Bear Creek Bridge Replacement Project

State Route 20 in Colusa County, near the intersection with State Route 16

03-Col-20-KP 4.5/6.1 (PM 2.8/3.8)

EA 1C4900

Initial Study with Negative Declaration

Prepared by the

State of California Department of Transportation

May 2006

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SCH# _____
03-Col-20-KP 4.5/6.1
(PM 2.8/3.8)
EA # 1C4900

Bear Creek Bridge Replacement on State Route 20 in Colusa County, from KP 4.5 (PM 2.8) to KP 6.1 (PM 3.8)

INITIAL STUDY WITH PROPOSED NEGATIVE DECLARATION

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

THE STATE OF CALIFORNIA
Department of Transportation

15 February 2005
Date of Approval

John D. Webb, Chief
North Region Environmental Services
California Department of Transportation

Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans) proposes to replace the Bear Creek Bridge (Bridge No. 15-0030) and reconstruct a 1,200-meter section of roadway along a new alignment on State Route 20 in Colusa County. The project limits will extend from kilometer post (KP) 4.5 to 6.1, postmile (PM) 2.8 to 3.8. The project will widen the travel lanes to 3.6-meters (12-feet) wide, add shoulders that will vary in width between 2.4 to 3.0-meters (8 to 10-feet), and install shoulder backing 1-meter (3-feet) wide. Existing culverts within the project limits will be extended and replaced. Utility poles carrying telephone lines will be relocated. Rebuilding this section of roadway to meet current design standards will improve the safety for the traveling public.

Determination

Caltrans has prepared an Initial Study for this project and following public review has determined from this study that the proposed project will not have a significant effect on the environment for the following reasons:

- The project will have no effect on air quality, land use, farmlands, noise levels, population and housing, recreation or parklands, public services, transportation, or traffic patterns.
- The project will have no significant effect on floodplains, cultural resources, visual resources, water quality, geology, soils, hydrology, or hazardous waste.
- Replacement planting will minimize potential impacts to riparian vegetation.
- Migratory birds will be protected in accordance with the Migratory Bird Treaty Act.
- Impacts to wetlands will be mitigated to result in no net loss of wetlands.

John D. Webb, Chief
North Region Environmental Services
California Department of Transportation

3 May 2006
Date

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List of Abbreviated Terms

ac	Acre
AC	Asphalt concrete
ADT	Average Daily Traffic
APE	Area of Potential Effects (cultural resources)
BMP	Best management practices (water quality)
BSA	Biological Study Area
Caltrans	California Department of Transportation
CDFG	California Department of Fish & Game
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	Carbon monoxide (air quality)
dBA	Decibels (noise level measurement)
Dbh	Diameter at breast height
ES	Edge of shoulder
ESA	Environmentally Sensitive Area
ETW	Edge of traveled way
FG	Finished grade
FHWA	Federal Highway Administration
FPPA	Farmland Protection Policy Act
ft	Foot/feet
ha	Hectare
HP	Hinge point
HPSR	Historic property survey report
IS	Initial Study
km	Kilometer(s)
KP	Kilometer post
Leq	Equivalent noise level
LOS	Level of service
m	Meter(s)
MBTA	Migratory Bird Treaty Act
mi	Mile(s)
NAC	Noise abatement criteria
NEPA	National Environmental Policy Act
NES	Natural Environment Study (biological resources)
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
OG	Original ground
OHWM	Ordinary High Water Mark
PG&E	Pacific Gas & Electric
PM	Post mile
ppm	Parts per million
PRC	Public Resources Code
RTIP	Regional Transportation Improvement Program

RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SHPO	State Historic Preservation Office
SR	State Route
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish & Wildlife Service

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans) intends to replace the Bear Creek Bridge (Bridge No. 15-0030) in Colusa County, west from the city of Williams, on State Route 20. The new bridge will be constructed 23-meters (75-feet) upstream (north) from the existing bridge. Because the new bridge will be constructed on a new alignment and at a higher profile, a 1,200-meter section of highway will be reconstructed to align the repositioned bridge to the roadway.

In the direction of west to east, State Route 20 travels from the Pacific Coast to the Sierra Nevada Mountains passing through Colusa County. The highway extends east to the Twin Cities of Yuba City and Marysville. Towards the west, the highway continues past Williams onto Clearlake. Bear Creek Bridge, less than a quarter mile from where State Highway 16 and State Highway 20 intersect, transverses the highway across Bear Creek. As such, Bear Creek Bridge is an essential component to the transportation infrastructure that serves regional, commercial, agricultural, and recreational traffic. Built in 1930, the Bear Creek Bridge was constructed as a seven-span, reinforced concrete girder deck. The bridge deck rests on six bent caps supported by four columns at each bent. Concrete footings anchor the columns into the streambed channel. The bridge is 8.5-meters (28-feet) wide and 66.1-meters (217-feet) long with two 2.7-meter (9-foot) wide travel lanes with no shoulders. The bridge was built on a 30-degree skew across Bear Creek.

1.1.2 Project Background

Most bridges on the California highway system undergo routine maintenance inspections every two years. The purpose of these inspections is to document the current condition of the bridge and determine the degree of wear and deterioration. Bridge inspectors make an in-depth evaluation of the condition of the structure and record information about any observable defects. The initial bridge inspection, and all subsequent inspections, is recorded on the Bridge Inspection Report form and archived into a database. Historical records from the database can provide a baseline of the structural condition and identify any changes from the observations developed over the years. In addition, information pulled from the database will reveal any past maintenance repairs. Based on these historical reports, Caltrans is able to make an

assessment of the long-term performance of the bridge. If a bridge has identified deficiencies, a recommendation is made to either replace the bridge or repair the deficiencies. If the repairs become cost prohibitive, or the structural deficiencies are beyond routine maintenance repairs, then a total bridge replacement is recommended.

Since 1955, and continuously reflected in subsequent reports, the Bridge Inspection Reports for the Bear Creek Bridge have documented the need to remove the accumulation of branches entangled between the columns, and noted the evidence of water overtopping by the remnants of debris left on the bridge deck after the high waters have receded. The most recent Bridge Inspection Report dated August 2004 identified extensive scour holes near the foundation of the columns, exposing the top of the footings. Collectively over the last 45 years, the Bridge Inspection Reports for Bear Creek Bridge have clearly documented the maintenance difficulties for this structure. Based on these collective investigations a recommendation was made for a complete bridge replacement. The proposed project is included in the 2004 State Highway Operation and Protection Program (SHOPP) with an estimated cost of $5.9 million.

1.2 Purpose and Need

1.2.1 Purpose

The purpose of the Bear Creek Bridge Replacement Project is to remove a functionally obsolete structure and reconstruct a bridge on a new alignment that will provide adequate, safe vehicle access. The intention is to improve safety and reduce long-term maintenance costs by replacing Bear Creek Bridge.

1.2.2 Need

Bridges that are termed functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate underclearance, scour degrading the foundation, or poor alignment, all of which reduce highway safety. Bear Creek Bridge received a functionally obsolete rating because of the following reasons: a history of overtopping during heavy rains due to an inadequate length between spans; the deposit of large amounts of sediment that clog the waterway channel; and scour occurring around the piers that is degrading the foundation of the bridge footings. Highway design standards have changed since the highway segment was first constructed. In addition to the hydraulic deficiencies of the bridge, the bridge no

longer meets current design standards for lane and shoulder widths. Instead of the bridge being reconstructed on its existing location, a road realignment is proposed to improve the geometric design by changing the curve radii.

When this portion of State Route 20 was constructed, the road was originally built around a large hill. The roadway was likely built around the hill because it was easier to construct by avoiding extensive cuts into the hillside. Unfortunately, this segment of highway was built on a curve radius that limits the sight distance for drivers. Drivers attempting to exit Bear Creek Road onto the highway have limited site distance because of the large hillside. It is difficult to determine whether or not oncoming traffic is traveling in the westbound highway lane. The goal of the project is to improve the safety of State Route 20. To attain this goal, the proposed project will realign the roadway to improve the geometric design and increase the shoulder widths to current design standards. The new alignment will provide standard sight distance for drivers and full-width paved shoulders will provide room for emergency parking should a vehicle become disabled.

In addition to the reduced site distance, this bridge has inadequate length between spans. Due to the inadequate length between spans, large pieces of drifting debris become entangled between the columns. With the waterway clogged with debris during high flows, the water overtops the bridge. Historical Bridge Inspection Reports dated in 1955, and subsequent reports from the following years, have documented the need to remove the accumulation of branches. Evidence of overtopping was also noted by the remnants of debris left on the bridge deck after the waters receded.

The most recent August 2004 Bridge Inspection Report identified extensive scour holes near the foundation of the piers, exposing the top of the footings. Bank erosion upstream has deposited large amounts of sediment between some of the piers, reducing the waterway capacity by more than fifty percent during high flows. Scour, as a result of water surging around the piers, erodes the soils on which the structure is supported. Should the scour continue during rapid flood events, the foundation of the bridge could be undermined, causing partial or total collapse of the bridge. Reconstructing the new bridge on a different alignment will improve the sight distance, rectify hydraulic deficiencies by eliminating subsurface scour, and restore a more natural stream channel by the removal of several in-water piers.

1.3 Alternatives

1.3.1 Build Alternative

The proposed project will consist of replacing the existing Bear Creek Bridge with a new bridge on an alignment shifted approximately 23-meters (75-feet) north (upstream) from the existing location. The new bridge will be constructed while the existing bridge remains open to traffic. Facilitating the use of the existing bridge will minimize traffic impacts during the construction period. Once traffic is moved onto the new bridge, the old bridge will be demolished.

The new bridge will be approximately 14-meters (43-feet) wide and 75-meters (246) long. The replacement bridge will be 5.5-meters (18-feet) wider and 8.8-meters (29-feet) longer than the old bridge to accommodate wider travel lanes and added shoulders. The design of the new bridge will place two piers in the streambed and the existing 24 piers inside the channel will be removed. The profile of the new structure will be five to six feet higher than the profile of the present bridge. The new bridge design will be configured with a width and profile that corrects the structural deficiencies discovered through the bridge inspection program. Replacing Bear Creek Bridge will address all the aspects that make the existing bridge functionally obsolete. The new bridge will be a concrete box girder, cast-in-place, meaning the decking will not come from a manufacturer prefabricated, and the pouring of the concrete for the decking will occur at the project location. The contractor will opt to either import the concrete by cement truck, or build a batch plant on site.

Utilities are located within easements in the State Route 20 transportation right-of-way and will require relocation. Utility relocation involves moving the poles that support telephone lines.

Eight existing culverts within the project limits will need some type of rehabilitation, either replacement, repair, or removal. Two studies, a hydraulic assessment and a floodplain analysis, were done to characterize the watershed of the project area. Based on specific discharge rates and volumes of surface water run-off, recommendations were made for the size and structure type for the new culverts. The following paragraphs outline the recommendations made for each culvert identified by postmile; however, these recommendations are subject to change once the project transitions from preliminary to final design. The following culverts are identified by postmile on the map in Appendix D.

Location 1, Route 20, PM 2.98 - The existing highway was constructed in 1930, but many modifications have been made since the original construction. Few of the original culverts remain; however, this postmile has the original 107-foot long culvert. This pipe, as noted in a field visit in 2005, has blockage in the middle of the culvert and needs to be replaced. Excavation of this pipe will be about six-feet deep under the roadway and nine-feet at the deepest point to the south side of the road. For ease of cleaning and to meet current design standards, the proposed replacement pipe will be 24-inches in diameter instead of the existing 18-inches. The flow line of the pipe and the maximum allowable headwater will not change. The new headwall will have bevels to improve the direction of flowing water, and rock slope protection at the pipe outlet to prevent soil erosion.

Location 2, Route 20, PM 3.03 - Records show short periods of flooding in December 1983 and January 1997 around PM 3.07 to PM 3.27. Water from an ephemeral drainage is carried underneath the roadway by a 60-inch diameter, 122-foot long culvert. During heavy rains, floodwaters from this ephemeral drainage overtop the highway because the existing culvert is not large enough to handle the capacity. To prevent future floodwaters from overtopping the highway, an additional 60-inch diameter culvert placed side-by-side the existing culvert will be installed. The two culverts will share a single concrete headwall at the inlet. To prevent soil eroding from the discharging water, large boulders will be placed at the outlet as rock slope protection to act as an energy dissipater.

Location 3, Route 20, PM 3.11 - The existing culvert will be eliminated and not replaced. To convey storm water run-off, a 1-foot deep triangular shaped ditch (1:4 side slope) will be installed on the south side of the highway. This ditch will essentially run parallel to the highway and eventually empty into Bear Creek downstream from the bridge.

Location 4, Bear Valley Road, PM 3.34 – Under the existing drainage conditions, storm flows frequently overtop the roadway at this area. Two 24-inch diameter corrugated, metal pipes will replace the two existing 18-inch diameter corrugated, metal culverts buried underneath Bear Valley Road.

Location 5, Route 20, PM 3.44 – Since 1970, floodwaters have overtopped the existing box culvert four times. The existing 5-foot high by 6-foot wide box culvert will be replaced with three (8ft. by 7ft.) box culverts. This solution will allow storm flows equal to the ten-year storm event to drain without backing up or overtopping

the roadway. Rock slope protection will be placed at the outlet of the box culverts due to the velocity of water runoff.

Location 6, Route 20, PM 3.50 – The existing 24-inch diameter, 95-foot long pipe will be replaced with a 30-inch, 79-foot long culvert that lies perpendicular to the roadbed. A headwall will be installed at the inlet of the culvert (south side of SR 20).

Location 7, Route 20, PM 3.61 - The two 30-inch diameter culverts carry water from another system. A ditch on the north side of the highway channels water flowing from the outlet of this culvert. This ditch collects water from the two culverts at PM 3.61 and one culvert at PM 3.65. The ditch empties into the box culvert at PM 3.5. The 10-year storm event from the watershed is calculated to be greater than the capacity of this culvert and ditch. Instead of using metal culverts, a box culvert (7-feet by 4-feet) installed underneath the roadbed is recommended. Wing walls, which are concrete walls constructed at the culvert entrance to direct flows into their openings, will be installed on the south side of the highway. In order to increase the capacity of the existing ditch, the bottom will be excavated to a width of eight-feet wide with two-feet high sides.

Location 8, Route 20, PM 3.65 - The existing culvert is the original culvert from when the roadway was built in 1930. Due to the sensitive resources of the surrounding area, soil excavation within this postmile is not recommended. Therefore, the preferred option for rehabilitating this culvert will be the Cured in Place Pipe (CIPP) method for repairing the culvert without soil disturbance.

1.3.2 No-Build Alternative

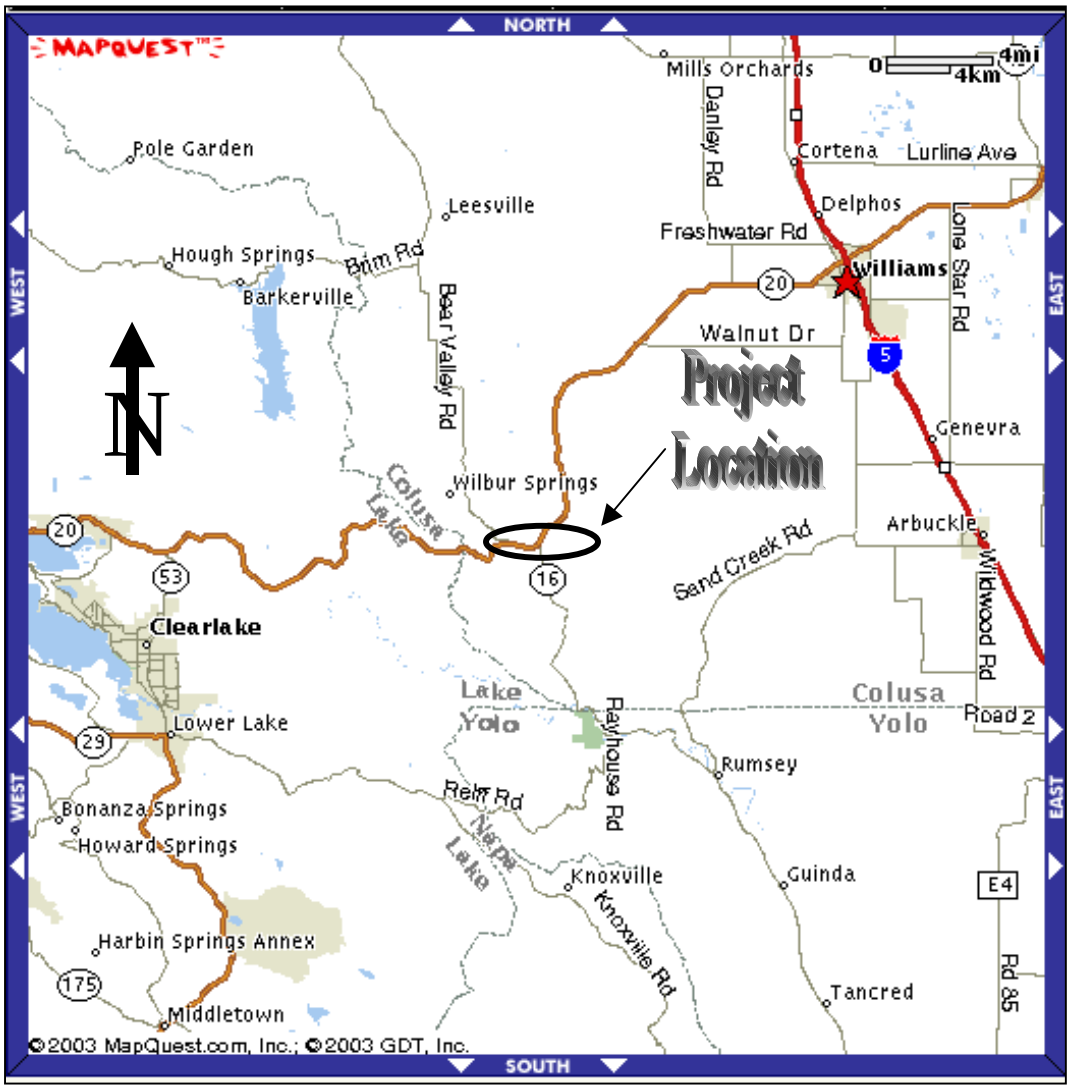
A No-Build Alternative is included to provide a baseline, when compared to the Build Alternative, to evaluate the magnitude of proposed changes and to measure those environmental effects of those changes. With a No Build Alternative, no action will be taken to replace or repair the bridge. This alternative ignores all of the factors that contribute to the functional obsolete rating of the bridge. The site distance for drivers will not be improved. Without widening the shoulders, safety design standards will not be met. The continuation of scour around the pier footings will degrade the foundation of the bridge. This condition of benign neglect could eventually result in partial or total collapse of the structure. This alternative will not meet the purpose of the project, which is to improve the safety and operation of the highway.

