to the stream in the form of fallen leaves and insects (a food source for fish). Riparian vegetation is also important in controlling stream bank erosion, contributing to instream structural diversity, and maintaining undercut banks. Under all three build alternatives, construction activities associated with vegetation removal, site preparation including grading and excavation for constructing columns (piers) for bridges and overpasses, and installation of platforms to support temporary falsework for constructing elevated structures would result in the removal of or damage to existing streamside woody riparian vegetation, including vegetation that contributes to overhead and instream SRA cover. Without appropriate mitigation, removal of streamside vegetation is likely to adversely affect salmonids because SRA cover is an essential component of rearing habitat that may limit production and abundance of salmonid populations in Antelope Creek, Miners Ravine, and Secret Ravine. Salmonid populations are highly influenced by the amount of available cover, and the amount of existing SRA cover in the BSA is variable. Figures 2.16-4a–h show the location of SRA cover habitat (overhead and instream cover) that occurs within the BSA on Antelope Creek, Miners Ravine, and Secret Ravine.

Table 2.19-11 summarizes the impacts on overhead SRA cover vegetation by build alternative.

Table 2.19-11. Impacts on Overhead SRA Cover Vegetation in the Biological Study Area by Build Alternative

Creek/Reach	Alternative 1		Alternative 2		Alternative 3	
	Temporary (lf)	Permanent (lf)	Temporary (lf)	Permanent (lf)	Temporary (lf)	Permanent (lf)
Antelope Creek (Figures 2.16-4h, 2.16-5h, and 2.16-6h)	46	409	46	409	46	409
Miners Ravine (Figures 2.16-4a, 2.16-5a, and 2.16-6a)	0	0	37	76	36	24
Secret Ravine						
Reach 1 (Figures 2.16-4b, 2.16-5b, and 2.16-6b)	0	0	0	0	0	0
Reach 2 (Figures 2.16-4c, 2.16-5c, and 2.16-6c)	0	0	0	0	0	0
Reach 3 (Figures 2.16-4d, 2.16-5d, and 2.16-6d)	154	221	142	153	142	153
Reach 4 (Figures 2.16-4e, 2.16-5e, and 2.16-6e)	0	0	0	0	0	0
Reach 5 (Figures 2.16-4f, 2.16-4g, 2.16-5f, 2.16-5g, 2.16-6f and 10g)	266	119	0	148	0	148
Secret Ravine subtotal	*420*	*340*	*142*	*301*	*142*	*301*
Total	**466**	**749**	**225**	**786**	**224**	**734**

Riparian vegetation also may be adversely affected indirectly through shading and rain shadow effects created by constructed bridges and overpasses. Because riparian vegetation requires both sunlight and moisture for growth and survival, significant interception of sunlight and precipitation may affect vegetation survival. The extent to which new structures may result in light and rain shadow effects depends on the width and height of the new structure above the existing vegetation and the orientation of the structure relative to the sun's path. Structures that are relatively narrow or are sufficiently elevated are likely to cause minimal, if any, adverse effect on plant growth and survival. Conversely, structures that are wide and low are more likely to intercept light and precipitation and adversely affect plant growth and survival, including to the point of excluding vegetation completely. In addition, vegetation occurring directly underneath but near the south side of elevated structures are likely to receive direct sunlight as a result of the low angle of the sun for at least part of the day, while vegetation north of elevated structures are likely to be shaded topographically for part or all of the day. Two locations within the BSA illustrate these conditions. The first example occurs on Miners Ravine where the I-80 bridge, which is low and wide, heavily shades the creek and creates a substantial rain shadow to the point of excluding all riparian vegetation. The other example occurs at the East Roseville Viaduct crossing of Antelope Creek, where the two moderately narrow, elevated structures allow sufficient light and precipitation to support various amounts of woody riparian vegetation directly under the spans and within the topographic shade created by these spans.

Increase in Overwater Structure

All three build alternatives for the proposed project would result in additional shading on Antelope Creek, Miners Ravine, and Secret Ravine because, following construction, the new and widened structures would completely shade the streams, including stream segments where existing gaps in the over-water riparian canopy allow sunlight to reach the water surface. Although stream productivity can be negatively affected by too much shade, the small amount of additional shade that would be created by the new and widened structures is expected to negligibly affect the overall stream productivity and may provide some small benefit to stream temperatures because overall shade levels would increase slightly. Structure shading also would offset the temporal loss of stream shading that would occur as a result of removing over-water vegetation during construction. Revegetation of the affected banks and other onsite areas following construction will replace affected shade, and likely will increase overall stream shade above current levels. The increase in stream shading associated with the new and widened over-water structures on Antelope Creek, Miners Ravine, and Secret Ravine would result in negligible long-term effects on stream productivity because the amount of the habitat that would be permanently shaded by these structures is small relative to the total stream area.

In addition, increased shading created by new and widened structures may affect the migration of salmonids. Within the Sammamish River, in Washington State, migrating adult salmon hold in shaded areas beneath bridges. Juvenile salmonids also prefer shaded areas created by bridges. The proposed elevated structures would generally allow ambient light levels to penetrate into the water and therefore would not negatively affect fish or fish habitat through significant increased shading of the stream.

Increase in Impervious Surfaces

The proposed project would result in added impervious surfaces in the Antelope Creek, Miners Ravine, and Secret Ravine watersheds, and ultimately in the Dry Creek watershed. The added impervious area has the potential to increase peak flow and runoff volume in receiving waters from the loss of natural ground cover and reduced infiltration of water into soil. This change could subsequently lead to accelerated stream bed and bank erosion, loss of stream structure, increased sediment transport and deposition (turbidity and sedimentation effects), and increased flooding. In response to the increases in flow magnitude and frequency, stream channels could incise or widen, which could result in adding additional fine sediments to the stream from the resultant increases in channel bed and stream bank erosion. These changes could lead to long-term alterations to stream flow, temperature, and geomorphology, with long-term or permanent consequences for fish and their habitat.

The increase in impervious surfaces also could result in increased water pollutants in local streams. Increased traffic loads in the corridor could result in increased deposition of particulates onto roadway surfaces that are then transported to receiving waters with road runoff. Heavy metals, oil, grease, and polycyclic aromatic hydrocarbons (PAHs) are common pollutants in road runoff and some of these pollutants can accumulate in stream sediments with lethal and sublethal consequences for fish and other aquatic species, particularly during "first flush" rain events. PAHs are organic compounds—containing only carbon and hydrogen—that occur in motor vehicle exhaust, petroleum products, materials associated with asphalt, and various other municipal and industrial sources. PAHs are widely distributed in the environment and are important environmental pollutants because of their carcinogenicity and tendency to bioaccumulate. PAHs are readily absorbed by fish and other aquatic organisms and, depending on concentration, can lead to lethal and deleterious sublethal effects in these organisms. PAHs tend to adsorb to any particulate matter, including fine sediment; therefore, relative concentrations of PAHs in aquatic ecosystems are generally highest in sediments, followed by aquatic biota and the water column. There is evidence that urban runoff containing roadway sediment may be an important PAH input to aquatic habitats and that a significant contribution to the PAH content of roadway sediment comes from materials associated with asphalt.

The project proponent would substantially reduce or eliminate the potential for hydromodification (modification of existing receiving water body hydrographs by increasing the flow volumes and rates and peak durations from the loss of unpaved overland flow and native infiltration) impacts by incorporating into the project design temporary construction site BMPs, design pollution prevention and erosion control BMPs, and treatment BMPs to promote infiltration of storm water runoff, maximize treatment of storm water runoff, and reduce erosion by metering or detaining post-project runoff from the roadway.

2.19.3.2 No Build Alternative

The No Build Alternative would not result in habitat modification or increases in impervious surfaces or overwater structure (shade). Therefore, the No Build Alternative would not directly affect non-listed special-status animals. However, the No Build Alternative could result in indirect impacts on water quality relative to existing conditions from increased traffic congestion.

2.19.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures will avoid or minimize potential permanent and temporary impacts on western spadefoot, Pacific pond turtle, burrowing owl, white-tailed kite, northern harrier, purple martin, and Central Valley fall-/late fall–run Chinook salmon and their habitat that would be caused by all three build alternatives.

Install Fencing and/or Flagging to Avoid and Protect Sensitive Biological Resources

Please refer to the discussion of this measure in Section 2.16.

Conduct Mandatory Environmental Awareness Training for Construction Personnel

Please refer to the discussion of this measure in Section 2.16.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please refer to the discussion of this measure in Section 2.16.

Implementation of the following measures will mitigate for loss of SRA cover for Central Valley fall-/late fall–run Chinook salmon caused by all three build alternatives.

Compensate for the Temporary and Permanent Loss of Non-Wetland Riparian Forest (including SRA Cover)

Please refer to the discussion of this measure in Section 2.16.

Compensate for the Permanent Loss of Oak Woodland

Please refer to the discussion of this measure in Section 2.16.

Implementation of the following measures will avoid, minimize, or mitigate potential permanent and temporary impacts on western spadefoot, Pacific pond turtle, and Central Valley fall-/late fall–run Chinook salmon and their habitat that would be caused by all three build alternatives.

Protect Water Quality and Minimize Sedimentation Runoff in Wetlands and Other Waters

Please refer to the discussion of this measure in Section 2.17.

Compensate for Temporary and Permanent Impacts on Wetlands

Please refer to the discussion of this measure in Section 2.17.

Compensate for Placement of Permanent Fill into Waters of the United States/Waters of the State

Please refer to the discussion of this measure in Section 2.17.

Implementation of the following measure will avoid and minimize potential impacts on western spadefoot and Pacific pond turtle that would be caused by all three build alternatives.

Provide Escape Ramps for Wildlife and Inspect Pits and Trenches Daily

To prevent inadvertent entrapment of western spadefoot during construction in grassland habitat under the East Roseville Viaduct, the construction contractor will provide all excavated, steep-walled holes, or trenches more than 6 inches deep with one or more escape ramps constructed of earth fill or wooden planks; and the biological monitor or a designated crew member will inspect these ramps prior to being filled to ensure that no wildlife are present. In the event that holes or pits cannot be ramped, they will be properly covered at night to prevent access by wildlife. Coverings may consist of wooden boards, metal plates, or tarps held down by soil or rocks, with no openings between the cover and the ground. The biological monitor or a designated construction crew member will inspect covered and open trenches and pits each morning and evening during construction to look for spadefoot or other wildlife that may have become trapped. It should be noted that spadefoot can fall into a trench or pit through the excavated wall of the trench/pit; therefore, these areas must be inspected daily, even if covered.

Implementation of the following measure will avoid and minimize potential impacts on Pacific pond turtle that would be caused by all three build alternatives.

Conduct a Pre-Construction Survey for Pacific Pond Turtle and Exclude Turtles from Work Area

To avoid and minimize impacts on Pacific pond turtles, the project proponent will retain a qualified wildlife biologist to conduct two separate pre-construction surveys: 2 weeks before, and within 48 hours of, disturbance in aquatic and upland habitats. The survey objectives are to determine the presence or absence of pond turtles in the construction work area and, if necessary, to allow time for successful trapping and relocation.

If possible, the surveys will be timed to coincide with the time of day and year when turtles are most likely to be active (during the cooler part of the day from 8:00 a.m. to 12:00 p.m. during spring, summer, and late summer). Prior to conducting presence/absence surveys, the biologist will locate the microhabitats for turtle basking (logs, rocks, and brush thickets) and determine a location to quietly observe turtles.

Each aquatic survey will include a 15-minute wait time after arriving on site to allow startled turtles to return to open basking areas. The survey will consist of a minimum 15-minute observation time per area where turtles could be observed. A survey of adjacent upland habitat also will be conducted to look for adult turtles and active nests.

If turtles are observed during a survey and they cannot be avoided, they will be either hand-captured or trapped and relocated outside the construction area to appropriate aquatic habitat by a biologist with a valid Memorandum of Understanding (MOU) from CDFW, and as determined during coordination with CDFW. Handling of a species of special concern requires authorization from CDFW through an MOU specific to project activities and will be obtained at the time of construction, as necessary. If an active turtle nest is found, the biologist will coordinate with CDFW to determine the appropriate avoidance measures.

Implementation of the following measure will avoid and minimize potential impacts on burrowing owl that would be caused by all three build alternatives.

Conduct Pre-Construction Surveys for Burrowing Owl and Establish Exclusion Zones, if Necessary

A qualified biologist will conduct two separate pre-construction surveys for burrowing owl: no less than 14 days prior to, and within 48 hours of, initiating ground-disturbing activities within suitable habitat. The pre-construction survey area will encompass the designated work area (including permanent and temporary impact areas) and a 500-foot buffer around this area where access is permitted. To the maximum extent feasible (i.e., where the construction footprint can be modified), construction activities within 500 feet of active burrowing owl burrows will be avoided during the nesting season (February 1 to August 31).

If an active burrow is identified near a proposed work area and work cannot be conducted outside of the nesting season (February 1 to August 31), a qualified biologist will establish a no-activity zone that extends a minimum of 250 feet around the burrow. If burrowing owls are present at the site during the non-breeding season (September 1 through January 31), a qualified biologist will establish a no-activity zone that extends a minimum of 150 feet around the burrow.

If the designated no-activity zone for breeding or non-breeding burrowing owls cannot be established, a wildlife biologist experienced in burrowing owl behavior will evaluate site-specific conditions and, in coordination with CDFW, recommend a smaller buffer (if possible) that still minimizes the potential to disturb the owls (and is deemed to still allow reproductive success during the breeding season). The site-specific buffer will consider the type and extent of the proposed activity occurring near the occupied burrow, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity to background activities.

If burrowing owls are present within the direct disturbance area and cannot be avoided during the non-breeding season (generally September 1 through January 31), passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used instead of trapping. Passive relocation also may be used during the breeding season (February 1 through August 30) if a qualified biologist, coordinating with CDFW, determines through site surveillance that the burrow is not occupied by burrowing owl adults, young, or eggs. Passive relocation will be accomplished by installing one-way doors (e.g., modified dryer vents or other CDFW-approved method). The one-way doors will be left in place for a minimum of 1 week and will be monitored daily to ensure that the owls have left the burrow. The burrow will be excavated using hand tools, and a section of flexible plastic pipe (at least 3 inches in diameter) will be inserted into the burrow tunnel to maintain an escape route for any animals that may be inside the burrow.

Implementation of the following measure will avoid and minimize potential impacts on nesting white-tailed kite, northern harrier, and other migratory birds that would be caused by all three build alternatives.

Conduct Vegetation Removal during the Non-Breeding Season and Conduct Pre-Construction Surveys for Nesting Migratory Birds and Raptors

Vegetation removal will be conducted during the non-breeding season for migratory birds and raptors (generally between September 1 and February 28), to the extent feasible.

If construction activities (including vegetation removal) cannot be confined to the non-breeding season, the project proponent will retain a qualified wildlife biologist with knowledge of the relevant species to conduct nesting surveys before the start of construction. The migratory bird and raptor nesting surveys will be conducted in conjunction with the surveys previously identified for burrowing owl (*Conduct Pre-Construction Surveys for Burrowing Owl and Establish Exclusion Zones, if Necessary*) and will include a minimum of two separate surveys to look for active migratory bird and raptor nests. Surveys will include a search of all trees, shrubs, wetlands, and grassland vegetation that provide suitable nesting habitat in the construction area. In addition, a 500-foot area around the construction area will be surveyed for nesting raptors and tricolored blackbird, and a 100-foot area around the construction area will be surveyed for other song birds. Surveys should occur during the height of the breeding season (March 1 to June 1), with one survey occurring within 14 days prior to construction and the second survey occurring within 48 hours prior to the start of construction or vegetation removal. If no active nests are detected during these surveys, no additional measures are required.

If an active nest is found in the survey area, a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the nest until the end of the breeding season (August 31) or until after a qualified wildlife 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 CDFW, and will depend on the level of construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species.

Implementation of the following measure will avoid and minimize potential impacts on purple martin and other structure-nesting migratory birds that would be caused by all three build alternatives.

Remove or Modify Existing Structures during the Non-Breeding Season for Purple Martin and Other Structure-Nesting Migratory Birds or Implement Exclusion Measures to Deter Nesting

To avoid impacts on nesting purple martins, swallows, and other structure-nesting migratory birds that are protected under the MBTA and the CFGC, the construction contractor will remove or modify existing structures after the conclusion of the bird nesting period (February 15 through August 31). A qualified biologist will monitor any active nests near the end of the breeding season to determine when nesting has concluded. Removal or modification of structures after the nesting period has concluded is strongly preferred; however, if this is not possible, the project proponent will implement the following avoidance measures.

- Prior to the start of each phase of construction, the project proponent will hire a qualified wildlife biologist to inspect any aerial structure that would be removed or modified during the non-breeding season (September 1 through February 14). If nests are found and are determined to be inactive (abandoned), they may be removed.
- After inactive nests are removed and prior to construction that would occur between February 15 and August 31, the undersides of the portion of the structure to be removed or modified will be covered with a suitable exclusion material that will prevent birds from nesting (i.e., 0.5- to 0.75-inch mesh netting, plastic tarp, or other suitable material safe for wildlife). Portions of the existing structures containing weep holes that would be removed or modified also will be covered or filled with suitable material to prevent nesting (i.e., fiberglass insulation, foam padding, and PVC/ABS caps). All weep holes connected to the same girder recess area would require installation of exclusion material. A qualified wildlife management specialist experienced with installation of bird exclusion materials will be hired by the project proponent to ensure that exclusion devices are properly installed and will avoid inadvertent entrapment of migratory birds. All exclusion devices will be installed before February 15 and will be monitored by a qualified biologist throughout the breeding season (typically several times a week). The exclusion material will be anchored so that swallows cannot attach their nests to the structures through gaps in the net.

- Exclusion devices will be installed consistent with bat exclusion measures described below (*Conduct Pre-Construction Surveys for Roosting Bats and Implement Protection Measures*) and in a manner that does not entrap day-roosting bats.
- As an alternative to installing exclusion materials on a structure, the project proponent may hire a qualified biologist or qualified wildlife management specialist to remove nests as the birds construct them and before any eggs are laid. Visits to the site would need to occur daily throughout the breeding season (February 15 through August 31) as swallows can complete a nest in a 24-hour period.
- If exclusion material is not installed on structures prior to February 15 or manual removal of nests is not conducted daily and migratory birds colonize a structure, removal or modification to that portion of the structure may not occur until after August 31, or until a qualified biologist has determined that the young have fledged and all nest use has been completed.
- If appropriate steps are taken to prevent swallows from constructing new nests as described above, work can proceed at any time of the year.

Implementation of the following measures will avoid and minimize potential impacts on roosting bats that would be caused by all three build alternatives.

Conduct Pre-Construction Surveys for Roosting Bats and Implement Protection Measures

Baseline data are not available or are limited on how bats use the BSA, their individual numbers, and how they vary seasonally. Bat species with potential to occur in the BSA use a variety of roosting strategies, from solitary roosting in foliage of trees to colonial roosting in trees and artificial structures, such as overcrossings and bridges. Daily and seasonal variations in habitat use are also common. To obtain the highest likelihood of detection, the following pre-construction bat surveys will be conducted within and adjacent to the construction area for each phase of construction. If surveys determine that bats are roosting in the construction area, the protective measures described below will be implemented.

Conduct Pre-Construction Surveys at Bridges and Other Structures

Before work begins on the bridge/structure, qualified biologists will conduct a daytime search for bat sign and evening emergence surveys to determine whether the bridge/structure is being used as a roost. Biologists conducting daytime surveys will listen for audible bat calls and will use the naked eye, binoculars, and a high-powered spotlight to inspect expansion joints, weep holes, and other bridge features that could house bats. Bridge surfaces and the ground around the bridge/structure will be surveyed for bat sign, such as guano, staining, and prey remains.

Qualified biologists also will conduct evening emergence surveys that will consist of at least one biologist stationed every 100 feet on each side of the bridge/structure watching for emerging bats from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights at each survey location within the season that construction would be taking place. Surveys may take place over several nights to fully cover the extent of structure work. Night-vision goggles and/or full-spectrum acoustic detectors will be used during emergence surveys to assist in species identification. All emergence surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). Survey methodology may be supplemented as new research identifies advanced survey techniques and equipment that would aid in bat detections.

Because the structures proposed for removal as part of the proposed project are very high off the ground or span other roadways, prolonged monitoring with full-spectrum bat detectors will not be conducted. Acoustic detectors may be used during emergence surveys to obtain data on bat species present in the survey area at the time of detection.

If suitable roost structures would be removed, additional surveys may be required to determine how the structure is used by bats—whether it is used as a night roost, maternity roost, migration stopover, or used for hibernation.

Conduct Pre-Construction Tree Surveys

Prior to tree removal or trimming, qualified biologists will examine trees to be removed or trimmed for suitable bat roosting habitat. High-value habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, and larger snags,) will be identified, and the area around these features will be searched for bats and bat sign (e.g., guano, culled insect parts, and staining). Riparian forest and stands of mature broadleaf trees should be considered potential habitat for solitary foliage-roosting bat species.

If a bat sign is detected, biologists will conduct evening visual emergence survey of the source habitat feature, from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights within the season that construction would be taking place. Methods should follow that described above for the bridge emergence surveys.

Additionally, if suitable tree roosting habitat is present, acoustic monitoring with a bat detector will be used to assist in determining the species present. A minimum of 3 nights of acoustic monitoring surveys will be conducted within the season that construction would be taking place. If site security allows, detectors should be set to record bat calls for the duration of each night. To the extent possible, all monitoring will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). The biologists will analyze the bat call data using appropriate software and will submit a report with the results of the surveys to CDFW.

Identify Protective Measures for Bats Using Bridges/Structures and Trees

If it is determined that bats are using bridge/structures or trees within or adjacent to the construction area as roost sites, the project proponent (or their designated contractor) will coordinate with CDFW to identify protective measures to avoid and minimize impacts on roosting bats based on the type of roost and timing of activities. These measures could include, but are not limited to the following.

- If feasible, tree removal/trimming and removal or modification of structures containing an active roost will be avoided between April 15 and September 15 (the maternity period) to avoid impacts on reproductively active females and dependent young.

- If a non-maternity roost is located within a structure that would be removed or modified in a manner that would expose the roost, bats will be excluded from the bridge by a qualified wildlife management specialist working with a bat biologist. An exclusion plan will be developed in coordination with CDFW that identifies the type of exclusion material/devices to be used, the location and method for installing the devices, and monitoring schedule for checking the effectiveness of the devices. Because bats are expected to tolerate temporary construction noise and vibrations, bats will not be excluded from structures if no direct impacts on the roost are anticipated.
- If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed until September 15 or until a qualified biologist has determined that the roost is no longer active.
- If avoidance of non-maternity roost trees is not possible, tree removal or trimming will be monitored by a qualified biologist. Prior to removal/trimming, the tree will be gently shaken, and several minutes should pass before cutting down trees or trimming limbs to allow bats time to arouse and leave the tree. The tree then will be removed in pieces, rather than cutting down the entire tree. The biologists will search downed vegetation for dead and injured bats. The presence of dead or injured bats that are species of special concern will be reported to CDFW.

Implementation of the following measures will avoid and minimize potential impacts on Central Valley fall-/late fall–run Chinook salmon that would be caused by all three build alternatives.

Limit All In-Channel Construction Activities to the June 15 to October 15 Period

All in-channel construction will take place between June 15 and October 15, unless earlier or later dates for in-channel construction activities are approved by CDFW and NMFS. *In-channel construction* is defined as creek bank and channel bed construction below the ordinary high water mark, including excavation and grading activities. By requiring construction contractors to adhere to these dates for in-channel construction, project effects on sensitive life stages of Chinook salmon and Central Valley steelhead will be minimized.

Prevent Temporary Lighting from Directly Radiating on Water Surfaces of Antelope Creek, Miners Ravine, and Secret Ravine during Nighttime Construction

The effects of lighting on fish will be minimized by the following actions.

- Avoiding construction activities at night, to the extent practicable.
- Using the minimal amount of lighting necessary to safely and effectively illuminate the work areas.
- Shielding and focusing lights on work areas and away from water surfaces.

2.19.5 References Cited

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2.19.5.1 Personal Communications

Titus, Robert G., Ph.D. Fishery Biologist. California Department of Fish and Wildlife, Native Anadromous Fish and Watershed Branch, Stream Evaluation Program. Sacramento, CA. November 5, 2001—Memorandum to files regarding the perennial rearing habitat for juvenile steelhead in the Dry Creek drainage (Placer County).

2.20 Threatened and Endangered Species

2.20.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the federal ESA (16 USC Section 1531 et seq.). See also 50 CFR 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 the ESA, federal agencies, such as the FHWA, are required to consult with USFWS and NMFS 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, a Letter of Concurrence and/or documentation of a No Effect finding. Section 3 of the ESA 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 (CFGC 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. CFGC Section 2081 prohibits take of any species determined to be an endangered species or a threatened species. *Take* is defined in CFGC Section 86 as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows take incidental to otherwise lawful development projects; for these actions, an incidental take permit is issued by CDFW. For species listed under both ESA and CESA requiring a Biological Opinion under Section 7 of the ESA, CDFW also may authorize impacts on CESA species by issuing a Consistency Determination under CFGC Section 2080.1.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSA), 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 (1) 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 (2) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

2.20.2 Affected Environment

This section is based on the *Natural Environment Study Report* (ICF International 2014) prepared for the project, the USFWS and NMFS lists of threatened and endangered species for the BSA (included in Appendix F), and the outcome of federal ESA consultation that concluded after circulation of the Draft EIR/EA. The *Natural Environment Study Report* is available on the project website at http://8065interchange.org/.