1.4 Permits and Approvals Needed

The following permits, reviews, and approvals will be required for project construction:

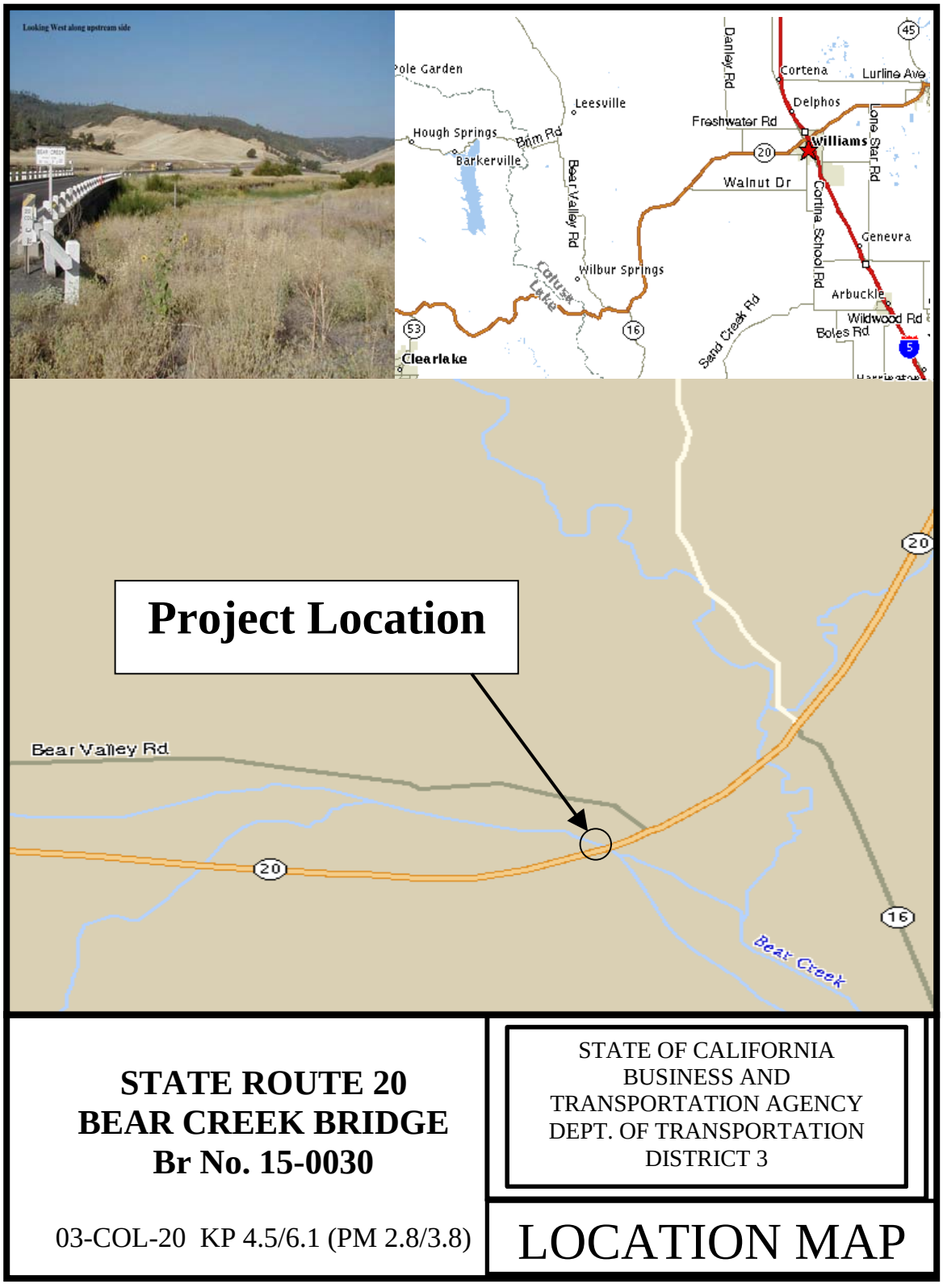
Agency	Permit/Approval
United States Army Corps of Engineers	Section 404 Permit for filling or dredging water of the United States
California Department of Fish and Game	1602 Agreement for Streambed Alternation
Central Valley Regional Water Quality Control Board	Section 401 Water Quality Certification

Figure 1.1 Project Vicinity Map



State Route 20 **Bear Creek** **Bridge Replacement** 03-Col-20 KP 4.5/6.1 (PM 2.8/3.8) EA 03-1C4900	**STATE OF CALIFORNIA** **DEPARTMENT OF TRANSPORTATION** **DISTRICT 3** **VICINITY MAP**

Figure 1.2 Project Location Map



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

This chapter explains the impacts that the project will have on the human, physical, and biological environments in the project area. It describes the existing environment that could be affected by the project and potential impacts from the proposed project.

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

- **Growth -** The project will not provide for an increase in traffic capacity and will not contribute to growth in the surrounding area.
- **Farmlands -** Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, fiber, forage, and oil seed. Unique farmland produces specialty crops such as fruits, vegetables, and nuts. Because there are no prime or unique farmlands associated with the project site, prime and unique farmlands were dismissed from detailed analysis.
- **Community Impacts -** There are no homes or businesses within the project area. The proposed project is located in a rural area between the communities of Bear Valley and Clear Lake, California, and does not include any work in these communities.
- **Traffic and Transportation/Pedestrian and Bicycle Facilities -** The new bridge will be constructed while the existing bridge remains open to traffic. Once construction has finished, traffic will be diverted to the new alignment and the old bridge demolished. Major traffic congestion during construction is not expected. Currently, there are no designated bicycle facilities or shoulders on the bridge. Should a cyclist cross the bridge, they have to share a portion of the traffic lane with vehicles. The proposed project will actually benefit cyclists by adding the 2.4-meters (8-foot) shoulders.
- **Paleontology -** Paleontological studies were not applicable to the proposed project.
- **Cumulative Impacts** -The proposed project is not expected to contribute to cumulative impacts to resources in the project area. Impacts to riparian vegetation

will be minimized through replacement planting after construction. Impacts to wetlands will be mitigated by purchasing credits at an approved site to result in no net loss of wetlands.

- **Air Quality** - The screening process outlined in the "Transportation Project-Level Carbon Monoxide Protocol" (Institute of Transportation, U.C. Davis, 1997), determined that the proposed project will not impact the air quality of Colusa County because of the following reasons: the project will not increase vehicles operating in cold start mode; traffic volumes will not increase, traffic flow will not change. Since the project improvements for this portion of State Route 20 will not have any substantial influence on the capacity of the highway or composition of traffic patterns, the proposed project is exempt from any regional conformity analysis (per 40 Code of Federal Regulations, Section 93.126, Table 2, subsection "Safety Widening narrow pavements or reconstructing bridges").
- **Noise and Vibration** - Bear Creek Bridge is located in a primarily rural, undeveloped area with sparse residences. Though the scope of the project does not add additional traffic lanes, it does include some moderate realignment; therefore, the project is considered a Type I project. However, when considering the context and setting (in other words, the arrangement of scenery or the set of circumstances surrounding the bridge), it was determined that realigning a 1,200-foot section of roadway in a rural area is not considered a significant change in vertical or horizontal alignment. Especially when the realignment is not moving the highway closer to any sensitive receptors (such as residential homes or schools). Therefore, no further noise analysis was required. Construction noise, though temporary, will be regulated by Caltrans' Standard Specifications, Section 7-1.011, "Sound Control Requirements".

2.1 Human Environment

2.1.1 Land Use

Colusa County is predominately rural, with agricultural uses and open space accounting for approximately 76% of existing land (General Plan Update Background Report, 2003). The majority of land within the project limits is zoned for agricultural and residential land use.

Affected Environment

Additional right-of-way will be acquired from two parcels adjacent to each other. Both parcels belong to the same property owner. A Temporary Construction Easement (TCE), which will be used for the storage of equipment and construction materials, will be entered into with the property owner on a fee basis. The identified area used as a construction easement will grant construction workers temporary access to that area expressively for the purposes of equipment and material storage. The area to be used as a TCE has been identified on the map in Appendix D. This area covers approximately five-acres of undeveloped, pastureland. The landowner will be compensated for any damages, and the area will be restored to its prior condition once construction has finished.

Impacts

In order to construct the project, approximately 1.6 hectares (4-acres) of land adjacent to the highway will be acquired and permanently incorporated into Caltrans right-of-way. The four-acres, acquired from a parcel that is 207-hectares (512-acres) in total size, will change the land use from the current privately owned pasture land to that of transportation use. No residential home or business will be relocated.

Avoidance, Minimization and/or Mitigation Measures

Acquisition of property will be limited to that needed to accommodate the road re-alignment. The property owner will be compensated the fair market value for any land acquired by Caltrans. In addition, the area used as a temporary construction easement will be restored to its prior condition after construction of the project has finished.

2.1.2 Utilities/Emergency Services

Within the project area approximately coinciding with the Caltrans' right-of-way, power poles that support overhead telephone lines are on both sides of the highway.

Impacts

In order to accommodate the realignment of the highway, it is expected that at least two utility poles will be relocated prior to actual roadway construction. Since the utility poles are located next to the roadway, any impacts to resources caused by the utility relocation were attributed to the actual construction of the bridge and realignment of the highway.

Avoidance, Minimization and/or Mitigation Measures

Caltrans will coordinate relocation work with the various utility companies to ensure minimum disruption of service to customers in the area.

2.1.3 Visual/Aesthetics

This section describes existing local conditions and the potential impacts of the proposed project on aesthetics and visual resources. Visual impacts were assessed in terms of the anticipated changes to the landscape, and the likely response of the public. There are very few, if any, residences who have a view of the project area. Because this is a rural area, the largest viewer group affected is the traveling public.

Regulatory Setting

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

Affected Environment

The vicinity of the project site is part of the northern California Coast Range. State Route 20 transverses through the mountainous terrain, winding through a course of steep hills. Although the drive is very pleasant, there is not one distinct or outstanding element that makes the section of highway memorable.

Impacts

The major impacts to this viewshed will result from tree removal, extensive cut into the hillside, excavated dirt used to fill in low-lying areas, road widening for the added shoulders, and the loss of wildflowers and native grasses planted in association with a Botanical Management Area that is adjacent to State Route 20 within Caltrans right-of-way. After mitigation to restore the cut slopes has taken place and vegetation has obscured the exposed ground, the visual quality conditions should equal the visual conditions prior to the construction of the project.

Avoidance, Minimization and/or Mitigation Measures

To minimize the degree of visual change and reduce impacts to a less than significant level, a combination of the following options will be incorporated to minimize impacts:

- Cut and fill slopes should be contour graded and rounded to reflect the contours of adjacent, undisturbed topography to the extent feasible. Grading operations should not result in angular landforms.
- During clearing and grubbing, if possible, existing surface soils and duff from the construction site will be stockpiled as part of the excavation work. All new cut slopes and areas where dirt placed as fill will be covered with stockpiled material to enhance re-vegetation efforts.
- Wood debris and green material generated from clearing and grubbing of the construction site will be chipped into a mulch material and stockpiled for later use. After the realignment is completed, this mulch material will be spread over the disturbed slope area (2-inches in depth) to aid in erosion control and re-vegetation.
- Exposed ground surfaces will be seeded with appropriate species as early as possible for erosion control purposes. The seed mix will include perennial native grass and chaparral shrub seed collected from the project area. As the seeds germinate and grow, the vegetative cover will reduce the degree of visual contrast of these areas, especially as seen from more distant locations. Indigenous native species of shrubs and herbaceous plants occurring on adjacent, undisturbed slopes will colonize the seeded slopes. As these colonizing plants mature and increase in density, the visual contrast of the disturbed areas will continue to diminish. In time, vegetative cover patterns of areas disturbed during project construction will essentially match the adjacent, undisturbed areas.
- Sections of the highway that are abandoned as a result of the realignment will be reclaimed. Reclamation should include removal of pavement, filling and grading the former roadbed to conform to adjacent slopes, seeding with erosion control mix, and in appropriate areas replanting with trees.
- Plant species native to the area will be used when re-vegetation is being performed. Often, native grasses and shrubs are the first to re-colonize after a disturbance event such as a disease or fire.
- Minimize the impacts to root networks when extending or replacing culverts if possible.
- At the end of construction all areas used for staging, access or other construction activities will be contour graded in such a way as to visually integrate them into the surrounding topography.
- The creek bed will be returned to its natural condition through the guidance of a biologist and Landscape Associate. The channel should be restored in such a way that it appears natural.

2.1.4 Cultural Resources

This section provides information on cultural resources that occur, or could occur, within the proposed project area. This section also discloses whether or not these cultural resources will be impacted by the proposed project.

Regulatory Setting

"Cultural resources" as used in this document refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include: The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of 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 the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) among the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and Caltrans went into effect for Caltrans projects, both state and local, with FHWA involvement. The PA takes the place of the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans.

The project is subject to federal regulations described in the Code of Federal Regulations (CFR), Title 36, Section 800, which implements regulations for Section 106 of the National Historic Preservation Act (NHPA), and state regulations set forth in the California Environmental Quality Act (PRC§21000 et seq.). In this context, historic properties are types of cultural resources included in or determined eligible for inclusion in the National Register of Historic Places (NRHP). Properties that are on or eligible for the National Register are automatically included in the California Register, and are considered historic resources for the purposes of CEQA.

The National Historic Preservation Act requires federal agencies, before any action, to identify cultural resources that may qualify as eligible for inclusion in the NRHP. If significant (i.e., National Register eligible) resources are identified, then federal agencies are directed to take prudent and feasible measures to avoid or reduce adverse impacts to those resources.

CEQA requires all state funded projects that could result in impacts to historic resources to consider alternative plans or measures for mitigation. As defined by Section 15064.5, a project may have a significant impact if it could cause a substantial adverse change in the significance of historical resource.

Caltrans must comply with these federal and state historic preservation laws. Archaeological studies conducted pursuant to these statutes are documented in a Historic Property Survey Report prepared by Caltrans.

Affected Environment

In November 2005, Caltrans staff completed a Historic Property Survey Report, which contains detailed information on the various cultural resource studies completed for the project. Efforts to locate cultural resources within the project area consisted of conducting a record search, contacting the Native American Heritage Commission, Native American representatives, and local historical societies. In addition, Caltrans archaeologists surveyed the ground within the project area in an effort to locate undiscovered cultural resources.

Consultation and identification efforts resulted in the identification of one previously recorded archaeological site within the Area of Potential Effects. For archaeological studies, typically the Area of Potential Effects is the required right-of-way, plus areas of ground-disturbing activities including utility relocations and areas for temporary storage of construction equipment. Field surveys failed to identify any additional cultural resources. The previously recorded archeological site, CA-COL-249, is near State Route 20. The site has not been evaluated to determine whether or not it is eligible for listing on the National Register of Historic Places.

In addition to considering affects to archaeological resources, Caltrans must comply with laws that afford protection to architectural structures. Because the project will demolish a bridge over 50-years of age, which is considered a historic structure, Caltrans had to follow certain procedures to determine whether or not the bridge is eligible for the National Register of Historic Places. The following paragraph provides background information and outlines the evaluation that was done to determine the bridge is not eligible for listing on the National Register.

The original statewide Historic Bridge Inventory, conducted during 1986-1988, surveyed all bridges along the California highway systems. The intent of this evaluation was to determine whether or not bridges 50-years of age or older are eligible for the National Register of Historic Places and the California Register of

Historical Resources. Bear Creek Bridge was built in 1930 and at the time of its evaluation was over 50-years old. The bridge was determined not to embody the distinctive characteristics of a type, period, or method of construction that will deem the bridge as unique. The bridge does not represent the work of a master, or possess high artistic values to enable the bridge to be considered eligible. Based on these criteria, Bear Creek Bridge was determined ineligible for inclusion in the National Register and the California Register. The Caltrans Historic Highways Bridge Inventory conducted in 2005 did not change the listing of eligibility for Bear Creek Bridge.

Impacts

Because encroachment within the archaeological site will be avoided, the proposed project will have no effect on this archeological site. No other cultural resources were identified.

Avoidance, Minimization and/or Mitigation Measures

Measures will be undertaken to ensure that the potential for inadvertent damage to site CA-COL-249 will be avoided by establishing an Environmentally Sensitive Area (ESA). The placement of exclusion fencing will be used to designate the ESA that will extend at least 6-meters (19-feet) beyond the recorded site boundaries. Delineation of an ESA may be used to reach a finding of No Adverse Effect in accordance with Stipulation X.B.2 (a)(ii) of the Programmatic Agreement; therefore, a finding of No Adverse Effect with standard conditions imposed is appropriate. As a condition for a No Adverse Effect finding, an ESA Action Plan will be developed to ensure that provisions for protecting CA-COL-249 will be implemented. Prior to ground disturbing activities, ESA fencing will be installed to prevent any type of construction related impacts, or inadvertent staging in this area.

2.2 Physical Environment

2.2.1 Hydrology and Floodplain

Caltrans completed a hydraulic assessment and a floodplain analysis to characterize the existing hydrologic conditions and water resources in the project area. Since the project encroaches a 100-year floodplain, an assessment of the proposed drainage improvements was done to determine the potential impacts on the floodplain.

The hydraulic review utilized as-built mapping and Federal Emergency Management Agency (FEMA) mapping. FEMA mapping included Flood Insurance Rate Map Panel 06011C 0625F (effective May 15, 2003). Hydrological calculations were performed to determine how much water is received from the watersheds. There are seven watersheds that contribute runoff within the project limits. Hydrologic models were used to evaluate and compare a range of water delivery, storage, and capacity for achieving target flows.

Regulatory Setting

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

In order 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 impacted by the project

The 100-year 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 100-year floodplain."

Affected Environment

The stretch of State Route 20 between PM 2.8 and PM 3.8 has been subjected to flooding at storm events of ten years or greater. Currently, the existing culverts do not have large enough capacity to convey floodwaters due to inadequate pipe sizes; consequently, during heavy rainstorms the culverts do not drain water without overtopping the road. Though the area will continue to be subjected to flooding, with the proposed drainage improvements, smaller local storm events will not flood over this portion of the highway.

Bear Creek Bridge has flooded at least six times since 1965. To correct the hydraulic deficiencies of the bridge, the profile of the new bridge will be raised above the historic flood elevation.

Impacts

The new Bear Creek Bridge will be built approximately 23-meters (75-feet) north of the existing bridge. The shifting of alignment will require extensive cutting into the hillside. Since the vertical alignment of the highway will raise approximately 1.8-meters (6-feet) and the ground profile is not uniform, dirt used as fill will be added to low-lying areas to create the new highway grade and approaches to the bridge. The profile of the bridge will be raised to provide sufficient underclearance to prevent water overtopping the bridge deck during heavy rains.

Heavy rainstorms have caused water to overtop several areas of the roadway because the existing culverts cannot convey the amount of rainfall during a flood storm. At certain culvert locations, headwalls will be added to improve flow characteristics and capacity. Rock slope protection will control the velocity by acting as an energy dissipater to prevent soil eroding at the culvert outlet.

Although the highway will be realigned, the proposed culverts will drain similarly to the existing culverts, except at PM 3.11 where the existing culvert will be removed and replaced by a ditch. Near the limits of construction for the proposed ditch, the slope and invert elevations for this system are almost identical to the existing culvert system.

At PM 3.44, three new 8ft. x 7ft. concrete box culverts will replace the single box culvert. Though some excavation into the hillside will be needed, the flow lines of the proposed and existing box culverts are roughly aligned. In other words, the three box culverts will be built straight-lined from the existing and the depth of the headwall will not change thereby retaining the 1% slope at the bottom of the culvert. Even though the size and location of the box culverts will change, the watershed remains virtually unchanged. In conclusion, the amount of water will not change that enters into the perennial pond.

Placement of fill material for the proposed project will result in minimal encroachment into the 100-year floodplain fringe, and it is anticipated that the subsequent affects to the base flood elevation will not be substantial. It is expected that the proposed work will have no impact on development in the base floodplain.

Avoidance, Minimization and/or Mitigation Measures

Based on studies carried out by the California Department of Transportation on behalf of the Federal Highway Administration, no practicable alternative to the proposed alternative exists (23 CFR 650, Subpart A). All other potential alternatives are not

possible within reasonable natural, social, and economic constraints. In addition, all measures to minimize potential harm within the floodplain, consistent with regulations issued in accord with Section 2(d) of Executive Order 11988 will be taken.

2.2.2 Water Quality and Stormwater Runoff

Bear Creek is 39-miles long from the headwaters until it empties into Cache Creek. Though water flows year-around, Bear Creek has a low-flow stream in the spring through fall months due to irrigation diversion in the lower reaches. Several smaller intermittent and ephemeral drainages feed into Bear Creek from the hillsides. Overall, the Bear Creek watershed is sparsely populated and the lower portion lies within the Cache Creek Management Area owned by the U.S. Bureau of Land Management. Bear Creek is one of the three main tributaries to the Cache Creek watershed. Bear Creek eventually enters into Cache Creek near the Colusa County and Yolo County border.

The water quality of a creek is an important indicator of the environmental health of a watershed because it picks up particles of soil, pesticides, and other pollutants as it drains through the system. Sediment discharged from natural sources and man-made erosion has released high mercury concentrations into the Cache Creek and Bear Creek watersheds. Consequently, Bear Creek has been identified under the federal Clean Water Act Section 303(d) as an impaired water body due to elevated concentrations of mercury. Mercury loads in Bear Creek originate from past mining activities for mercury, erosion of naturally occurring mercury soils, geothermal springs, and atmospheric deposition.

Regulatory Setting

The federal Clean Water Act of 1972 address issues regarding water pollution control and water quality protection. The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the waters of the United States for their beneficial uses. Federal environmental regulations based on the Clean Water Act have evolved to require the control of pollutants from municipal separate storm systems (i.e. roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, and storm drain) and construction activities (such as clearing, grading, excavating). Discharges from such sources were brought under the National Pollution Discharge Elimination System (NPDES) permit process by amendments to the Clean Water Act in 1987 and the subsequent 1990

promulgation of stormwater regulations by the Environmental Protection Agency. In California, the Environmental Protection Agency has delegated administration of the federal NPDES program to the State Water Resources Control Board and the nine Regional Water Quality Control Boards. Caltrans was issued an individual NPDES permit that regulates the discharges from highway storm systems and construction activities. Construction activities must meet the requirements contained in the Statewide General Construction Permit. The permit requires all agencies to prepare a Stormwater Pollution Prevention Plan for projects that disturb over an acre of soil.

Affected Environment

Bear Creek is on the EPA 303(d) list of impacted water bodies for elevated levels of mercury in the water and sediments at the bottom of the creek channel. The level of mercury in Cache Creek and Bear Creek exceeds the EPA recommended criterion for the protection of human health. The source of the mercury in the Bear Creek watershed is primarily from natural sources and historic mine operations.

Because the native soils and sediments within in the Bear Creek watershed have elevated mercury levels, a Caltrans water quality specialist took soil samples within the project limits. These samples collected in November 2005 were taken from areas where the project will have direct ground disturbance, such as slope cutting or dirt excavation.

The results showed that native soils within the project limits did not have mercury concentrations above the enriched levels set the by the Central Valley Regional Water Quality Control Board (RWQCB). The results ranged from non-detect to 0.18 mg/kg total mercury. Soils containing mercury of 0.40 mg/kg or greater are considered enriched. The only samples in the project area containing enriched mercury were the sediments from the Bear Creek channel under the existing bridge and the sediments from an unnamed drainage ditch on the north side of the highway. The following table outlines where the samples were taken and the mercury levels found at the sample sites.

Table 2.1 - Mercury Concentrations in Soil Samples

Bear Creek Curve Realignment Sample Results	
Location	**Results**
Sample 1 Cut Slope	0.10 mg/kg
Sample 2 Cut Slope	Non Detect
Sample 3 Cut Slope	0.18 mg/kg
Sample 4 Road side ditch below cut	1.5 mg/kg
Sample 5 Bear Creek Sediment	7.7 mg/kg

Note all samples were taken by Caltrans on November 22, 2005

Impacts

Even though the volume of traffic is not expected to increase after the proposed project is constructed, the amount of impervious paved surface area will increase because of the wider traffic lanes and the added paved shoulders. Storm water runoff can pick up contaminants from the roadway and paved surfaces. Potential contaminants in roadway runoff include suspended solids, heavy metals, and hydrocarbons. The water quality of the receiving waters can become impaired by these roadside contaminants.

Wetlands are known to provide improvements to water quality by naturally removing pollutants through biological activities. Wetlands also remove suspended material through sedimentation. Impacts to wetlands, either through degradation of the water quality or direct destruction, can have secondary affects to other water resources. Construction sites are known to produce increases in turbidity though erosion and the project will directly impact wetlands. See Section 2.3.1 for further discussion on wetland impacts.

Construction activities by their nature result in soil and ground disturbance. These disturbances can create loose, unprotected soil that if not properly managed can be carried by surface runoff, or wind, to adjacent water bodies. Sediment is of specific concern in the project area since it has the potential to increase the loading of mercury.

The following construction activities could contribute to increases in sediment, turbidity, color, and floating materials to receiving waters:

- Routine construction activities such as material delivery, storage, and usage, vehicle/equipment cleaning and operation, and use of a construction staging area
- Grading - Grading includes removal of the natural, stabilizing cover (topsoil) and the creation of engineered slopes using fill material
- Seeding and application of fertilizers and nutrients
- Construction of temporary roads
- Activities within the creek corridor
- Dewatering in localized areas
- Vegetation removal and trimming

Avoidance, Minimization and/or Mitigation Measures

Specifications and Standard Special Provisions require contractors to conduct work in a manner that protects receiving waters from pollution. This includes preparation and effectively managing a water pollution control program during project construction. For this proposed project, the applicable plan is referred to as a Storm Water Pollution Prevention Plan (SWPPP), which the contractor is required to prepare. The SWPPP will include temporary Best Management Plans (BMPs) the contractor is required to implement during construction. A spill prevention plan will also be required for staging and storage areas. Minimum BMPs in the SWPPP can include scheduling, preservation of vegetation, hydraulic mulch, hydroseeding, soil binders, straw mulch, geotextiles, plastic covers, erosion control blankets, silt fence, street sweeping and vacuuming, storm drain inlet protection, wind erosion control, vehicle and equipment cleaning control, vehicle and equipment fueling, vehicle and equipment maintenance controls.

In addition to the BMPs required as part of the SWPPP, pollution prevention BMPs will be incorporated according to the plans and the SWPPP to prevent pollution during construction and to prevent future pollution at the new facility. Pollution prevention BMPs include permanent re-vegetation of the disturbed soil, which will minimize the impact to existing slopes. The re-vegetation procedures include minimizing the impact to existing slopes. This requires the designer to consider all aspects of slope design including final geometry, drainage features and final slope cover. The procedures are intended to ensure that an appropriate design is developed that will allow all finished slopes to achieve stabilization, even under severe

conditions. Hydraulic design elements, such as flared end sections at culverts and rock slope protection as an energy dissipater, asphalt dikes, overside drains, and paved water conveyances, are techniques that can reduce erosion and could be incorporated into the design of the project.

All Caltrans projects are now required to evaluate and consider the design and construction of treatment BMPs. Treatment BMPs are designed to remove pollutants in the storm water. Caltrans uses a Storm Water Data Report (SWDR) to evaluate the treatment BMPs that are most appropriate for the site conditions of the project. Treatment BMPs considered for this project could include infiltration basins, detention basins, bio-Swales and bio-Strips. Some of these systems will be used on this project depending on the site conditions and the most appropriate BMP for each location. Inclusion of these treatment BMPs will ensure that the project will not increase the load of pollutants associated with highway runoff (e.g. conventional constituents, hydrocarbons, metals, nutrients, pesticides and herbicides).

Avoidance and protection measures will minimize the amount of wetland impacts. The permanent loss of wetlands will be mitigated as described in the biology section of this document. In addition to mitigation, to lessen indirect effects to wetlands, BMPs such as exclusion fencing, silt fence, and other measures that reduce discharge of pollutants, will be implemented to prevent water quality degradation and protect the beneficial uses of the wetlands.

The Total Maximum Daily Pollutant Load (TMDL) for mercury in the Bear Creek watershed requires Caltrans to coordinate the planning and design of projects with the Regional Water Quality Control Board (RWQCB). The TMDL represents the allowable pollutant load of mercury into the Bear Creek watershed. Caltrans will incorporate the appropriate permanent pollution prevention in the design and temporary construction sediment control BMPs to control the short-term increases in mercury and prevent long-term erosion. Scheduling the in-stream work during the dry season will help control erosion and disturbance of sediments in Bear Creek since it is the creek sediments that contain the highest concentration of mercury. Caltrans will submit the project plans and SWPPP to the RWQCB to demonstrate that BMPs are included to control erosion of the soils containing mercury. Caltrans will also include a sampling analysis plan for turbidity as required by the TMDL for work in Bear Creek.

In conclusion, overall impacts to water quality are considered less than significant because Caltrans will implement the avoidance and minimization practices contained in the SWPPP and incorporate additional BMPs as appropriate for site conditions. The practices outlined in the Storm Water Management Plan ensure certain minimum design elements are incorporated into project to maintain or improve water quality. Implementation of these standard procedures and practices will substantially reduce or eliminate most of the potential impacts associated with the construction of the project.

2.2.3 Geology/Soils/Seismic/Topography

The section identifies the existing soils and geological conditions present at the project location. To determine potential risks associated with the geological conditions, such as earthquake potential, Caltrans Geotechnical staff prepared a Preliminary Geotechnical Report. This section also discusses seismic concerns as they relate to public safety and project design.

The Preliminary Geotechnical Report prepared by Caltrans Geotechnical specialists was based on a literature study and will be followed up with subsurface, exploratory drilling and bore-hole sampling when the project schedule moves closer to final design. The discussion does not constitute final recommendations.

Regulatory Setting

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

Affected Environment

Site Specific Geology

The subsurface information available for the proposed new bridge site is derived from a subsurface investigation for the existing bridge foundation conducted in December 1974. The data generated from the stated study was presented in the bridge foundation report and the Log of Test Borings (LOTB) dated June 1977 and March 1978 respectively. According to the stated references, the geology of the bridge site consists of alluvium (granular material) overlying bedrock. The alluvium is Holocene

in age and is approximately 5.5-meters (18-feet) in thickness. It is comprised of loose deposits of silty or gravelly sand and a medium dense to very dense silty or sandy gravel containing boulders. The bedrock consists of serpentine conglomerate possibly of Cretaceous age, and presents a varied surface elevation across the site. Groundwater at the bridge site was encountered at elevation 318-meters (1,043-feet) in December 1974.

Soils

Referencing the Soil Conservation Service soil survey map, the soils in the project area are classified as Corval loams, Salt Canyon loams, Venado Clays, Haploxererts and Millsholm-Contra Costa Association soils (USDA, 1998). None of these soils have been classified as hydric or include hydric inclusions identified by the Natural Resources Conservation Service.

Haploxererts are well-drained soils that occur on 30-50% slopes in the project area along State Route 20, west of the intersection with State Route 16. Parent material of this soil series is residuum weathered from serpentine. Venado Clays are poorly drained soils occurring on 0-2% slopes in the lowest areas of Bear Valley. Parent material is alluvium derived from serpentine. Although these soil series may derive from serpentine, geologists conducted a reconnaissance visit to specifically identify whether or not serpentine or ultramafic rocks exist within the project limits. Caltrans geologists confirmed neither serpentine nor ultramafic rocks are present within the project limits. In addition, the California Geological Survey Map of California Showing Principal Asbestos Deposits (2000) affirms the project site is not in an area of naturally occurring asbestos. Corval Loams are well-drained soils that occur on 0-2% slopes along the Bear Creek floodplain. Parent material consists of alluvium. Salt Canyon loams are well-drained soils on 1-5% slopes from alluvium parent material. These soils are mapped in the project area along both sides of State Route 16. Millsholm-Contra Costa association soil series are well-drained soils of 30-50% slopes, occurring in the eastern portion of the study site. Parent material consists of residuum weathered from sandstone-shale. Figure 2.1 on page 29 shows the location of each soil series within the project study area.

Faults and Seismicity

The Fault Activity Map of California and Adjacent Areas (Charles W. Jennings, 1994) and the Geologic Map of California, Ukiah Sheet (Olaf P.Jenkins Edition,

1992) are the quoted references used to locate faults and associated seismic activity at this project site. Based on these references, the controlling fault for the bridge site is the Coast Ranges-Sierran Block Boundary Zone, which is located approximately 1.3 km (0.8 mi), west of the site. This fault is a reverse fault with thrust components and is capable of generating a maximum credible earthquake of magnitude 7.0. This magnitude will produce a peak horizontal bedrock acceleration of approximately 0.7g (g=acceleration due to gravity) at this site. The potential for surface rupture due to fault movement may be considered negligible since there are no known faults projecting towards or passing directly through the project site.

Liquefaction

Seismic-induced ground motion can cause liquefaction. Liquefaction occurs when water-saturated sediments are subjected to seismic-induced ground shaking, causing water pressure to increase in loose to medium dense granular soils, which temporarily alters the soil from a solid state to a liquid state. This results in a loss of soil strength, which could cause the failure of adjacent infrastructure, such as bridges and buildings. Liquefaction analysis of the subsurface condition indicates that the top 1.5 to 3.0-meters of granular material might be susceptible to liquefaction. Caltrans Geotechnical Services provided preliminary recommendations that give structural options for the type of piles (i.e. bridge foundation supports) to be used when constructing the new bridge.

Impacts

A geotechnical investigation will be conducted to evaluate the site-specific subsurface conditions and soil properties. The investigation will mainly involve drilling and sampling bore-holes at the proposed locations of the new bridge abutments on either bank of the creek and at the intermediate support location in, or near the current channel of Bear Creek. The borings will be approximately 152-millimeters (6-inches) diameter mud rotary soil borings that will be drilled approximately 31-meters (102-feet) deep at each location. Additional soil borings will also be drilled at the location of the proposed new approach embankments to study subsurface materials for settlement purposes.

Groundwater levels will also be determined during the geotechnical investigation in order to establish the extent of dewatering needed during trenching and other excavations.

A temporary increase in erosion might occur during grading and trenching for the utility poles, excavating the bridge footings, pile driving, cutting back slopes, constructing temporary roads, staging areas, and exploratory drilling and bore-hole sampling for geotechnical investigation activities.

Avoidance, Minimization and/or Mitigation Measures

According to the Peak Bedrock Acceleration, the peak ground acceleration expected in the project area is estimated to be 0.7g (g=acceleration due to gravity). To reduce the seismic-induced effects from an earthquake, the new bridge structure must take this potential g-force into consideration. The chance of the surface rupture of an earthquake fault at the project site is highly unlikely since no known earthquake faults traverse the project area.

Temporary erosion control measures (BMPs) will be used during all soil disturbing activities until all exposed and disturbed land areas have been stabilized, either through compaction of the soils or revegetation. These BMPs will include Central Valley Regional Water Quality Control Board approved measures such as those found in the Stormwater Quality Handbook (September 2002) to prevent soil loss and siltation into Bear Creek. The BMPs will be part of the required Storm Water Pollution Prevention Plan.

If required, permits will be obtained from the regulatory agencies for the bore-hole sampling done along the bank and within the stream channel. Avoidance and minimization measures outlined in the permits will be incorporated during implementation of the project.

In conclusion, the potential short-term impacts from construction and geotechnical investigations will be addressed through incorporation of temporary Best Management Practices (BMPs). Implementation of a revegetation plan will address long-term impacts associated with erosion.

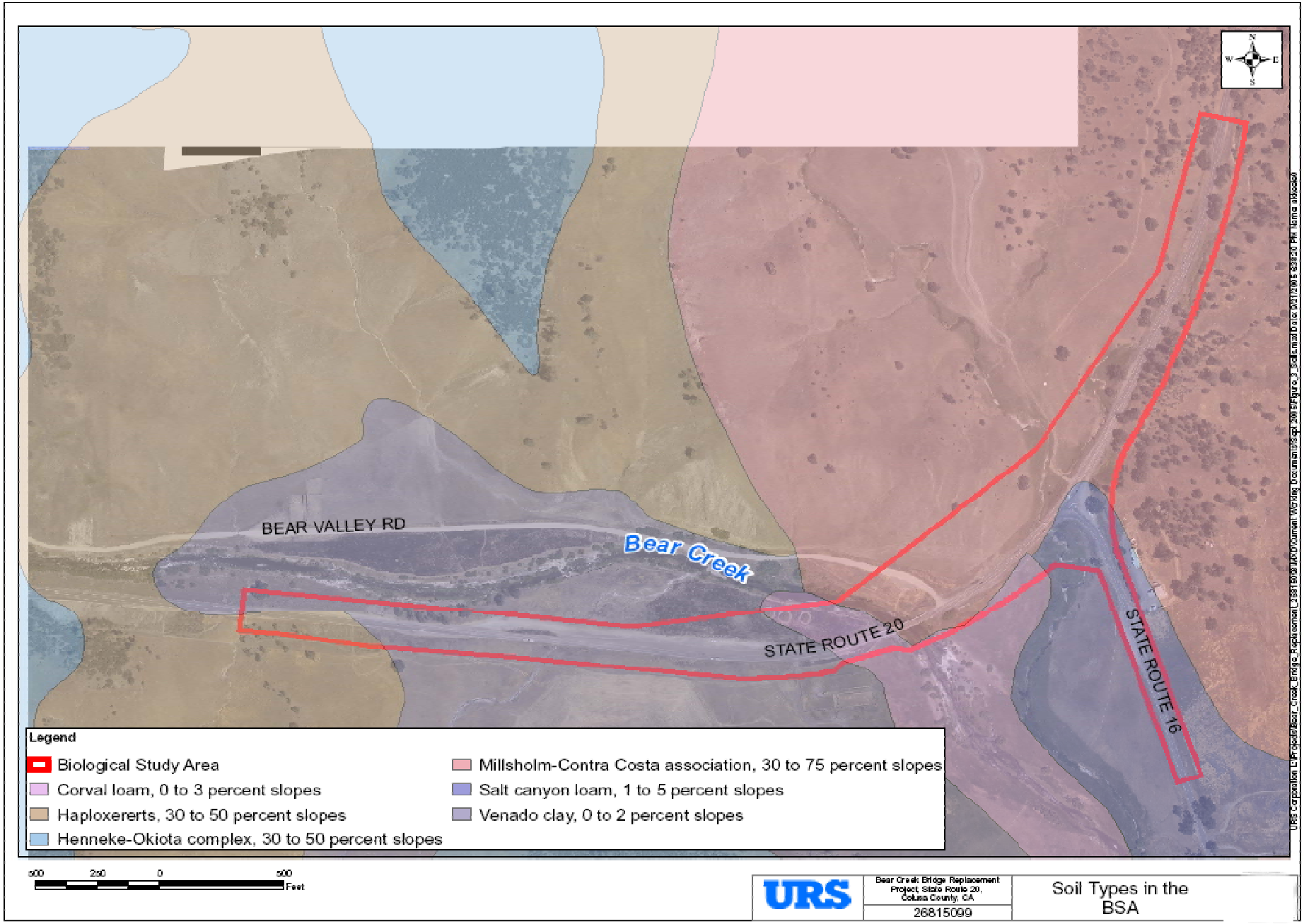

BEAR VALLEY RD
Bear Creek
STATE ROUTE 20
STATE ROUTE 16
Legend
Biological Study Area
Corval loam, 0 to 3 percent slopes
Haploxererts, 30 to 50 percent slopes
Henneke-Okiota complex, 30 to 50 percent slopes
Millsholm-Contra Costa association, 30 to 75 percent slopes
Salt canyon loam, 1 to 5 percent slopes
Venado clay, 0 to 2 percent slopes
500 250 0 500 Feet
URS
Bear Creek Bridge Replacement Project, State Route 20, Colusa County, CA
26815099
Soil Types in the BSA

Figure 2.1

2.2.4 Hazardous Waste Materials

This section provides information on potential hazardous materials that occur, or could occur, within the proposed project site and vicinity. The Initial Site Assessment (ISA) conducted by a Caltrans hazardous waste specialist evaluated the potential of encountering hazardous waste materials.

A hazardous waste is defined in Title 22 of the California Code of Regulations as "A substance or combination of substances because of its quantity, concentration, physical, chemical, or infectious characteristics may either:

1. Cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or

2. Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed. (CCR, Title 22, §66260.10)

Regulatory Setting

Worker health and safety, in addition to public safety, are key issues when dealing with hazardous materials that may affect human health and the environment.

California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 4, Section 1532.1, Lead, requires that the impacts, if any, of elevated levels of lead be addressed. Prior to 1986, lead was used as an additive to gasoline. After 1986, the Environmental Protection Agency (EPA) restricted the use of lead as an additive. For more than 60 years, lead emissions were the result of the gasoline used in automobiles. During that period, approximately 50% of lead released from motor vehicles was deposited within 100-feet of the roadway. Lead concentration decrease with distance from the road and increases with traffic volume, particularly along heavily traveled highways.

Affected Environment

Lead

If recommended by a Caltrans hazardous waste specialist, samples are generally collected to determine the presence for Aerially Deposited Lead (ADL) for projects that have an Average Annual Daily Traffic (AADT) peak volume of 10,000 vehicles

or greater. The average annual daily traffic is the total volume for the year divided by 365 days.

Based on the rural location of where the proposed project is taking place, the volume of traffic is well below a peak volume of 10,000 vehicles. This is confirmed in the 2001 Traffic Volume Data from Caltrans Traffic Census Department. According to this document, the AADT is 4,200 vehicles. The peak month Annual Daily Traffic is the average daily traffic for the month of heaviest traffic flow. This data is obtained because on many routes, high traffic volumes occur during a certain season of the year. The peak month ADT is 4,950 vehicles for the corresponding point on State Route 20 where Bear Creek Bridge is located. Because these numbers fall well below the 10,000 volume, aerially deposited lead is not a concern in the area where the project could be constructed. Sampling and analysis for lead contamination will not be performed.