Four federally-listed species (valley elderberry longhorn beetle [VELB], vernal pool fairy shrimp, vernal pool tadpole shrimp, and Central valley steelhead) and two state-listed species (Swainson's hawk and tricolored blackbird) could occupy the BSA based on the presence of suitable habitat. Each of these species is discussed below.

Inter-agency consultation with NMFS and USFWS under Section 7 of the ESA is required for potential effects of the proposed project on Central Valley steelhead (including designated critical habitat) (NMFS), valley elderberry longhorn beetle (USFWS), vernal pool fairy shrimp (USFWS), and vernal pool tadpole shrimp. Consultation with NMFS is also required for adverse effects on Essential Fish Habitat (EFH) for Pacific Coast Salmon (Chinook salmon) designated under the MSA.

A Biological Assessment (BA) was prepared and submitted by Caltrans to USFWS on April 24, 2015, in order to initiate ESA consultation and request the agency's determination on the effects to VELB, vernal pool fairy shrimp, and vernal pool tadpole shrimp. Following a July 7, 2015 meeting with USFWS, Caltrans submitted a revised BA to USFWS in November 2015 (ICF International 2015a). After receiving additional information from Caltrans on February 4, 2016, USFWS initiated formal consultation on February 9, 2016. USFWS issued a Biological Opinion on March 8, 2016 concluding that the proposed project may affect and is likely to adversely affect VELB, vernal pool fairy shrimp, and vernal pool tadpole shrimp.

A separate BA was prepared and submitted by Caltrans to NMFS on April 24, 2015, in order to initiate ESA consultation and request the agency's determination on the effects on Central Valley steelhead (ICF International 2015b). The BA also included an essential fish habitat (EFH) assessment to address potential effects on Pacific salmon (specifically, Chinook salmon). NMFS responded on August 10, 2015 stating that they concurred with Caltrans that the proposed action may affect, but is not likely to adversely affect Central Valley Steelhead or their critical habitat. NMFS also concluded that the proposed project may affect, but is not likely to adversely affect EFH and therefore consultation under the MSA is not required.

2.20.2.1 Valley Elderberry Longhorn Beetle

The VELB is a federally listed threatened species. The range of the beetle extends throughout the Central Valley of California and associated foothills, from the 3,000-foot-high contour in the east foothills, through the valley floor to the watershed of the Central Valley in the west foothills. The beetle often is associated with various riparian plant species, such as Fremont's cottonwood, California sycamore, willow, and oak.

Elderberry shrubs are the host plant for VELB and are a common component of the remaining riparian forests and grasslands of the Central Valley and adjacent foothills. Elderberry shrubs are also common in upland habitats. Field surveys have found that adult VELB feed on elderberry foliage and perhaps flowers, and are present from March through early June. During this time, the adults mate. The females lay their eggs, either singly or in small clusters, in bark crevices or at the junction of stem and trunk or leaf petiole and stem. After hatching, a larva burrows into the stem of the elderberry, where it creates a feeding gallery within the pith of the stem. The larvae develop for 1 to 2 years within the pith and, before pupating, they chew through the inner bark and then return inside the stem plugging the hole with chewed bark (frass plug). The larvae then metamorphose into a pupae and chew through the frass plug to emerge as adult beetles. Adult beetles live for a few days to a few weeks. Studies of the spatial distribution of occupied shrubs suggest that the beetle is a poor disperser.

Five elderberry shrubs were identified in the BSA during a July 2014 elderberry shrub survey (Table 2.20-1). One shrub (Shrub 1) is located under the existing East Roseville Viaduct (Figures 2.16-1c, 2.16-2c, and 2.16-3c). Three shrubs (Shrubs 2, 3 and 4) are located between Miners Ravine and an existing bike path south of Eureka Road (Figures 2.16-1a, 2.16-2a, 2.16-3a). The remaining shrub (Shrub 5) is located along China Garden Road at the northeast end of the proposed project (Figures 2.16-1d, 2.16-2d, and 2.16-3d). VELB has potential to occur in elderberry shrubs with stems sized 1 inch or greater in diameter at ground level.

Table 2.20-1. Summary of Stem Counts for Elderberry Shrubs in the Biological Study Area

Shrub	Presence of Exit Holes?	Riparian Habitat?	Number of Stems (by Diameter)			Comments
			1–3 Inches	3–5 Inches	>5 Inches	
1	Yes	No	10	0	1	Large trunk 20 inches diameter; canopy about 20 feet; many smaller stems less than 1 inch diameter; exit holes old.
2	No	Yes	0	0	1	Large trunk about 18 inches diameter; canopy about 12 feet; under alder tree next to bike path at top of creek bank.
3	No	Yes	2	1	2	Grouping of shrubs with canopy 40 feet by 20 feet; growing with willow on creek bank.
4	No	Yes	6	2	3	Canopy is 30 feet by 20 feet; east of a large cottonwood within blackberry thicket.
5	No	No	0	0	0	Shrub was burned in summer 2014 and no stems appear to be alive; however, shrub could grow back prior to construction.

2.20.2.2 Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

Vernal pool fairy shrimp is a federally listed threatened species. The species is found from Shasta County in the north throughout the Central Valley, and west to the central Coast Ranges, at elevations of 30 to 4,000 feet. Additional populations have been reported from the Agate Desert region of Oregon near Medford; and disjunct populations occur in San Luis Obispo, Santa Barbara, and Riverside Counties. However, most known locations are in the Sacramento and San Joaquin Valleys and along the eastern margin of the central Coast Ranges.

Vernal pool fairy shrimp inhabit vernal pools that form in depressions, usually in grassland habitats. Pools must remain inundated long enough for the species to complete its life cycle. Vernal pool fairy shrimp has the shortest time to reach sexual maturity, with a minimum of 18 days. Vernal pool fairy shrimp also occur in other wetlands that provide habitat similar to vernal pools, such as alkaline rain pools, ephemeral drainages, rock outcrop pools, ditches, stream oxbows, stock ponds, vernal swales, and some seasonal wetlands. Occupied wetlands range in size from as small as several square feet to more than 10 acres. Vernal pool fairy shrimp and other fairy shrimp have been observed in artificial depressions and drainages where water ponds for a sufficient duration. Examples of such areas include roadside ditches and ruts left behind by off-road vehicles or heavy equipment. Soil compaction from construction activity can sometimes create an artificial hardpan, or restrictive layer, which allows water to pond and form suitable habitat for vernal pool fairy shrimp.

Vernal pool tadpole shrimp is a federally listed endangered species. This species is a California Central Valley endemic species, with the majority of populations in the Sacramento Valley. This species has also been reported from the Sacramento–San Joaquin River Delta east of San Francisco Bay and from scattered localities in the San Joaquin Valley from San Joaquin to Madera Counties. Vernal pool tadpole shrimp generally take 38 days to mature and typically reproduce in about 54 days. Vernal pool tadpole shrimp occur in a wide variety of seasonal habitats, including vernal pools, ponded clay flats, alkaline pools, ephemeral stock tanks, and roadside ditches. This species is typically found at the highest concentrations in playa pools, large deep vernal pools, and winter lakes (greater than 100-acre) but have also been found in very small (less than 25 square feet) ephemeral pools. The species presence in very small pools is believed to be a result of wash down from larger source pools. Vernal pool tadpole shrimp have been observed in a variety of habitats ranging from clear, vegetated vernal pools to highly turbid alkali scald with variable depths and volumes of water during the wet cycle. Vernal pool tadpole shrimp are uncommon even where suitable habitats occur. During surveys conducted in 95 areas across 27 counties within northern and central California, vernal pool tadpole shrimp were detected in only 17 % of over 5,000 wetlands sampled.

The proposed project is within the current range of vernal pool fairy shrimp and vernal pool tadpole shrimp. Based on the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon*, the BSA lies within the Southeastern Sacramento Valley vernal pool region but is not within the Western Placer County core area or within designated critical habitat (70 FR 46924, August 11, 2005). Vernal pools within the BSA represent potential habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp and are located within the northern and southern off-ramps from SR 65 to Galleria Boulevard/Stanford Ranch Road (Figures 2.16-1e, 2.16-2e, and 2.16-3e) and along the railroad right-of-way south of the SR 65 overpass (Figures 2.16-1c, 2.16-2c, and 2.16-3c).

Three previously documented occurrences for vernal pool fairy shrimp and one previously documented occurrence for vernal pool tadpole shrimp are within 1 mile of the BSA.

2.20.2.3 Swainson's Hawk

Swainson's hawk is a state-listed threatened species. Swainson's hawks forage in grasslands, grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Vineyards, orchards, rice, and cotton crops are generally unsuitable for foraging because of the density of the vegetation. The majority of Swainson's hawks winter in South America, although some winter in the United States. Swainson's hawks arrive in California in early March to establish nesting territories and breed. They usually nest in large, mature trees. Most nest sites (87 percent) in the Central Valley are found in riparian habitats, primarily because trees are more available there. Swainson's hawks also nest in mature roadside trees and in isolated trees in agricultural fields or pastures. The breeding season is from March through August.

Within the BSA, potential nesting habitat for Swainson's hawk is associated with riparian forest and oak woodlands along Antelope Creek, Miners Ravine, and Secret Ravine. The closest documented Swainson's hawk nest sites are located approximately 4 miles west of the BSA along Pleasant Grove Creek and Kaseberg Creek, both within riparian habitat. Annual grassland in the BSA is patchy and provides marginal foraging habitat for Swainson's hawk. Swainson's hawks would not be expected to forage under the existing East Roseville Viaduct. No Swainson's hawks were observed in the BSA during the 2012 and 2014 wildlife surveys.

2.20.2.4 Tricolored Blackbird

Tricolored blackbird was emergency listed under CESA by the California Fish and Game Commission on December 3, 2014. The CDFW has 180 days to review an October 8, 2014 petition to list the tricolored blackbird filed by the Center for Biological Diversity and determine if formal listing is warranted. During the 180-day review period, which could be extended for an additional 180 days, the species will be fully protected under CESA. Tricolored blackbirds are also protected under the MBTA and CFGC Section 3503.5.

Tricolored blackbird is a highly colonial species that is largely endemic to California. Tricolored blackbird breeding colony sites require open, accessible water; a protected nesting substrate, including either flooded, thorny, or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few miles of the nesting colony. Tricolored blackbird breeding colonies occur in freshwater marshes dominated by tules and cattails, in Himalayan blackberries (*Rubus armeniacus*), and in silage and grain fields. The breeding season is from late February to early August. Tricolored blackbird foraging habitats in all seasons include annual grasslands, dry seasonal pools, agricultural fields (such as large tracts of alfalfa with continuous mowing schedules, and recently tilled fields), cattle feedlots, and dairies. Tricolored blackbirds also forage occasionally in riparian scrub habitats and along marsh borders. Weed-free row crops and intensively managed vineyards and orchards do not serve as regular foraging sites. Most tricolored blackbirds forage within 3 miles of their colony sites, but commute distances of up to 8 miles have been reported.

The emergent wetland and riparian forest/shrub wetland that occur along Antelope Creek within the BSA represents potential nesting habitat for tricolored blackbirds. The closest known nesting colony was documented in 2014 on Orchard Creek, approximately 5 miles northwest of the BSA. No tricolored blackbirds were observed in the BSA during the 2012 and 2014 wildlife surveys.

2.20.2.5 Central Valley Steelhead Distinct Population Segment

The Central Valley steelhead distinct population segment (DPS) was listed as threatened by the NMFS on March 19, 1998 (63 FR 13347). On January 5, 2006, NMFS issued a final listing determination reaffirming the threatened status of Central Valley steelhead (71 FR 834); at the same time, NMFS also adopted the term DPS, in place of Evolutionarily Significant Unit (ESU), to describe Central Valley steelhead and other population segments of this species. Central Valley steelhead include populations in the Sacramento River downstream of Keswick Reservoir and its large tributaries downstream of impassable dams, and the small, perennial tributaries of the Sacramento River; the San Joaquin River and its large tributaries downstream of the Merced River, inclusive; and the Sacramento-San Joaquin River Delta. NMFS issued the final rule designating critical habitat for Central Valley steelhead on September 2, 2005 (70 FR 52488). Central Valley steelhead are not listed under CESA but are designated as a California Species of Special Concern.

Steelhead, a sea-run rainbow trout, exhibit one of the most complex life histories of any salmonid (trout or salmon) species. Steelhead are capable of having an anadromous (sea-run) life history or a freshwater residency. Resident individuals are typically referred to as rainbow trout, and anadromous individuals are called steelhead. Currently, only winter (ocean-maturing) steelhead occur in the Central Valley drainages, although summer steelhead may have been present historically.

Historical records indicate that adult steelhead enter the Sacramento River in July, with peak in abundance in September and October, and continue migrating through February or March. Within Dry Creek and its tributaries, migration is dependent upon adequate flow and suitable water temperature that usually occurs following storms in October and November. Generally, spawning occurs from December through March or April. Adult steelhead spawn in relatively high-gradient reaches of tributary rivers and require streams with cool, clean, well oxygenated water and suitably sized spawning gravel that is generally free of fine sediments. Unlike Pacific salmon, some adult steelhead may survive to spawn more than one time, returning to the ocean between spawning migrations.

In the Central Valley, juvenile steelhead typically spend 1 to 3 years in fresh water before emigrating to the ocean. Juveniles require year-round flows, suitable water temperatures, adequate cover, and abundant food to support growth and survival to the smolt stage. Summer rearing habitat consisting of pools, cool, well oxygenated water, and sufficient cover often is cited as a major limiting factor for juvenile steelhead in California streams when one or more of these habitat conditions is absent. Juvenile Central Valley steelhead feed primarily on drifting aquatic organisms and terrestrial insects, and occasionally on active benthic invertebrates.

Various fisheries surveys conducted by CDFW indicate that steelhead are currently present in the Dry Creek watershed, but that spawning and rearing primarily occur upstream of the BSA. The occurrence of steelhead in the CDFW survey results are consistent with species' thermal tolerances and measured water temperatures for lower Miners Ravine and Secret Ravine. For example, CDFW recorded mean daily summer water temperatures in excess of the 77°F thermal maximum limit for steelhead in the lower reaches of Miners Ravine and Secret Ravine where no steelhead were detected. Similarly warm water temperatures also were measured by ICF biologists conducting SRA cover habitat mapping surveys in the BSA along Miners Ravine and Secret Ravine (Table 2.20-2).

Steelhead were once abundant in Central Valley drainages. However, population numbers have declined significantly in recent decades. Many of the same factors affecting the distribution and abundance of Chinook salmon have also affected Central Valley steelhead populations.

Table 2.20-2. Instantaneous Water Temperature Measurements on Antelope Creek, Miners Ravine, and Secret Ravine on Select Dates in July and August 2014

Creek	Location	Date/Time	Temperature (°F)
Antelope Creek	Immediately downstream of SR 65 viaduct	August 4, 2014/15:30	72.5
Miners Ravine	Eureka Road off-ramp	July 28, 2014/09:38	72
Secret Ravine	Behind Sutter Hospital	July 28, 2014/14:53	80
	Adjacent to I-80/Taylor Road off-ramp	August 4, 2014/10:00	71
	Adjacent to SR 65 interchange	August 12, 2014/13:20	76.5
		September 16, 2014/12:10	70.5

Based on their steelhead catch and water temperature data, CDFW concluded that lower Miners Ravine and Secret Ravine, including Dry Creek, need to be protected and improved for seasonal rearing and migration of steelhead. Based on the data presented above, it is unlikely that summer rearing of juvenile steelhead is supported in lower Miners Ravine and Secret Ravine within the BSA. The limited data for Antelope Creek makes it difficult to determine whether steelhead use this watershed. However, given the known occurrence of steelhead in the upper reaches of Miners Ravine and Secret Ravine, it is possible that steelhead also use the upper reaches of this watershed. Based on the generally poor habitat conditions observed in lower Antelope Creek, it is also unlikely that summer rearing of juvenile steelhead is supported within the BSA on Antelope Creek.

2.20.3 Environmental Consequences

2.20.3.1 Build Alternatives

Each of the build alternatives could directly or indirectly affect a threatened or endangered species. Impacts of each alternative are discussed below by species. The proposed project may affect and is likely to adversely affect VELB, vernal pool fairy shrimp, and vernal pool tadpole shrimp. The proposed project may affect but is not likely to affect Central Valley steelhead and Central Valley steelhead critical habitat. For all other species listed on the USFWS and NMFS species lists, the proposed project will have no effect. See Tables 2.18-1 and 2.19-1.

Valley Elderberry Longhorn Beetle

Proposed project activities associated with roadway and bridge construction would result in the loss or disturbance of elderberry shrub(s) that could contain VELB larvae or adults.

Direct impacts on VELB include removal or transplantation of elderberry shrubs within 20 feet from the limits of disturbance. Indirect impacts could result from construction activities within 100 feet of elderberry shrubs and may include removal of associated riparian plants that provide protection to elderberry shrubs, dust accumulation or asphalt residue on shrubs from paving and bridge construction activities that could affect the ability of VELB to forage and deposit eggs, and application of water that attracts argentine ants that prey on VELB. Excavation and grading in the vicinity of an elderberry shrub also could damage the root system, resulting in subsequent death of the shrub.

Table 2.20-3 summarizes the direct and indirect impacts on VELB by build alternative.

Table 2.20-3. Impacts on VELB by Build Alternative

Impact	Alternative 1 # Shrubs (# Stems)	Alternative 2 # Shrubs (# Stems)	Alternative 3 # Shrubs (# Stems)
Elderberry shrubs directly affected	2 (10, 0, 1)	2 (10, 0, 1)	2 (10, 0, 1)
Elderberry shrubs indirectly affected	3 (8, 3, 6)	3 (8, 3, 6)	3 (8, 3, 6)

Note: Elderberry shrubs within the limits of disturbance (permanent and temporary impact area) and up to 20 feet from the limits of disturbance were considered directly affected. Elderberry shrubs greater than 20 feet but less than 100 feet from the limits of disturbance were considered indirectly affected. Total impacts on elderberry stems for each alternative are shown in parentheses as (1–3 inches, 3–5 inches, >5 inches).

Permanent loss of suitable and potentially occupied habitat for VELB is considered an adverse impact on the species because VELB larvae or adults could be killed during the removal of an elderberry shrub. Therefore, the proposed project ***may affect, and is likely to adversely affect*** VELB.

Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

Based on the lack of protocol-level survey data for the BSA and because several records for vernal pool fairy shrimp have been documented within 1 mile of the proposed project, it was determined that vernal pool fairy shrimp may occur in suitable habitat (vernal pools) within the BSA. For purposes of this impact analysis, vernal pools in the BSA that support suitable habitat characteristics are presumed to be occupied by vernal pool fairy shrimp. Interchange improvements at Galleria Boulevard/Stanford Ranch Road and construction on the East Roseville Viaduct would result in direct and indirect impacts of potentially occupied vernal pools within and adjacent to the project footprint.

Direct impacts that result in direct modification (i.e., permanent or temporary fill or excavation) of vernal pools in the BSA could result in the subsequent loss of vernal pool fairy shrimp and their eggs. Additionally, vernal pools adjacent to project construction may be indirectly affected. Construction activities such as excavation, grading, paving, or stockpiling of soil could result in indirect effects on vernal pool fairy shrimp by altering the suitability of nearby habitat. Runoff of sediment, gasoline, oil, or other contaminants may result in degradation of water quality within suitable habitat. Changes in hydrology also may reduce the suitability of habitat by altering the hydroperiod of vernal pools and swales.

Several vernal pools are present within the Galleria Boulevard/Stanford Ranch Road Interchange. Interchange improvements could directly affect four vernal pools and indirectly affect another 11 vernal pools located within and adjacent to the limits of disturbance. Two vernal pools are located adjacent to, but outside, the limits of disturbance and the existing ROW for SR 65. These pools are within the Highland Reserve North Open Space area. No ground disturbance will occur within 500 feet of these pools and so they will not be affected by the proposed project. Three vernal pools are outside the limits of an existing access route that would be used during construction and more than 250 feet south of the East Roseville Viaduct (Figures 2.16-1c, 2.16-2c, and 2.16-3c). These pools were not considered to be directly or indirectly affected by the proposed project because no ground disturbance is proposed during use of this access route. One large vernal pool is present south of the East Roseville Viaduct and within 250 feet of proposed construction on the viaduct; this pool could be indirectly affected.

Table 2.20-4 summarizes the impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp habitat by build alternative.

Table 2.20-4. Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat by Build Alternative

Impact	Alternative 1 *(acres)*	Alternative 2 *(acres)*	Alternative 3 *(acres)*
Vernal pools directly affected	0.043	0.043	0.043
Vernal pools indirectly affected	0.351	0.351	0.351

Note: Vernal pools partially or entirely within the limits of disturbance (permanent and temporary impact area) were considered directly affected. Vernal pools within 250 feet of the limits of disturbance were considered indirectly affected.

Permanent loss of suitable and potentially occupied habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp is considered an adverse impact on the species because individual cysts or eggs could be destroyed. Therefore, the proposed project ***may affect, and is likely to adversely affect*** vernal pool fairy shrimp and vernal pool tadpole shrimp.

Swainson's Hawk

Construction activities associated with roadway improvements within or near oak woodland and riparian forest habitats could disturb an active Swainson's hawk nest, if present in or near the construction area. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of an active Swainson's hawk nest would violate CESA, the MBTA, and CFGC Section 3503.5, and would be considered an adverse impact.

Roadway construction also could result in indirect impacts on Swainson's hawk through temporary and permanent loss of grassland that provides suitable foraging habitat. Because only a small amount of permanent foraging habitat loss would be associated with each of the build alternatives, the proposed project is not expected to substantially decrease the available foraging habitat for locally nesting Swainson's hawks and would not adversely affect foraging Swainson's hawks.

Table 2.20-5 summarizes the impacts on Swainson's hawk by build alternative.

Table 2.20-5. Impacts on Swainson's Hawk by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Nesting habitat	2.866	4.985	2.343	5.298	2.336	5.437
Foraging habitat	2.399	0.085	2.399	0.085	2.399	0.085

Note: For purposes of calculating impacts on Swainson's hawk, nesting habitat consists of oak woodland and riparian forest, and foraging habitat consists of annual grassland (excluding areas beneath the existing viaduct).

Tricolored Blackbird

Construction activities associated with roadway improvements within emergent wetland and riparian shrub wetland habitat could disturb an active tricolored blackbird nest, if present in or near the construction area, and would be considered an adverse effect. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of a tricolored blackbird nest would violate CESA if the species is still emergency listed or is formally listed as threatened or endangered under CESA at the time of construction. Loss of tricolored blackbird eggs or young would also violate the MBTA and CFGC Section 3503.5.

Table 2.20-6 summarizes the impacts on tricolored blackbird by build alternative.

Table 2.20-6. Impacts on Tricolored Blackbird by Build Alternative

Habitat	Alternative 1		Alternative 2		Alternative 3	
	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Permanent (acres)
Nesting habitat	0.375	0.120	0.375	0.120	0.375	0.120
Foraging habitat	2.399	0.085	2.399	0.085	2.399	0.085

Note: For purposes of calculating impacts on tricolored blackbird, nesting habitat consists of emergent wetland and riparian shrub wetland and foraging habitat consists of annual grassland (excluding areas beneath the existing viaduct).

Central Valley Steelhead

Project impacts on Central Valley steelhead and their habitat include potential adverse effects related to disturbance and direct injury, increased turbidity and sedimentation, potential discharges of contaminants, temporary and permanent loss of SRA cover, and changes to channel morphology and hydraulics as discussed for Chinook salmon (Section 2.19.3.1). However, juvenile steelhead may be at higher risk of exposure to construction-related impacts than Chinook salmon because of their potential year-round occurrence (unlike juvenile Chinook salmon which emigrate to the ocean within a few months after emerging from the gravels, juvenile steelhead rear 1 or more years in freshwater before emigrating to the ocean).

Of greatest concern would be the potential exposure of juvenile steelhead to project effects during summer when environmental conditions (e.g., low flow, elevated water temperature, increased competition for food and space, and reduced availability of food resources) generally are more stressful for juvenile steelhead, compared to other times of the year. However, potential effects on Central Valley steelhead would be avoided and minimized by implementing the measures discussed to avoid and minimize project effects to Chinook salmon (Section 2.19.3.1). Therefore, the proposed project ***may affect, but is not likely to adversely affect*** Central Valley steelhead.

Central Valley Steelhead Critical Habitat

Miners Ravine and Secret Ravine within the BSA are included in the designated critical habitat for Central Valley steelhead (70 FR 52627, September 2, 2005). The primary constituent elements of critical habitat in the BSA include freshwater spawning habitat and freshwater rearing habitat with water quantity and quality, natural cover, forage, and passage conditions supporting migration and rearing of steelhead. Critical habitat for Central Valley steelhead in the BSA includes the lateral extent of the channel up to the ordinary or mean high water elevation.

The project ***may affect, but is not likely to adversely affect*** Central Valley steelhead designated critical habitat. Impacts on critical habitat of Central Valley steelhead include temporary effects on the water column (water quality and shade impacts) and temporary and permanent loss of overhead SRA cover vegetation. These impacts would be the same as those discussed for Chinook salmon (Section 2.19.3.1).

Essential Fish Habitat

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires federal agencies to consult with NMFS on activities that may adversely affect EFH. Important components of EFH are substrate; water quality; water quantity, depth, and velocity; channel gradient and stability; food; cover and habitat complexity; space; access and passage; and habitat connectivity.

EFH for fall-run Chinook salmon could be affected by any of the proposed build alternatives. Impacts on Chinook salmon EFH would be similar to the impacts discussed for the species (Section 2.19.3.1).

The following environmental conditions could affect Chinook salmon EFH.

- Sedimentation and turbidity
- Hazardous materials and contaminants
- Temporary and permanent loss of SRA cover

Effects associated with sedimentation and turbidity, hazardous materials and contaminants, and SRA cover loss on Chinook salmon EFH would be temporary. Potential adverse effects of increased fine sediment and turbidity on EFH will be avoided or minimized through implementation of all applicable BMPs. The potential environmental effects of the project to EFH would be limited to temporary, localized, and minor increases in turbidity and suspended sediment.

The proposed project would adversely affect EFH; however, the effects would be temporary and small relative to the EFH available.

2.20.3.2 No Build Alternative

The No Build Alternative would not result in habitat modification or increases in impervious surfaces or overwater structure (shade). Therefore, the No Build Alternative would not directly affect threatened and endangered species. However, the No Build Alternative could result in indirect impacts on water quality relative to existing conditions from increased traffic congestion.

2.20.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures will avoid or minimize potential direct and indirect impacts on VELB, vernal pool fairy shrimp, vernal pool tadpole shrimp, Swainson's hawk, tricolored blackbird, and Central Valley steelhead and their habitat that would be caused by all three build alternatives.

Install Fencing and/or Flagging to Avoid and Protect Sensitive Biological Resources

Please refer to the discussion of this measure in Section 2.16.

Conduct Mandatory Environmental Awareness Training for Construction Personnel

Please refer to the discussion of this measure in Section 2.16.

Retain a Qualified Biologist to Conduct Monitoring during Construction in Sensitive Habitats

Please refer to the discussion of this measure in Section 2.16.

Implementation of the following measure will mitigate potential direct and indirect impacts on Swainson's hawk and Central Valley steelhead and their habitat that would be caused by all three build alternatives.

Compensate for Temporary and Permanent Loss of Non-Wetland Riparian Forest (including SRA Cover)

Please refer to the discussion of this measure in Section 2.16.

Implementation of the following measures will avoid, minimize, or mitigate potential direct and indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp, tricolored blackbird, and Central Valley steelhead and their habitat that would be caused by all three build alternatives.

Protect Water Quality and Minimize Sedimentation Runoff in Wetlands and Other Waters

Please refer to the discussion of this measure in Section 2.17.

Compensate for Temporary and Permanent Impacts on Wetlands

Please refer to the discussion of this measure in Section 2.17.

Implementation of the following measures will avoid, minimize, or mitigate potential direct and indirect impacts on VELB and their habitat that would be caused by all three build alternatives.

Establish a Minimum 20-Foot-Wide Buffer around the Elderberry Shrub

In conjunction with the measure to *Install Fencing and/or Flagging to Protect Sensitive Biological Resources* (see Section 2.16), the project proponent will ensure that a minimum 4-foot-tall, orange plastic mesh–type construction fence (Tensor Polygrid or orange sediment control fencing) will be installed at least 20 feet from the dripline of elderberry shrubs that are located within the project area. Where the existing bike path restricts placement of the exclusion fencing, the fencing will be placed at the edge of the existing pavement. This fencing is intended to prevent encroachment by construction vehicles and personnel. The exact location of the fencing will be determined by a qualified biologist, with the goal of protecting habitat for VELB. The fencing will be strung tightly on posts set at a maximum interval of 10 feet. The fencing will be installed in a manner that prevents equipment from enlarging the work area beyond what is necessary to complete the work. The fencing will be checked and maintained weekly until all construction is completed. This buffer zone will be marked by a sign stating:

> This is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.

No construction activity, including grading, will be allowed until this condition is satisfied. The fencing and a note reflecting this condition will be shown on the construction plans and specifications.

Transplant Elderberry Shrubs That Cannot Be Avoided or Implement Dust Control Measures during Construction

Elderberry shrubs growing within 20 feet of proposed construction will require transplanting prior to any ground-disturbing activities. In the event that elderberry shrubs can be retained onsite but occur within 20 feet of proposed construction activities, dust control measures will be required to minimize direct and indirect effects on these shrubs. One of the following measures will be implemented for each elderberry shrub that occurs within 20 feet of proposed construction activities.

- All elderberry shrubs that occur within areas requiring vegetation removal will be transplanted to a USFWS-approved conservation area in accordance with the *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (U.S. Fish and Wildlife Service 1999). These elderberry shrubs will be transplanted when they are dormant (after they lose their leaves), in the period starting approximately in November and ending in the first 2 weeks of February. A qualified specialist familiar with elderberry shrub transplantation procedures will supervise the transplanting. The location of the conservation area transplantation site will be approved by USFWS before removal of the shrubs.

OR

- If it is determined that elderberry shrubs can be avoided but that construction activities will occur within 20 feet of the shrubs, dust control measures (e.g., application of water to graded and disturbed areas that are unvegetated and covering of soil piles) will be implemented in the vicinity of the shrub. To further minimize effects associated with dust accumulation, the elderberry shrubs will be covered by a protective cloth (i.e., burlap) during all ground-disturbing activities occurring within 20 feet of the shrubs. The cloth will be removed daily and immediately after ground-disturbing activities are completed. In addition, temporary construction fencing will be placed around the dripline of the elderberry shrubs (consistent with the measure described earlier to *Establish a Minimum 20-Foot-Wide Buffer around the Elderberry Shrub*) before the start of construction activities to ensure that the shrub is not inadvertently removed.

Compensate for Direct Effects on Valley Elderberry Longhorn Beetle Habitat

The project proponent will compensate for direct effects (including transplanting) on all elderberry stems measuring 1 inch or more at ground level (i.e., VELB habitat) that are located within 20 feet of construction activities. Compensation will include planting replacement elderberry seedlings or cuttings and associated native plantings in a USFWS-approved conservation area, at a ratio between 1:1 and 8:1 (ratio = new plantings to affected stems), depending on the diameter of the stem at ground level, the presence or absence of exit holes, and whether the shrub is located in riparian habitat (U.S. Fish and Wildlife Service 1999).

Mitigation credits for VELB can be purchased at a USFWS-approved mitigation bank, or an onsite or offsite conservation area can be established and a management plan can be developed in accordance with the *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (U.S. Fish and Wildlife Service 1999). The exact amount and location of compensatory mitigation will be based on consultation with USFWS.

Implementation of the following measures will avoid, minimize, or mitigate potential direct and indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp and their habitat that would be caused by all three build alternatives.

Avoid and Minimize Potential Indirect Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat

The following avoidance and minimization efforts will be implemented prior to and during construction to protect vernal pool fairy shrimp and vernal pool tadpole shrimp habitat outside the project footprint.

- Ground disturbance within 250 feet of suitable vernal pool fairy shrimp and vernal pool tadpole shrimp habitat (i.e., vernal pools) will be avoided from the first day of the first significant rain (1 inch or greater) until June 1, or until suitable wetlands remain dry for 72 hours and no significant rain is forecast on the day of such ground disturbance.
- Consistent with the measure to *Install Fencing and/or Flagging to Protect Sensitive Biological Resources* (see Section 2.16), a qualified biologist will guide the installation of exclusion fencing prior to the start of ground-disturbing activities (including staging and grading). The exclusion fencing will be installed along the edge of the construction limits and in a manner that minimizes disturbance of adjacent wetlands. The exclusion fencing will consist of orange construction barrier and erosion control fencing or combination fencing, and will be installed by the project proponent or its construction contractor.

- No herbicide will be applied within 100 feet of aquatic habitat, except when applied to cut stumps or frilled stems, or injected into stems. No broadcast applications will be used.

Compensate for Direct and Indirect Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat

The project proponent will compensate for direct and indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp habitat by preserving suitable habitat at 2:1 ratio (2 acres preserved for every 1 acre affected). Compensatory mitigation will be acquired through the purchase of appropriate habitat credits at a USFWS-approved mitigation or conservation bank.

Implementation of the following measures will avoid and minimize potential direct and indirect impacts on Swainson's hawk and tricolored blackbird that would be caused by all three build alternatives.

Conduct Vegetation Removal during the Non-Breeding Season and Conduct Pre-Construction Surveys for Swainson's Hawk

Tree removal will be conducted during the non-breeding season for Swainson's hawk (generally between September 1 and February 28), to the extent feasible.

If construction activities (including tree removal) cannot be confined to the non-breeding season, a qualified wildlife biologist with knowledge of Swainson's hawk to conduct nesting surveys will be retained before the start of construction.

Surveys will be conducted by a qualified biologist no more than 1 month prior to ground disturbance that is to occur during the nesting season (March 1 through August 31). Surveys will be conducted in accordance with the Swainson's Hawk Technical Advisory Committee's methodology (May 31, 2000) or according to updated methodologies issued by CDFW. According to current guidelines, the biologist will use binoculars during the survey to inspect all large trees and then document whether Swainson's hawk nests occur onsite. If surveys conclude that Swainson's hawk nests occur, and are occupied, the project will adopt the following minimization measures.

- During the nesting season (March 1 through August 31), project activities within 1,000 feet of occupied nests or nests under construction will be prohibited to prevent nest abandonment. If site-specific conditions or the nature of the activity indicate that a smaller buffer could be used, the biologist and the project proponent will coordinate with CDFW to determine the appropriate buffer size.
- If young fledge prior to September 1, project activities can proceed normally. A qualified biologist will survey the nest to establish whether the young have fledged prior to September 1.
- Nest trees will not be removed, if feasible. If a nest tree (any tree that has an active nest in the year the impact is to occur) must be removed, tree removal will occur only between September 1 and February 28.

Conduct Vegetation Removal during the Non-Breeding Season and Conduct Pre-Construction Surveys for Nesting Migratory Birds and Raptors

Please refer to the discussion of this measure in Section 2.19.

Implementation of the following measures will avoid and minimize potential direct and indirect impacts on Central Valley steelhead that would be caused by all three build alternatives.

Limit All In-Channel Construction Activities to the June 15 to October 15 Period

Please refer to the discussion of this measure in Section 2.19.

Prevent Temporary Lighting from Directly Radiating on Water Surfaces of Antelope Creek, Miners Ravine, and Secret Ravine during Nighttime Construction

Please refer to the discussion of this measure in Section 2.19.

2.20.5 References Cited

ICF International. 2014. *Natural Environment Study Report – I-80/SR 65 Interchange Improvements Project, Placer County, Interstate 80 and State Route 65*. Sacramento, CA. November.

ICF International. 2015a. *Biological Assessment – I-80/SR 65 Interchange Improvements Project, Placer County, Interstate 80 and State Route 65*. Prepared for the United States Fish and Wildlife Service. Sacramento, CA. November.

ICF International. 2015b. *Biological Assessment/Essential Fish Habitat Assessment – I-80/SR 65 Interchange Improvements Project, Placer County, Interstate 80 and State Route 65*. Prepared for the National Marine Fisheries Service. Sacramento, CA. April.

2.21 Invasive Species

2.21.1 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 on August 10, 1999, directs the use of the State's invasive species list, maintained by the California Invasive Species Council (http://www.iscc.ca.gov/) to define the invasive species that must be considered as part of NEPA analysis for a proposed project.

2.21.2 Affected Environment

This section is based on the *Natural Environment Study Report* prepared for the project (ICF International 2014). The report is available on the project website at http://8065interchange.org/.

Invasive plant species include species designated as federal noxious weeds by the U.S. Department of Agriculture, species listed by the California Department of Food and Agriculture (CDFA), and invasive plants identified by the California Invasive Plant Council (Cal-IPC). Invasive plants displace native species, change ecosystem processes, alter plant community structure, and lower wildlife habitat quality. Road, highway, and related construction projects are some of the principal dispersal pathways for invasive plants and their propagules. Table 2.21-1 lists the invasive plant species identified by CDFA and Cal-IPC that are known to occur in the BSA. No plant species designated as federal noxious weeds have been identified in the BSA. Most of the invasive plant species occur in annual grassland, along roadways, and in disturbed/graded areas.

Table 2.21-1. Invasive Plant Species Identified in the Biological Study Area

Species	CDFA	Cal-IPC
Barbed goat grass (*Aegilops triuncialis*)	B	High
Tree of heaven (*Ailanthus altissima*)	C	Moderate
Giant reed (*Arundo donax*)	B	High
Slender wild oat (*Avena barbata*)	–	Moderate
Wild oat (*Avena fatua*)	–	Moderate
Ripgut brome (*Bromus diandrus*)	–	Moderate
Soft chess (*Bromus hordeaceus*)	–	Limited
Red brome (*Bromus madritensis* ssp. *Rubens*)	–	High
Italian thistle (*Carduus pycnocephalus*)	C	Moderate
Yellow star-thistle (*Centaurea solstitialis*)	C	High
Bull thistle (*Cirsium vulgare*)	C	Moderate
Bermuda grass (*Cynodon dactylon*)	C	Moderate

Species	CDFA	Cal-IPC
Hedgehog dogtail grass (*Cynosurus echinatus*)	–	Moderate
Fuller's teasel (*Dipsacus fullonum*)	–	Moderate
Stinkwort (*Dittrichia graveolens*)	–	Moderate
Medusahead (*Elymus caput-medusae*)	C	High
Red-stemmed filaree (*Erodium cicutarium*)	–	Limited
Rattail fescue (*Festuca myuros*)	–	Moderate
Italian ryegrass (*Festuca perennis*)	–	Moderate
Edible fig (*Ficus carica*)	–	Moderate
Fennel (*Foeniculum vulgare*)	–	High
Cutleaf geranium (*Geranium dissectum*)	–	Limited
Bristly ox-tongue (*Helminthotheca echioides*)	–	Limited
Field mustard (*Hirschfeldia incana*)	–	Moderate
Mediterranean barley (*Hordeum marinum* var. *Gussoneanum*)	–	Moderate
Foxtail barley (*Hordeum murinum* ssp. *Leporinum*)	–	Moderate
Klamathweed (*Hypericum perforatum*)	C	Moderate
Smooth cat's ear (*Hypochaeris glabra*)	–	Limited
Rough cat's-ear (*Hypochaeris radicata*)	–	Moderate
Hyssop loosestrife (*Lythrum hyssopifolia*)	–	Moderate
Pennyroyal (*Mentha pulegium*)	–	Moderate
Olive (*Olea europaea*)	–	Limited
Harding grass (*Phalaris aquatica*)	–	Moderate
Pokeweed (*Phytolacca americana*)	–	Limited
English plantain (*Plantago lanceolata*)	–	Limited
Rabbitsfoot grass (*Polypogon monspeliensis*)	–	Limited
Himalayan blackberry (*Rubus armeniacus*)	–	High
Sheep sorrel (*Rumex acetosella*)	–	Moderate
Curly dock (*Rumex crispus*)	–	Limited
Russian thistle (*Salsola tragus*)	C	Limited
Red sesbania (*Sesbania punicea*)	B	High
Johnson grass (*Sorghum halepense*)	C	–
Hedge parsley (*Torilis arvensis*)	–	Moderate
Rose clover (*Trifolium hirtum*)	–	Moderate

Note: The California Department of Agriculture (CDFA) and California Invasive Plant Council (Cal-IPC) lists assign ratings that reflect the CDFA and 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 species list is more inclusive than the CDFA list.

The **CDFA categories** indicated in the table are defined as follows:

B: Eradication, containment, control or other holding action at the discretion of the county agricultural commissioner.

C: State-endorsed holding action and eradication only when found in a nursery; action to retard spread outside nurseries at the discretion of the county agricultural commissioner.

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.

Sources: California Department of Food and Agriculture 2014; California Invasive Plant Council 2014.

2.21.3 Environmental Consequences

2.21.3.1 Build Alternatives

At similar levels under all build alternatives, the proposed project would temporarily create additional disturbed areas and could result in the introduction and spread of invasive plant species. Areas where temporary disturbance occurs would be more susceptible to colonization or spread by invasive plants.

2.21.3.2 No Build Alternative

Under the No Build Alternative, ground disturbance would not occur and the project area would not be more susceptible to the introduction and spread of invasive plant species.

2.21.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measure will avoid or minimize the potential introduction and spread of invasive plant species.

Avoid and Minimize the Spread of Invasive Plant Species during Project Construction

Two or more of the BMPs listed below will be written into the construction specifications and implemented during project construction.

- Retain all fill material onsite to prevent the spread of invasive plants to uninfested areas.
- Use a weed-free source for project materials (e.g., straw wattles for erosion control that are weed-free or contain less than 1 percent weed seed).
- Prevent invasive plant contamination of project materials during transport and when stockpiling (e.g., by covering soil stockpiles with a heavy-duty, contractor-grade tarpaulin).
- Use sterile wheatgrass seed and native plant stock during revegetation.
- Revegetate and/or mulch disturbed soils within 30 days of completion of ground-disturbing activities to reduce the likelihood of invasive plant establishment.

The goal for implementation of two or more of these BMPs is to minimize the disturbance and transport of soil and vegetation to the greatest extent feasible to complete the work. Detailed information about implementing these BMPs can be found in *Preventing the Spread of Invasive Plants: Best Management Practices for Transportation and Utility Corridors* (California Invasive Plant Council 2012).

2.21.5 References Cited

California Department of Food and Agriculture. 2014. *Encycloweedia: Data Sheets*. Division of Plant Health and Pest Prevention Services, Pest Exclusion Branch, Sacramento, CA.

Available: <http://www.cdfa.ca.gov/plant/ipc/weedinfo/winfo_table-sciname.html>. Accessed: June 26, 2014.

California Invasive Plant Council. 2014. California Invasive Plant Inventory Database. Available: <http://www.cal-ipc.org>. Accessed: January 7, 2014.

———. 2012. *Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers (Third Edition)*. (Cal-IPC Publication 2012-03.) California Invasive Plant Council, Berkeley, CA. Available: <http://www.cal-ipc.org/ip/prevention/tuc.php>.Accessed: July 8, 2014.

ICF International. 2014. *Natural Environment Study Report – I-80/SR 65 Interchange Improvements Project, Placer County, Interstate 80 and State Route 65*. Sacramento, CA. November.

2.22 Cumulative Impacts

2.22.1 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 State 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 State CEQA Guidelines. A definition of cumulative impacts, under NEPA can be found in 40 CFR 1508.7 of the CEQ regulations.

2.22.2 Approach to Cumulative Impact Analysis

The cumulative analysis takes into consideration other past, ongoing, and reasonably foreseeable projects in the same geographic area as the proposed project, as well as planned land uses and transportation and circulation projections identified in city and county general plan and policy documents.

The existing, ongoing, and proposed projects in Table 2.22-1 have been included in this analysis because they are close to the project area or could affect regional resources. Projects not yet constructed are considered reasonably foreseeable because they are identified and planned by local agencies. This information represents the most up-to-date information available as of the date of publication of this document.

Table 2.22-1. Existing and Proposed Projects Included in Cumulative Impact Analysis

Project Name and Location	Description	Potentially Affected Resources in Common with Proposed Project
Transportation Projects		
SR 65 capacity and operational Improvements (between Galleria Boulevard/Stanford Ranch Road and Lincoln Boulevard in Placer County	Construct capacity and operational improvements on SR 65 from Galleria Boulevard/Stanford Ranch Road to Lincoln Boulevard, including widening to accommodate additional travel lanes (http://pctpa.net/projects/sr65widening/)	• Wetlands and waters of the United States • Biological resources (branchiopods) • Noise • Air quality • Temporary construction impacts (traffic and transportation) • Traffic
Placer Parkway (SR 65 in western Placer County to SR 70/99 in south Sutter County)	Construct an approximately 15-mile long, high-speed transportation facility that will connect SR 65 in western Placer County to SR 70/99 in south Sutter County	• Visual and aesthetics • Air quality • Noise • Water quality • Wetlands and waters of the United States • Biological resources (branchiopods) • Growth • Temporary construction impacts (traffic and transportation) • Traffic
I-80 auxiliary lanes (City of Rocklin on I-80 eastbound from SR 65 to Rocklin Road and City of Roseville westbound from Douglas Boulevard to Riverside Avenue in Rocklin and Roseville)	Construct auxiliary lanes on I-80 for the following two locations (http://pctpa.net/projects/i-80-auxiliary-lanes/): • Eastbound from SR 65 to Rocklin Road • Westbound from Douglas Boulevard to Riverside Avenue	• Biological resources • Water quality • Air quality • Noise • Visual and aesthetics • Temporary construction impacts (traffic)
Various road widening projects in Lincoln (City of Lincoln, Department of Public Works)	Widen existing roads, including Airport Road, Aviation Boulevard, East Joiner and Joiner Parkways, Ferrari Ranch Road, Highway 193, Industrial Avenue, Lakeside Drive, Lincoln Parkway, Nicolaus Road, and Venture Drive	• Traffic
Construction of new and/or extension of roads in Lincoln (City of Lincoln, Department of Public Works)	Construct new roads, including extending Aviation Boulevard, Joiner Parkway (project completed), Dyer Parkway, Fiddyment Road, and Gladding Parkway	• Traffic
Ferrari Ranch Road/ SR 65 Bypass (City of Lincoln, Department of Public Works) -Project Completed	Construct a new interchange at Ferrari Ranch Road/ SR 65 Bypass	• Traffic
Wise Road (City of Lincoln, Department of Public Works)	Realign and construct new overcrossing between SR 65 Lincoln Bypass and existing SR 65	• Traffic
SR 65 Lincoln Bypass (City of Lincoln, Caltrans District 3) -Project Completed	Construct a four-lane expressway from Industrial Avenue to north of North Ingram Slough and continue north with two lanes to Sheridan	• Biological resources • Water quality

Project Name and Location	Description	Potentially Affected Resources in Common with Proposed Project
16th Street (Placer County Department of Public Works)	Construct a four-lane road from the Sacramento/Placer County line to Baseline Road	• Traffic • Air quality • Noise
Widen Baseline Road in Placer County (Placer County Department of Public Works)	Widen Baseline Road to six lanes from Watt Avenue to Fiddyment Road	• Traffic • Air quality • Noise
Various road widenings in Rocklin (City of Rocklin, Division of Engineering)	Widen existing roads, including Rocklin Road, Sierra College Boulevard, and Sunset Boulevard	• Traffic • Air quality • Noise
Construction of new roads in Rocklin (City of Rocklin, Division of Engineering)	Construct new roads, including Valley View Parkway and Whitney Ranch Parkway	• Traffic • Air quality • Noise • Wetlands and waters of the United States
SR 65 & Whitney Ranch interchange (City of Rocklin, Division of Public Services)	Construct the SR 65/Whitney Ranch Parkway interchange; construct a northbound on-/off-ramp with an overcrossing structure and a southbound loop on-ramp; extend Whitney Ranch Parkway to connect to the interchange	• Traffic • Air quality • Noise • Wetlands and waters of the United States • Biological resources (branchiopods)
I-80/Rocklin Road interchange (City of Rocklin, Division of Public Services)	Improve the I-80/Rocklin Road interchange to increase capacity, improve traffic operations, and enhance safety on Rocklin Road	• Traffic • Air quality • Noise
Various road widenings in Roseville (City of Roseville, Department of Public Works)	Widen existing roads, including Blue Oaks Boulevard, Fiddyment Road, Foothills Boulevard, Galleria Boulevard, Pleasant Grove Boulevard, and Sierra College Boulevard	• Traffic • Air quality • Noise
Construction of new and/or extension of roads in Roseville (City of Roseville, Department of Public Works)	Construct new roads, including Westbrook Boulevard, Blue Oaks Boulevard, Roseville Parkway, and Westside Drive	• Traffic • Air quality • Noise
Major Development Projects		
Roseville Hotel & Conference Center (310 Conference Center Drive off of Gibson Drive north of Roseville Parkway; City of Roseville)	Develop a 250-room hotel that includes a restaurant and a parking lot on an 11-acre site; construct a 35,000-square-foot (sf) conference center adjacent to the hotel	• Traffic • Air quality • Biological resources: species, wetlands • Noise
HP Campus Oaks Project (1485 Blue Oaks Boulevard; City of Roseville)	Develop the site as a mixed-use project that would include residential uses of varying densities, commercial and office/tech uses, parks, and a fire station	• Traffic • Air quality • Biological resources • Water quality • Noise

Project Name and Location	Description	Potentially Affected Resources in Common with Proposed Project
NCRSP Parcel 49 (9000 Washington Boulevard, southeast corner of Washington Boulevard & Blue Oaks Boulevard; City of Roseville)	Develop the approximately 59-acre site with a 387,632-sf mixed-use development that features a 64,232-sf indoor and outdoor recreational golf facility, 130,000 sf of community assembly use (a church), 116,500 sf of office space, a 125-room hotel, 11,200 sf of restaurant space, and 37,800 sf of retail space. The project will include frontage improvements along Washington Boulevard and realignment of the bike trail along the southern property line, as well as onsite parking, landscaping, plaza spaces, lighting, and pedestrian paths.	• Traffic • Air quality • Water quality • Biological resources • Noise
VillaSport Athletic Club & Spa (310 Conference Center Drive; City of Roseville)	Construct an approximately 88,000-sf building and an approximately 50,000-sf outdoor area. Outdoor amenities would include an outdoor pool area with two swimming pools (one with 25-foot slides), whirlpools, an outdoor café, an outdoor play area with play structures, and an area for a potential future artificial turf field. The outdoor pool area would be surrounded by a fence and landscaping. The proposed facility would operate from 5:00 a.m. to 11:00 p.m., 7 days a week. The project anticipates hiring approximately 250 employees.	• Traffic • Air quality • Water quality • Noise
Lifetime Fitness (1435 East Roseville Parkway, Stoneridge Specific Plan Area; City of Roseville)	Construct a 120,000-sf fitness center, outdoor pool, and 14 tennis courts with related site improvements including parking, site/building lighting, and landscaping. In addition, a minor Ordinance Amendment to add outdoor recreation as a conditionally permitted use in the Community Commercial (CC) zone, a Conditional Use Permit to allow outdoor recreation in the CC zone, and a Specific Plan Amendment to eliminate two parcel-specific conditions are proposed.	• Traffic • Air quality • Noise • Biological resources (migratory birds)

Sources: Fehr & Peers 2014; <http://www.sacog.org/mtp/2035/eir/Appendices/Appendix%20A%20-%20Common%20Projects%20&%20Proposed%20Project/Appendix%20A.pdf>; <http://www.rocklin.ca.us/depts/ps/current_projects/default.asp>; <http://www.roseville.ca.us/gov/development_services/planning/current_projects/default.asp>; <http://www.placer.ca.gov/~/media/cdr/ECS/CurrentProjects/2014/current%20projects%2011.14%20-%20BOS%20area.pdf>.