Hazardous Waste Storage Sites

A hazardous waste evaluation consisted of an Initial Site Assessment, using the information services of Environmental Data Resources (EDR). The EDR report provides information on hazardous materials storage and releases collected from the databases of state and federal regulatory agencies. Based on the information contained in the EDR report, no hazardous waste storage sites or releases are known to exist in the project vicinity. No part of the project area is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 (Cortese List).

Asbestos

Asbestos is a known carcinogen. Activities that disturb materials containing asbestos can generate airborne particles. Asbestos laden dust can be easily inhaled and may result in the development of lung cancer. Because concerns have been raised about possible health hazards from activities that disturb materials containing asbestos, comprehensive investigations are done to assess the potential for exposure from asbestos.

Inspection of the original design plans (i.e. as-builts) revealed no asbestos was used to construct Bear Creek Bridge; therefore, asbestos is not expected to be encountered during demolition.

Naturally occurring asbestos found in ultramafic serpentine rock occurs in certain geologic settings in California. The California Geological Survey map titled "A General Location Guide for Ultramafic Rocks in California-Areas More Likely to Contain Naturally Occurring Asbestos", which shows principal asbestos deposits, depicted no naturally occurring asbestos in the project area.

Impacts

Asbestos was not used in the construction of the bridge, and ultramafic serpentine rocks are not known to exist in the project area; therefore, no impact from asbestos is expected.

Yellow thermoplastic pavement striping can contain lead. If yellow thermoplastic stripe will be removed from the pavement surface as a separate operation, it could be considered hazardous waste. Appropriate safe work practices and disposal methods will be required for the removal of yellow thermoplastic traffic striping. If this material is removed along with pavement grindings it becomes diluted and is no longer considered as hazardous waste.

Avoidance, Minimization and/or Mitigation Measures

If necessary, precautionary measures will be implemented to protect construction workers from the possible exposure to lead during the removal operations of the yellow thermoplastic paint used for traffic striping.

2.3 Biological Environment

This section provides information on biological resources that occur or could occur within the project area. This includes specific information on the biological resources and the potential impacts to special-status species, wetlands, and sensitive natural communities.

2.3.1 Jurisdictional Wetlands and Other Waters

Potential jurisdictional wetlands and other Waters of the U.S. in the Biological Study Area were delineated using the routine on-site method described in the 1987 U.S. Army Corps of Engineer Wetlands Delineation Manual. Delineation methods were also consistent with the Sacramento District of the U.S. Army Corps of Engineer (USACE) minimum requirements for delineations (USACE 2001). All creeks, ditches, and swales were inspected in the field for jurisdictional characteristics.

Within the limits of the Biological Study Area (BSA), one perennial stream, three intermittent streams, and several ephemeral streams were identified that are tributaries to Bear Creek. Several ephemeral ditches, linear seasonal wetlands, and seeps also occur along the roadway. Herbaceous species associated with these ditch-like wetlands and seeps include pink creamsacs, rabbitsfoot grass, loosestrife, and Italian wildrye. These features are classified as meadow and seep communities.

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates 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 delineate wetlands to satisfy the Sacramento District of the Army Corps of Engineers minimum requirements for delineations (USACE 2001), a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters will be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers with oversight by the Environmental Protection Agency (EPA).

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this Executive Order states that a federal agency, such as the Federal Highway Administration, cannot undertake or provide assistance for new construction located in wetlands unless the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Game (CDFG) and the Regional Water Quality Control Boards (RWQCB). Sections 1600-1607 of the Fish and Game Code require any

agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFG before beginning construction. If CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the Clean Water Act. Additional water quality details can also be found in this document under Section 2.2.2, Water Quality.

Affected Environment

Approximately 0.79 hectares (2.0 acres) of potential jurisdictional wetlands and Waters of the U.S. were identified in the BSA. Jurisdictional features include ephemeral, intermittent and perennial drainages, and perennial and seasonal wetlands, and one perennial pond. Perennial drainages contain standing or flowing water year round, while intermittent drainages are inundated with water for a shorter but significant period of the year. Both types of drainage classes are typically dominated by perennial emergent vegetation. By definition, perennial emergent wetlands contain standing water for a significant portion of the year, and are associated with perennial, obligate wetland plant species such as cattail, spikerush and rush species. In the project area, these features are typically located within and along intermittent drainages. Seasonal wetlands are inundated or saturated by standing water for shorter periods during the year, although saturated soils may occur for longer periods. These seasonal wetland features in the project area are usually adjacent to intermittent and ephemeral drainages, and contain some emergent, obligate wetland plant species as well as non-obligate facultative and facultative wetland species.

Features were identified as non-wetland waters of the U.S. based on the presence of defined bed and banks, drift lines, and the Ordinary High Water Marks (OHWM) average 2 year return frequency. These features, usually streams, ponds or ditches, were mapped using a combination of field measurements and aerial photography. Cross sectional widths of non-wetland waters were measured in the field from the

OHWM. These measurements were extrapolated to delineate these features in the project area.

Table 2.2 and Table 2.3 list the potential jurisdictional wetlands and non-wetland waters of the U.S. in the Biological Study Area (BSA).

Table 2.2: Potential Wetlands within the BSA

Wetland Type	Hectares	Acres
Perennial Emergent Wetland	0.046	0.113
Seasonal Wetland	0.155	0.382
Wetlands Total	**0.200**	**0.495**

Table 2.3: Potential "Non-Wetland Waters of the U.S." within the BSA

"Other Waters of the U.S." Type	Hectares	Acres
Intermittent Drainage	0.112	0.277
Perennial Drainage	0.402	0.994
Ephemeral Drainage	0.049	0.120
Perennial Pond	0.025	0.062
Other Waters of the U.S. Total:	**0.588**	**1.453**

Wetlands

Wetland features in the project study area were classified as perennial emergent and seasonal wetlands. Perennial emergent wetlands contain standing water for a significant portion of the year, and are associated with perennial, obligate wetland plant species such as cattail, spikerush and rush species. In the project area, these features are typically located within and along intermittent drainages. Seasonal wetlands are inundated or saturated by standing water for shorter periods during the year, although saturated soils may occur for longer periods. These seasonal wetland features in the project area are usually adjacent to intermittent and ephemeral drainages, and contain some emergent, obligate wetland plant species as well as facultative and facultative wetland species. Figure 2.2 on page 39 shows the location of these wetlands and other waters of the U.S.

Perennial Emergent Wetlands

Perennial emergent wetlands F-1 through F-6 all occur in the channel of perennial

drainage A (A1 through A-12) north of SR 16 on the east side of SR 20. These in-stream wetlands appear to be inundated a significant portion of the year and are dominated by perennial, obligate wetland species including narrow leaf cattail, spikerush and Baltic rush. At the time of surveys, small pools occurred along the drainage interspersed with patches of emergent vegetation.

Perennial emergent wetlands G-1 through G-3 and H-1 are also within the channel of an intermittent drainage, and are similar in vegetation and hydrology to perennial emergent wetlands F-1 through F-6.

Perennial emergent wetland H-2 occurs in the channel of perennial drainage C (C-1 through C-7) that traverses SR 20. Vegetation structure and composition is similar to that of perennial emergent wetlands G-1 through G-3, but contain a greater cover of the invasive perennial pepperweed.

Perennial emergent wetland Q-1 is located adjacent to SR 20, and receives water from ephemeral drainage CC (CC-1 through CC-3) that runs along the base of a serpentine slope. Dominant species occurring in this wetland are perennial emergent species such as cattails and Baltic rush. The ephemeral drainage that feeds wetland Q-1 eventually discharges into Bear Creek.

Perennial emergent wetland J-1 is located in the middle of Bear Creek (Perennial Drainage U-1). Dominant plant species include perennial pepperweed, tules and Baltic rush.

Seasonal Wetlands

Seasonal wetland K-1 is located in the eastern end of project study area on the east side of SR 20. This wetland is located in the floodplain of ephemeral drainage AA-1. Dominant plant species in this wetland include perennial ryegrass and barley. The soils in this location have a low chroma matrix with mottles and contain oxidized rhizospheres. Adjacent uplands are blue oak woodlands with an understory of nonnative grasses such as soft chess and medusahead.

Seasonal wetland L-1 is located in the eastern portion of project study area, on the north side of SR 20. The wetland appears to be an overflow area for the intermittent drainage that runs along the north side of this feature. Overland flow into the wetland from the drainage is restricted to times of high flow, when the water can breach a

small berm that is situated at the eastern end of the wetland. Vegetation within the wetland includes Baltic rush, bird's foot trefoil, and rabbit's foot grass. Data points 1a,1b, 2a, 2b and 2c were used to delineate this wetland. The locations of these data points are shown in Figure 2.2.

Seasonal wetland M-1 is immediately adjacent to intermittent drainage B (B-1 through B-14) on the north side of SR 20. This small seasonal wetland (4 m wide) is dominated by obligate and facultative wetland plants including bird's foot trefoil, perennial ryegrass, Baltic rush, and spikerush.

Seasonal wetland N-1 is located near the eastern end of project study area near the intersection of SR 20 and SR 16. This wetland receives runoff from ephemeral drainages BB-1 and BB-2, and drains via a culvert under SR 20. The site is dominated by teasel. Co-dominant species include Baltic rush, saltgrass, perennial ryegrass, spikerush, and foxtail. The wetland is bordered by blue oak woodland. At the time of surveys, the site contained saturated soils. Test pit #1 placed within the wetland confirmed the presence of hydric soils at this location.

Seasonal wetland O-1 occurs on private property near the eastern terminus of the project study area, on the north side of SR 20. At the time of the survey, this feature contained some standing water near the fence line and was heavily grazed by cattle. The source of the water appears to be a seasonal seep. In addition to mottled, low chroma soils (Test Pit 2), the site contained dried algal mats at the soil surface. Baltic rush was the dominant species near the fence, while farther from the fence species such as perennial ryegrass, bird's foot trefoil, and barley dominate.

Seasonal wetland P-1 is fed by an ephemeral drainage that flows down a short, steep, road cut before discharging into the wetland. Vegetation of the wetland is dominated by saltgrass. Soils are coarse sandy loams near the surface, and dark, mottled serpentine clay loams below 8 in. Data points 4a and 4b document the rationale for the delineation of this wetland. This wetland feature was impacted by the placement of a fuel break during a controlled burn event conducted by BLM in June of 2005. Seasonal wetlands R-1 and R-2 are located in a small, linear ditch that occurs just west of the Bear Creek Bridge on the south side of SR 20. This feature is fed by a small seep upslope of the feature. Vegetation includes pink creamsacs, coyote thistle (*Eryngium* sp.), Baltic rush, rabbit's foot grass, and sedges.

seasonal wetland S-1 occurs north of SR 20, adjacent to a culvert on the edge of a serpentine meadow. This small pool is fed by a culvert that collects roadside runoff.

Other Waters of the U.S.

Non-wetland waters of the U.S. within the project study area include perennial, intermittent and ephemeral drainages, and one perennial pond. Perennial drainages contain standing or flowing water year round, while intermittent drainages are inundated with water for a shorter but significant period of the year. Both types of drainage classes are typically dominated by perennial emergent vegetation. In the project area, small seasonal pools occur within intermittent drainages that usually become dry during the summer months. Ephemeral drainages typically contain water only during storm events in the winter and early spring season, and are dry the remainder of the year. At the time of surveys, the ephemeral drainages had little to no visible flowing or standing water. Only one deep perennial pond occurs in the eastern extent of the project area.

Perennial Drainage (Bear Creek)

Bear Creek (Perennial Drainage U-1) is a north to south flowing perennial stream that crosses the center of the project area under the Bear Creek Bridge eventually flowing into Cache Creek. The stream channel is deeply incised, which has resulted in the alteration of the natural flooding regime of meadows adjacent to the stream. Upper floodplains of Bear Creek on the south side of Bear Creek Bridge are composed of non-hydric serpentine clays vegetated with ryegrass, soft chess and Baltic rush. South of the bridge the upper floodplains consist of non-hydric, coarse-sandy soils vegetated with Baltic rush and several species of non-native annual grasses.

Perennial Drainage C (C-1 through C-7) runs northwest to southeast in the eastern portion of the project site. On the north side of SR 20, the stream consists of shallow, open pools bordered and interspersed with emergent vegetation (50-60% of stream) including spikerush, narrow leaf cattails and perennial pepperweed (*Lepidium latifolium*). Land use here consists of cattle grazing. After crossing under the highway through a culvert, the stream opens into a large pool (T-1) approximately 2.4 m (8 ft) deep bordered by emergent vegetation. Downstream from the pool, the stream is bordered by dense stands of perennial pepperweed.

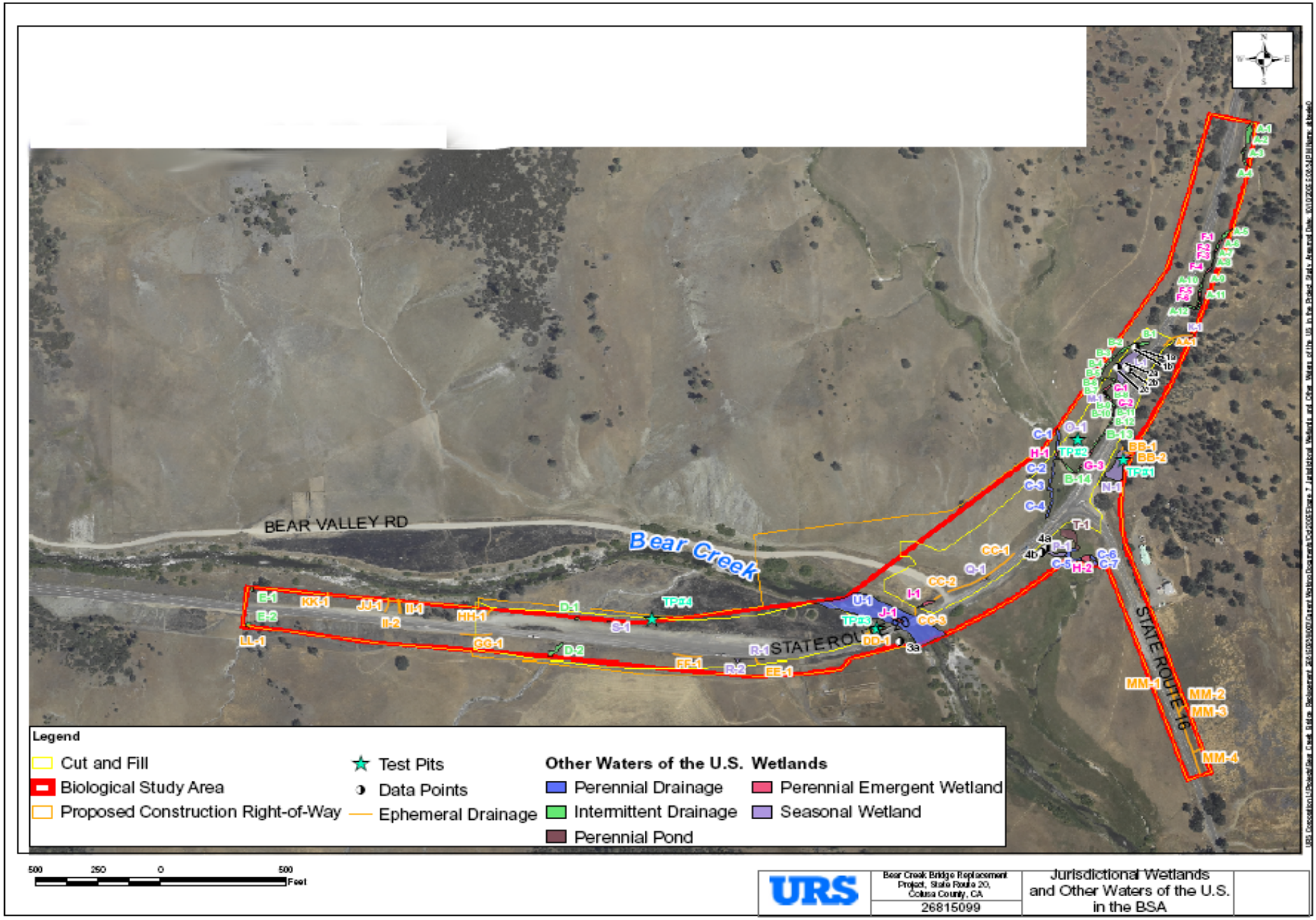

BEAR VALLEY RD
Bear Creek
STATE ROUTE 16
Legend
Cut and Fill
Biological Study Area
Proposed Construction Right-of-Way
Test Pits
Data Points
Ephemeral Drainage
Other Waters of the U.S.
Perennial Drainage
Intermittent Drainage
Perennial Pond
Wetlands
Perennial Emergent Wetland
Seasonal Wetland
500 250 0 500 Feet
URS
Bear Creek Bridge Replacement Project, State Route 20, Colusa County, CA
26815099
Jurisdictional Wetlands and Other Waters of the U.S. in the BSA

Figure 2.2

Intermittent Drainages

Intermittent drainage A (A-1 through A-12) occurs in the eastern portion of the project area on the east side of SR 20. This drainage runs north to south, parallel to the highway. At the time of surveys, small pools occurred within the drainage, as well as stands of perennial emergent vegetation.

Intermittent drainage B (B-1 through B-14) also runs north to south in the eastern portion of the study area, on the west side of SR 20. The vegetation and drainage patterns in this feature are similar to intermittent drainage A.

Intermittent drainage D (D-1, D2) occurs in the western section of the project study area, traversing the highway though a culvert. This relatively flat drainage consists of small serpentine cobbles and gravel with small amounts of hedge nettle (*Stachys albens*), saltgrass and Baltic rush below the OHWM. Plants of the adjacent serpentine grasslands include pink creamsacs, blue wildrye and wild oats.

Intermittent drainage E (E-1, E2) occurs in the western extent of the project study area on both sides of SR 20. The bed and immediate banks of the stream on the south side of the highway contain medium-sized serpentine boulders with little soil development. Vegetation along the margins of this stream include poison oak, gum plant (*Grindelia camporum*) and redberry (*Rhamnus illicifolia*), while the slopes surrounding the drainage are dominated by crested wheat grass, soft chess, pink creamsacs, ryegrass and melic grass (*Melica californica*). One steep, ephemeral drainage (LL-1) feeds into this intermittent drainage. On the north side of the highway, the stream leaves a culvert near a large valley oak and makes its way to Bear Creek outside of the project area.

Ephemeral Drainages

Ephemeral drainage AA (AA-1) is located at the east end of the project site on the east side of SR 20. This shallow drainage is dominated by perennial ryegrass and barley. This feature drains a small, 4.0-meters (13 ft) wide seasonal wetland. Upland habitat consists of rolling terrain with blue oak woodlands.

Ephemeral drainages BB-1 and BB-2 feed into seasonal wetland N-1 in the eastern study area, on the east side of SR 20. Species composition in the drainage and surrounding habitat is similar to ephemeral drainage AA-1. No standing or flowing water was observed during surveys.

Ephemeral drainage CC (CC1 through CC-3) runs between the base of a steep serpentine slope and SR 20, and eventually terminate at Bear Creek. One perennial emergent wetland is located along this ephemeral drainage. Soils in all other areas along this ephemeral drainage are dark clay loams with no hydric soil indicators. Vegetation associated with the drainage include California sagebrush (*Artemisia californica*), creeping ryegrass and tamarisk.

Ephemeral drainage DD (DD-1) is a small feature located in between SR 20 and Bear Creek. This feature appears to convey water that runs off of SR 20 during storm events. One test pit (TP #3) was placed within the drainage to determine if wetland soils were present. No wetland obligate plants or wetland soils were identified within this feature.

Ephemeral drainage EE (EE-1) appears to drain the serpentine prairie that occurs along the south side of SR 20, just east of Bear Creek. This ephemeral drainage discharges into a small seasonal wetland 'ditch' (R-1 and R-2) immediately adjacent to the highway.

Ephemeral Drainages FF-1 through KK-1 are small, narrow features immediately adjacent to SR 20. Those ephemeral drainages associated with a culvert do not have a defined bed and bank on the opposite side of the highway.

Ephemeral drainage LL-1 is located near the western terminus of the project area, on the south side of SR 20. This narrow, steep serpentine drainage feeds into a larger intermittent drainage (E1-E2) that eventually crosses the highway through a culvert. The drainage is mostly free of vegetation, but is bordered by serpentine prairie species including the CNPS List 1B species pink creamsacs.

Ephemeral drainages MM1 through MM-4 are short features approximately 0.9 m (3 feet) wide that flow under SR 16 through a culvert and into Bear Creek. These drainages have no vegetation except for A-20, which contains small amounts of Baltic rush.

Perennial Pond

One perennial pond occurs on the south side of SR 20 (T-1) near the intersection with SR16. At the time of the surveys, the pool was approximately 1.8 m (6 ft) deep.

perennial emergent vegetation grows within and adjacent to this feature. The pool is fed by perennial drainage C (C-1 through C-7) that flows under the highway through a box culvert.

Impacts

Potential impacts to jurisdictional wetlands and other waters include permanent and temporary affects. Permanent impacts include filling or removal of wetlands within the cut and fill limits. Temporary impacts may result at construction access routes and staging areas, and include sediment discharge, removal of vegetation, and soil compaction. The proposed project will permanently impact 0.09 hectare (0.22 acre) of potentially jurisdictional non-wetland waters of the U.S. and a total of 0.10 hectare (0.25 acre) of potentially jurisdictional wetlands. The project will also temporarily affect approximately 0.54 hectare (1.33 acre) of potentially jurisdictional non-wetland waters of the U.S. and 0.20 hectare (0.49 acre) of jurisdictional wetlands. The specific values for wetland impacts in the BSA are subject to change when project design specifications are finalized. Table 2.4 below summarizes the extent of impacts to Waters of the United States, including wetlands.

Table 2.4: Impacts to Waters of the United States

Resource	Area of Permanent Impact	Area of Temporary Impact
Waters of the U.S.	0.09 hectare (0.22 acre)	0.54 hectare (1.33 acre)
Wetlands	0.10 hectare (0.25 acre)	0.20 hectare (0.49 acre)
Total	**0.19 hectare (0.47 acre)**	**0.74 hectare (1.82 acre)**

Avoidance, Minimization and/or Mitigation Measures

Upon completion of the project, all areas that have been temporarily impacted by the project will be restored to approximate original site conditions. Measures will be employed to prevent any construction material or debris from entering surface waters or their channels. Best Management Practices (BMPs) for erosion control will be implemented and in place prior to, during, and after construction in order to ensure that no silt or sediment enters surface waters.

Caltrans' Standard Specifications require the Contractor to submit a Water Pollution Control Plan. This plan must meet the standards and objectives to minimize water pollution impacts set forth in section 7-1.01G of Caltrans' Standard Specifications. The Water Pollution Control Plan must also be in compliance with the goals and

restrictions identified in the Central Valley Regional Water Quality Control Board's Basin Plan.

In addition, the contractor will also comply with any additional measures included in the 401 certification, 1601 Agreement, and 404 permit. These standards, also referred as BMPs, include but are not limited to the following:

- Where working areas encroach on live or dry streams, lakes, or wetlands, RWQCB-approved physical barriers shall be constructed and maintained between working areas and streams, pond and wetlands. These barriers will prevent the discharge of sediment into these water systems.
- Discharge of sediment into streams shall be held to a minimum during construction of the barriers. Discharge will be contained through the use RWQCB-approved measures that will keep sediment from entering jurisdictional waters beyond the project limits.
- Oily or greasy substances originating from the Contractor's operations shall not be allowed to enter or placed where they will later enter a live or dry stream, pond, or wetland.
- Asphalt concrete shall not be allowed to enter a live or dry stream, pond, or wetland.
- All off-road construction equipment is to be cleaned of potential noxious weed sources (mud, vegetation) before entry into the project area. After entering a potentially infested area and before moving on to another area, to help ensure noxious weeds from outside of the project area are not introduced into the project area all equipment must be cleaned. The contractor shall employ whatever cleaning methods (typically with the use of a high-pressure water hose) are necessary to ensure that equipment is free of noxious weeds. Equipment shall be considered free of soil, seeds, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools is not required. Equipment washing stations shall be placed in areas that afford easy containment and monitoring (preferably outside of the project area), and that do not drain into the forest or sensitive (riparian, wetland, etc.) areas.
- To further minimize the risk of introducing additional nonnative species into the area, only native plant species appropriate for the project area will be used in any erosion control or revegetation seed mix or stock. No dry-farmed straw will be used, and certified weed-free straw shall be required where erosion control straw

is to be used. In addition, any hydro-seed mulch used for revegetation activities must also be certified weed-free.

Additional direct and indirect impacts to sensitive biological resources, including wetlands and jurisdictional waters, throughout the project area will be avoided or minimized by designating these features outside of the construction impact area as "Environmentally Sensitive Areas" (ESA) on project plans and in project specifications. ESA information will be shown on contract plans and discussed in the Special Provisions. ESA provisions may include the use of temporary orange fencing to delineate the areas where work will be limited when sensitive resources are adjacent to construction activities. ESA fencing can also exclude construction work from occurring within the boundaries of sensitive resources to prevent inadvertent construction impacts. Contractor encroachment into ESAs will be restricted to prevent staging, operation of heavy equipment, or casting of excavation materials. ESA provisions will be implemented as a first order of work, and remain in place until all construction activities have been completed.

Compensatory mitigation will be necessary to offset permanent and temporary wetland losses. Compensation for potential impacts to jurisdictional Waters of the U.S. include a combination of the following measures:

- Purchase of wetland creation credits from a local mitigation bank approved by the USACE
- Purchase of wetland preservation or enhancement credits from an USACE approved mitigation bank
- On-site restoration or enhancement of wetlands
- On-site creation of wetlands

Permanent wetland impacts will be mitigated by creation of wetland habitat at a ratio of 1:1. Additional wetland habitat will be preserved, restored, or enhanced at a minimum ration of 1:1 to compensate for temporal losses of wetland habitat functions.

Non-Jurisdictional Areas

Data points and test pits were taken from areas within the project limits to determine whether or not these locations were upland, non-jurisdictional areas. Figure 2.2 shows the location where these data points and test pits samples were taken. Data point 3a

confirmed the absence of hydric soil indicators for areas adjacent to Bear Creek south of the Bear Creek Bridge. These areas are positive for wetland vegetation, but the sandy well-drained soils lack the characteristics of hydric soils. Test Pit 3 was placed on the north side of SR 20 within a meadow extending from Bear Creek to SR 20. This area contains similar vegetation to that of Data point 3a, and also lacked hydric soil and wetland hydrology indicators. Based on the results of these test pits, it was determine these locations are not jurisdictional areas.

2.3.2 Plant Species

This section discusses natural communities of concern, special-status plant species including CDFG fully protected species and species of special concern, USFWS candidate species, and non-listed California Native Plant Society (CNPS 2001) rare and endangered plants.

Plant surveys, conducted between May through August 2005, revealed eight special-status plant species. In addition, three sensitive plant communities were identified. These communities are identified as sensitive by the CDFG Natural Heritage Division and are recognized as rare by the CNDDB.

Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) share regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and subject to population and habitat declines. Special status is a general term for species that are afforded 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).

The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et. seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et. seq. Caltrans projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

Affected Environment

The Biological Study Area (BSA) covers approximately 12.5 hectares (31-acres) covering both sides of State Route 20 between PM 2.8 – 3.8. The study area encompasses rolling hills covered with blue oak woodland, annual grassland on alluvial terraces, serpentine prairie, riparian communities, and wetland communities.

The BSA is adjacent to the Botanical Management Area, a unique area within Caltrans right-of-way that is managed by the University of California, Davis, to promote and maintain the high plant diversity present at the site. Bureau of Land Management (BLM) lands and private grazing lands surround the study area.

Twelve natural communities that were observed in the BSA are listed as follows: nonnative annual grassland, introduced perennial grassland, serpentine bunchgrass, creeping ryegrass grassland, saltgrass grassland, baltic rush wetland, cattail wetland, common spikerush wetland, sedge wetlands, bulrush wetlands, blue oak woodland and foothill pine woodland.

The sensitive communities in the BSA include 4.97-arces of serpentine bunchgrass, 0.32-arce of creeping ryegrass grassland, and 0.30-acre of purple needlegrass grassland. The total area of sensitive communities is approximately 2.26-hectares (5.59-acres). Figure 2.3 on page 48 outlines where these sensitive communities are located.

Serpentine Bunchgrass Grassland

Native perennial grasslands [dominated by squirreltail *(Elymus elymoides*), native barley (*Hordeum bracheantherum*) and pine bluegrass (*Poa secunda* ssp. *secunda*)] occurring on serpentine soils are prevalent in the project area, especially along the southwestern corridor and northeast of Bear Creek on a ridgeline above the north side of SR 20.

Creeping Ryegrass

Creeping ryegrass (*Leymus triticoides*) communities occur on the historic upper floodplain of Bear Creek in the project study area. These stands are located northwest side of the bridge and also in smaller patches near the confluence of smaller intermittent drainages and Bear Creek near the southeastern side of the bridge. These stands of creeping ryegrass total approximately 0.131 hectares (0.32 acre) in the BSA.

Purple Needlegrass

Two stands of purple needlegrass (*Nasella pulchra*) occur in the project BSA. These stands are located on the eastern end of the BSA on grassland ridgetops north of SR 20. These stands occupy approximately 0.121 hectare (0.30 acre).

Table 2.5: Area and Type of CNDDB Sensitive Communities in BSA

Community Type	Hectares	Acres
Serpentine Bunchgrass Grassland	2.01	4.97
Creeping Ryegrass Grassland	0.13	0.32
Purple Needlegrass Grassland	0.12	0.30
Sensitive Community Total:	**2.27**	**5.60**

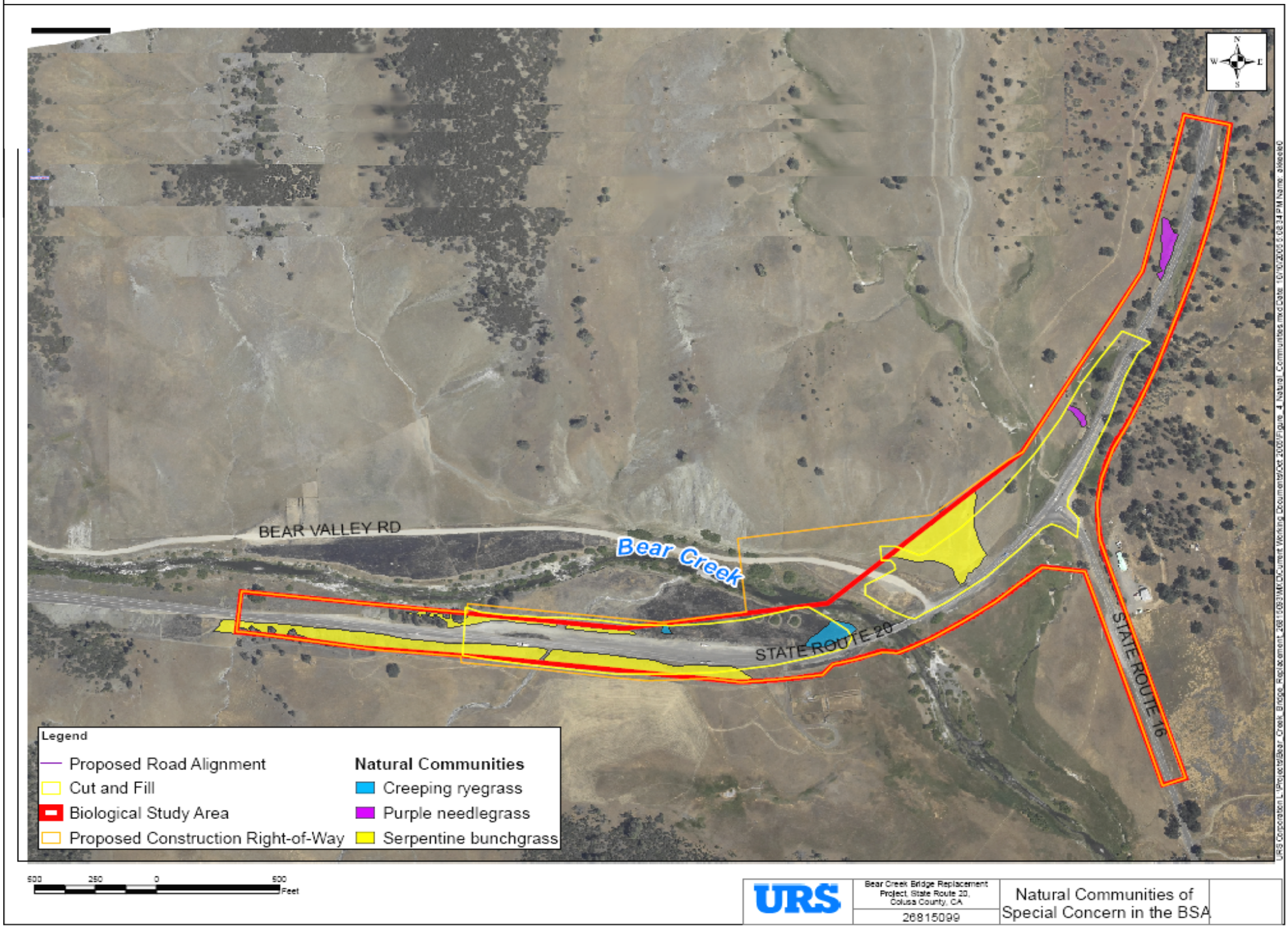

BEAR VALLEY RD
Bear Creek
STATE ROUTE 20
STATE ROUTE 16
Legend
Proposed Road Alignment
Cut and Fill
Biological Study Area
Proposed Construction Right-of-Way
Natural Communities
Creeping ryegrass
Purple needlegrass
Serpentine bunchgrass
500 250 0 500
Feet
URS
Bear Creek Bridge Replacement Project, State Route 20, Colusa County, CA
26815099
Natural Communities of Special Concern in the BSA

Figure 2.3

Eight special-status plant species were observed in the BSA. These include three CNPS List 1B species (adobe lily, pink creamsacs, Jepson's milkvetch) and five CNPS List 4 species (bearded jewelflower, Cleveland's milkvetch, Purdy's onion, serpentine bedstraw and serpentine sunflower). The adobe lily is also a federal species of concern. Figure 2.4 on page 56 identifies where these special-status plant species exist.

Adobe Lily

Adobe lily, *Fritillaria pluriflora*, is a CNPS List 1B and federal species of concern. It is a perennial herb in the lily family (Liliaceae) that occurs in grasslands, oak woodlands and chaparral communities, and typically blooms from February to April. The range of this species includes Butte, Tehama, Colusa, Lake, Napa, Solano, and Yolo Counties. The CNPS notes this California endemic species is distributed in limited occurrences and is fairly endangered (CDFG 2005), with approximately 100 populations recorded in California. Sixteen of these occurrences, varying in size from 10 to 1000 individuals, occur within a 6-mile radius of the BSA (CDFG 2005).

Two populations of the species were identified in the BSA. One of these populations is located in a fenced oak woodland setting on the east side of SR 20 approximately 200-meters north of the junction of SR 20 and SR 16. This population had approximately 125 plants at the time of this survey effort. The second population occurs in a rock outcrop slope on the south side of SR 20 just east of the narrow perennial serpentine drainage just east of KP 4.8 (PM 3.0). This population contains 26 plants and was documented in 2002-2004 by Rangeland Ecologist Craig Thomsen.

Bearded Jewelflower

Bearded jewelflower (*Streptanthus barbiger*) is a CNPS List 1B species in the mustard family (Brassicaceae). The CNPS notes that this plant is rare in California (CNPS 2001), but exists in sufficient numbers and distributed widely enough that extinction potential is low at this time. The blooming period is typically from May to July. This annual species occurs on serpentine slopes and outcrops and in chaparral. The range of the species includes portions of Lake, Mendocino, Napa, Sonoma and Tehama Counties. The project area represents optimal habitat for this species and three populations of this plant were located during the current survey effort in the BSA (Figure 2.4).

A fourth small population of the plant occurs immediately outside the northern edge of the BSA. Two populations occur approximately 76-meters (250 ft.) apart on the

south side of SR 20 on barren serpentine clay slopes (road cuts) roughly halfway between KP 4.8 (PM 3.0) and KP 4.4 (PM 2.75). The westernmost population on the slope has approximately forty plants and occurs near the eastern edge of a blue oak woodland. The eastern of these two populations has approximately 150 plants and occurs near a group of smaller blue oaks. A third smaller population occurs on the north side of SR 20 approximately 160-meters (527 ft.) east of KP 4.8 (PM 3.0). This is an open serpentine road cut with 15 plants and associated species include naked buckwheat (*Eriogonum nudum*). An additional population of bearded jewelflower is located outside of the study area along the northern edge of SR 20 approximately 80-meters east of KP 4.8 (PM 3.0) on the open serpentine clay banks of a narrow perennial drainage. This population had two small clumps of three plants (total six plants).

Cleveland's Milk-Vetch

Cleveland's milk-vetch (*Astragalus clevelandii*) is a CNPS List 4 species in the pea family (Fabaceae). This perennial herb typically blooms from June to September and is found in serpentine seeps associated with chaparral, woodlands and riparian scrub. Cleveland's milk-vetch is known to occur in Colusa, Lake, San Benito, Tehama and Yolo counties.

One population, consisting of two plants, was observed growing on the lower banks of a perennial drainage near KP 4.8 (PM 3.0). It is expected that this population will be permanently impacted. Given the relatively small areas of impacts to this species, it is expected that the project will have minimal overall impact to the Cleveland's milk-vetch. Efforts will be made to collect seeds and re-establish the population elsewhere.

Jepson's Milk-Vetch

Jepson's milk-vetch *(Astralagus rattanii* var. *jepsonianus)* is a CNPS List 1B species that is associated with serpentine soils of chaparral, woodlands and valley and foothill grasslands. It is an annual herb in the pea family (Fabaceae) that typically blooms from April to June in Colusa, Glen, Lake, Napa, Tehama and Yolo Counties. The CNPS notes this California endemic species is limited to a small number of occurrences, is fairly rare and known populations are small and widely scattered (CNPS 2005). An occurrence of Jepson's milk-vetch is documented along Bear Valley Road, approximately 1.5 km (1 mi) from the BSA (CDFG 2005).

Habitat for this species is present in the BSA and three populations of the plant were documented during the 2005 surveys (Figure 2.4). The largest of these populations occupies approximately 0.192 hectares (0.474 acres) and contains an estimated 1,200 plants. This population is located on a large, sloped serpentine ridgeline on the north side of SR 20 approximately 230 m (750 ft.) west of the junction of SR 20 and SR 16. This population had a very high density of Jepson's milk-vetch plants interspersed with annual grasses and native wildflowers. The other two populations are located in the western portion of the BSA. One of the western populations is located within and adjacent to an intermittent stream at the western terminus of the BSA. Approximately 10 plants were observed in the BSA, however, this population extends beyond the limits of the study area. This occurrence overlaps a population of pink creamsacs (*Castilleja rubicundula* ssp. *rubicundula*). The third population of Jepson's milk-vetch in the BSA is located on the south side of SR 20 approximately twenty meters west of the occurrence in the intermittent stream on a grass serpentine slope. This population contained approximately 20 plants. In total, approximately 2,000 Jepson's milk-vetch plants exist within the BSA and surrounding area.

Pink Creamsacs

Pink creamsacs *(Castilleja rubicundula* ssp. *rubicundula*) is a CNPS List 1B species in the snapdragon family (Scrophulariaceae). It is an annual herb that typically blooms from April to June. Occurrences of this plant are known from Butte, Colusa, Lake and Napa Counties. Eighteen populations are listed in the CNDDB, including one occurrence in the project BSA, and four that are assumed extirpated (CDFG 2005, Thomsen 2001).