2.22.3 Assessment of Cumulative Impacts

The current health and historical context of the resources considered in this analysis are presented in the "Affected Environment" sections of Chapter 2. None of the build alternatives would contribute to a cumulative impact in the following resource areas because the resources are in generally good health and the build alternatives would result in beneficial impacts, no impacts, or minor impacts that would be fully mitigated (to a less-than-significant level under

CEQA). Consequently, the contribution to a cumulative impact on the following resources would not be considerable.

- Land Use
- Growth
- Community Impacts
- Cultural Resources
- Pedestrian and Bicycle Facilities
- Hydrology and Floodplain
- Geology/Soils/Seismic/Topography
- Paleontology
- Hazardous Waste/Materials
- Energy
- Biological Resources (Plant Species and Animal Species)

2.22.3.1 Human Environment

Utilities/Emergency Services

The resource study area for cumulative effects to utilities/emergency services includes the geographic area of the ongoing and future projects listed above, which generally coincides with the land use study area (Figure 2.1-1).

All project impacts pertaining to utilities and emergency services would be temporary and related to construction activities (e.g., relocation of utility lines). Construction activities would be coordinated with service providers. Notification of construction activity would be provided in accordance with the TMPs for each project site, and emergency access would be maintained to prevent unanticipated disruptions and delays. Therefore, the proposed project, in combination with other projects, is not considered to result in an adverse effect on utilities/emergency services, and the proposed project's incremental effects to utilities and emergency services are not cumulatively considerable.

Traffic and Transportation

The resource study area for cumulative impacts related to traffic and transportation is the same as that used for the traffic analysis (Figure 2.5-1). Projects that would contribute to potential cumulative impacts include all transportation and development projects assumed in the traffic modeling assumptions for the *Transportation Analysis Report* (Fehr & Peers 2014).

As discussed in Section 2.5, traffic forecasts for design year (2040) analysis were developed for the three build alternatives and the No Build Alternative. All three build alternatives improve overall network performance compared to no-build conditions. In addition, both a.m. and p.m. 2020 and 2040 HOV travel times are better than existing conditions for all build alternatives, and serve nearly all of the peak-period demand volume. Where adverse effects resulting from project build alternatives are identified (see detailed discussion of Design Year and Construction Year Traffic Operations Impacts in Section 2.5.3.1), implementation of the measures listed in Section 2.5.4 would reduce the effects.

Temporary adverse effects associated with construction would be reduced by implementation of a TMP (see Section 2.5.4.1). In addition, the project alternatives, to varying degrees, would result in net benefits to traffic and transportation. Therefore, the project is not considered to result in a cumulatively considerable impact on traffic and transportation.

Visual/Aesthetics

As discussed in Section 2.6 and shown in Figure 2.6.1, the resource study area for aesthetics comprises the visual assessment units designated as I-80 Corridor, SR 65 Corridor, Open Space, Residential, and Commercial/Institutional.

The combined visual effect of this project and other development projects planned, recently in construction, or currently in construction would change the visual character of the region. As described in the *Community Impact Assessment* (ICF International 2014), Roseville and Rocklin General Plans and the *Placer County Regional Transportation Plan 2035* will contribute to growth and development within and surrounding the project area. These plans, once implemented, will expand and improve existing transportation corridors, create new and reconfigured transportation corridors, and induce development and infill of open space areas and vacant lots within the project vicinity. These plans also will allow for continued growth and development to occur around the project area. The proposed project is driven by forecasted local and freeway traffic operations that would result from implementation of the plans described above, and would support the existing and planned future land uses in the vicinity. All three proposed alternatives would result in the same cumulative visual impacts.

Construction impacts associated with the project would result in cumulative visual impacts because they would be long term and compound the visual presence of construction in the area, especially when factored with other larger scale development and transportation projects. Planned development and transportation projects also would alter the existing visual character of the area in the long term, including the open space areas and vacant lots located in the project vicinity.

Development in the project vicinity would contribute to changes in the visual quality of views as seen from all visual assessment units. Roadway users, residents, businesses, and recreationists will be able to see open space areas and vacant lots within the landscape gradually transition and infill to industrial, mixed-use, commercial, and residential development; this development will include the associated transportation and utility infrastructure needed to support it. Other large-scale transportation projects would widen segments of I-80, SR 65, and local connectors and create larger roadways, such as the Placer Parkway project that would widen nearby segments of SR 65 and Whitney Ranch Parkway. Widening associated with the I-80/SR 65 project would contribute to cumulative visual impacts by replacing narrower freeways with wider ones, affecting the associated vegetation and viewers.

Future development and roadway improvements also would add to ambient atmospheric lighting and glare in the area by infilling unlit open space areas with lit buildings and roadways, and by adding reflective surfaces to an area that is currently undeveloped. The proposed project, however, would contribute only incrementally to cumulative impacts associated with lighting because highway lighting would not greatly increase as a result of the project.

The project would contribute to visual changes related to planned and/or proposed development in the area because it would alter the existing visual landscape, degrade the visual quality of the project area, and negatively affect highways users and highway neighbors. Implementation of the mitigation measures identified in Section 2.6 would reduce the project's impact on visual resources but not to a less than cumulatively considerable level. Therefore, the project's cumulative effects to visual resources would be cumulatively considerable.

2.22.3.2 Physical Environment

Water Quality and Stormwater Runoff

The resource study area for cumulative water quality and stormwater runoff effects is the two HSAs that the project limits cross, Lower American (HSA #519.21) and Pleasant Grove (HSA #519.22) within the hydrologic unit: Valley-American. Valley American-Lower American includes Antelope Creek, Miners Ravine, Secret Ravine, and Sucker Ravine. Pleasant Grove includes Highland Ravine and the tributary to the south branch of Pleasant Grove Creek.
The project crosses or is adjacent to several water bodies. Table 2.9-1 presents a cumulative list of streams and creeks that cross or flow adjacent to I-80 and SR 65 within the project limits.

The proposed project and other projects in the area would introduce new impervious surfaces. This would result in an incremental reduction in the amount of natural soil surfaces available for infiltration of rainfall and runoff, thereby potentially generating additional runoff during storm events. Additional runoff can contribute to the flood potential of natural stream channels and accelerate soil erosion and stream channel scour. Furthermore, there is the potential for reduced water quality from the introduction of contaminants (contaminants used in maintenance and landscaping or resulting from an accidental spill), erosion (increased turbidity), and the loss of wetlands and other jurisdictional waters. All state and local projects, including the proposed project, must incorporate construction stormwater treatment measures, erosion control measures, and stormwater runoff control measures to meet the water quality regulations of the Central Valley RWQCB. With each project meeting the requirements of the RWQCB, no net effect to water quality is expected. Therefore, the proposed project, in combination with other projects and on its own, would not contribute to a cumulative impact on water quality.

Air Quality

The project is located in Placer County, which spans three air basins; however, the project is located entirely in the SVAB, the resource study area. The SVAB includes Sacramento, Shasta, Tehama, Butte, Glenn, Colusa, Sutter, Yuba, and Yolo Counties, as well as parts of Solano and Placer Counties. The SVAB is bounded on the west by the Coast Ranges and on the north and east by the Cascade Ranges and Sierra Nevada. The San Joaquin Valley Air Basin lies to the south.

The primary pollutants of concern in the project area are O_3 and its precursors, ROG and NO_X, as well as CO, PM10, and PM2.5. O_3, PM10, and PM2.5 are considered to be regional pollutants because they affect air quality on a regional scale. Refer to Section 2.13, "Air Quality," for further discussion on the existing setting related to air quality.

Construction Activities

Construction of the proposed project would not result in adverse impacts on air quality, with the implementation of standard construction control measures. Short-term effects during construction would be minimized through compliance with Caltrans Standard Specifications and requirements of permits obtained for the project. Therefore, project-related construction activities are not expected to contribute to cumulative impacts on air quality. In addition, implementation of the avoidance and minimization measures identified in Section 2.13 would further reduce the project's incremental contribution to cumulative impacts on air quality.

Operational Impacts

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for CO, NO_2, O_3, and particulate matter (PM10 and PM2.5). Phase 1 of the proposed project is included in the regional emissions analysis conducted by SACOG for the conforming *2035 Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS) and 2015–2018 Metropolitan Transportation Improvement Program (MTIP) (SACOG ID PLA25440). The complete project (i.e., Phases 1 through 4) will be included in the regional emissions and conformity analysis for the upcoming 2036 MTP/SCS. Adoption and federal approval of the 2036 MTP/SCS is expected in early 2016, prior to the final environmental document for the proposed project. Accordingly, the regional emissions modeling conducted for the 2036 MTP/SCS would ensure that, prior to preparation of the final environmental document for the proposed project, the design, concept, and scope for the project will be consistent with the description in the 2036 MTP/SCS and the "open to traffic" assumptions in SACOG's regional emissions analysis. Section 2.13 also includes a discussion of how the proposed project meets project-level conformity requirements for CO and particulate matter. Based on the results shown in Section 2.13, the project would conform both regionally and at a project level to the State's plan for attaining NAAQS. The project would not contribute to a cumulative effect on air quality conformity.

The regional emissions modeling and analysis conducted by SACOG for the MTP/SCS considers all planned and programmed transportation projects included in the MTP and MTIP. The transportation projects listed in Table 2.22-1 have been analyzed and found not to contribute to a substantial impact on air quality. In addition, the development projects in Table 2.22-18 are subject to air quality permitting requirements. Projects that are in conformance with the regional air quality plan and that meet regional air pollutant budgets (based on air quality models and analyses) would not be expected to result in a cumulative impact on air quality. Therefore, impacts of the proposed project on air quality are not expected to be cumulatively considerable.

Noise

The resource study area for noise is the area around the project containing the sensitive receptors shown on Figure 2.14-2. Temporary increases in noise could occur during construction activities. However, implementation of Caltrans Standard Specifications and compliance with applicable local noise standards to minimize the temporary noise effects of construction would ensure that noise impacts caused by construction would be short term and not adverse. Other projects are required to adopt similar noise-reduction measures either as directed by Caltrans or as a result of local noise ordinances. Consequently, the proposed project is not expected to contribute to a cumulative impact related to construction noise.

For consideration of cumulative impacts from operation of the proposed project, this analysis examines whether implementation of the project would make a considerable contribution to noise levels compared to design year (2040) no-build conditions. The analysis of noise level changes resulting from roadway operations is inherently cumulative because the traffic forecasts use build-out assumptions. Noise levels for design year no-build conditions range from 48 to 78 dBA Leq(h). Under design year build conditions (under any of the build alternatives), predicted traffic noise levels range from 49 to 79 dBA Leq(h). Because traffic noise levels are predicted to exceed the noise abatement criteria for some residential, recreational, and business land uses in the project area, noise abatement was considered (see the discussion of noise abatement in Section 2.14). The proposed project's increase in noise levels would contribute to a cumulative noise impact. Implementation of the noise abatement measures (i.e., construction of soundwalls) identified in Section 2.14.4.1 would reduce traffic noise impacts for the project to acceptable levels. Therefore, the project's contribution to noise impacts is not expected to be cumulatively considerable.

2.22.3.3 Biological Environment

The resource study area for the biological environment is the BSA. As described in Sections 2.16 – 2.21, the BSA generally comprises the limits of disturbance (including areas to accommodate temporary construction activities and staging) and undeveloped habitats within 100 feet of these limits to account for potential indirect effects to nearby aquatic resources and elderberry shrubs. The BSA also includes an area up to 250 feet from the limits of disturbance where vernal pools are present. The extent of the BSA is shown in Figures 2.16-1 through 2.16-3. Approximately two-thirds of the BSA consists of highways, commercial development, and residential areas. The remainder consists of graded parcels, designated Open Space with bike/pedestrian trails areas (i.e., Antelope Creek Trail, Miners Ravine Trail), and natural areas (e.g., grasslands, oak woodland, and streams). The BSA has a relatively high level of historical and ongoing disturbance.

Natural Communities

The BSA supports both common natural communities and natural communities of special concern. Common natural communities are habitats with low species diversity that are widespread, reestablish naturally after disturbance, or support primarily non-native species. These communities generally are not protected by agencies unless the specific site is habitat for or supports special-status species (e.g., raptor foraging or nesting habitat, upland habitat in a wetland watershed). The only common natural community in the BSA is annual grassland. The vegetation communities in the BSA that meet the criteria for natural communities of special concern are non-wetland riparian forest and oak woodland.

Non-wetland riparian forest in the BSA occurs along Antelope Creek, Miners Ravine, and Secret Ravine. Portions of this riparian forest also include SRA cover habitat that provides shade for anadromous fish. Riparian communities are considered sensitive locally, regionally, and statewide because of their habitat value and declining distribution.

Oak woodland in the BSA occurs upslope of the west side of Antelope Creek and along Miners Ravine and Secret Ravine. The overstory of oak woodland in the BSA typically consists of blue oak and interior live oak but also contains valley oak.

The BSA contains numerous native oak trees that would qualify for protection under the tree preservation ordinances of the City of Roseville or the City of Rocklin. Native oak species known to occur in the BSA are valley oaks, interior live oaks, and blue oaks. Most of the protected trees that would be affected by implementation of the proposed project occur within the non-wetland riparian forest and oak woodland.

Implementation of the proposed project, in combination with other local and regional projects, has the potential to contribute to the cumulative loss of non-wetland riparian forest, oak woodland, and other protected trees in the project vicinity. The cumulative effects are discussed below.

Non-Wetland Riparian Forest

The proposed project and other transportation and development projects in Placer County have the potential to contribute to the cumulative loss of riparian habitat. Indirect impacts can be caused by disturbances adjacent to riparian woodland and have the potential to add to the cumulative loss of these natural communities. However, with implementation of the avoidance and minimization efforts and compensatory mitigation described in Section 2.16, construction of the proposed project would not add to the cumulative loss of riparian forest and would not result in a cumulatively adverse effect to riparian forest.

Oak Woodland

Cumulative impacts on oak woodland would result from construction of other general development projects in Placer County. With implementation of the avoidance and minimization efforts and compensatory mitigation described in Section 2.16, construction of the proposed project would not add to the cumulative loss of oak woodlands and would not result in a cumulatively adverse effect to oak woodlands.

Protected Trees

Most of the protected trees that would be affected by implementation of the proposed project occur within the non-wetland riparian forest and oak woodland. As described in Section 2.16, impacts on protected trees will be minimized as a certified arborist will be retained to conduct a tree survey in order to quantify the number of protected trees that would be affected by implementation of each project alternative. Avoidance and minimization measures are listed in Section 2.16.4. Unavoidable impacts on protected trees will be compensated for in accordance with the requirements of the applicable jurisdiction's tree preservation ordinance. The compensation will consist of planting replacement trees or paying an in-lieu fee. With implementation of the prescribed avoidance and minimization efforts and compensatory mitigation, construction of the proposed project would not add to the cumulative loss of protected trees and would not result in a cumulatively adverse effect to protected trees.

Wetlands and Other Waters

Cumulative impacts on wetlands and other waters would result from construction of other transportation and general development projects in Placer County. Construction of the proposed project would add to the cumulative loss of wetlands. Direct impacts can result from the placement of fill within a wetland or drainage. Indirect impacts can be caused by the accumulation of sediment in wetlands and drainages resulting from adjacent disturbances. Both direct and indirect impacts can add to the cumulative loss of wetland and drainage habitat. However, with implementation of the measures prescribed for minimizing impacts and compensating for remaining impacts as discussed in Section 2.17, the proposed project's incremental contribution to cumulative impacts on wetlands and other waters would not be cumulatively considerable.

The project would result in direct and indirect loss of up to 0.265 acre of wetland habitat and up to 0.056 acre of other water habitat. Indirect impacts associated with the proposed project would be minimized through avoidance and minimization measures in Section 2.17, and through implementation of BMPs required under Section 404 permit conditions. Most projects are required to comply with similar requirements under Section 404 of the CWA. These laws require no net loss of the function or value of the nation's or state's wetlands. Although this may not be achieved on every project, regulations ensure that, on the whole, cumulative impacts on wetlands under state and federal jurisdiction are reduced, and even improved, over time. Consequently, the project is not anticipated to result in a considerable contribution to cumulative impacts on wetlands and other waters.

Threatened and Endangered Species

As discussed in Section 2.20, four federally listed species (VELB, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Central valley steelhead) and two state-listed species (Swainson's hawk and tricolored blackbird) could occupy the BSA based on the presence of suitable habitat. Under all three build alternatives, direct and indirect impacts could occur to these species. Avoidance, minimization, and/or mitigation measures to reduce effects to these special-status species are identified in Section 2.20. In addition, as part of consultation with USFWS and NMFS under Section 7 of the FESA, the project impacts on VELB, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Central valley steelhead will be addressed. Other projects are also required to comply with FESA and protect threatened and endangered species or compensate for impacts to ensure the continued existence of the species. These measures would reduce or mitigate project impacts so that no effect to the long-term health or stability of these species, and no cumulative impact, would result from project implementation.

Invasive Species

As described in Section 2.21, invasive plant species include species designated as federal noxious weeds by USDA, species listed by CDFA, and invasive plants identified by Cal-IPC. Invasive plants displace native species, change ecosystem processes, alter plant community structure, and lower wildlife habitat quality. Road, highway, and related construction projects are some of the principal dispersal pathways for invasive plants and their propagules. No plant species designated as federal noxious weeds have been identified in the BSA. Most of the invasive plant species occur in annual grassland, along roadways, and in disturbed/graded areas. Table 2.21-1 identifies the invasive plant species that CDFA and Cal-IPC have identified as occurring in the BSA.

Federal agencies are required to comply with EO 13112 (Invasive Species) as part of NEPA analyses. CEQA requires that state and local agencies identify and avoid, minimize or mitigate substantial habitat modifications, such as those that could be caused by invasive species. Ground disturbance and construction vehicle traffic associated with the projects listed in Table 2.22-1 and the proposed project have the potential to contribute to the introduction and spread of invasive plant species. The projects would be required to avoid, minimize or mitigate potential effects under the EO or state requirements, or both, depending on federal agency involvement, to prevent the spread of invasive species. With implementation of the prescribed avoidance and minimization measure described in Section 2.21, the proposed project would not substantially contribute to cumulative impacts related to the spread of invasive plants.

2.22.4 References Cited

Fehr & Peers. 2014. *Transportation Analysis Report – I-80/SR 65 Interchange Improvements. Roseville, CA.* August.

ICF International. 2014. *Community Impact Assessment – I-80/SR 65 Interchange Improvements Project, Placer County, Interstate 80 and State Route 65*. Sacramento, CA. November.

Chapter 3 California Environmental Quality Act (CEQA) Evaluation

3.1 Determining Significance under CEQA

The proposed project is a joint project by Caltrans and the FHWA and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. FHWA's responsibility for environmental review, consultation, and any other action required in accordance with NEPA and other applicable federal laws for this project is being, or has been, carried-out by Caltrans under its assumption of responsibility pursuant to 23 United States Code (USC) 327. Caltrans is the lead agency under CEQA and NEPA.

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 Caltrans 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 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

Supporting documentation of all CEQA checklist determinations is provided in Chapter 2 of this environmental document. Discussion of all impacts, avoidance, minimization, and/or compensation measures is under the appropriate topic headings in Chapter 2. This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the project indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included either following the applicable section of the checklist or is within the body of the environmental document itself.

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.

I. Aesthetics	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a 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 that would adversely affect daytime or nighttime views in the area?	☒	☐	☐	☐

III. Air Quality	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
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 a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e. Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

IV. Biological Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or 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, or regulations, or by the California Department of Fish and Game or U.S. 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, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

V. Cultural Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☒	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

VI. Geology and Soils	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
1. 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.	☐	☐	☐	☒
2. Strong seismic ground shaking?	☐	☐	☐	☒
3. Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
4. Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c. Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

VII. Greenhouse Gas Emissions	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	*An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While Caltrans has included this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans' determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the body of the environmental document.*			

VIII. Hazards and Hazardous Materials	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
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 involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d. Be located on a site that 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. Be located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f. Be located within the vicinity of a private airstrip and 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?	☐	☐	☒	☐

VIII. Hazards and Hazardous Materials	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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?	☐	☐	☐	☒

IX. Hydrology and Water Quality	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in 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 that 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 that would result in substantial erosion or siltation onsite or offsite?	☐	☐	☒	☐
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 that would result in flooding onsite or offsite?	☐	☐	☒	☐
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
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 that would impede or redirect floodflows?	☐	☐	☒	☐
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. Contribute to inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

X. Land Use and Planning	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
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, a 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?	☐	☐	☐	☒

XI. Mineral Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
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?	☐	☐	☐	☒

XII. Noise	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	☐	☐	☒	☐
b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

XII. Noise	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
e. Be located within an airport land use plan area, or, where such a plan has not been adopted, within two miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f. Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

XIII. Population and Housing	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☒	☐
b. Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c. Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

XIV. Public Services	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

XV. Recreation	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☒	☐

XVI. Transportation/Traffic	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
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 because of 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?	☐	☐	☒	☐

XVII. Utilities and Service Systems	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
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 stormwater 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 would new or expanded entitlements be needed?	☐	☐	☐	☒
e. Result in a determination by the wastewater treatment provider that 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?	☐	☐	☐	☒

XVIII. Mandatory Findings of Significance	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	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 that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

3.2.1 Discussion of Significance of Impacts

3.2.1.1 Less-than-Significant Effects of the Proposed Project

Air Quality

Expose sensitive receptors to substantial pollutant concentrations?

As described in Section 2.13, all three build alternatives would result in the temporary release in construction-related air pollution emissions and dust. Construction activities are subject to requirements found in the *Standard Specifications for Construction of Local Streets and Roads* (California Department of Transportation 2010). Implementation of Caltrans' Standard Specifications and measures to control dust during construction would help to minimize air quality impacts from construction activities. Refer to Section 2.13 for additional discussion of potential impacts on air quality.

Biological Resources

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 described in Sections 2.19 and 2.20, the movement of fish species present in Antelope Creek, Miners Ravine and Secret Ravine could be affected during work activities occurring in or near stream channels. Most adults and juveniles would be expected to move upstream or downstream of the immediate project area in response to disturbance. Displacement could reduce spawning success by causing adults to abandon redds or be delayed in reaching upstream spawning areas, and affect survival of young by increasing the exposure of juveniles to predators and possibly increasing competition with other juveniles, especially if suitable rearing habitat is limited or not readily available. Although juveniles are capable of actively moving away from disturbances, some juveniles may seek cover in active work areas, where they may be injured or killed by exposure to harmful levels of suspended sediment or other factors. Fry and small juveniles are at highest risk because of their tendency to hide in the substrate and reluctance to move away from protective nearshore habitat.

Short-term noise disturbance caused by construction vehicles and equipment, including drilling rigs and vibratory pile drivers, could occur during construction. The likely effects on adults, fry and juveniles would be avoidance of habitat adjacent to the construction area. Effects, however, are not expected to rise to a level that result in injury to or direct mortality of adults, fry or juveniles.

Cultural Resources

Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

There is one built resource within the project area that is considered to be a historical resource for the purposes of CEQA, a 300-foot, double-tracked segment of the First Transcontinental Railroad located directly under the SR 65/East Roseville Viaduct. Under any build alternative, impacts on the First Transcontinental Railroad segment would be less than significant. The build alternatives would not result in the demolition, destruction, relocation, or alteration of the historical resource or its immediate surroundings, and the character-defining features would remain intact. All three build alternatives would widen the existing SR 65/East Roseville Viaduct in the northbound and southbound directions and construct additional columns, introducing new visual elements to setting. However, these changes would not cause a substantial adverse change in the historical significance of this resource. Refer to Section 2.7 for additional discussion of potential impacts on cultural resources.