Four populations of this plant were observed in the BSA (Figure 2.4). The largest population is located on either side of the banks and floodplain of a narrow, perennial, drainage on serpentine substrate that is located just east of KP 4.8 (PM 3.0) on the south side of SR 20. This population had approximately 52 plants. Other species growing at this location included Indian paintbrush (*Castilleja affinis*) and white hedge nettle (*Stachys albens*). Approximately 75 m (240 ft) east of this streamside population is another smaller patch of approximately ten plants growing in serpentine bunchgrass prairie with native barley (*Hordeum brachyantherum*) and one-sided bluegrass (*Poa secunda* ssp. *secunda*). A second population of pink creamsacs is located on the south side of SR 20 near KP 2.84 (PM 3.11) in a linear seasonal wetland. This seasonal wetland is approximately 33.5 m (110 ft) long and 1 m (3.28 ft) wide. Approximately 50 plants were observed in this roadside wetland feature, which is fed by a small seep. Other species associated with this feature include coyote

thistle (*Eryngium* sp.), Baltic rush, and rabbit's foot grass. The third population is located on the north side of SR 20 near the western terminus of the study area. The pink creamsacs are growing on banks of intermittent stream with serpentine substrate. Approximately 15 plants were observed within the study area; however, the population extended north towards Bear Creek and another 60 plants were observed just outside the project boundary. This population was associated with Jepson's milk-vetch and saltgrass (*Distichlis spicata*).

Purdy's Onion

Purdy's onion (*Allium fimbriatum* var. *purdyi*) is a CNPS List 4 species in the lily family. It is a perennial bulbiferous species with a blooming period from April to June. Purdy's onion is found on serpentine soils of chaparral and woodland communities in Colusa, Lake, Napa and Yolo Counties. CNPS notes this rare species in not very endangered in California, and is found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time (CNPS 2005). No occurrences of this species are recorded in the CNDDB (CDFG 2005).

One large, diffuse population of this Purdy's onion occupies approximately 0.890 hectares (2.20 acres) of the BSA (Figure 2.4). The population is located on serpentine slopes and grasslands on the south side of SR 20 that extend from the intermittent drainage on the western edge of the BSA toward the Bear Creek Bridge to approximately 90 m west of KP 2.84 (PM 3.11). Approximately 1,000 plants were observed in this population during the current survey effort. The Purdy's onions were associated with big-fruited lomatium (*Lomatium macrocarpum*), large flowered agoseris (*Agoseris grandiflora*), bearded jewelflower and pale larkspur (*Delphinium hesperium* ssp. *pallescens*).

Serpentine Bedstraw

Serpentine bedstraw (*Galium andrewsii* ssp. *gatense*) is a CNPS List 4 species in the bedstraw family (Rubiaceae). This species a perennial herb with a blooming period from April to July, and is found in rocky, serpentine soils of chaparral, woodlands and coniferous forests. The range of this species includes Alameda, Contra Costa, Fresno, Monterey, San Benito, Santa Clara and San Luis Obispo Counties. CDFG notes that this species is endemic and rare in California, but is found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time (CNPS 2005).

The project area represents optimum habitat for this species and three occurrences were observed in the BSA during the surveys conducted in 2005 (Figure 2.4). The first population occurs on the upper northern bank of an intermittent drainage on the southeast side of SR 20 near the eastern terminus of the BSA. A larger population occurs downstream on rocky soil on the upper banks of the same intermittent stream. This second population is immediately east of a large population of adobe lily. The third occurrence is composed of one plant located mid-slope in a blue oak woodland approximately 152 m (500 ft) east of KP 4.8 (PM 3.0) on the north side of SR 20.

Serpentine Sunflower

Serpentine sunflower (*Helianthus exilis*) is a CNPS List 4 species in the sunflower (Asteraceae) family. The plants are known to occur in serpentine habitats in Colusa, Glenn, Lake, Napa, Shasta, Siskiyou, Sonoma, Tehama and Trinity Counties. These sunflowers are often found in serpentine drainages and seeps within oak woodlands and chaparral communities. The plants bloom between June and November, depending on localized site conditions. No occurrences of this species are known from the project vicinity (CDFG 2005).

One occurrence of serpentine sunflower was observed in the project area. This population is located in a serpentine intermittent drainage at the western terminus of the BSA. Fifteen plants were observed in the BSA during a September 2005 site visit. However, the population extends southward (upstream), outside of the project area. Approximately 100 additional plants occurred outside of the project study area.

Impacts to Special-Status Plant Species

Approximately 0.06 hectare (0.16 acre) of Adobe lily will be temporarily impacted and approximately 0.05 hectare (0.12 acre) will be permanently impacted by the proposed project. One occurrence will be entirely removed as a result of this project.

Approximately 0.03 hectare (0.06 acre) of bearded jewelflower will be temporarily impacted and approximately 0.001 hectare (0.003 acre) will be permanently impacted by the proposed project. Given the relatively small areas of impact to this species, it is expected that the project will have minimal overall impact to the bearded jewelflower.

Approximately 0.20 hectare (0.49 acre) of Jepson's milk-vetch will be permanently impacted by the proposed project. Almost all of the population of Jepson's milk-vetch on the north of SR 20 will be removed for this project. Of the known occurrences recorded in the CNDDB, this population supports the highest number of individuals (estimated at >1,200) (CDFG 2005).

Approximately 0.03 hectare (0.16 acre) of pink creamsacs will be temporarily impacted and approximately 0.14 hectare (0.34 acre) will be permanently impacted by the proposed project. Two of four populations will be permanently removed from the BSA.

The population of Purdy's onion that occurs on the Botanic Management Area within Caltrans' right-of-way that has been managed for research purposes by Craig Thomsen (Plant Ecologist, U. C. Davis) for five years. The BMA will be protected as an Environmentally Sensitive Area (ESA) by orange fencing. Losses of individuals of this species are expected to be minimal.

Approximately 0.02 hectare (0.04 acre) of serpentine bedstraw will be temporarily impacted and no individuals of serpentine bedstraw will be permanently impacted by the proposed project.

Less than 0.001 hectare of serpentine sunflower will be temporarily impacted and no individuals of serpentine sunflower will be permanently impacted by the proposed project.

Impacts to Sensitive Communities

Potential impacts to natural plant communities could include permanent, temporary, and indirect effects. Permanent impacts include loss or degradation of vegetation due to roadway development. Temporary impacts, occurring only during the construction period, include increased erosion and vehicle disturbances of vegetation. Indirect effects, such as altered hydrology, introduction of invasive non-native species, and reduced genetic exchange, are those that may result after implementation of the project.

Approximately 2 hectare (5 acres) of serpentine bunchgrass community will be temporarily impacted and approximately 1 hectare (3 acres) will be permanently impacted by the proposed project.

Approximately 0.13 hectare (0.32 acre) of creeping ryegrass community will be temporarily impacted and approximately 0.11 hectare (0.27 acre) will be permanently impacted by the proposed project.

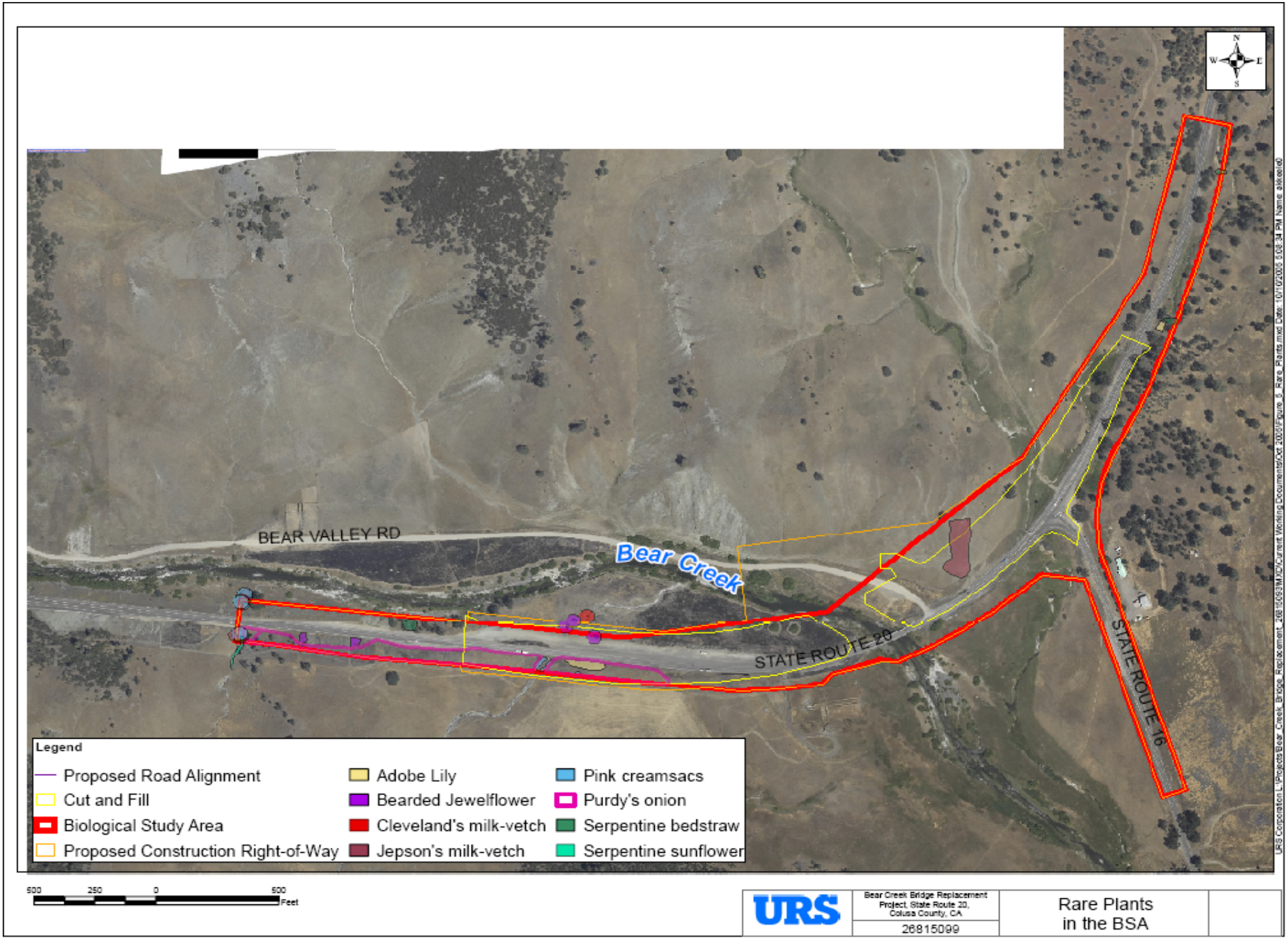
Approximately 0.12 hectares (0.30 acres) of purple needlegrass community will be temporarily impacted and approximately 0.03 hectares (0.07 acres) will be permanently impacted by the proposed project.

Avoidance, Minimization and/or Mitigation Measures for Sensitive Communities and Special-Status Plant Species

Potential impacts to serpentine bunchgrass, creeping ryegrass grassland, and purple needlegrass grassland will be avoided or minimized through implementation of construction specifications and seasonal timing of when the project is constructed.

Potential impacts to adobe lily, bearded jewelflower, cleveland's milk-vetch, jepson's milk-vetch, pink creamsacs, purdy's onion, serpentine bedstraw, and sepentine sunflower will be avoided or minimized through implementation of construction specifications, placement of ESA fencing, and seasonal timing of when the project is constructed. The following measures will be implemented during construction to minimize impacts to sensitive biological resources.

- Environmentally sensitive areas will be established around sensitive habitats that abut construction areas along and within the right-of-way. These sites will be fenced off or clearly marked to prevent inadvertent destruction. High visibility fencing will be installed along the margins of construction work areas where those areas are adjacent to sensitive biological resources.


BEAR VALLEY RD
Bear Creek
STATE ROUTE 20
STATE ROUTE 16
Legend
Proposed Road Alignment
Cut and Fill
Biological Study Area
Proposed Construction Right-of-Way
Adobe Lily
Bearded Jewelflower
Cleveland's milk-vetch
Jepson's milk-vetch
Pink creamsacs
Purdy's onion
Serpentine bedstraw
Serpentine sunflower
500 250 0 500
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URS
Bear Creek Bridge Replacement Project, State Route 20, Colusa County, CA
26815099
Rare Plants in the BSA

Figure 2.4

- Temporary erosion control devices will be installed on slopes where erosion or sedimentation could degrade sensitive biological resources. All temporary disturbance areas will be revegetated with appropriate combinations of native species upon completion of construction.
- A qualified biologist will monitor construction activities.
- All temporary fill and construction debris will be removed from the BSA after completion of construction activities.
- Construction will be timed to minimize potential impacts to sensitive biological resources. Construction work will be minimal during the wet season.
- Impacts to sensitive plant communities and plant species will be minimized by implementing a combination of on-site or off-site preservation, enhancement, or restoration of existing habitat.
- Collection of seeds of annual plants and bulbs for transplanting in coordination with the CDFG

2.3.3 Animal Species

This section identifies the sensitive species that could potentially occur in the project area. The identification of sensitive species was based on a review of existing information, coordination with agency personnel, and various biological field reviews.

A list of special status animals within the project vicinity was obtained based on information queried from the California Natural Diversity Data Base (CNDDB 2005). Pursuant to Section 7 of the Endangered Species Act, a special status species list was requested and received from the United States Fish and Wildlife Service (USFWS).

After biological field surveys were conducted and additional information was obtained from the resources agencies, Caltrans biologists determined a total of 19 sensitive wildlife species were identified as either occurring or having the potential to occur in the study area.

Biologists compared specific habitat requirements, life history notes, and species distribution to determine that the following special status species could be present in the project area. The accounts for each species include generalized habitat associations, food habits, cover, reproduction requirements, seasonal movements, and any known locations in the project area. All known locations were obtained from the CNDDB.

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NOAA Fisheries) and the California Department of Fish and Game (CDFG) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under the state or federal Endangered Species Act. All other special-status animal species are discussed here, including CDFG fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act
- Federal Endangered Species Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- California Endangered Species Act
- Sections 1601 – 1603 of the Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

Affected Environment - Amphibians

Western Pond Turtle

The western pond turtle (*Clemmys marmorata*) is a federal and state species of concern. Western pond turtles range throughout the State of California, from southern coastal California to the Central Valley, and east to the Cascades and Sierra Nevada range. The two subspecies, northwestern pond turtle {*Clemmys marmorata marmorata*} and southwestern pond turtle {*Clemmys marmorata pallida*} are believed to integrate over a broad range in the Central Valley (Jennings and Hayes 1994). Western pond turtles occur in a variety of permanent and intermittent aquatic habitats. Pond turtles require suitable basking and haul-out sites, such as emergent rocks or floating logs, which they use to regulate their temperature throughout the day (Holland 1994). In addition to appropriate aquatic habitat, these turtles require an upland oviposition site in the vicinity of the aquatic habitat, usually within 200 m (656 ft). Upland hibernating areas may include any type of crack, hole or object that a

turtle seeking cover might squeeze into or burrow under. Several occurrences are known from the project vicinity, including one occurrence 4.8 km (3 mi) northwest of the BSA along Bear Creek. A single western pond turtle was observed in the perennial pond southeast of the Bear Creek Bridge and west of the junction of SR 20 and SR 16.

Western Spadefoot Toad

The western spadefoot toad (*Scaphiopus hammondii*) is a federal species of concern and a California species of special concern. This toad is primarily a species of the lowlands, frequenting washes, floodplains of rivers, alluvial fans, playas and alkali flats, but also ranges into the foothills and mountains (Stebbins 1985). It is common throughout the Central Valley and foothills. This species spends most of the year in underground burrows. The western spadefoot toad occurs primarily in grasslands but is known to occur in valley and foothill hardwood woodlands. Breeding and egglaying occur almost exclusively in shallow, temporary pools from late winter until the end of March. Movements to and from breeding areas are rarely extensive (CWHR 2002). No focused surveys were conducted for this species and this species was not observed during visits to the BSA. Even though suitable habitat for the western spadefoot toad is present in the BSA, this species is not known to exist in the project vicinity.

Foothill Yellow-legged Frog

The foothill yellow-legged frog (*Rana boylii*) is a CDFG species of special concern. This frog occurs in the Coast Ranges from the Oregon border south to the Transverse Mountains in Los Angeles County and in most of northern California west of the Cascade crest, and along the western flank of the Sierra south to Kern County. Its elevation range extends from sea level to 1,830 m (6,000 ft) in the Sierra Nevada Mountains. The foothill yellow-legged frog is found in or near rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types. This species rarely occurs far from permanent water. The normal home range is less than 10 m (33 ft) in the longest dimension. Occasional long distance movements up to 50 m (165 ft) may occur during periods with high water conditions (CWHR 2002). The foothill yellow-legged frog is known to occur in Bear Creek downstream of the BSA (CDFG 2005). This species was observed at several locations in the BSA by URS biologists (consultants hired for biological studies) during several site visits. However, no formal night surveys were

conducted for this species. The foothill yellow-legged frog potentially occupies all of the seasonal and perennial drainages in the BSA.

Impacts

Potential impacts to the western pond turtle include direct mortality, removal or degradation of habitat, and barriers to movement and dispersal. The proposed avoidance and minimization measures will substantially reduce the potential for direct mortality. The potential for habitat loss or degradation is likely to be minor due to the small area of aquatic habitat in the project area relative to the adjacent area.

Construction of the proposed project could result in indirect and direct effects on aquatic breeding habitat (e.g. seasonal wetlands) and upland habitat (e.g. nonnative annual grassland) for the western spadefoot toad. Project activities, including the movement of construction equipment within the construction corridor, could result in the potential loss of adult western spadefoot toad.

Approximately 0.74 hectares (1.83 acres) of yellow-legged frog habitat will be temporarily impacted and approximately 0.18 hectares (0.45 acres) will be permanently impacted by the proposed project. Additional impacts could include frog mortality, water quality degradation, or creation of barriers for dispersal.

Avoidance, Minimization and/or Mitigation Measures

The following measures will be implemented during construction to minimize impacts to these sensitive biological resources.

- Environmentally sensitive areas will be established around sensitive habitats that abut construction areas along and within the BSA. These sites will be fenced off or clearly marked to prevent inadvertent destruction. High visibility fencing will be installed along the margins of construction work areas where those areas are adjacent to sensitive biological resources.
- Temporary erosion control devices will be installed on slopes where erosion or sedimentation could degrade aquatic habitat. All temporary disturbance areas will be revegetated with appropriate combinations of native species upon completion of construction.
- A qualified biologist will monitor construction activities.
- All temporary fill and construction debris will be removed from the BSA after completion of construction activities.

- Construction will be timed to minimize potential impacts to sensitive biological resources. Construction work will be minimal during the wet season.
- Avoid construction activities in saturated or pond waters during the wet season (spring and winter) to the maximum extent possible.
- Prior to construction work within aquatic habitats, a qualified biologist will conduct a visual survey of the work area. If a pond turtle is observed, the biologist will relocate the turtle to an off-site location with appropriate habitat. Construction personnel will be instructed to move any western pond turtles that are seen near construction areas to a safe location.
- The project area will be surveyed for burrows potentially occupied by the western spadefoot toad prior to construction. Potential burrows will be avoided, where feasible. If avoidance is not feasible, Caltrans will consult with the CDFG to develop a plan to remove and relocate the toad to other suitable habitat in the vicinity of the project.

Affected Environment – Birds

Cooper's Hawk

The Cooper's hawk (*Accipiter cooperii*) is a California species of special concern. This bird is a breeding resident throughout most of the wooded portion of California. It typically nests in trees that are 6-15 m (20-50 ft) tall. Nests are constructed on horizontal branches, in the main crotch, often just below the lowest live limbs. The nest is a stick platform lined with bark. The Cooper's hawk typically nests near streams and breeds from March through August with peak activity from May through July (CWHR 2002). In 1995, breeding Cooper's hawks were found 4.8 km (3 mi) north of the BSA in Rail Canyon (CDFG 2005). No focused surveys were conducted for this species. This species was not observed during field visits by URS biologists; however, suitable foraging habitat is present and the species has the potential to nest in trees within the BSA.

Sharp-shinned Hawk

The sharp-shinned hawk (*Accipiter striatus*) is a California species of special concern. This bird is a common migrant and winter resident throughout California, except in areas with deep snow. It is an uncommon permanent resident and breeder in mid-elevation areas. This species breeds in ponderosa pine, black oak, riparian deciduous, mixed conifer and Jeffery pine habitats from April through August (CWHR 2002). No occurrences of this species are known from the project vicinity (CDFG 2005). No

focused surveys were conducted for this species and this species was not observed during field visits to the BSA. No potential nesting habitat is present in the BSA.