Greenhouse Gas Emissions

Refer to Section 3.3, “Climate Change,” below.

Hazards and Hazardous Materials

Would the project 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?

Humans and the environment could be exposed to hazardous conditions from the accidental release of hazardous materials during construction activities. Construction would involve the use of heavy equipment, involving small quantities of hazardous materials (e.g., petroleum and other chemicals used to operate and maintain construction equipment) that may result in hazardous conditions in the project area. Measures to help protect workers such as site assessment, soil testing, safe handling practices, proper disposal methods, and lead compliance training will also help keep the public safe from inadvertent exposure to hazards and hazardous wastes. These hazards are applicable to any of the build alternatives. Implementation of the avoidance and minimization measures described in Section 2.12, would reduce potential impacts regarding human or environmental contact with hazards and hazardous wastes.

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

Antelope Creek Elementary School is located within 0.25 mile of the project area at 6185 Springview Drive in Rocklin, northeast of the project between Galleria Boulevard and Taylor Road. As noted above, there is the potential for accidental release of hazardous materials during construction-related activities. Implementation of the avoidance and minimization measures described in Section 2.12, as wells as compliance with federal and state laws for handling and disposal of hazardous wastes, would reduce these impacts. This impact would be less than significant.

Would the project be located on a site that 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 described in Section 2.12, three sites with potentially hazardous material conditions were identified within or immediately adjacent to the project area: Alta Sierra Body Shop and Venture Out Recreational Vehicles, and Roseville Golfland-Sunsplash. Disturbance of these areas could expose humans and the environment to contaminated soil during construction activities under all build alternatives. The Venture Out Recreational Vehicles site is not proposed for acquisition but is immediately adjacent to the project area. A release of gasoline in the past at this site would require soil testing for contaminants. Implementation of the measures to conduct a site assessment and perform soil testing would reduce this impact. This impact would be less than significant.

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

Construction of the project could result in some temporary disruptions to traffic flow, where temporary lane shifts or closures are required. During roadway construction, emergency vehicles may need to stop temporarily or slow in order to ensure that they can safely pass through the study area. The Transportation Management Center will be notified of all lane restrictions which might impact emergency response. Caltrans will notify all emergency services prior to construction so they can plan alternative routes, if necessary. A TMP would be prepared to minimize disruptions to traffic and to emergency services during construction. Measures included in the TMP are described in Section 2.4. Implementation of these measures would ensure that the project would not interfere with any emergency response or evacuation plans. This impact would be less than significant.

Hydrology and Water Quality

Would the project violate any water quality standards or waste discharge requirements?

Construction of the build alternatives would result in surface disturbance of approximately 147 acres (Alternatives 1) or 151 acres (Alternative 2) or 156 acres (Alternative 3). Construction-related activities have the potential to violate water quality standards or waste discharge requirements if sediment- or contaminant-laden runoff from disturbed work areas enters storm drains or other pathways leading to receiving waters, or if fuel or other construction chemicals are accidentally spilled or leaked into the water. These temporary construction-related impacts would be reduced to less-than-significant levels through compliance with Caltrans' NPDES permit and implementation of the SWPPP and BMPs.

Additionally, increased impervious surface area under the build alternatives would increase the runoff and sediment-laden stormwater and change the erosion and accretion patterns in the project area. Impervious area added by Alternatives 1, 2, and 3 would be approximately 30 acres, 28 acres, and 26 acres, respectively. Increased traffic loads could also increase pollutants in stormwater. Implementation of permanent design pollution prevention BMPs would reduce these impacts.

Would the project 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 that would result in substantial erosion or siltation onsite or offsite?

The build alternatives involve improvements over Miners Ravine and Antelope Creek but would not alter the course of these waterways. New onsite drainage systems would be installed and designed to maintain the existing drainage patterns. Measures described in Section 2.9 would protect water quality from erosion and siltation impacts. This impact would be less than significant.

Would the project 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 that would result in flooding onsite or offsite?

As described in Section 2.8 and above, the amount of impervious surface area would increase under the build alternatives increasing stormwater runoff. However, the rate and volume of stormwater runoff to downstream drainages and the potential to result in flooding in surrounding areas or onsite are considered minor because of the size of the watersheds and elevation of the waterways below surrounding neighborhoods. This impact would be less than significant.

Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

See the Section 2.9, “Water Quality” regarding the potential impacts associated with increased impervious surface. New onsite drainage systems would be installed and designed to maintain the existing drainage patterns. Several existing culverts would require lengthening, and existing systems would be evaluated to determine compliance with current design standards. Therefore, the proposed project would maintain or improve upon existing drainage conditions. Measures described above and in Section 2.9 would protect water quality from polluted runoff. This impact would be less than significant.

Would the project place within a 100-year flood hazard area structures that would impede or redirect floodflows?

Hydraulic modeling was conducted to determine whether fill and encroachment upon the Miners Ravine floodplain and longitudinal encroachments on the Secret Ravine and Miners Ravine base floodplains/floodways would cause a significant increase in water surface elevations. The modeling found minor increases (less than 0.1 foot) could occur for each build alternative. This impact would be less than significant. See Section 2.8 for additional information regarding impacts on hydrology.

Land Use and Planning

Would the project physically divide an established community?

Alternative 3

SR 65 and I-80 currently divide portions of the cities of Roseville and Rocklin as described in Section 2.1. Alternative 3 would also eliminate the Taylor Road interchange, reducing access to businesses on Taylor Road in Roseville and Pacific Street in Rocklin, as well as access options for local residents using Taylor Road to reach residential areas. The elimination of the Taylor Road interchange under Alternative 3 would be a new barrier within the project area affecting community cohesion, but the effect would be minor and less than significant.

Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

All build alternatives would require acquisition of several acres of Open Space Preserve in the Olympus Pointe Preserve. Alternative 2 would require the most acreage (6.64 acres) and Alternative 1 would require the least (4.43 acres), while Alternative 3 would require 5.86 acres. Any property acquisitions that are located in the preserve would require an amendment to the OSPOMP and changes to the Biological Opinion (reinitiation of Section 7 consultation). See Section 2.1 for additional discussion. This impact would be less than significant.

Noise

Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?

Whether an increase in future noise level would result in a significant adverse effect for purposes of CEQA is determined based on the setting and magnitude of the noise increase, by comparing the existing noise level to the predicted noise level with construction of the project. The conclusions of the *Noise Study Report* (ICF International 2014) indicate that traffic noise levels for existing conditions range from 47 to 77 dBA Leq(h). Under design year build conditions for the build alternatives, predicted traffic noise levels range from 49 to 79 dBA Leq(h). An increase of up to 2 dBA is predicted at 23 of the 163 receiver locations modeled in the analysis. All other modeled receiver locations would have either a 1 dBA increase (121 locations), no increase (43 locations) or a decrease in noise levels (4 locations). This impact is considered less than significant.

Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

As stated above, the conclusions of the *Noise Study Report* indicate that traffic noise levels for build alternatives are predicted to increase by only 2 dBA or less. This impact is considered less than significant.

Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction of any of the build alternatives would result in temporary and periodic increases in noise levels in the project vicinity. Because Caltrans standard procedures include implementation of measures to minimize the temporary noise effects from construction, this impact would be less than significant.

Population and Housing

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

The potential for the project to cause growth-related impacts in the surrounding communities is described in Section 2.2. The project would not introduce a new transportation facility to the area or provide new access to undeveloped areas. Although the project would accommodate planned growth by adding capacity to existing facilities, growth in the cities of Roseville and Rocklin would not be attributable to, or otherwise influenced by, the project. Further the project is unlikely to substantially encourage unplanned development in the project area, or to shift or hasten planned growth along the SR 65 and I-80 corridors. Growth-related impacts of the project related to growth pressure would be less than significant.

Recreation

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

Under Alternatives 2 and 3, the grade profile of the Miners Ravine Trail would need to be lowered by approximately 6 inches under the Eureka Road/Atlantic Street eastbound off-ramp to maintain vertical clearance requirements. A temporary construction zone would be required around this area affecting approximately 0.35 mile of the trail. The profile correction would affect approximately 200 feet of the trail. A detour would maintain access to the trail around the temporary construction zone. Once the trail profile correction is completed, the trail would be repaved and reopen for use. Measures would be implemented providing advance notice of the closures and signs would be posted depicting the detour for trail users.

Under all build alternatives, widening the East Roseville Viaduct and SR 65 mainline would require a temporary construction zone be established on both sides of Antelope Creek Trail for access to the viaduct/SR 65 and installation of new columns. Placement of one column would require realignment of the section of trail underneath the viaduct. The new realigned section of trail would be constructed first and, when completed, trail users would be shifted to the new trail section. Following the shift, the old trail section would be permanently closed to accommodate the viaduct column.

Section 2.1 and Appendix A both provide additional descriptions of the impacts on the trails and measures to minimize impacts on trail users. These impacts would be temporary during the construction period and less than significant.

Transportation Traffic

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 above under *Recreation*, under Alternatives 2 and 3 the grade profile of the Miners Ravine Trail would need to be lowered by approximately 6 inches under the Eureka Road/Atlantic Street eastbound off-ramp to maintain vertical clearance requirements. A temporary construction zone would be required around this area affecting approximately 0.35 mile of the trail. Under all build alternatives, widening the East Roseville Viaduct and SR 65 mainline would require a temporary construction zone be established on both sides of Antelope Creek Trail for access to the viaduct/SR 65 and installation of new columns. Measures would be implemented providing advance notice of closures and signs would be posted depicting the detour for trail users.

These impacts would be temporary during the construction period and would not result in a conflict with adopted policies or programs regarding bicycle facilities. The safety of the facilities would not be affected. This impact is considered less than significant. Section 2.1 and Appendix A both provide additional descriptions of the impacts on the trails and measures to minimize impacts on trail users.

Result in inadequate emergency access?

During construction, short-term lane closures would be necessary throughout the project corridor, potentially increasing the response times for emergency service providers under all build alternatives. As described in Section 2.4, Caltrans requires TMPs for all major construction activities that are expected to affect traffic on the state highway system. Emergency service providers would be notified as early as possible in order to plan for lane closures and other delays related to construction activity. Emergency and law enforcement providers would be notified in advance of any road closures.

Under Alternative 3, the Taylor Road interchange would be closed affecting police and fire response times as well as mutual aid from Placer County and the nearby cities of Roseville and Citrus Heights. Advanced notification of any closures would help to ensure that the local emergency service providers could make proper arrangements, in the event that the Taylor Road interchange is eliminated.

Implementation of a TMP would reduce this impact to a less-than-significant level.

Utilities and Service Systems

Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

As discussed in Section 2.8, *Hydrology,* all build alternatives would increase the amount of impervious surface area, increasing the amount of stormwater runoff. New onsite drainage systems would be constructed as part of the project and designed to maintain the existing drainage patterns. Minimal impacts are expected on the Miners Ravine, Secret Ravine, and Antelope Creek watersheds. Implementation of the SWPPP and associated BMPs would reduce the potentials for impacts on the watersheds. The existing SPMUD storm drains that run along I-80 mainline in both the eastbound and westbound directions near the Taylor Road overcrossing and the existing southbound SR 65 to westbound I-80 connector, may be affected. The increase in stormwater runoff would not require expansion of existing stormwater drainage facilities or require new facilities to be constructed outside the project footprint. This impact would be less than significant.

For additional discussion, see the hydrology, water quality, wetlands and other waters, and utilities sections in Chapter 2.

3.2.1.2 Significant Environmental Effects of the Proposed Project

Biological Resources

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 2.20, direct and indirect impacts from the build alternatives could occur to four federally listed species (VELB, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Central Valley steelhead) and two state-listed species (Swainson's hawk and tricolored blackbird). Avoidance, minimization, and mitigation measures to reduce effects to these special-status species are identified in Section 2.20. In addition, as part of consultation under Section 7 of the FESA, BAs were prepared to address project impacts on VELB, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Central Valley steelhead. These measures would reduce or mitigate project impacts to less-than-significant levels.

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 Game or U.S. Fish and Wildlife Service?

Each of the build alternatives would result in permanent and temporary impacts on vegetation communities that would qualify as natural communities of special concern, including, non-wetland riparian forest and oak woodland. Native trees are present within these community types and would also be affected. Implementation of the avoidance and minimization measures and the mitigation measures described in Section 2.16 would provide compensation for the loss of natural communities and reduce impacts to less-than-significant levels.

Each of the build alternatives would also result in permanent and temporary impacts on SRA cover. Compensation for the temporary and permanent loss of non-wetland riparian forest (including SRA Cover) would reduce this effect to a less-than-significant level.

Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?

As discussed in Section 2.17, each of the build alternatives would result in permanent and temporary effects on wetlands and waters of the United States and State, including riparian forest/scrub wetland, emergent wetland, seasonal wetland, vernal pool, perennial stream, intermittent stream, and ephemeral drainage. The measures described in Section 2.7 would reduce the impact to a less-than-significant level and compensate for the loss of wetlands.

Refer to Sections 2.16, 2.17, 2.18, 2.19, and 2.20 for additional discussion of potential impacts on biological resources.

Cultural Resources

Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

One archaeological resource was determined to be located within the APE. As a result of the XPI and Phase II testing and evaluation (see Section 2.7 “Cultural Resources” for a discussion of the XPI and Phase II testing methods used), site P-31-1443 was determined eligible for listing on the NRHP and is therefore a significant archaeological resource as defined by Section 15064.5 of the CEQA Guidelines. On July 2, 2015 the SHPO concurred that site P-31-1443 is eligible for listing on the NRHP.

As part of the proposed widening of the East Roseville Viaduct, a component of all three build alternatives, four piles will be installed within or directly adjacent to the known boundaries of site P-31-1443. Project engineers have indicated that installing the piles outside of the site boundaries to avoid impacting the site is not a viable option. Because of this, avoidance of significant impacts to portions of the site within the APE is not possible and appropriate mitigation measures must be implemented to reduce impacts to less-than-significant levels.

It is also possible that previously unknown archaeological resources could be uncovered during ground-disturbing construction activities for any of the build alternatives. This impact would be considered a significant impact to previously unknown cultural resources. Implementation of the mitigation measure to avoid cultural resources and notification procedures would reduce the potential for significant impacts to less-than-significant levels. Refer to Section 2.7 for additional discussion of potential effects on cultural resources.

Would the project disturb any human remains, including those interred outside of formal cemeteries?

No burial sites or human remains were identified within or adjacent to the APE. Implementation of the mitigation measure to avoid cultural resources and notification procedures would reduce this potential impact to a less-than-significant level.

Refer to Section 2.7 for additional discussion of potential effects on cultural resources.

Geology and Soils

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

As discussed in Section 2.11, the geologic units that underlie the project site have a high sensitivity for paleontological resources; and therefore, fossils could be present. Earth-disturbing activities (i.e., excavation and grading) during construction of the build alternatives could damage fossils present in the project area. Substantial damage to or destruction of significant paleontological resources as defined by the Society of Vertebrate Paleontology would be a significant impact. Implementation of measures to educate construction personnel to recognize fossil materials, stop work if fossil remains are encountered, and follow resource stewardship measures would reduce this impact to a less-than-significant level.

Transportation/Traffic

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?

Section 2.5.2.3 describes the acceptable traffic operating conditions by jurisdiction within the project area. Tables 2.5-9 through 2.5-20 compare the freeway and intersection traffic operations under the No Build Alternative to the three build alternatives in both construction year (2020) and design year (2040) conditions.

As shown in Section 2.5, all alternatives for the proposed project would result in some worsening of freeway and intersection operations, including operations at specific locations and segments that would be below the acceptable traffic operating conditions of the local jurisdictions (shown by grey shaded cells in the tables in Section 2.5. Alternative 3 has the fewest freeway impacts but the most intersection impacts. Conversely, Alternative 1 has the most freeway impacts but the fewest intersection impacts. Alternative 2 has the fewest total impacts (freeway and intersection impacts combined). These impacts would be reduced to less-than-significant levels with the implementation of the improvements listed in Section 2.5.4.

3.2.1.3 Unavoidable Significant Environmental Effects

Aesthetics

Substantially degrade the existing visual character or quality of the site and its surroundings?

Although the project would improve an existing highway interchange, all build alternatives would result in permanent changes on the existing visual character and quality of the visual assessment units. Impacts would primarily result from the prominence of the I-80/SR 65 connectors, widened viaduct, and removal of vegetation. The adverse impacts vary by unit as described in Section 2.6 and implementation of the mitigation measures in the section would reduce impacts at varying degrees depending on the existing views. However, some impacts would be significant and unavoidable even with mitigation.

Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

Nighttime views of and from the project would be affected as a result of the use of bright lights during evening or nighttime construction activities and the relocation of existing lights and/or addition of new lights. Daytime glare would increase as a result of more pavement and introduction of vertical surfaces. With implementation of the mitigation measures described in Section 2.6, these impacts would be less than significant for four of the visual assessment units: I-80 Corridor, SR 65, Open Space, and Commercial/Institutional.

Adverse impacts to the Residential Visual Assessment Unit from light and glare would be similar to those for the other units. However, adverse impacts would be greater on the residences within this unit including the Hearthstone and Placer West apartment complexes that are in close proximity to the viaduct. Because of their close proximity, they could experience high-intensity nighttime lighting associated with construction activities from higher elevations and increased shading during different times of day.

The reconfigured East Roseville Viaduct structure comes within 20 feet of the Hearthstone and Placer West apartment complexes and may increase shading of these complexes during different times of day, which varies seasonally. This effect may be perceived as a negative visual change, and no mitigation is available to reduce shading impacts. These impacts would be significant and unavoidable even with mitigation. See Section 2.6 for a detailed discussion of these impacts.

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 greenhouse gas (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 (IPCC) 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 (1, 1, 1, 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 make up the largest source of GHG-emitting sources. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are typically two terms used when discussing 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 the effort of planning for and adapting to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels)[1].

There are four primary strategies for reducing 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 cooperatively. [2]

3.3.1 Regulatory Setting

3.3.1.1 State

With the passage of several pieces of legislation including State Senate and Assembly bills and Executive Orders, California launched an innovative and pro-active approach to dealing with GHG emissions and climate change.

Assembly Bill 1493 (AB 1493), Pavley, Vehicular Emissions: Greenhouse Gases, 2002: This bill requires the 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.

Executive Order S-3-05 (EO) (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 the 2020, and 3) 80 percent below the year 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32.

Assembly Bill 32 (AB 32), Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 sets the same overall GHG emissions reduction goals as outlined in EO S-3-05, while further

[1] http://climatechange.transportation.org/ghg_mitigation/
[2] http://www.fhwa.dot.gov/environment/climate_change/mitigation/

mandating that ARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases."

Executive Order S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency (Cal/EPA) and state agencies with regard to climate change.

Executive Order S-01-07 (January 18, 2007): This order set 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 ten percent by the year 2020.

Senate Bill 97 (SB 97) Chapter 185, 2007, Greenhouse Gas Emissions: required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the California Environmental Quality Act (CEQA) Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bill 375 (SB 375), Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets from passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan for the achievement of the emissions target for their region.

Senate Bill 391 (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.

3.3.1.2 Federal

Although climate change and GHG reduction are a concern at the federal level; currently no regulations or legislation have been enacted specifically addressing GHG emissions reductions and climate change at the project level. Neither the United States Environmental Protection Agency (U.S. EPA) nor the FHWA has issued explicit guidance or methods to conduct project-level GHG analysis. [3] FHWA supports the approach that climate change considerations should be integrated throughout the transportation decision-making process, from planning through project development and delivery. Addressing climate change mitigation and adaptation 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. Climate change considerations can be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies outlined by FHWA to lessen climate change impacts correlate with efforts that the state is undertaking to deal with transportation and climate change; these strategies

[3] To date, no national standards have been established regarding mobile source GHGs, nor has U.S. EPA established any ambient standards, criteria or thresholds for GHGs resulting from mobile sources.

include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and a reduction in travel activity.

Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and EO 13514 - *Federal Leadership in Environmental, Energy and Economic Performance*.

Executive Order 13514 (October 5, 2009): This order is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also direct federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change.

U.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, U.S. 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. U.S. EPA in conjunction with 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.[4]

The U.S. EPA and the NHTSA are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations.

The final combined standards that made up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards implemented by this program are expected to reduce GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016).

On August 28, 2012, U.S. EPA and NHTSA issued a joint Final Rulemaking to extend the National Program for fuel economy standards to model year 2017 through 2025 passenger vehicles. Over the lifetime of the model year 2017–2025 standards this program is projected to save approximately four billion barrels of oil and two billion metric tons of GHG emissions.

The complementary U.S. EPA and NHTSA standards that make up the Heavy-Duty National Program apply to combination tractors (semi trucks), heavy-duty pickup trucks and vans, and vocational vehicles (including buses and refuse or utility trucks). Together, these standards will cut GHG emissions and domestic oil use significantly. This program responds to President Barack Obama's 2010 request to jointly establish GHG emissions and fuel efficiency standards

[4] http://www.c2es.org/federal/executive/epa/greenhouse-gas-regulation-faq

for the medium- and heavy-duty highway vehicle sector. The agencies estimate that the combined standards will reduce CO_2 emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of model year 2014 to 2018 heavy duty vehicles.

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.[5] 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.

The AB 32 Scoping Plan mandated by AB 32 includes the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the Draft Scoping Plan, the ARB released the GHG inventory for California, which is indicated in Figure 3-1 (forecast last updated: October 28, 2010). The forecast is an estimate of the emissions expected to occur in 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the GHG inventory for 2006, 2007, and 2008.

Caltrans and its parent agency, the Transportation Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, Caltrans has created and is implementing the Climate Action Program at Caltrans that was published in December 2006.[6]

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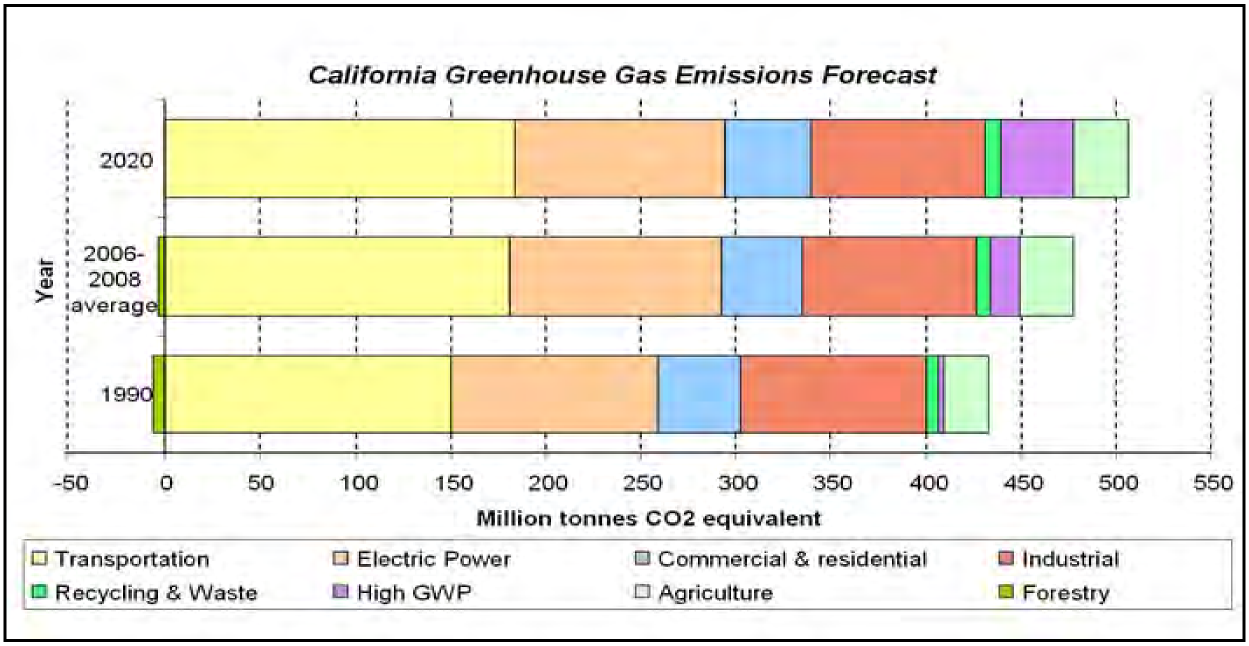
[5] This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).
[6] Caltrans Climate Action Program is located at the following web address: http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf.



Source: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

Figure 3-1 California Greenhouse Gas Forecast

One of the main strategies in Caltrans' Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide (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 (see Figure 3-2 below). 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.

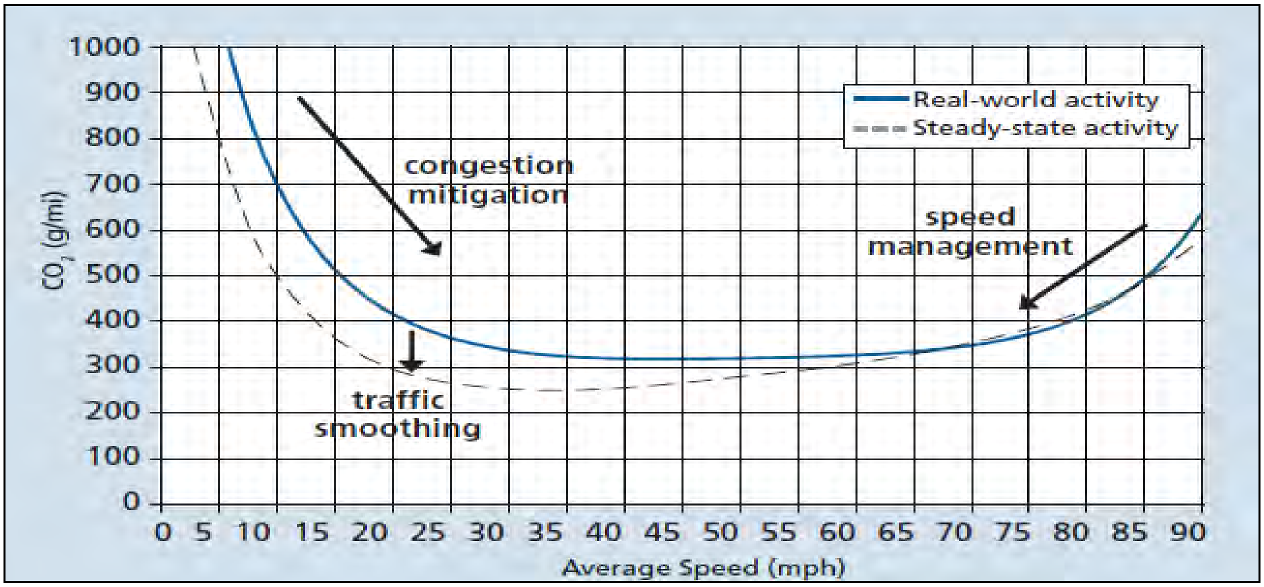


Figure 3-2 Possible Effect of Traffic Operation Strategies in Reducing On-Road CO_2 Emission[7]

Potential for Generation of Greenhouse Gas Contaminant Emissions

The project would result in widened roads, overcrossings, and ramps, as well as intersection improvements and the removal of existing ramp connections that would reduce vehicle delay and address existing capacity constraints. These transportation improvements would induce more vehicle travel to the project area, resulting in increased VMT compared to no build conditions. Caltrans' CT-EMFAC (Caltrans Emission Factor) model was used to estimate CO_2 emissions for existing (2012), construction year (2020), and design year (2040 conditions) and evaluate potential emissions increases among the project alternatives. Table 3-1 summarizes the modeled emissions by scenario, as well as a comparison of build emissions to no build and existing conditions. Emissions are presented with and without state mandates to reduce GHG emissions from onroad vehicles and transportation fuels.[8]

[7] Traffic Congestion and Greenhouse Gases: Matthew Barth and Kanok Boriboonsomsin (TR News 268 May-June 2010)<http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf>

[8] Actions undertaken by the state will contribute to project-level GHG reductions. The state mandate analysis assumes implementation of Pavley and the Low Carbon Fuel Standard (LCFS). Pavley will improve the efficiency of automobiles and light duty trucks, whereas LCFS will reduce the carbon intensity of diesel and gasoline transportation fuels.

Table 3-1. Estimated Greenhouse Gas Emissions from Operation of I-80/SR 65 Interchange Improvements Project (metric tons per year)

Alternative	Annual VMT	Emissions without Pavley and LCFS[c]			Emissions with Pavley and LCFS		
		CO_2	Other[a]	CO_2e	CO_2	Other[a]	CO_2e
2012 Baseline	1,785,077,999	825,982	9,912	835,893	793,615	9,523	803,139
2012 + Alternative 1[b]	1,801,826,648	830,993	9,972	840,965	798,433	9,581	808,014
2012 + Alternative 2[b]	1,797,503,028	828,610	9,943	838,554	796,141	9,554	805,695
2012 + Alternative 3[b]	1,800,451,487	829,201	9,950	839,152	796,713	9,561	806,273
2020 No Build	2,042,824,245	920,519	11,046	931,565	687,066	8,245	695,310
2020 Alternative 1	2,047,609,574	921,917	11,063	932,980	688,112	8,257	696,369
2020 Alternative 2	2,046,374,254	921,268	11,055	932,324	687,626	8,252	695,877
2020 Alternative 3	2,047,216,670	921,407	11,057	932,464	687,733	8,253	695,986
2040 No Build	2,687,189,861	1,247,683	14,972	1,262,655	863,380	10,361	873,740
2040 Alternative 1	2,703,938,510	1,252,760	15,033	1,267,793	866,911	10,403	877,314
2040 Alternative 2	2,699,614,890	1,250,381	15,005	1,265,386	865,245	10,383	875,628
2040 Alternative 3	2,702,563,349	1,250,936	15,011	1,265,947	865,659	10,388	876,047
Comparison to Existing							
Alternative 1	16,748,649	5,011	60	5,071	4,818	58	4,876
Alternative 2	12,425,029	2,629	32	2,660	2,526	30	2,556
Alternative 3	15,373,488	3,219	39	3,258	3,098	37	3,135
Comparison to No Build							
2020 Alternative 1	4,785,328	1,398	17	1,415	1,046	13	1,059
2020 Alternative 2	3,550,008	750	9	759	560	7	567
2020 Alternative 3	4,392,425	889	11	899	668	8	676
2040 Alternative 1	16,748,649	5,077	61	5,138	3,531	42	3,574
2040 Alternative 2	12,425,029	2,698	32	2,731	1,866	22	1,888
2040 Alternative 3	15,373,488	3,253	39	3,292	2,280	27	2,307

[a] Includes methane (CH_4), nitrous oxide (N_2O), and other trace GHGs emissions emitted by typical passenger vehicles (U.S. Environmental Protection Agency 2013c, 2013d).

[b] Evaluates the net project impact on VMT under existing conditions. For this analysis, net VMT under the project was derived using design year (2040) conditions and added to VMT under existing conditions. The analysis was undertaken to support the project-level CEQA document.

[c] LCFS = low carbon fuel standard

Implementation of the build alternatives would increase GHG emissions compared to the existing conditions and the No Build Alternative in 2020 and 2040. This increase is due to improved traffic operations under the project, which in turn increases demand and associated VMT on the transportation network. As discussed in Impact AQ-5, future year peak period traffic volumes are forecasted to exceed available capacity in many locations on I-80 and SR 65 under the No Build Alternative. The build alternatives would expand capacity in these locations, which reduces travel times and induces more vehicle travel. Accordingly, since delay would be reduced under the build alternatives, VMT and resultant GHG emissions would increase.

Currently, there are no federal or state standards set for CO_2 emissions, therefore the estimated emissions shown in Table are only useful for a comparison between alternatives. The numbers are not necessarily an accurate reflection of what the true CO_2 emissions would be because CO_2 emissions are dependent on other factors that are not part of the model, such as the fuel mix[9], rate of acceleration, and the aerodynamics and efficiency of the vehicles. Refer to Appendix D of the *Air Quality Study Report* (ICF International 2014) for a summary of limitations and uncertainties associated with the emissions modeling. The *Air Quality Study Report* is available on the project website at http://8065interchange.org/

The SACOG's MTP/SCS 2035, adopted in 2012, projects a 6.6% decrease in total per capita VMT by the year 2035 from 2008 levels due to three main factors (Sacramento Area Council of Governments 2012a):

- Improvements in Accessibility (i.e., the number of activities which can be reached within a given travel time) — Because the growth that occurs between 2008 and 2035 is more compact, the number of activities within a reasonable travel time increases by 31.3%. This change means that most residents will be able to find jobs, schools, shopping, and other activities closer to their place of residence, and their vehicle trips will be shorter.
- Improvements in Mix of Land Uses — Most areas within the region improve to some degree in the balance of complementary land uses. This allows for a higher share of wants and needs to be met closer to a place of residence, which in turn allows for shortening of vehicle trips and creates more opportunities for non-motorized travel.
- Improvements in Transit Service and Walkability — Shifts in mode of travel from private vehicle (e.g., driving alone and carpooling) to non-auto modes (i.e., transit, bicycling and walking) are another key factor.

The MPT/SCS 2035 indicates reduction in congested travel is driven by two basic factors for 2035 (SACOG 2014):

- Roadway capacity investments include a significant number of projects that resolve or improve major existing bottlenecks, including several new projects for bottleneck locations not addressed in prior plans.
- On several major congested travel corridors, new transit options are provided in the MTP/SCS. Overall transit mode share increases, and commute transit share increases dramatically—the MTP/SCS forecasts show transit mode share increasing by 5 percentage points, from about 3 percent in 2008 to over 8% in 2035. There is a strong relationship between the work travel mode share, and the level of congested VMT experienced during the peak period. For each incremental percentage point in work travel transit share, congested VMT decreases by 5%, based on modeling by SACOG staff.

The EIR for SACOG's MTP/SCS 2035 also indicates the MTP/SCS would result in GHG improvements within SACOG's geographic boundaries. Table 3-2 below summarizes changes in GHG emissions in 2020 and 2035 associated with SACOG's MTP/SCS 2035, relative to 2008

[9] CT-EMFAC model emission rates are only for direct engine-out CO_2 emissions not full fuel cycle; fuel cycle emission rates can vary dramatically depending on the amount of additives like ethanol and the source of the fuel components.

conditions (Sacramento Area Council of Governments 2012a). While SACOG's MTP/SCS 2035 Final EIR indicated the MTP/SCS would reduce GHG emissions from new development and transportation projects in the rural residential communities, the EIR concluded impacts related to climate change would be significant and unavoidable. This is because SACOG cannot require that agencies and jurisdictions adopt the mitigation measures identified in the MTP/SCS 2035 that would potentially reduce impacts to a less-than-significant level. (Sacramento Area Council of Governments 2012b)

Table 3-2. Proposed MTP/SCS Plan Area GHG Calculations for 2020 and 2035 ($MMtCO_2e$)

2020 Estimates	Activity	Scoping Plan Reductions	2020 Emissions
Transportation	VMT/capita	-1.902	8.77
Residential Electricity Production	Percent of all units in single family	-0.860	2.58
Non-Residential Electricity Production	Relative percent of base emissions	-0.860	0.76
Residential Energy Use	Percent of all units in single family	-0.125	1.58
Non-Residential Energy Use	Relative percent of base emissions	-0.125	0.67
Industrial	Square feet per employee	0	1.96
Agriculture & Forestry	Millions of acres of Ag production	0	1.02
2035 Estimates	**Activity**	**Scoping Plan Reductions**	**2035 Emissions**
Transportation	VMT/capita	-1.838	8.48
Residential Electricity Production	Percent of all units in single family	0	2.06
Non-Residential Electricity Production	Relative percent of base emissions	0	1.00
Residential Energy Use	Percent of all units in single family	0	1.39
Non-Residential Energy Use	Relative percent of base emissions	0	0.67
Industrial	New industrial employees	0	1.96
Agriculture & Forestry	Millions of acres of Ag Production	0	0.99

$MMtCO_2e$ = million metric tons carbon dioxide equivalent
Source: Sacramento Area Council of Governments 2012b

3.3.1.3 Construction Emissions

Construction GHG emissions include emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays due to construction. The SMAQMD's RCEM (Version 7.1.5.1) was used to estimate CO_2 emissions from construction activities. The RCEM does not include emission factors for CH_4 or N_2O for off-road diesel equipment. Emissions of CH_4 and N_2O from diesel-powered equipment were determined by scaling the CO_2 emissions quantified by the ratio of CH_4/CO_2 (0.000057) and N_2O/CO_2 (0.000025) (Climate Registry 2014). Emissions of CH_4, N_2O, and other trace GHGs from gasoline-powered vehicles were determined by dividing the CO_2 emissions quantified by Equation 22A-4 by 0.988 (U.S. Environmental Protection Agency 2013a and 2013b).

Table 3-3 summarizes estimated GHG emissions generated by on-site construction equipment over the 15-year construction period. These emissions would 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 mitigated to some degree by longer intervals between maintenance and rehabilitation events. Measures 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. GHG Emissions from Construction of Alternatives 1 through 3 (metric tons per year)

Alternative	Diesel Equipment			Gasoline Vehicles		
	CO_2	CH_4	N_2O	CO_2	Other[a]	CO_2e
Alternative 1	19,568	1.1	0.5	1,497	18	21,246
Alternative 2	21,656	1.2	0.6	1,253	15	23,105
Alternative 3	21,517	1.2	0.5	1,275	15	22,987

[a] Includes CH_4, N_2O, and other trace GHGs emissions emitted by typical passenger vehicles (U.S. Environmental Protection Agency 2013c, 2013d).

3.3.1.4 CEQA Conclusion

As discussed above, both the 2040 build and no build scenarios show increases in CO_2 emissions over existing levels; all build alternatives for both 2020 and 2040 CO_2 emissions are also higher than the future no build emissions (Table 3-1). Nonetheless, there are also limitations with EMFAC/CT-EMFAC and with assessing what a given CO_2 emissions increase means for climate change (See Appendix D from the Air Quality Technical Report). Therefore, it is Caltrans determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a determination regarding significance of the project's direct impact and its contribution on the cumulative scale to climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

3.3.2 Greenhouse Gas Reduction Strategies

Caltrans continues to be involved on the Governor's Climate Action Team as the ARB works to implement Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from then-Governor Arnold Schwarzenegger's Strategic Growth Plan for California. The Strategic Growth Plan targeted a significant decrease in traffic congestion below 2008 levels and a corresponding reduction in GHG emissions, while accommodating growth in population and the economy. The

Strategic Growth Plan relies on a complete systems approach to attain CO_2 reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as shown in Figure 3-3: The Mobility Pyramid.

Figure 3-3: Mobility Pyramid

Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans works closely with local jurisdictions on planning activities but does not have local land use planning authority.

Caltrans also assists efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; Caltrans is doing this by supporting on-going research efforts at universities, by supporting legislative efforts to increase fuel economy, and by participating on the Climate Action Team. It is important to note, however, that control of fuel economy standards is held by the U.S. EPA and ARB.

Caltrans is also working towards enhancing the State's transportation planning process to respond to future challenges. Similar to requirements for regional transportation plans under Senate Bill (SB) 375 (Steinberg 2008), SB 391(Liu 2009) requires the State's long-range transportation plan to meet California's climate change goals under Assembly Bill (AB) 32.

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.

The purpose of the CTP is to provide a common policy framework that will guide transportation investments and decisions by all levels of government, the private sector, and other transportation stakeholders. Through this policy framework, the CTP 2040 will identify the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the State's transportation needs.

Table 3-4 summarizes departmental and statewide efforts that Caltrans is implementing to reduce GHG emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

Table 3-4. Climate Change/CO_2 Reduction Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings Million Metric Tons (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	.975	7.8
Operational Improvements & Intelligent Transportation System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	.07	2.17
Mainstream Energy & GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, ARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	.0045	.0065 .045 .0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	.117	.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 .36	4.2 3.6
Goods Movement	Office of Goods Movement	Cal EPA, ARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.18

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012): is intended to establish a Caltrans policy that will ensure coordinated efforts to incorporate climate change into Caltrans decisions and activities.

Caltrans Activities to Address Climate Change (April 2013)[10] provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce GHG emissions resulting from agency operations.

The following measures will also be included in the project to reduce the GHG emissions and potential climate change impacts from the project:

1. Caltrans and the California Highway Patrol are working with regional agencies to implement Intelligent Transportation Systems (ITS) to help manage the efficiency of the existing highway system. ITS commonly consists of electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.
2. In addition, SACOG provides ridesharing services and park-and-ride facilities to help manage the growth in demand for highway capacity. These include the Sacramento Region 511 website (http://www.sacregion511.org), which provides information for various programs, including a Commuter Club + Rideshare Database, Vanpool Incentive Program, and map of park and ride lots.
3. Landscaping reduces surface warming, and through photosynthesis, decreases CO_2. The project proposes onsite restoration for all areas temporarily disturbed by construction. Onsite replanting of trees may occur in intersection and interchange slopes and along drainage channels, and soil-stabilizing seeding would occur in open areas disturbed by construction. Planted species will be similar to those removed from the project area and will include native species, such as valley oak, Fremont cottonwood, Oregon ash, black willow, red willow, and arroyo willow. These trees will help offset any potential CO_2 emissions increase.
4. According to Caltrans Standard Specifications, the contractor must comply with all local Air Pollution Control District’s (APCD) rules, ordinances, and regulations for air quality restrictions.

3.3.2.1 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. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and 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. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the Council on Environmental Quality (CEQ), the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA), released its interagency task force

[10] http://www.dot.ca.gov/hq/tpp/offices/orip/climate_change/projects_and_studies.shtml

progress report on October 28, 2011[11], 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 provides an update on actions in key areas of federal adaptation, including: building resilience in local communities, safeguarding critical natural resources such as freshwater, and providing accessible climate information and tools to help decision-makers manage climate risks.

Climate change adaptation must also involve the natural environment as well. Efforts are underway on a statewide-level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

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.

In addition to addressing projected sea level rise, the California Natural Resources Agency (Resources Agency) was directed to coordinate with local, regional, state, and federal public and private entities to develop. The California Climate Adaptation Strategy (Dec 2009)[12], which summarizes the best known science on climate change impacts to California, assesses California's vulnerability to the identified impacts, and then outlines solutions that can be implemented within and across state agencies to promote resiliency.

The strategy outline is in direct response to EO S-13-08 that specifically asked the Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous other state agencies were involved in the creation of the Adaptation Strategy document, including the California Environmental Protection Agency; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors that include: Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. As data continues to be developed and collected, the state's adaptation strategy will be updated to reflect current findings.

The National Academy of Science was directed to prepare a Sea Level Rise Assessment Report[13] to recommend how California should plan for future sea level rise. The report was released in June 2012 and included:

- Relative sea level rise projections for California, Oregon and Washington taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates.

[11] http://www.whitehouse.gov/administration/eop/ceq/initiatives/adaptation
[12] http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF
[13] *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (2012) is available at: http://www.nap.edu/catalog.php?record_id=13389.

- The range of uncertainty in selected sea level rise projections.
- A synthesis of existing information on projected sea level rise impacts to state infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems.
- A discussion of future research needs regarding sea level rise.

In 2010, interim guidance was released by The Coastal Ocean Climate Action Team (CO-CAT) as well as Caltrans as a method to initiate action and discussion of potential risks to the states infrastructure due to projected sea level rise. Subsequently, CO-CAT updated the Sea Level Rise guidance to include information presented in the National Academies Study.

All state agencies that are planning to construct projects in areas vulnerable to future sea level rise are directed to consider a range of sea level rise scenarios for the years 2050 and 2100 to 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, storm surge and storm wave data

All projects that have filed a Notice of Preparation as of the date of the EO S-13-08, and/or are programmed for construction funding through 2013, or are routine maintenance projects may, but are not required to, consider these planning guidelines. The proposed project is outside the coastal zone and direct impacts to transportation facilities due to projected sea level rise are not expected.

Executive Order S-13-08 also directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level rise affecting safety, maintenance and operational improvements of the system, and economy of the state. Caltrans continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change effects, Caltrans has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans will be able review its current design standards to determine what changes, if any, may be needed to protect the transportation system from sea level rise.

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 an active participant in the efforts being conducted in response to EO S-13-08 and is mobilizing to be able to respond to the National Academy of Science Sea Level Rise Assessment Report.

3.4 Mitigation Measures for Significant Impacts under CEQA

Use Native Grass and Wildflower Species in Erosion Control Grassland Seed Mix

Construction contractors will be required to incorporate native grass and wildflower seed to standard seed mixes, which may be nonnative, for erosion control measures that will be applied to all exposed slopes. Wildflowers will provide seasonal interest to areas where trees and shrubs are removed and grasslands are disturbed. Only wildflower and grass species that are native will be incorporated into the seed mix, and under no circumstances will any invasive grass or wildflower plant species be used as any component in any erosion control measures. Species will be chosen that are indigenous to the area and for their appropriateness to the surrounding habitat. For example, upland grass and wildflower species will be chosen for drier, upland areas, and wetter species will be chosen for areas that will receive more moisture. If not appropriate to the surrounding habitat, wildflowers should not be included in the seed mix.

Implement Interchange and Slope Landscaping and Visual Buffers

Landscaping within interchange loops and on constructed earth slopes will improve the visual quality of the roadway corridor by improving corridor aesthetics and helping to reduce the apparent scale of new and reconfigured aerial connectors. Visual buffers also will be planted to replace or supplement existing visual buffers for visual assessment units bordering the I-80 and SR 65 corridors that are affected by the project. This landscaping will serve as a buffer and screen against nuisance lighting resulting from oncoming vehicle headlights and roadway lighting and will help to prevent or greatly reduce nuisance lighting from affecting nearby sensitive viewers. Prior to approval of the roadway design, the Caltrans project landscape architect will review project designs to ensure that the following elements are implemented in the project landscaping plan.

- One hundred percent of the species composition will reflect species that are native and indigenous to the project area and California. Native plant species can be used to create attractive spaces, high in aesthetic quality, that are not only drought-tolerant but attract more wildlife than traditional landscape plant palettes. Use of native species promotes a visual character of California that is being lost through development and reliance on nonnative ornamental plant species.
- The species list will include trees, shrubs, and an herbaceous understory of varying heights, as well as both evergreen and deciduous types. Plant variety will increase the effectiveness of the roadside planting areas by providing multiple layers, seasonality, diverse habitat, and reduced susceptibility to disease. Evergreen groundcovers or low-growing plants, such as *Ceanothus* spp., should be used in areas where taller vegetation would potentially cause driving hazards by obscuring sight distances.
- Special attention should be paid to plant choices near residences to ensure that species chosen are of an appropriate height and rely on evergreen species to provide year-round light screening from nuisance light.
- Under no circumstances will any invasive plant species be used at any location.

- Vegetation will be planted within the first 6 months following project completion at any given location.
- 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 also may incorporate aesthetic features, such as cobbling swales or shallow detention areas, which can reduce or eliminate the need for irrigation in certain areas.
- If an irrigation system is required, areas that are irrigated will use a smart watering system that evaluates the existing site conditions and plant material against weather conditions to avoid overwatering of such areas. To avoid undue water flows, the irrigation system will be managed in such a manner that any broken spray heads, pipes, or other components are fixed within 1–2 days, or the zone or system will be shut down until it can be repaired.

Implement Project Design Aesthetics

The project will incorporate an aesthetic design treatment with a consistent motif for new and reconfigured structures such as retaining walls, lane barriers, and connector system structures. Choosing earth-toned colors for the surfaces would be less distracting to viewers than light or brightly colored surfaces. The design motif applied to structures will reflect a combination of naturally colored surfaces and surfaces that are textured to appear as natural materials (e.g., rock or cobble) or that incorporates a design theme (such as wildlife and plants of native oak woodlands, traditional architectural elements such as inset panels, or other design reflecting local heritage or environment) using form liners. Such a motif would reduce visual monotony, soften verticality, reduce glare, and be more visually pleasing to viewers than plain surfaces. It will be used for surfaces that would be visible to highway users and other viewers: retaining walls, exterior facing barriers and girders on bridges, decking, abutments and side supports, and columns. Local examples of such treatments include the I-5/French Camp interchange in Stockton and SR 99/Sheldon Road overcrossing in Elk Grove. Non-local examples include Maryland 216 in Prince Georges County, Maryland; US 54/East Kellogg Drive and South Oliver Street interchange in Wichita, Kansas; and Roberts Road bridge in Los Gatos, California.

Roughened retaining wall surfaces would soften the verticality of the wall faces by providing visual texture and reducing the amount of smooth surface that can reflect light. Furthermore, if possible, a plantable wall surface, such as a retaining wall structure that allows interstices for planting, will be evaluated for use as a possible best management practice to help introduce more landscaping. A local example includes the slopes east and west of the Rocklin Road/I-80 undercrossing. However, a plantable wall surface will not be used if it would require more space or create a greater impact on adjacent visual assessment units. The shade of the wall also will be carefully considered. Studies have shown that structures 2–3 degrees darker than the color of the general surrounding area creates less of a visual impact than matching or lighter hues (U.S. Bureau of Land Management 2008). In general, very light buff/tan, brown, or gray colors stand out more than darker colors such as deep browns, deep red-browns, and deep warm grays that have the ability to complement the surrounding vegetation. Lane barrier coloring should complement project retaining walls and avoid using lightly colored concrete that appears to be white or greyish-white and, instead, use mid- to darker greys or tans to limit reflective glare.

Minimize Fugitive Light from Portable Sources Used for Construction

At a minimum, the construction contractor will minimize project-related light and glare to the maximum extent feasible, given safety considerations. Color-corrected halide lights will be used. Portable lights will be operated at the lowest allowable wattage and height and will be raised to a height no greater than 20 feet. All lights will be screened and directed downward toward work activities and away from the night sky, highway users, and highway neighbors, particularly residential areas, to the maximum extent possible. The number of nighttime lights used will be minimized to the greatest extent possible.