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is a species of special concern to California and is fully protected under the California Fish and Game Code. This bird is an uncommon permanent resident and usually migrates throughout California, except for the Central Valley. The golden eagle builds large platform nests on cliffs and in large trees in open areas. Alternative nest sites are maintained, and old nests are reused. The nest can be 3 m (10 ft) across and 1 m (3 ft) high, consisting of sticks, twigs, and greenery. Rugged, open habitats with canyons are used most frequently. The size of the home range is related to prey density and availability, and the openness of the terrain (CWHR 2002). In 1993, one golden eagle nest was documented southwest of the BSA along Cache Creek. In 1995, an additional nest was found northwest of the BSA (CDFG 2005). Both nests are approximately five miles from the proposed project. No potential nest sites were observed during surveys conducted for biological studies. Golden eagles may occasionally forage in the project BSA.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is a federally threatened, state endangered and California Fully Protected species. This bird is a permanent resident and usually does not migrate in California during the winter. This species breeds in Butte, Modoc, Lake, Trinity, Siskiyou, Plumas and Lassen Counties. The bald eagle requires large bodies of water, or free flowing rivers, with abundant fish for hunting. The bald eagle nests in large, old growth trees or snags with open branches (CWHR 2002). No nests or potential sites that could be used as a nesting area were observed during surveys. Bald eagles may occasionally forage in the project area.

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia hypugaea*) is a federal species of concern and a California species of special concern. Burrowing owls typically occupy annual and perennial grasslands with sparse or nonexistent tree or shrub canopies. In California, burrowing owls are found in close association with California ground squirrel burrows, which provide them with year-round shelter and seasonal nesting habitat. Burrowing owls also use human-made structures such as culverts, debris piles, or openings beneath pavement as shelter and nesting habitat (CDFG 1995). Burrowing owl populations have been on the decline due to diminishing habitat

(CDFG 1995) and pest control on burrowing rodents (Zarn 1974). Burrowing owls exhibit a high degree of nest site fidelity and as habitat becomes increasingly fragmented and isolated by development, these sites become increasingly inhospitable for breeding burrowing owls. No occurrences of this species are known from the project vicinity (CDFG 2005). No focused surveys were conducted for this species and this species was not observed during field visits to the BSA. However, a few rodent holes in the BSA were observed and are potentially suitable for nesting burrowing owls. Habitat suitable for foraging is also present.

Oak Titmouse

The year-round range of the oak titmouse is from southwest Oregon through California to northwestern Baja California, Mexico where it breeds in low to middle elevations. This species prefers open oak and pine-oak woodland, nesting in mostly natural cavities and sometimes in old woodpecker holes (Audubon 2005). No focused surveys were conducted for this species. This species was not observed during field visits to the BSA. However, this species has the potential to nest in trees located in the BSA.

Lawrence's Goldfinch

Lawrence's goldfinch (*Carduelis lawrencei*) is a federal species of concern. This bird is uncommon in the foothills surrounding the Central Valley. It breeds in open oak or other arid woodland and chaparral habitats near water. It uses trees, preferably oak, and shrubs for nesting, resting, escape, and other cover. The nesting season of the Lawrence's goldfinch typically lasts from March to August. No occurrences of this species are known from the project vicinity (CDFG 2005). This species was not observed during field visits to the BSA. However, suitable habitat for Lawrence's goldfinch is present.

Lewis' Woodpecker

Lewis' woodpecker (*Melanerpes lewis*) is a federal species of concern. This bird utilizes open habitats dominated by oaks, other deciduous trees and conifers, and nests in cavities of trees. It breeds along the eastern slopes of the Coast Range in the Sierra Nevada and Warner Mountains, and the Klamath and Cascade Ranges. Lewis' woodpecker breeds from early May through July (CWHR 2002). No occurrences of this species are known from the project vicinity. No focused surveys were conducted for Lewis' woodpecker and this species was not observed during field visits to the BSA. However, habitat suitable for Lewis's woodpeckers is present in the BSA.

Nuttall's Woodpecker

Nuttall's woodpecker (*Lanius ludovicianus)* is a federal species of local concern. The range of Nuttall's woodpecker includes the Central Valley, the Coast Ranges and lower portions of the Cascade Range. It forages in oak and riparian deciduous habitats, and nests in cavities of riparian trees and oaks of adjacent habitat (CWHR 2002). No focused surveys were conducted for Nuttall's woodpecker and this species was not observed during field visits to the BSA. However, habitat suitable for Nuttall's woodpecker is present. This species has the potential to nest in trees located in the BSA.

Purple Martin

The purple martin (*Progne subis*) is a federal and state species of concern. This bird is an uncommon to rare, local summer resident in a variety of wooded, low-elevation habitats throughout the state. It is a rare migrant in spring and fall, and absent in winter. It uses valley, foothill and montane hardwood, conifer, and riparian habitats. The purple martin nests in old woodpecker cavities and sometimes in human-made structures such as a nesting box or under a bridge. It nests from April into August (CWHR 2002). No occurrences of this species are known from the project vicinity (CDFG 2005). No focused surveys were conducted for this species and this species was not observed during field visits to the BSA. However, the woodland habitats in the BSA appear to be suitable for nesting purple martins.

Impacts

Potential impacts to Cooper's hawks, if found in the BSA, include disturbance to nesting birds or loss of foraging habitat. However, loss of habitat will be minimal compared to the amount of habitat available in the project vicinity. Disturbance to nesting birds will also be minimal if nests can be avoided or construction is done after the young are able to forage independently (typically July or August).

The proposed project is not likely to affect Sharp-shinned hawks because the project area is not suitable nesting for this species. Any potential impacts will be avoided by implementing the minimization measures outlined in the Avoidance, Minimization and/or Mitigation Measures for bird species.

Construction of the proposed project will result in the loss of foraging habitat for the Golden eagle and Bald eagle. However, loss of habitat will be minimal because the surround area has vast, undisturbed lands that extend for miles in all directions. These species are not likely to be affected by the proposed project.

Western burrowing owls are not likely to occur in the project BSA based on the absence of known occurrences in the vicinity and the isolation of the BSA from other known occurrences. However, should the western burrowing owl be present during the time of construction, the proposed avoidance and minimization measures will substantially reduce any potential impacts to burrowing owls. Potential impacts to foraging habitat will be minimal if owls are present because of the extensive grassland habitat in the vicinity of the project.

Potential impacts to the oak titmouse, if found in the BSA, include disturbance to nesting birds or loss of foraging habitat. However, loss of habitat will be minimal compared to the amount the habitat available in the project vicinity. Disturbance to nesting birds will also be minimal if nests can be avoided or construction is done after the young are able to forage independently (typically July or August).

Construction of the proposed project could result in the disturbance of suitable nesting habitat and loss of foraging habitat for Lawrence's goldfinch. If nesting goldfinches are present, noise associated with construction could result in the disturbance of nesting pairs during the breeding season (generally between March and August). Disturbance to nesting birds will be minimal if tree removal is before or after the nesting season and construction is timed to occur after the young are able to forage independently (typically July or August).

Potential impacts to Lewis' woodpecker, Nuttall's woodpecker and purple martin, if found during preconstruction surveys, include disturbance to nesting birds or loss of foraging habitat. However, loss of habitat will be minimal compared to the amount the habitat available in the project vicinity. Disturbance to nesting birds will also be minimal if nests can be avoided and construction is done after the young are able to forage independently (typically July or August).

Avoidance, Minimization and/or Mitigation Measures

To ensure that possible impacts on nesting birds and their foraging habitat are less than significant, and that unauthorized take of legally protected birds does not occur, Caltrans will implement the following measures:

- Preconstruction surveys will be conducted for Lawrence's goldfinch, Lewis' woodpecker, Nuttall's woodpecker, oak titmouse and purple martin. If these bird species are found nesting in the BSA, nest sites will be avoided and construction

within 100-feet of the nest will be delayed until after the young have fledged and are able to forage independently (typically July or August).

- Preconstruction surveys will be conducted to evaluate the potential presence of nesting raptors. If a nesting Cooper's hawk, sharp-shinned hawk, golden eagle, or bald eagle are detected within 0.5 mile of the project area, Caltrans will implement appropriate avoidance and minimization measures that will be developed in consultation with the CDFG.
- Preconstruction surveys will be conducted for the Western burrowing owl. If burrowing owls were found in the project BSA during preconstruction surveys, the following avoidance and minimization measures will be implemented to reduce impacts to this species:

    - No disturbance will occur within 50 m (160 ft) of occupied burrows during the non-breeding season (from September 1 through January 31) or within 75 m (250 ft) during the breeding season (from February 1 through August 31)
    - On-site passive relocation will be implemented if occupied burrows cannot be avoided. Owls will be excluded from burrows in the immediate impact zone and within a 50 m (160 ft) buffer zone. Passive relocation involves encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are more than 50 m from the impact zone and that are within or contiguous to a minimum of 2.6 hectares (6.5 acres) of foraging habitat for each pair of relocated owls. Relocation of owls will only be implemented during the non-breeding season.

If active burrowing owl burrows were permanently disturbed by the proposed project, the following compensatory mitigation measures will be implemented (CBOC 1993):

- Construction of artificial burrows in adjacent suitable habitat at a 3:1 ratio
- Preservation, enhancement, and/or restoration of potential foraging habitat at 1:1 ratio.

Affected Environment – Mammals

American Badger

The American badger is a state species of concern. In California, badgers occupy a diversity of habitats. The principal requirements seem to be sufficient food, friable soils, and relatively open, uncultivated ground. Grasslands, savannas, and mountain meadows near timberline are preferred. Badgers prey primarily on burrowing rodents

such as gophers, marmots, and kangaroo rats. They are predatory specialists on these rodents, although they will eat a variety of other animals, including mice, woodrats, reptiles, birds and their eggs, bees and other insects, etc. (CWHR 2002). The American badger breeds from summer to early fall. This species was found in 2004 at the south end of Antelope Valley along SR 20, approximately 7 km (4.5 mi) from the project BSA (CDFG 2005). This species or evidence of burrows for this species was not observed during field visits. However, this species has the potential to occur in the BSA.

Bat Species

The long-eared myotis bat (*Myotis evotis*) is widespread but uncommon in California. It can be found in nearly all brush, woodland and forest habitats. It roosts in buildings, crevices, spaces under bark and snags (CWHR 2002). No occurrences of this species are known from the project vicinity.

The long-legged myotis bat (*Myotis volans*) is a federal species of concern. Its range is widespread throughout California. This mammal is a colonial bat that is known for breeding in buildings and small crevices in rocky cliff ledges. No occurrences of this species are known from the project vicinity.

The pallid bat (*Antrozous pallidus*) is a federal species of concern. This locally common species is found in low elevations in California, occupying grasslands, shrublands, woodlands and forests. The pallid bat roosts in caves, crevices, mines and hollow trees (CWHR 2002). An occurrence is recorded approximately (10 mi) southwest of the project site in housing structure on Morgan Valley Road (CDFG 2005).

The Yuma myotis bat (*Myotis yumanensis*) is widespread in California and can occur in a wide range of habitats, but optimal habitat consists of open forests and woodlands with sources of water in which to feed. The Yuma myotis bat roosts in buildings, mines, caves and crevices (CHWR 2003).

The fringed myotis bat (*Myotis thysanodes*) occurs in a wide variety of habitats throughout California. Optimal habitats include pinyon juniper, valley and foothill hardwood and hardwood-conifer forests. This species roosts in caves, mines, buildings, and bridges (CWHR 2002). No occurrences of this species are known from the project vicinity.

No focused surveys were conducted for these special status bat species. Bats were not observed during field visits to the BSA. However, special-status bats have the potential to roost under the Bear Creek Bridge and limited evidence of bat usage of the bridge (guano) were observed.

Impacts

If found during preconstruction surveys, badger dens and burrows will be avoided where possible. Potential indirect impacts to the American badger may include disturbance due to construction noise, light, or dust. This species is not likely to be affected by the proposed project with implementation of the proposed avoidance and minimization efforts.

No focused surveys were conducted for these special status bat species. Bats were not observed during field visits to the BSA. However, special-status bats have the potential to roost under the Bear Creek Bridge and may be impacted by the bridge removal.

Avoidance, Minimization and/or Mitigation Measures

The project area will be surveyed for burrows potentially occupied by the American badger prior to construction. Potential burrows will be avoided, where feasible. If avoidance is not feasible, Caltrans will consult with the CDFG to develop a plan to remove and relocate the badger to other suitable habitat in the vicinity of the project.

Preconstruction surveys for special status bats will be conducted. These surveys will include checking the Bear Creek Bridge for roosts. If bats are found, temporary exclusion devices will be used to keep bats from entering the structure prior to and during construction. To avoid permanent impacts, Caltrans will evaluate the feasibility of creating alternative roosting sites in the project vicinity.

2.3.4 Oak Trees

Regulatory Setting

Senate Concurrent Resolution #17 requests all state agencies to assess and determine the effects of their land use decisions or actions within any oak woodlands. The measure requests those state agencies to undertake measures to preserve and protect native oak woodlands to the maximum extent, or provide replacement plantings

where designated oak species (Blue, Engleman, Valley, and Coast Live Oaks) are removed from oak woodlands (a five-acre circular area containing five or more oak trees per acre).

Affected Environment

One valley oak and 200 blue oaks (*Quercus douglasii*) occur in the BSA, ranging from 1-inch to 43-inches in diameter at breast height. Figure 2.5 shows the approximate grouping locations.

Impacts

When reviewing the cut and fill lines on the mapping prepared at preliminary design it appears six blue oaks and one valley oak tree will be removed. Considering the project stage is at preliminary design, these numbers might change when the project transitions into final design. These trees are growing at the northern portion of the BSA. The six oak trees, ranging in diameter size from 3-inches to 43-inches at breast height, will be removed and therefore permanently impacted.

Avoidance and Minimization Efforts

To comply with the intent of Senate Concurrent Resolution #17 regarding impacts to oak woodland, Caltrans will prepare a replanting plan outlining the methods to be used for replacement of oak trees lost due to construction of the proposed project. To the extent possible, oak trees that fall short of complete removal, branch trimming or root cutting will be kept to a minimum.

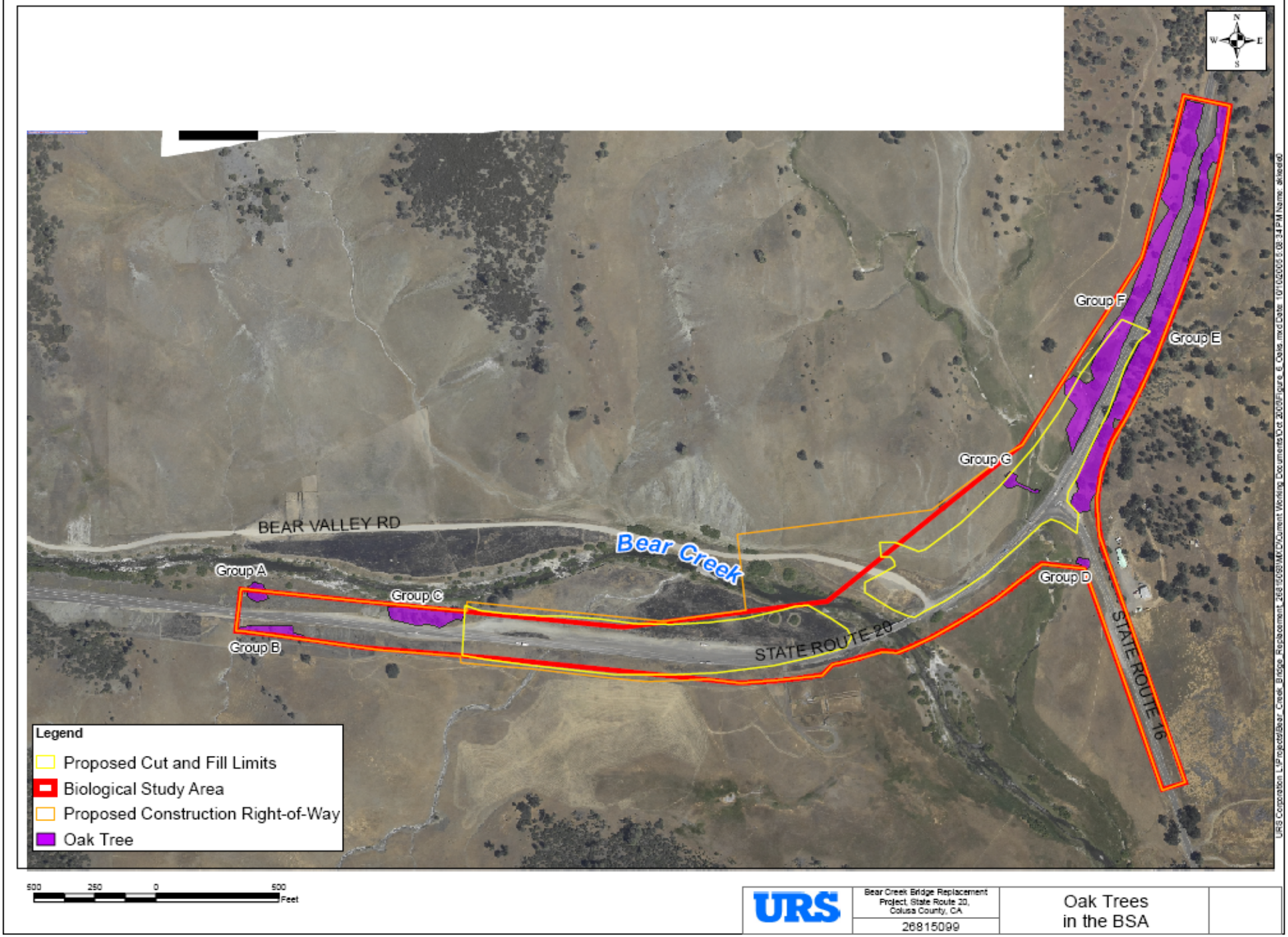
Group F
Group E
Group G
BEAR VALLEY RD
Bear Creek
Group A
Group C
Group D
Group B
STATE ROUTE 20
STATE ROUTE 16
Legend
Proposed Cut and Fill Limits
Biological Study Area
Proposed Construction Right-of-Way
Oak Tree
500
250
0
500
Feet
URS
Bear Creek Bridge Replacement Project, State Route 20, Colusa County, CA
26815099
Oak Trees in the BSA

Figure 2.5

2.3.5 Invasive Species

Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 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." Federal Highway Administration guidance issued August 10, 1999 directs the use of the state's noxious weed list to define the invasive plants that must be considered as part of the National Environmental Policy Act analysis for a proposed project.

Affected Environment

More than 255 plant species were identified in the BSA. Of these plants, 168 species are native and 87 species are non-native, or otherwise known as invasive. One of the main purposes of the Biological Management Area program was to restore the native plant populations by eradicating invasive weed species. Though invasive species still exist, the populations have sharply declined.

Avoidance, Minimization, and/or Mitigation Measures

To avoid either the introduction or spread of noxious weeds the following measures will be implemented:

- Certified weed-free straw shall be required where erosion control straw is used at disturbed soils.
- Hydro-seed mulch or any other erosion control application must be certified as weed-free.
- All off-road equipment shall be cleaned of potential noxious weed sources such as mud encrusted in crevices before entry into the project area to ensure weeds are not transferred from one project site to another project site.

2.4 Construction Impacts

Major construction stages will involve the following: clearing and grubbing, utility relocation, temporary stream crossing, stream diversion, hauling of earth and sub-base preparation, relocation of culverts and drainage systems, structural work for the new bridge, pile driving, sub-grade for the new roadway alignment, demolition of the existing bridge, pulverize and abandon the existing asphalt roadway.

The new bridge will be a concrete box girder, cast-in-place. Meaning, the decking does not come from a manufacture prefabricated; therefore, pouring of the concrete for the decking will occur at the project location. The contractor could opt to either import the concrete by cement truck, or build a batch plant on site. The bridge will be approximately 14-meters (46-feet) wide and 75-meters (246-feet) long. The replacement bridge will be approximately 18-feet wider and 29-feet longer than the original bridge to accommodate wider travel lanes and added shoulders. The new structure height will be five to six feet higher than the present structure. During construction of the new bridge, traffic will continue over the existing bridge.