Apply Minimum Lighting Standards

All overhead street lighting is to be limited to the minimum required for driver safety and will be designed using the Illuminating Engineering Society's design guidelines and in compliance with International Dark-Sky Association approved fixtures. All lighting is to cause minimum impact on the surrounding environment and will utilize downcast, cut-off type fixtures that are shielded and direct the light only toward surfaces requiring illumination. Accordingly, lights must be installed at the lowest allowable height and cast low-angle illumination while minimizing incidental light spill onto adjacent properties, open spaces, or backscatter into the nighttime sky. The lowest allowable wattage will be used for all lighted areas, and the amount of nighttime lights needed to light an area will be minimized to the highest degree possible. Light fixtures will have non-glare finishes that will not cause reflective daytime glare. Lighting will be designed for energy efficiency, use high-pressure sodium vapor lights with individual photocells, and have daylight sensors or be timed with an on/off program. Lights will provide good color rendering with natural light qualities with the minimum intensity feasible for security, safety, and personnel access. Technologies to reduce light pollution evolve over time and design measures that are presently available may help, but may not be the most effective means of controlling light pollution once the project is designed. Consequently, all design measures used to reduce light pollution will use the technologies available at the time of project design to allow for the highest potential reduction in light pollution.

Install Visual Barriers between Construction Work Areas and Sensitive Receptors

The contractor will install visual barriers to obstruct undesirable views of construction activities from, and to protect privacy for, sensitive receptors—especially residents and recreational areas that are adjacent to the construction site. The visual barrier may be chain-link fencing with privacy slats, fencing with windscreen material, wood or concrete barrier/soundwall, or other similar barrier. The visual barrier will 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.

Compensate for the Temporary and Permanent Loss of Non-Wetland Riparian Forest (including SRA Cover)

The final compensation plan for the permanent and temporary loss of non-wetland riparian forest, including areas considered SRA cover habitat, will be more fully developed as part of consultation with NMFS and additional coordination with the City of Roseville Open Space manager and environmental coordinator. Compensation for the impacts on riparian forest will depend on the amount and location of SRA and the availability and feasibility of onsite restoration along Miners Ravine, Secret Ravine, and Antelope Creek.

The project proponent will compensate for temporary and permanent impacts on non-SRA riparian forest at a minimum ratio of 2:1 and on SRA riparian forest habitat at a minimum of 3:1. For non-SRA riparian habitat, the project proponent may choose to purchase mitigation bank credits at a locally approved bank or compensate by restoring or enhancing riparian forest at onsite and/or offsite locations within the Dry Creek watershed. Each of these options is described below.

- **Mitigation Bank Credit Purchase.** If this option is chosen for non-SRA riparian forest habitats, the project proponent will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The amount to be paid will be the fee that is in effect at the time the fee is paid. The mitigation will be approved by CDFW and may be modified during the permitting process.
- **Onsite and/or Offsite Restoration in the Dry Creek Watershed.** This option may be chosen for non-SRA riparian forest and will be required for riparian forest identified as SRA cover. Onsite restoration will be required for all areas temporarily disturbed by construction. For onsite or offsite replacement plantings, an onsite mitigation planting plan will be prepared that includes a species list and number of each species, planting locations, and maintenance requirements. Plantings will consist of cuttings taken from local plants or plants grown from local material. Planted species for the mitigation plantings will be similar to those removed from the project area and will include native species, such as valley oak, Fremont cottonwood, Oregon ash, black willow, red willow, and arroyo willow. The final planting plan will be developed based on results of the arborist survey for species to be removed. All plantings will be fitted with exclusion cages or other suitable protection from herbivory. Plantings will be irrigated for up to 3 years or until established.

For riparian habitat restored onsite, it should occur in the same year as construction. Plantings will be monitored annually for 3 years or as required in the project permits. If 75 percent of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the 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. Riparian forest compensation will be consistent with the requirements of the City of Roseville and City of Rocklin tree ordinances to ensure compensation for losses of individual protected trees.

To provide a more accurate estimate of tree loss, an arborist survey will be conducted upon completion of 90% design plans for each phase of the project. In addition to a description of the tree, the arborist survey report will include the precise location of the trunk and size of the dripline for all trees whose trunk or canopy overlap with the project footprint.

To satisfy NMFS and compensate for the loss of SRA cover, this measure will include the following:

- Replace affected SRA cover vegetation at a 3:1 replacement ratio by planting native riparian trees in temporary impact areas and along existing unshaded banks. This linear distance will provide a 3:1 replacement ratio (i.e., 3 linear feet replaced for every 1 foot affected).
- Plant native riparian trees onsite to the maximum extent practicable, followed by planting on adjacent reaches of affected streams to minimize the need for offsite mitigation.
- Plant riparian trees that are intended to provide SRA cover along the water's edge at summer low flows and at levels sufficiently dense to provide shade along at least 85 percent of the bank's length when the plant reaches maturity.
- Ensure that riparian plantings intended for SRA cover mitigation are planted within 10 feet (horizontal distance) of the summer wetted channel. This maximum planting distance will ensure that riparian plantings will contribute to SRA cover once they approach maturity.
- Monitor and evaluate the revegetation success of riparian plantings intended for SRA cover mitigation as described above.

Compensate for the Permanent Loss of Oak Woodland

The project proponent will compensate for the permanent loss of oak woodland at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). Replacement plantings for oak woodland may be planted onsite and/or at offsite locations. If onsite replacement is not feasible, the project proponent will pay an in-lieu fee to the appropriate jurisdiction (i.e., the City of Roseville or the City of Rocklin).

If onsite or offsite replacement planting will occur, a mitigation planting plan will be prepared that includes a species list and number of each species, planting locations, and maintenance requirements. Plantings will consist of cuttings taken from local plants or plants grown from local material. Planted species for the mitigation plantings will be similar to those removed from the project area and will include native species, such as interior live oak, blue oak, valley oak, ceanothus (*Ceanothu*s sp.), toyon (*Heteromeles arbutifolia*), and other locally appropriate species. The final planting plan will be developed based on results of the arborist survey for species to be removed. All plantings will be fitted with exclusion cages or other suitable protection from herbivory. Plantings will be irrigated for up to 3 years or until established.

Plantings will be monitored annually for 3 years or as required in the project permits. If 75 percent of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the 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.

Oak woodland compensation will be consistent with the requirements of the City of Roseville and City of Rocklin tree ordinances to ensure compensation for losses of individual oak trees.

To provide a more accurate estimate of tree loss, an arborist survey will be conducted upon completion of 90% design plans for each phase of the project. In addition to a description of the tree, the arborist survey report will include the precise location of the trunk and size of the dripline for all trees whose trunk or canopy overlap with the project footprint.

Compensate for Temporary and Permanent Impacts on Wetlands

To compensate for temporary and permanent project impacts on seasonal wetland, freshwater emergent wetland, and riparian forest/scrub wetland, the project proponent will purchase credits at an approved mitigation bank to ensure no net loss of wetland functions and values. Vernal pool mitigation will be coordinated with compensatory mitigation for listed vernal pool fairy shrimp and vernal pool tadpole shrimp, such that mitigation for loss of listed species habitat does not duplicate mitigation for loss of USACE-jurisdictional vernal pool habitat. Mitigation banks with service areas for Placer County include Laguna Terrace East Conservation Bank, Reeds Creek Vernal Pool Preserve, Twin Cities Conservation Bank and Preserve, Toad Hill Ranch Mitigation Bank, and Western Placer Schools Conservation Bank. The minimum wetland compensation ratio will be 1:1 (1 acre of wetland habitat credit for every 1 acre of impact) to ensure no-net-loss of wetland habitat functions and values.

The construction contractor will be required to implement the conditions and requirements of state and federal permits that will be obtained for the proposed project.

Compensate for Placement of Permanent Fill in Waters of the United States/Waters of the State

The project proponent will compensate for the permanent fill of other waters of the United States and waters of the State (a direct impact associated with roadway construction). Temporarily disturbed waters of the United States will be returned to pre-construction condition following construction. The project proponent will purchase compensatory credits at a USACE-approved mitigation bank to ensure no net loss of functions and values. As discussed previously, mitigation banks with service areas for Placer County include Laguna Terrace East Conservation Bank, Reeds Creek Vernal Pool Preserve, Twin Cities Conservation Bank and Preserve, Toad Hill Ranch Mitigation Bank, and Western Placer Schools Conservation Bank. The minimum other waters compensation ratio will be 1:1 (1 acre of other waters habitat credit for every 1 acre of permanent impact) to ensure no net loss of habitat functions and values.

The construction contractor will be required to implement the conditions and requirements of state and federal permits that will be obtained for the proposed project.

Compensate for Direct Effects on Valley Elderberry Longhorn Beetle Habitat

The project proponent will compensate for direct effects (including transplanting) on all elderberry stems measuring 1 inch or more at ground level (i.e., VELB habitat) that are located within 20 feet of construction activities. Compensation will include planting replacement elderberry seedlings or cuttings and associated native plantings in a USFWS-approved conservation area, at a ratio between 1:1 and 8:1 (ratio = new plantings to affected stems), depending on the diameter of the stem at ground level, the presence or absence of exit holes, and whether the shrub is located in riparian habitat (U.S. Fish and Wildlife Service 1999).

Mitigation credits for VELB can be purchased at a USFWS-approved mitigation bank, or an onsite or offsite conservation area can be established and a management plan can be developed in accordance with the *Conservation Guidelines for Valley Elderberry Longhorn Beetle* (U.S.

Fish and Wildlife Service 1999). The exact amount and location of compensatory mitigation will be based on consultation with USFWS.

Compensate for Direct and Indirect Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat

The project proponent will compensate for direct and indirect impacts on vernal pool fairy shrimp and vernal pool tadpole shrimp at 2:1 ratio (2 acres preserved for every 1 acre affected). Compensatory mitigation will be acquired through the purchase of appropriate habitat credits at a USFWS-approved mitigation or conservation bank.

Implement Avoidance and Notification Procedures for Cultural Resources

t is the Caltrans’ policy to avoid cultural resources whenever possible. If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. All reasonable measures will be implemented to avoid, minimize, or mitigate further harm to the resource. If appropriate, the project proponent will notify Indian tribes or Native American groups that may attach religious or cultural significance to the affected property.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease 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 Native American Heritage Commission, which will then notify the Most Likely Descendent (MLD). The project proponent will work with the MLD to avoid the remains, and if avoidance is not feasible, to determine the respectful treatment of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

Conduct Phase III Data Recovery on P-31-1443

Because site P-31-1443 is eligible for listing on the NRHP and project construction cannot avoid a portion of the site, data recovery will be necessary. The potential contribution of a prehistoric site to archaeological research can be preserved, at least in part, through an excavation program designed to recover the materials that constitute important data. This research program is referred to as data recovery, or a Phase III study. Under 36 CFR 800, data recovery at an archaeological site is no longer the basis for a finding of "no adverse effect" to the site. However, data recovery continues to be an important measure to mitigate adverse effects, when avoidance of impacts is not feasible. The data recovery (or Phase III) study will consist of:

- Preparation of a Data Recovery Plan (DRP)
- Preparation of a Phase III Proposal
- Fieldwork
- Laboratory work and analysis

- Reporting the study's results

A MOA was prepared. The MOA documents agreements made about the timing, nature, and extent of the data recovery effort. Signatories on the MOA are the SHPO and Caltrans. Native American groups consulting on the project are invited to sign the MOA as concurring parties. A copy of the MOA is included in Appendix F.

The DRP was prepared concurrent with the MOA and serves to document agreement between Caltrans and SHPO that the objectives and scope of the proposed Phase III study are appropriate. The DRP is in accordance with the guidelines given in the Caltrans Standard Environmental Reference (SER) and Attachment 6 of the Section 106 PA. The DRP, at a minimum, provides for results and interpretation of research questions and proposed investigations, including how the public might benefit from the information gathered. The DRP also includes provisions for Native American consultation, qualifications of key personnel, field methods and techniques, and describe appropriate arrangements for curation of archeological materials and records.

Following approval of the DRP, a Phase III Proposal will be prepared, which is primarily an in-house document that builds on the DRP; it may reference appropriate portions of the plan or include them as attachments, if they have been adequately developed. The Phase III Proposal will differ from the DRP in that it will include the specifics of personnel, schedule, and cost.

Intensive fieldwork and detailed laboratory analyses are needed to realize the objectives of the data recovery program. Data recovery fieldwork will be conducted with a Native American monitor present. Recovered materials will be curated at an appropriate repository in accordance with 36 CFR Part 79, "Curation of Federally Owned and Administered Archaeological Collections," and the Office of Historic Preservation's "Guidance for the Curation of Archaeological Collections."

Once fieldwork and laboratory analysis are completed, a Data Recovery Report will be prepared that details the methods and results of the effort. The final report will describe the contributions the excavation made toward creating a more complete picture of regional prehistory. The SER guidelines for preparing Data Recovery Reports will be followed by the archaeologist. The archaeologist will also prepare a revised archaeological site record that documents the changed information about the site as a result of the Phase III studies, a copy of which will be submitted to the CHRIS NCIC located at California State University, Sacramento.

Educate Construction Personnel in Recognizing Fossil Material

All construction personnel receive training provided by a qualified professional paleontologist experienced in teaching non-specialists to ensure that construction personnel can recognize fossil materials in the event that any are discovered during construction.

Stop Work if Substantial Fossil Remains Are Encountered during Construction

If substantial fossil remains (particularly vertebrate remains) are discovered during earth-disturbing activities, activities will stop immediately until a State-registered professional geologist or qualified professional paleontologist can assess the nature and importance of the geologist or qualified professional paleontologist can assess the nature and importance of the find and a qualified professional paleontologist can recommend appropriate treatment. Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may include preparation of a report for publication describing the finds. The project proponent will ensure that recommendations regarding treatment and reporting are implemented.

Resource Stewardship Measures

The following will be added to the project's standard specification.

If paleontological resources are discovered at the job site, do not disturb the material and immediately:

1. Stop all work within a 60-foot radius of the discovery
2. Protect the area
3. Notify the Resident Engineer

The project proponent investigates and modifies the dimensions of the protected area if necessary.

Do not take paleontological resources from the job site. Do not resume work within the specified radius of the discovery until authorized. A specification alerting the construction contractor that paleontological monitoring will occur during activities that will disturb native sediments will also be added to the project's specifications.

Improve Taylor Road at Stonehouse Court

At the time that improvements to Taylor Road are constructed as part of the proposed project, the project proponent will facilitate egress from businesses located on the south side of Taylor Road through the construction of a new traffic signal on Taylor Road at Stonehouse Court that allows eastbound Taylor Road traffic to make a U-turn.

Regional Coordination for Transportation Improvements

The *Transportation Analysis Report* assumed modifications to the existing transportation network according to improvement projects anticipated to be constructed by the construction (2020) and design (2040) years (refer to *Transportation Analysis Report* Figures 6 and 7). These projects are based on the financially constrained project list contained in the 2035 MTP/SCS, but also consider projects the project development team agreed would likely be constructed by the design year (2040).

The rationale for adding projects to the MTP/SCS list was that the design year is five years beyond the 2035 horizon of the MTP/SCS. This creates a longer timeframe for revenue to accumulate. Further, the additional socioeconomic growth added to the model would also be contributing to transportation revenue to help pay for these improvements.

Based on results from the *Transportation Analysis Report*, it was determined that even with transportation improvements assumed through year 2040, the following specific locations in the project boundary may operate below acceptable thresholds and potential future improvements are identified below.

Westbound I-80:

- Improve from SR 65 to Riverside Avenue by providing an additional through lane from the Douglas Boulevard off-ramp to the westbound on-ramp and from the Riverside Avenue off-ramp to the northbound on-ramp. This improvement may cause a secondary operational deficiency downstream at Elkhorn Boulevard.
- Improve from the truck scales to Elkhorn Boulevard by providing a full auxiliary lane from the truck scales to Elkhorn Boulevard or adding a through lane at Elkhorn Boulevard.
- An alternate improvement to the above widening options would be to operate the ramp meters on westbound I-80 and southbound SR 65 at a more restrictive rate. With a more restrictive rate, longer ramp queues may cause a secondary operational deficiency on local streets.

Northbound SR 65:

- Improve from Stanford Ranch Road to Pleasant Grove Boulevard by providing an additional through lane from the Pleasant Grove Boulevard off-ramp to on-ramp. The additional lane may need to be extended past the Blue Oaks Boulevard interchange to improve potential secondary operational deficiencies.

Southbound SR 65:

- Improve from Ferrari Ranch Road to Twelve Bridges Drive by providing an auxiliary lane between Twelve Bridge Drive and Placer Parkway. Secondary operational deficiencies may occur at downstream sections.
- Improve the westbound Placer Parkway on-ramp (Alternative 1 only) by extending the planned auxiliary lane between Placer Parkway and Sunset Boulevard to start at the westbound, instead of the eastbound, on-ramp.
- Improve the southbound-to-westbound connector at I-80 (Alternatives 1 and 2) by widening westbound I-80 at Douglas Boulevard or adjusting ramp meter rates as discussed above for westbound I-80.

Intersections:

- Improve the Stanford Ranch Road/Five Star Boulevard intersection by providing a second eastbound right-turn lane.
- Improve the Roseville Parkway/Creekside Ridge Drive intersection, caused by queuing from the adjacent intersection at Roseville Parkway/Galleria Boulevard, by implementing signal timing adjustments (when warranted based on monitoring) or widening improvements at the adjacent signal.

- Improve the Roseville Parkway/Taylor Road intersection (Alternative 3 only) by adding a third southbound left-turn lane.
- Improve the Atlantic Street/I-80 westbound ramps intersection (Alternatives 1 and 3) by adjusting the ramp meter rate or widening the on-ramp to provide more storage.
- Improve the Eureka Road/Taylor Road/I-80 eastbound ramps intersection. For Alternatives 1 and 2, add a second northbound left-turn and southbound right-turn lanes to reduce delays although accommodations may be needed for bicycles and pedestrians. Because Alternative 3 already includes these modifications, further improvements will need to be identified.
- Improve the Eureka Road/Sunrise Avenue intersection by widening to provide a fourth through lane or a third left-turn lane on some approaches.
- Improve the Pacific Street/Sunset Boulevard intersection (Alternatives 1 and 2) under construction year conditions by constructing the planned widening of Sunset Boulevard from four to six lanes prior to the construction year. The planned widening is currently assumed to occur before the design year.

Some of the improvements identified above are already being considered as part of the SR 65 Widening (http://pctpa.net/projects/sr65widening/) and I-80 Auxiliary Lanes (http://pctpa.net/projects/i-80-auxiliary-lanes/) projects. Other improvements identified above are preliminary and need further study, including inclusion in the Placer County Regional Transportation Plan and SACOG MTP/SCS, environmental clearance and public outreach, project approval from Caltrans and/or FHWA, project design, and potential right of way acquisition, before the improvements can be constructed and open to the traveling public. Depending on the project size and cost, infrastructure improvements on federal and state highways can take an average of 16 years. If a project is not controversial, fully funded, and within existing right of way, then typically those projects can be constructed within five to ten years.

The need for additional transportation improvements after year 2040 is based on growth in traffic demand from development over a wide area. Jurisdictions in Placer County currently have traffic impact fee programs both at the local jurisdiction and regional county levels. Traffic impact fees on new development are a potential source of funding for the above identified improvements. Placer County has a history of planning for both local and regional transportation improvements, including the South Placer Regional Transportation Authority (http://pctpa.net/sprta/). Caltrans, PCTPA, and local jurisdictions continuously update and add new projects that are identified to accommodate future population and employment growth. The specific intersection and roadway improvements identified above, which are all located on Caltrans facilities or within the City of Rocklin and City of Roseville, will be addressed as part of current ongoing projects, capital improvement program updates, and traffic impact fee updates.

3.5 References Cited

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Chapter 4 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for the proposed project have been accomplished through a variety of formal and informal methods, including community workshops, project development team meetings, stakeholder focus group meetings, interagency coordination meetings, and a public scoping meeting. This chapter summarizes the results of PCPTA and Caltrans' efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

4.1 Scoping Process for the EIR/EA

4.1.1 Notice of Preparation

On behalf of the CEQA Lead Agency (Caltrans), on January 2, 2013, PCTPA distributed a Notice of Preparation (NOP) of an EIR to the following agencies. A copy of the NOP is included in Appendix F.

- California State Clearinghouse
- CDFW
- Central Valley RWQCB
- USFWS
- USACE
- FHWA
- City of Roseville
- City of Rocklin
- City of Lincoln
- County of Placer

Caltrans also sent a copy of the NOP to the California Transportation Commission (CTC), following intra-agency communication protocols.

The NOP requested comments from the responsible and trustee agencies regarding environmental issues, reasonable alternatives, and reasonable mitigation measures that should be discussed in the draft EIR to address each agency's specific concerns in their areas of responsibility. The NOP also invited agency representatives to attend a public scoping meeting held on January 15, 2013.

The 30-day comment period closed on January 31, 2013. Seven letters were received in response to the NOP, including letters from the California State Clearinghouse (Clearinghouse); CDFW; USACE; Central Valley RWQCB; Central Valley Flood Protection Board (CVFPB); City of Rocklin; and the CTC. Brief summaries of these letters are below. The letters in their entirety are included in Appendix F.

California State Clearinghouse

The letter from the Clearinghouse is the Lead Agency copy of the NOP cover letter sent by the Clearinghouse to reviewing agencies. The letter includes attachments indicating to which agencies the NOP was sent and confirms the 30-day comment period. According to the Document Details Report attachment, the Clearinghouse distributed the NOP to the Resources Agency; CVFPB; Office of Historic Preservation; Department of Parks and Recreation; California Department of Water Resources, CDFW, Region 2; NAHC; Public Utilities Commission; State Lands Commission; California Highway Patrol; ARB, Transportation Projects; and Central Valley RWQCB, Region 5 (Sacramento).

California Department of Fish and Wildlife

The CDFW recommends that the draft EIR discuss and provide adequate mitigation for impacts on fish and wildlife and their habitat; impacts on significant habitat such as wetlands, valley oak woodlands, and riparian habitat and impacts on sensitive species; and growth-inducing and cumulative impacts on fish, wildlife, water quality, and vegetative resources. In addition, CDFW recommended that the draft EIR provide analysis of alternatives that reduce impacts on fish, wildlife, water quality, and vegetative resources; and an evaluation of the project’s consistency with land use and species recovery plans. The CDFW letter also notes that an LSAA may be required and that assessment of fees under California PRC Section 21089 is necessary.

U.S. Army Corps of Engineers

In this letter, the USACE notes the agency’s jurisdiction under Section 404 of the CWA for the discharge of dredge or fill material into waters of the United States. The USACE requires a wetland delineation to ascertain the extent of water on the project site and a range of alternatives that should include alternatives to avoid impacts on wetlands or other waters.

Central Valley Regional Water Quality Control Board

This letter describes the permits related to the RWQCB’s responsibility to protect the quality of surface water and groundwater of the state: Construction Storm Water General Permit Phase I and II Municipal Separate Storm Sewer System (MS4) Permits; Industrial Storm Water General Permit; CWA Section 404 permit; CWA Section 401 permit – Water Quality Certification; and WDRs.

Central Valley Flood Protection Board

The CVFPB identifies Secret Ravine, Antelope Creek, Dry Creek, and Miners Ravine within their jurisdiction. The letter does not provide specific comments regarding the proposed alternatives but does describe the activities that require a permit from the CVFPB and the vegetation requirements, including accumulation and establishment of woody vegetation, according to Title 23, Section 131(c).

City of Rocklin

This letter indicates City support for Alternatives 1 and 2, but the City is not in favor of Alternative 3. The letter notes that the EIR should include evaluation of impacts on local roadways and that thresholds of significance should include the City of Rocklin’s Level of Service policy “C.” Analysis of Alternative 3 should include impacts on the Rocklin Road/I-80 interchange and local roadways, and should examine potential economic impacts and potential business closures. Finally, analysis of Alternative 3 should examine the likelihood of increased vehicle miles traveled and increases in emissions, including greenhouse gasses, and compare results to Alternatives 1 and 2.

California Transportation Commission

The CTC has no comments on the purpose and need, alternatives, impacts, or evaluation methods but recommends that Caltrans and its partners identify and secure the necessary funding to complete the project. The letter requests notifications as a responsible agency under CEQA if funds or other actions under the purview of the CTC are anticipated.

4.1.2 Public Scoping Meeting

A public scoping meeting/community workshop for the EIR/EA was held on January 15, 2013, from 6:00 to 8:00 p.m. at the Maidu Community Center, 1550 Maidu Drive, Roseville, California 95661. Twenty-three members of the public attended the workshop. The meeting was announced in the NOP and via a news release on December 12, 2012. The purpose of the scoping meeting was to identify concerns of both the public and agencies in order to clearly define the environmental issues and alternatives to be examined in the draft EIR/EA. Maps and other project information displays were available, and Caltrans staff were on hand to answer questions and receive comments regarding the scope and content of the EIR/EA.

More than 55 community members submitted comments on the project and the proposed alternatives. Comments were received through a variety of methods, including comment cards received at the scoping meeting/community workshop held on January 15, 2013; input received through the project website (www.8065interchange.org); and emails received through the dedicated PCTPA email (pctpa@pctpa.net). The 30-day comment period closed on January 31, 2013.

In general, commenters were pleased that the project will improve the transition from I-80 to SR 65 and noted that traffic backup and the high risk potential for major traffic accidents are an ongoing problem.

Many commenters expressed concern regarding continued Taylor Road access. Several commenters favored Alternative 1 (Taylor Road Full Access Interchange [Diamond-Shaped]) as it appeared to offer the easiest access to businesses on Taylor Road, as well as full access to I-80. Some commenters felt that local traffic also would benefit from this alternative as full access to Taylor Road is important as a parallel facility to I-80 that carries a lot of local traffic that otherwise would shift to I-80 and SR 65. Comments also noted that Alternative 1 could adversely affect the Secret Ravine riparian area.

Comments indicated that Alternative 2 (Taylor Road Full Access Interchange [Trumpet-Shaped]) was not as appealing as Alternative 1 because access to Taylor Road would be more complicated; however, Alternative 2 did not appear to not encroach on Secret Ravine as much as Alternative 1.

It also was noted that Alternative 3 (Taylor Road Interchange Eliminated) would improve flow along I-80, but the concern regarding elimination of Taylor Road remained and some comments state that elimination of Taylor Road would negatively affect businesses and increase congestion along nearby local interchanges.

Most comments expressed support for the various elements of Alternative 4 (Transportation System Management) but acknowledged that, by itself, it will not be enough to reduce traffic congestion and does not constitute a long-term solution.

Subsequent to the public scoping meeting, and through extensive coordination between Caltrans, FHWA, local agencies, and the design team, features from Alternatives 1 and 2 were combined to improve the spacing between interchanges and better address vehicle weaving on I-80 between the Eureka Road interchange and the I-80/SR 65 interchange, and a new alternative proposing a collector-distributor system in the eastbound direction was introduced. The three build alternatives described in Chapter 1 reflect these changes.

4.2 Consultation and Coordination with Public Agencies

During preparation of the technical studies for the proposed project, formal and informal coordination was conducted with the federal, state, and local agencies and the entities listed below.

4.2.1 U.S. Army Corps of Engineers

A preliminary jurisdictional determination of wetlands and other waters of the United States was prepared and was submitted by Caltrans to the USACE on March 4, 2015. Field verification site visits with the USACE and the project wetland biologist were conducted in May of 2015 and the USACE verified the delineation on November 13, 2015. An application for authorization under CWA Section 404 for fill of waters of the United States has not yet been initiated.

4.2.2 U.S. Fish and Wildlife Service

A species list was requested of USFWS and is included in Appendix F. Inter-agency consultation with USFWS under Section 7 of the ESA is required for potential effects of the proposed project on valley elderberry longhorn beetle, vernal pool fairy shrimp, and vernal pool tadpole shrimp. A BA was submitted by Caltrans to USFWS on April 24, 2015, in order to initiate ESA consultation and request the agency's determination on the effects of the project. Following submittal of the BA, Caltrans scheduled a July 7, 2015 meeting with USFWS, USACE, PCPTA and their consultant team, and the City of Roseville to discuss the findings of the BA, federal lead for Section 7 consultation, and relevance of the project to the City of Roseville's OSPOMP. Based on discussions at this meeting a revised BA was prepared and submitted to USFWS in November 2015. USFWS sent a December 29, 2015 letter to Caltrans as the federal lead agency for Section 7 consultation requesting additional information related to project impacts within open space preserves. Caltrans scheduled a second meeting to discuss the requested information and Section 7 consultation for the project on January 25, 2016. The January meeting was attended by Caltrans, USFWS, PCPTA and their consultant team, and the City of Roseville. An addendum to the BA was sent by Caltrans to USFWS on February 4, 2016. USFWS initiated formal consultation with Caltrans for the proposed project on February 9, 2016. A Biological Opinion was issued by USFWS for the proposed project on March 8, 2016, concluding formal consultation. The Biological Opinion is included in Appendix F.

4.2.3 National Marine Fisheries Service

Inter-agency consultation with NMFS under Section 7 of the ESA is required for potential effects of the proposed project on Central Valley steelhead (including designated critical habitat). In August of 2014, Caltrans began technical assistance and informal consultation with NMFS. Documentation addressing impacts on Central Valley steelhead was submitted by Caltrans to NMFS on April 24, 2015, in order to initiate ESA consultation and request the agency's determination on the effects of the project. NMFS requested additional information from Caltrans on July 14, 2015 via phone, which was provided by Caltrans and NMFS initiated consultation on the same day. NMFS sent a letter to Caltrans on August 10, 2015 stating that NMFS concurred with Caltrans that the proposed action may affect, but is not likely to adversely affect, Central Valley steelhead or their critical habitat. The letter of concurrence is included in Appendix F.

Consultation with NMFS is required for projects that adversely affect EFH for Pacific Coast salmon (Chinook salmon) designated under the MSA. An EFH assessment addressing Chinook salmon was included in the documentation submitted to NMFS on April 24, 2015. In their August 10, 2015 concurrence letter, NMFS concluded that the proposed project would not adversely affect EFH and therefore consultation under the MSA is not required.

4.2.4 Native American Heritage Commission and Coordination with Local Native American Tribes

The NAHC was contacted on March 13, 2013, to request a sacred lands database search and provide a list of Native American representatives who might have any information or concerns regarding the project. On March 22, 2013, the NAHC provided both sacred lands search results and a list of 11 Native American representatives, who were contacted by letter in April 5, 2013. Of those contacted, two representatives responded with letters. The letters are included in Appendix F.

Josh Stewart, a Native American monitor representing the UAIC, was present for Extended Phase I testing (XPI) and Phase II evaluation activities conducted between December 2014 and March 2015, including locating and recording shovel test probes.

4.2.5 North Central Information Center

The North Central Information Center was contacted in March 2013 to perform a records search of archaeological and historical resources for the project.

4.2.6 State Historic Preservation Officer

The SHPO was contacted to request concurrence with the findings of the XPI testing and Phase II Evaluation conducted at site P-31-1443. As a result of this testing, site P-31-1443 is recommended eligible for listing on the NRHP. On May 4, 2015, the results of the evaluation were submitted to SHPO requesting concurrence on the eligibility determination. The SHPO responded in a letter dated July 2, 2015, concurring that site P-31-1443 is eligible for listing on the NRHP. In the same letter, the SHPO agreed to assume that two built environment resources, the former First Transcontinental Railroad and the Edwin Purdy House, are eligible for listing in the NRHP for the purposes of this undertaking, and concurred that the segment of the former Lincoln Highway within the project limits is not eligible for the NRHP due to a lack of integrity. Subsequent research into the Edwin Purdy House history supported a conclusion that the stone house is not eligible for listing in the NRHP. Caltrans provided the additional information to the SHPO on July 28, 2015 and received concurrence with the revised determination. A Finding of Effects document was prepared by Caltrans and submitted to SHPO for concurrence on January 25, 2016. SHPO concurred with the FOE determination on March 22, 2016. Concurrence letters are included in Appendix F. A MOA was prepared and sent to SHPO and was executed on August 22, 2016. The MOA is included in Appendix F.

4.2.7 City of Roseville

Written concurrence from the City of Roseville Parks, Recreation, and Libraries regarding the project's temporary occupancy of the two trails was requested to meet the requirements of Section 4(f) at 23 CFR 774.13(d). Caltrans determined that the proposed project would not trigger the provisions of Section 4(f) because it would involve only temporary occupancy of the

Antelope Creek and Miners Ravine Trails. Caltrans requested concurrence from Dominick Casey, Director, City of Roseville Parks, Recreation, and Libraries. On November 5, 2013, Caltrans received the signed concurrence letter. The request and response letters are included in Appendix F.

4.3 Public Participation and Outreach

4.3.1 Community Workshops

A series of public workshops were hosted by PCTPA to encourage public participation. The purpose of the workshops was to introduce the overall interchange improvement project, the Project Approval and Environmental Document (PA&ED) phase, and the proposed schedule; and to gather input from community members. Over 120 informational notices were sent via email and U.S. Postal Service to local jurisdictions (Lincoln, Rocklin, Roseville, and Placer County), interested agencies, vicinity organizations/businesses, and interested individuals. Notices also were posted to PCTPA's website (www.pctpa.net) and the project website (www.8065interchange.org). The details of the public workshops follow. Workshop #1 was held on April 14, 2011, from 6:00 to 8:00 p.m.at the Rocklin City Council Chambers, 3970 Rocklin Road, in Rocklin, California. Thirty-two members of the public attended this workshop. The workshop was organized as an open house with a series of information stations where the public could get information about the project, ask questions, and provide feedback. Information station topics included general project information, mapping, community input, and traffic patterns. Questions from attendees included those regarding the process of the PA&ED phase, how alternatives are selected, project limits, and how to create access to businesses on I-80/SR-65 corridors. Other key topics included the plans for Taylor Road as well as a general support for addressing congestion. A full summary of the workshop can be found at: http://8065interchange.org/?p=111.

Workshop #2 was held on January 25, 2012, at 9:00 a.m.at the Placer County Board of Supervisors Chambers, 175 Fulweiler Street, in Auburn, California. This meeting was held during a regularly scheduled PCPTA Board meeting and, therefore, no sign-in sheet was provided. Five people however did sign up to be included on the contact list. A staff presentation concluded with a series of 'Next Steps' (traffic analysis – summer 2012, alternatives selection – spring 2012, and environmental technical studies – spring 2012). Questions from attendees included those regarding the traffic patterns near the Galleria (from Atlantic Street), whether the TSM would be considered a potential first phase of the project, and what would happen to Eureka and East Roseville Parkway if the Taylor Road ramps closed. Other topics raised included the suggestion of an auxiliary lane on westbound I-80 from Douglas Boulevard to Riverside Avenue and that concern about eliminating existing ramps to Taylor Road. A full summary of the workshop can be found at: http://8065interchange.org/?p=220.

Workshop #3 served as the public scoping meeting and was held on January 15, 2013, from 6:00 to 8:00 p.m. at the Maidu Community Center, Reception Hall, 1550 Maidu Drive, in Roseville, California. Twenty-three members of the public attended the workshop. The workshop was organized as an open house with a series of information stations where the attendees could get information about the project, ask questions, and provide feedback. Following the presentation, attendees were encouraged to visit the information stations where the project team was available to answer questions. Comments are included above in section 4.1.2. A full summary of the workshop can be found at: http://8065interchange.org/?p=278.

4.3.2 Public Hearings

In anticipation of the public distribution of the Draft EIR/EA, a Public Hearing was held on June 24, 2015 at the Placer County Board of Supervisors Chambers, 175 Fulweiler Avenue, in Auburn, California. This hearing was held during a regularly schedule PCPTA Board meeting and, therefore, no sign-in sheet was provided. The board opened up the public hearing regarding the proposed project and PCTPA staff provided an update on the status of the EIR/EA and requested that the public comment be continued until the August 26 board meeting.

A Public Hearing was held on August 26, 2015 at the Placer County Board of Supervisors Chambers, 175 Fulweiler Avenue, in Auburn, California. This hearing was held during a regularly schedule PCPTA board meeting and, therefore, no sign-in sheet was provided. The Public Hearing took place toward the end of public circulation of the Draft EIR/EA. Circulation took place from August 3, 2015 to September 16, 2015. During the hearing, Wayne Lewis, Caltrans Project Manager, spoke in support of Alternative 2, stating that he believes it will most appropriately serve the varied needs of motorists using the interchange. One member of the public, Irene Smith, spoke at the hearing. Ms. Smith asked for consideration in building an off-ramp for emergency vehicles that would go directly from the interchange ramp to Sutter Roseville Hospital. A response to the comment from Ms. Smith is included in Appendix G.

4.3.3 Stakeholder Focus Group Meetings

Approximately 40 representatives identified as key stakeholders were invited to attend stakeholder focus group meetings. The stakeholder group consisted of a cross section of project-vicinity property and business owners/tenants, residents, and other interested organizations/individuals that may be directly affected by the proposed project. The purpose of the meetings was to receive feedback from key stakeholders regarding current traffic patterns and land use, as well as the evaluation criteria for potential alternatives. Stakeholder focus group meetings took place on August 23, 2011; January 11, 2012; January 9, 2013; February 4, 2014, and March 12, 2015. Details are below.

Stakeholder Focus Group Meeting #1 was held on August 23, 2011, at 9:00 a.m. at 2000 Taylor Road, Roseville, California and at 4:00 p.m. at the Roseville Civic Center, Roseville, California. Nine stakeholders attended the meetings. During discussions regarding traffic data and modeling, stakeholders agreed that the traffic data accurately depicted congestion points along the I-80 and SR 65 corridors as well as local streets; including the heavy congestion in the morning and afternoon commute times, especially the bottleneck into Lincoln. They were also interested to know which traffic model was used to analyze traffic conditions for the proposed project.

There was general agreement among the attendees that Taylor Road is often used as a “parallel facility” in order to avoid traffic delays. The Hilton Garden Inn directs guests to take Taylor Road and not the freeway in the evening to avoid traffic. Stakeholders agreed that I-80/Taylor Road Interchange should not be closed in either direction (westbound I-80 on-ramp or eastbound I-80 off-ramp). Other questions and comments included concern for Taylor Road and if it must be closed, could it be combined with another interchange and how the proposed project fits into the larger transportation system. A full summary of the meeting can be found at: http://8065interchange.org/meetings/stakeholder/SRG_Notes_082311_FINAL.pdf.

Stakeholder Focus Group Meeting #2 was held on January 11, 2012 at 2000 Taylor Road, Roseville, California. Fourteen stakeholders attended the meeting. The main purpose of this meeting was to review the overall project and introduce the preliminary design concepts. Attendees commented on all five concepts presented. During these discussions, questions regarding the viability of implementing the TSM, LOS on Taylor Road, and the differences between design concepts were raised. A request was made for maps that include existing property lines in addition to the design. One commenter noted that for some, there is a feeling of resentment from Taylor Road business/property owners when Taylor Road is referred to as a partial interchange because the feeling is that lanes were given up for SR 65 and now the whole interchange could be lost. A full summary of the meeting can be found at: http://8065interchange.org//meetings/stakeholder/SRG_Notes_011112_FINAL.pdf.

Stakeholder Focus Group Meeting #3 was held on January 9, 2013, at 2000 Taylor Road, Roseville, California. Thirteen stakeholders attended the meeting. Discussion for this meeting focused on review of the project including constraints and considerations, and the current project phase, as well as address questions or concerns about the overall project. Questions addressed by the project team regarding Alternative 1 included a question asking why the current southbound SR 65 ramp to eastbound I-80 need to be reconstructed and whether or not the project would stay within existing right of way. For Alternative 2, a question was raised asking if Taylor Road can be mixed and matched with other alternatives. Regarding Alternative 3, one commenter expressed concern for the “already congested” Eureka Road and another if it was possible to remove underutilized HOV lanes in heavily congested areas. Some general comments included a concern for the salmon in Secret Ravine, funding and costs for the project, whether elements of the TSM can be incorporated into any alternative and additional safety benefits of the project. A full summary of the meeting can be found at: http://8065interchange.org/meetings/stakeholder/SRG_Notes_010913_FINAL.pdf.

Stakeholder Focus Group Meeting #4 was held on February 4, 2014, at 2000 Taylor Road, Roseville, California. Sixteen stakeholders attended the meeting. The purpose of this meeting was to present the current revised alternatives as well as gather additional feedback. One commenter expressed concern for Alternative 1 regarding property acquisitions and another noted that this alternative did not offer full Taylor Road access. Questions about Alternative 2 included several regarding what specific changes to Taylor Road would occur and whether or not there would be access to Taylor Road from westbound I-80. Questions and comments regarding Alternative 3 included a concern that jobs would be lost under this alternative, and was the project team was in communication with the environmental community, and if this alternative would create more traffic on local roads. A full summary of this meeting can be found at: http://8065interchange.org//meetings/stakeholder/SRG_Notes_020414_FINAL.pdf.

Stakeholder Focus Group Meeting #5 was held on March 12, 2015, at 2000 Taylor Road, Roseville, California. Twelve stakeholders attended the meeting. The purpose of this meeting was to provide an overview of project status, a review of project alternatives and a presentation of planned next steps as the EIR/EA is prepared for public release in spring of 2015. Alternative 2 was presented as the preferred alternative, subject to public review. Questions about Alternative 2 included several regarding access to Cattlemens restaurant, left turn options on Taylor Road, and speed limit and ramp metering on the C-D ramps. Comments included consideration of flooding on Taylor Road, acceptance of Alternative 2, and positive feedback for the C-D ramp system. Property and right-of-way acquisition questions included effects on businesses and business signage, the limits of Union Pacific Railroad right-of-way along Taylor Road, and heights of noise barriers on Rocklin Road. A full summary of this meeting can be found at: http://8065interchange.org/meetings/stakeholder/Stakeholder_Meeting5_summary.pdf.

4.4 Circulation of Draft EIR/EA and Comments Received

A Notice of Completion form and copies of the Draft EIR/EA were submitted to the State Clearinghouse on August 3, 2015. A notice of the availability of the Draft EIR/EA and of the public hearing was published in the Auburn Journal, Colfax Record, Loomis News, Lincoln News Messenger, Rocklin Placer Herald, and the Roseville Press Tribune and mailed to the distribution list of agencies, organizations and individuals identified in Chapter 6, *Distribution List*.

The Draft EIR/EA was available for public review for a 45-day period starting August 3, 2015, and ending September 16, 2015. The August 26, 2015 public hearing mentioned above was held during the 45-day comment period.

A total of 11 comment letters/emails were received and one comment card received at the public hearing. Comments received on the Draft EIR/EA and Caltrans' responses to those comments are provided in Appendix G. Table 4-1 contains a list of the individuals, organizations, and agencies that submitted comments on the Draft EIR/EA.

Table 4-1. List of Individuals, Organizations, and Agencies Commenting on the Draft EIR/EA

Commenter	Format of Comment (letter, email, hearing)	Date Comment Received
Roger Smith	Email	8/12/2015
Jerry Peterson	Email	8/19/2015
Irene Smith	Public hearing card	8/26/2015
Bruce FitzGerald	Email	9/16/2015
Dry Creek Conservancy	Email	9/16/2015
Federal Emergency Management Agency	Letter	8/24/2015
Central Valley Regional Water Quality Control Board	Letter	9/9/2015
City of Rocklin	Letter	9/15/2015
City of Roseville	Letter	9/16/2015
Governor's Office of Planning and Research, State Clearinghouse and Planning Unit	Letter	9/17/2015
California Transportation Commission	Letter	10/1/2015

Chapter 5 List of Preparers

The following agency staff and consultants contributed to the preparation of this EIR/EA.

5.1 Caltrans

- Sam Jordan, P.E., Project Manager
- Wayne Lewis, P.E., Project Manager
- Kendall Schinke, Environmental Branch Chief
- Adele Pommerenck, Environmental Branch Chief
- John Webb, Environmental Manager – South
- Ken Lastufka, Environmental Coordinator, Community Impacts oversight
- Dotrik Wilson, Environmental Coordinator
- Joan Fine, Architectural History oversight
- Bill Larson, Archaeology oversight
- Gail St. John, NEPA Reviewer, Section 4(f) oversight
- Jim Calkins, P.E., Traffic oversight
- Christine Zdunkiewicz, Traffic oversight
- Cynthia Smith, Traffic Planning oversight
- Mark Melani, Hazardous Waste oversight
- Jeff Pietrzak, Aesthetics oversight
- Jason Meigs, Biology oversight
- Saeid Zandian, Noise oversight
- Shalanda Christian, Air Quality/Climate Change oversight
- Gurdeep Bhattal, P.E., Floodplain/Hydrology oversight

5.2 Federal Highway Administration

- Cesar Perez, Project Manager

5.3 Placer County Transportation Planning Agency

- Celia McAdam, AICP, Executive Director

- Luke McNeel-Caird, P.E., Senior Planner/Engineer

5.4 City of Roseville

- Rhon Herndon, P.E, Public Works Director
- Scott Gandler, P.E., Senior Civil Engineer, Public Works Department

5.5 City of Rocklin

- Dave Palmer, P.E., City Engineer

5.6 City of Lincoln

- Ray Leftwich, P.E., Construction Manager

5.7 Placer County

- Matt Randall, P.E., Civil Engineer, Public Works Department
- Richard Moorehead, P.E., Senior Civil Engineer, Public Works Department

5.8 ICF International

- Maggie Townsley, Project Director
- Claire Bromund, Senior Project Manager
- Tina Sorvari, Project Coordinator, Hazardous Waste/Materials
- Deborah Jew, Publications Specialist
- Larry Goral, Technical Editor
- Geneva Faulkner, Land Use, Growth, Community Impacts
- Kimberly Stevens, Utilities and Emergency Services
- Jessica Viramontes, Traffic and Transportation
- Jennifer Stock, Visual/Aesthetics
- Christiaan Havelaar, Archaeology
- Pete Morris, Archaeology
- Monte Kim, Architectural History
- Meghan Heintz, Hydrology Floodplain; Water Quality and Stormwater

- Ellen Unsworth, Geology/Soils; Paleontology
- Laura Yoon, Air Quality and Energy
- Darrin Trageser, Air Quality and Energy
- Shannon Hatcher, Air Quality and Energy peer review
- Jason Volk, Noise and Vibration
- Angela Alcala, Wildlife Biology
- Jessica Hughes, Botany and Wetland Ecology
- Jeff Kozlowski, Fisheries Biology
- Karin Bouler, Cumulative Impacts

5.9 CH2M HILL, Inc.

- Leonard Heuston, P.E., Project Manager
- Chris Benson, P.E., Project Manager
- Lauren Proctor, P.E., Project Engineer
- Michael Higgins, Environmental Coordinator

5.10 Fehr & Peers

- David Stanek, P.E., Traffic Engineering
- Katie Jackson, P.E., Traffic Engineering
- Ronald T. Milam, AICP, PTP, Traffic Engineering

5.11 WRECO

- Analette Ochoa, P.E., Water Quality, Stormwater, Hydrology

5.12 Blackburn Consulting, Inc.

- Patrick Fisher, P.E., C.E.G., Geotechnical, Hazardous Materials
- Rob Pickard, C.E.G., Geotechnical
- Jeff Patton, P.E., Geotechnical
- Laura Long, Hazardous Materials

5.13 Egret, Inc.

- Joan Lynn, Lead Technical Editor

Chapter 6 Distribution List

The following agencies, organizations, and individuals were sent a copy of the Draft EIR/EA.

Federal Agencies and Tribal Representatives

Federal Emergency Management Agency

Federal Highway Administration

National Marine Fisheries Service, Sacramento Office

Native American Heritage Commission

U.S. Army Corps of Engineers, Sacramento District

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service, Sacramento Office

U. S. Department of the Interior, Bureau of Reclamation

United Auburn Indian Community of the Auburn Rancheria

State Agencies

California Air Resources Board

California Department of General Services

California Department of Housing and Community Development

California Department of Toxic Substances Control

California Department of Water Resources

California Department of Fish and Wildlife, North Central Region

California Department of Parks and Recreation

California Energy Commission

California Highway Patrol

California Integrated Waste Management

California Office of Historic Preservation

California Public Utilities Commission

California Resources Agency

California Reclamation Board

California State Clearinghouse

California State Lands Commission

California State Water Resources Control

California Regional Water Quality Control Board, Central Valley Region

Central Valley Flood Protection Board

California Department of Education, School Facilities Planning Division

CalFire, Nevada-Yuba-Placer Unit

California Transportation Commission

Caltrans, Division of Environmental Analysis

The following agencies, organizations, and individuals will be sent notification of availability of this Draft EIR/EA.

Local Agencies

City of Auburn

City of Colfax

City of Lincoln

City of Rocklin

City of Roseville

Town of Loomis

County of Placer

Roseville Fire Department

Rocklin Fire Department

Roseville Police Department

Rocklin Police Department

Placer County Sheriff Department

Placer County Air Pollution Control District

Roseville Transit

Placer County Transit

Schools and School Districts

Roseville City Elementary School District

-Catheryn Gates Elementary School
-Ferris Spanger Elementary School
-Thomas Jefferson Elementary
-Stoneridge Elementary School

Roseville Joint Union High School District

-Roseville High School

Rocklin Unified School District

-Antelope Creek Elementary School
-Sierra Elementary School

Sierra Community College District

-Sierra College

Phoenix Schools Private Preschool

University of Phoenix, Sacramento Valley Campus

Federal Elected Officials

United States Senate, Barbara Boxer

United States Senate, Diane Feinstein

United States Congress, Tom McClintock, 4th District

United States Congress, Doug LaMalfa, 1st District

State Elected Officials

California State Senator Ted Gaines, District 1

California State Senator Jim Nielson District 4

California State Assembly, Beth Gaines, District 6

Local Elected Officials

All members of the Auburn City Council

All members of the Colfax City Council

All members of the Lincoln City Council

All members of the Rocklin City Council

All members of the Roseville City Council

All members of the Loomis Town Council

All members of the Placer County Board of Supervisors

Other Individuals and Organizations

Organizations and individuals who previously requested notices regarding this Draft EIR/EA

Union Pacific Railroad

Pacific, Gas & Electric

Sacramento Municipal Utility District

Western Area Power Administration

AT & T

Kinder Morgan

Environmental Council of Sacramento

Placer Valley Tourism

Auburn Area Chamber of Commerce

Colfax Area Chamber of Commerce

Foresthill Divide Chamber of Commerce

Lincoln Area Chamber of Commerce

Loomis Basin Chamber of Commerce

North Lake Tahoe Chamber of Commerce

Rocklin Chamber of Commerce

Roseville/Granite Bay Chamber of Commerce

Sacramento Metropolitan Chamber of Commerce