Work within the stream could include excavation equipment buckets for the purpose of removing and placing fill materials, pile driving, removal of existing piers and footings within the confines of cofferdams, constructing new piers and footings, and installing temporary false work. Most likely, the contractor will opt to work in a dry channel for the construction of the new piers. This will be achieved by temporarily diverting the steam. The contractor may elect to use a pump-around method were the water upstream is dammed with the use of sandbags and filter fabric, pumped around the work area through tubing, and discharged past the downstream dam.

Instead of the bridge being reconstructed at its existing location, a road realignment is proposed to improve the site distance for drivers attempting to enter onto SR 20 from Bear Valley Road. This proposed shift of the highway alignment is approximately 23-meters (75-feet) to the north. This will require a large portion of a hillside on the northeast side of Bear Valley Road to be cut. The new cut will be approximately 15-meters (50-feet) in vertical height, utilizing a slope ratio of 1:1.5 The dirt and materials generated from the excavated hillside will be used to build up the approaches to the bridge and fill the low-lying areas for the new highway grade. As the hillside is excavated, construction trucks hauling the dirt will need access across the stream. Instead of the trucks using SR 20, which will require a temporary lane closure each time the truck turned onto SR 20 from Bear Valley Road, the contractor

may prefer to construct a temporary stream crossing. One method used by contractors is to install a culvert to act as a temporary stream crossing for construction equipment. Installing a culvert to be used as a temporary stream crossing requires the dewatered channel to be clear of large roots or rocks to prevent the culvert from being damaged. Before the culvert is placed, filter cloth will line the streambed and streambank followed by gravel placed on top of the filter fabric. To prevent construction equipment from crushing the culvert, gravel (minimum of one-foot) is backfilled over the culvert to the top of the channel. This will create a level surface for construction equipment to cross the flowing stream without damaging the banks.

After completion of new bridge and relocation of the overhead utility lines, demolition of the existing bridge will begin. Demolition will involve removing the wooden rails, asphalt surface from the deck, steel beams below the bridge deck, abutments, and piers by crane or other applicable equipment. Demolition activities involve separating the bridge into pieces that can be removed by truck from the site.

Construction is expected to span 24-months, therefore, it is necessary that the contractor is permitted to work year around. However, limitations and restrictions to working in the stream during the rainy season may be presented in the 404 permit from the U.S. Army Corps of Engineers, the Regional Water Quality Control Board 401 certification, and the 1602 agreement from the Department of Fish and Game.

Additional right-of-way will be acquired from two parcels on the north side of State Route 20. The temporary construction easement for the storage of materials and construction equipment is identified on the aerial mapping in Appendix D.

Chapter 3 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 for this project has been accomplished through a variety of formal and informal methods.

This chapter summarizes the results of Caltrans' efforts to fully identify, address and resolve project-related issues through early and continuing coordination.

Public Outreach

This Initial Study was available for public and agency review and comment for 30 days starting on February 24, 2006 and closing on March 24, 2006. Two comment letters were received. One letter was from the U.S. Department of the Interior, Bureau of Land Management and the second letter was from Craig Thomsen, an ecologist working for U.C. Davis as the Bear Creek Watershed Coordinator. Copies of the comment letters along with Caltrans's responses can be found in Appendix F - Public Review Comments.

Resource Agency Coordination

Bear Creek is on the EPA 303-D list of impacted water bodies for elevated levels of mercury in the water and sediments. Throughout the planning and design phase of this project, Caltrans will continue to coordinate with the Central Valley Region Water Quality Control Board to develop the appropriate BMPs for site specific conditions. Caltrans will also coordinate with CDFG, USACE and USFWS regarding potential project impacts to resources under the jurisdiction of those agencies.

Tribal Coordination

Contact with representative of local Native American groups, based on a contact list provided by the Native American Heritage Commission, consisted of a series of letters and phone conversations.

Chapter 4 List of Preparers

The following Caltrans District 3, North Region staff, prepared this document:

Laura Walsh, Associate Environmental Planner. Contribution: Document Writer.

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Erin Dwyer, Associate Environmental Planner (Archaeology). Contribution: Historic Property Survey Report (HPSR).

Gail St. John, Associate Environmental Planner (Architectural Historian). Contribution: Historic Architectural Review.

Mark Melani, Associate Environmental Planner. Contribution: Preliminary Site Investigation (Hazardous Waste).

Sharon Tang, Transportation Engineer Technician. Contribution: Air Quality and Noise Study Reports.

Kathleen Grady, Landscape Architect Associate. Contribution: Visual Impacts Assessment.

Sean Penders, Transportation Engineer Civil, P.E. Contribution: Water Quality Report.

Dennis Jagoda, Senior Transportation Engineer. Contribution: Floodplain Hydraulics Study.

Douglas Freund, Transportation Engineer Civil. Contribution: Hydraulics Study.

Abubarkarr Barrie, Transportation Engineer Geologist. Contribution: Preliminary Geology Recommendation.

W. John Baker, Transportation Engineer Civil, P.E. Contribution: Foundation Evaluation

Rodolfo Contreras, Transportation Engineer Civil, P.E. Contribution: Project Engineer.

Caroline Warren, Associate Environmental Planner (Biology). Contribution: Oversight to Natural Environmental Study, Wetland Delineation Report.

Dina Robertson, Consultant, URS Biologist . Contribution: Natural Environmental Study, Wetland Delineation Report.

Steve Leach, Consultant, URS Senior Biologist. Contribution: Natural Environmental Study, Wetland Delineation Report.

Casey Stewman, Consultant, URS Senior Biologist. Contribution: Natural Environmental Study, Wetland Delineation Report.

Darold Heikens, Landscape Architect Senior. Contribution: Project Manager.

Appendix A CEQA Checklist

The following checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. The California Environmental Quality Act impact levels include “potentially significant impact,” “less than significant impact with mitigation,” “less than significant impact,” and “no impact.”

The California Environmental Quality Act requires that environmental documents identify significant or potentially significant impacts. In many cases, background studies performed in connection with the project indicate no impacts. A mark in the “no impact” column of the checklist reflects this determination. Any needed explanation of that determination is provided at the beginning of Chapter 2.

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
AESTHETICS - Would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic building within a state scenic highway?			X	
c) Substantially degrade the existing visual character or quality of the site and its surroundings?		X		
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X
AGRICULTURE RESOURCES - In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X
AIR QUALITY - Where 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?				X

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?				X
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?				X
d) Expose sensitive receptors to substantial pollutant concentration?				X
e) Create objectionable odors affecting a substantial number of people?				X
BIOLOGICAL RESOURCES - Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			X	
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			X	
C) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X		
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				X
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	X
COMMUNITY RESOURCES - Would the project:				
a) Cause disruption of orderly planned development?	☐	☐	☐	X
b) Be inconsistent with a Coastal Zone Management Plan?	☐	☐	☐	X
c) Affect lifestyles or neighborhood character or stability?	☐	☐	☐	X
d) Physically divide an established community?	☐	☐	☐	X
e) Affect minority, low-income, elderly, disabled, transit-dependent, or other specific interest group?	☐	☐	☐	X
f) Affect employment, industry, or commerce, or require the displacement of businesses or farms?	☐	☐	☐	X
g) Affect property values or the local tax base?	☐	☐	☐	X
h) Affect any community facilities (including medical, educational, scientific, or religious institutions, ceremonial sites or sacred shrines?	☐	☐	☐	X
i) Result in alterations to waterborne, rail, or air traffic?	☐	☐	☐	X
j) Support large commercial or residential development?	☐	☐	☐	X
k) Affect wild or scenic rivers or natural landmarks?	☐	☐	☐	X
l) Result in substantial impacts associated with construction activities (e.g., noise, dust, temporary drainage, traffic detours, and temporary access, etc.)?	☐	☐	X	☐
CULTURAL RESOURCES - Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	X

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?				X
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X
d) Disturb any human remains, including those interred outside of formal cemeteries?				X
GEOLOGY AND SOILS - Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				X
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?				X
iii) Seismic-related ground failure, including liquefaction?				X
iv) Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?			X	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.				X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
HAZARDS AND HAZARDOUS MATERIALS - Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	X
b) Create a significant hazard to the public or the environment through reasonably forseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	X
c) Emit hazardous emissions or handle hazardous or acutely hazardous material, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	X
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?	☐	☐	☐	X
HYDROLOGY AND WATER QUALITY - Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	X	☐

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	X	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	X	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	X
f) Otherwise substantially degrade water quality?	☐	☐	X	☐
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?	☐	☐	☐	X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	X	☐
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?	☐	☐	☐	X
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	X
LAND USE AND PLANNING - Would the project:				
a) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	X

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
b) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
MINERAL RESOURCES - Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
NOISE - Would the project:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
POPULATION AND HOUSING - Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	X
PUBLIC SERVICES -				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	X
Police protection?	☐	☐	☐	X
Schools?	☐	☐	☐	X
Parks?	☐	☐	☐	X
Other public facilities?	☐	☐	☐	X
RECREATION -				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	X

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
TRANSPORTATION/TRAFFIC - Would the project:				
a) Cause an increase in traffic which his substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☐	X
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	X
c) Result in a change in air traffic patters, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incomplete uses (e.g., farm equipment)?	☐	☐	☐	X
e) Result in inadequate emergency access?	☐	☐	☐	X
f) Result in inadequate parking capacity?	☐	☐	☐	X
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	X
UTILITY AND SERVICE SYSTEMS - Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	X
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?	☐	☐	☐	X
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	X	☐	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	X

	Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
e) Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	X
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	X
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	X

MANDATORY FINDINGS OF SIGNIFICANCE -

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, or cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	X	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	X
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	X

Appendix B Title VI Policy Statement

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

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Flex your power!
Be energy efficient!

January 14, 2005

TITLE VI
POLICY STATEMENT

The California Department of Transportation under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, and age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

WILL KEMPTON
Director

"Caltrans improves mobility across California"

Appendix C Minimization and/or Mitigation Summary

Land Use

Acquisition of property will be limited to that needed to accommodate the road re-alignment. The property owner will be compensated the fair market value for any land acquired by Caltrans. In addition, the area used as a temporary construction easement will be restored to its prior condition after construction of the project has finished.

Utilities/Emergency Services

Caltrans will coordinate relocation work with the various utility companies to ensure minimum disruption of service to customers in the area.

Visual/Aesthetics

To minimize the degree of visual change and reduce those impacts to a less than significant level, a combination the following options will be incorporated to minimize impacts:

- Cut and fill slopes should be contour graded and rounded to reflect the contours of adjacent, undisturbed topography to the extent feasible. Grading operations should not result in angular landforms.
- During clearing and grubbing, if possible, existing surface soils and duff from the construction site will be stockpiled as part of the excavation work. All new cut/fill slopes will be covered with stockpiled material to enhance re-vegetation efforts.
- Wood debris and green material generated from clearing and grubbing of the construction site will be chipped into a mulch material and stockpiled for later use. After the realignment is completed, this mulch material will be spread over the disturbed slope area (2-inches in depth) to aid in erosion control and re-vegetation.
- Exposed ground surfaces will be seeded with appropriate species as early as possible for erosion control purposes. The seed mix will include perennial native grass and chaparral shrub seed collected from the project area. As the seeds germinate and grow, the vegetative cover will reduce the degree of visual contrast of these areas, especially as seen from more distant locations. Indigenous native species of shrubs and herbaceous plants occurring on adjacent, undisturbed slopes will colonize the seeded slopes. As these colonizing plants mature and increase in

density, the visual contrast of the disturbed areas will continue to diminish. In time, vegetative cover patterns of areas disturbed during project construction will essentially match the adjacent, undisturbed areas.

- Sections of the highway that are abandoned as a result of the realignment should be reclaimed. Reclamation should include removal of pavement, filling and grading the former roadbed to conform to adjacent slopes, seeding with erosion control mix, and in appropriate areas replanting with trees.
- Plant species native to the area will be used when re-vegetation is being performed. Often, native grasses and shrubs are the first to re-colonize after a disturbance event such as a disease or fire.
- Minimize the impacts to root networks when extending or replacing culverts if possible.
- At the end of construction all areas used for staging, access or other construction activities will be contour graded in such a way as to visually integrate them into the surrounding topography.
- The creek bed will be returned to its natural condition through the guidance of a biologist and Landscape Associate. The channel should be restored in such a way that it appears natural.

Cultural Resources

Measures will be undertaken to ensure that the potential for inadvertent damage to site CA-COL-249 will be avoided by establishing an Environmentally Sensitive Area (ESA). The placement of exclusion fencing will be used to designate the ESA that will extend at least 6-meters (19-feet) beyond the recorded site boundaries. Delineation of an ESA may be used to reach a finding of No Adverse Effect in accordance with Stipulation X.B.2 (a)(ii) of the Programmatic Agreement; therefore, a finding of No Adverse Effect with standard conditions imposed is appropriate. As a condition for a No Adverse Effect finding, an ESA Action Plan will be developed to ensure that provisions for protecting CA-COL-249 will be implemented. Prior to ground disturbing activities, ESA fencing will be installed to prevent any type of construction-related impacts, or inadvertent staging in this area.

Hydrology and Floodplain

Based on studies carried out by the California Department of Transportation on behalf of the Federal Highway Administration, no practicable alternative to the proposed alternative exists (23 CFR 650, Subpart A). All other potential alternatives are not possible within reasonable natural, social, and economic constraints. In addition, all measures to minimize potential harm within the floodplain, consistent with

regulations issued in accord with Section 2(d) of Executive Order 11988 will be taken.

Water Quality and Stormwater Runoff

Overall impacts to water quality are considered less than significant because Caltrans will implement the avoidance and minimization practices contained in the SWPPP and incorporate additional BMPs as appropriate for site conditions. The practices outlined in the Storm Water Management Plan ensure certain minimum design elements are incorporated into project to maintain or improve water quality. Implementation of these standard procedures and practices will substantially reduce or eliminate most of the potential impacts associated with the construction of the project.

Geology/Soils/Seismic/Topography

The potential short-term impacts from construction and geotechnical investigations will be addressed through incorporation of temporary Best Management Practices (BMPs). Implementation of a revegetation plan will address long-term impacts associated with erosion. If required, permits will be obtained from the regulatory agencies for the bore sampling done along the bank and within the stream channel. Avoidance and minimization measures outlined in the permits will be incorporated during implementation of the project.

Hazardous Waste Materials

Precautionary measures will be implemented to protect construction workers from the possible exposure to lead during the removal operations of the yellow thermoplastic paint used for traffic striping.

Air Quality

Bridge demolition and construction of this project will result in the generation of suspended particulate matter and the short-term generation of dust. Although the amount of dust will increase, any impacts will be temporary, local, and limited to the areas of construction. Dust control practices will be incorporated into the project to minimize potential impacts from construction activities. These practices will comply with Caltrans' Standard Specifications and the Colusa County Air Pollution Control District Rule 2.16.

Noise and Vibration

Construction noise, though temporary, will be regulated by Caltrans' Standard Specifications, Section 7-1.011, "Sound Control Requirements". These requirements state that noise levels generated during construction will comply with applicable local, state, and federal regulations. In addition, all equipment will be fitted with adequate mufflers according to manufacturer specifications.

Wetlands and Other Waters

Direct and indirect impacts to sensitive biological resources, including wetlands and jurisdictional waters, throughout the project area will be avoided or minimized by designating these features outside of the construction impact area as "Environmentally Sensitive Areas". ESA fencing will exclude construction work from occurring within the boundaries of sensitive resources to prevent inadvertent construction impacts. The fencing will remain in place until all construction activities have been completed.

Compensatory mitigation will be necessary to offset permanent and temporary wetland losses. Compensation for potential impacts to jurisdictional Waters of the U.S. include a combination of the following measures:

- Purchase of wetland creation credits from a local mitigation bank approved by the USACE
- Purchase of wetland preservation or enhancement credits from a mitigation bank approved by the USACE
- On-site restoration or enhancement of wetlands
- On-site creation of wetlands

Permanent wetland impacts will be mitigated by creation of wetland habitat at a ratio of 1:1. Additional wetland habitat will be preserved, restored, or enhanced at a minimum ration of 1:1 to compensate for temporal losses of wetland habitat functions.

Plant Species and Animal Species

Potential impacts to serpentine bunchgrass, creeping ryegrass grassland, and purple needlegrass grassland will be avoided or minimized through inclusion of construction specifications and seasonal timing of when the project is implemented.

Potential impacts to adobe lily, bearded jewelflower, cleveland's milk-vetch, jepson's milk-vetch, pink creamsacs, purdy's onion, serpentine bedstraw, and sepentine sunflower will be avoided or minimized through modification of construction specifications, placement of ESA fencing, and seasonal timing of when the project is implemented.

The following measures will be implemented during construction to minimize impacts to sensitive biological resources:

- Environmentally sensitive areas will be established around sensitive habitats that abut construction areas along and within the right-of-way. These sites will be fenced off or clearly marked to prevent inadvertent destruction. High visibility fencing will be installed along the margins of construction work areas where those areas are adjacent to sensitive biological resources.
- Temporary erosion control devices will be installed on slopes where erosion or sedimentation could degrade sensitive biological resources. All temporary disturbance areas will be revegetated with appropriate combinations of native species upon completion of construction.
- A qualified biologist will monitor construction activities.
- All temporary fill and construction debris will be removed from the BSA after completion of construction activities.
- Construction will be timed to minimize potential impacts to sensitive biological resources. Construction work will be minimal during the wet season.
- Implementing a combination of on-site or off-site preservation, enhancement, or restoration of existing habitat will minimize impacts to sensitive plant communities. The option will be explored further when additional design and construction details are developed.
- Preservation, enhancement, and/or restoration of habitat
- Collection of seeds of annual plants and bulbs for transplanting in coordination with the CDFG.
- Preservation and/or enhancement of additional plant populations in the project vicinity.
- Pre-construction surveys will be conducted to determine the presence of nesting birds, or trees to be removed outside of the breeding season for birds. If trees cannot be removed outside of the nesting period and there are nesting birds, Caltrans will contact the CDFG to determine the appropriate steps to avoid impacts to nesting birds.

- The project area will be surveyed for burrows potentially occupied by the American badger prior to construction. Potential burrows will be avoided, where feasible. If avoidance is not feasible, Caltrans will consult with the CDFG to develop a plan to remove and relocate the badger to other suitable habitat in the vicinity of the project.
- To comply with the intent of Senate Concurrent Resolution #17 regarding impacts to oak woodland, Caltrans will prepare a replanting plan outlining the methods to be used for replacement of oak trees lost due to construction of the proposed project. To the extent possible, oak trees that fall short of complete removal, branch trimming or root cutting will be kept to a minimum.

Appendix D Environmental Study Limits and Cross Section Maps

The first map on the following page represents the limits where environmental studies were performed, existing right-of-way, proposed new right-of-way, and the area identified for the temporary construction easement. At this point, the design of the project is in a preliminary stage. The dashed lines on the map represent areas of cut and fill. The dashed line labeled "F" represents where dirt fill will be placed in low-lying areas. The dashed line labeled "C" represents cut slopes. Locations of existing culverts are identified by postmile.

The other two maps show the typical cross-section view of (1) the proposed roadway and (2) the new Bear Creek Bridge.

Appendix E List of Technical Studies

The following technical reports were prepared to analyze the potential impacts this project may have on the environment.

Air Quality Report
Noise Study Report
Water Quality Report
Natural Environment Study
Wetland Delineation Report
Location Hydraulic Study
Historical Property Survey Report

- Historic Study Report
- Historic Resource Evaluation Report
- Historic Architectural Survey Report
- Archaeological Survey Report

Hazardous Waste Reports

- Initial Site Assessment
- Preliminary Site Investigation (Geophysical Survey)

Visual Impacts Assessment
Preliminary Geology Recommendation

Copies of these reports are available for review at the Caltrans District 3 North Region, Environmental Division, 703 B Street, Marysville, CA 95901.

Appendix F Public Review Comments

This appendix contains comments received during the 30-day review period for this Initial Study/Negative Declaration. Caltrans received two comment letters. A copy of each letter is included, followed by the responses to substantive issues raised.

United States Department of the Interior

Bureau of Land Management
Ukiah Field Office
2550 N. State Street
Ukiah, CA 95482
www.ca.blm.gov/ukiah
Office: (707) 468-4000 Fax: (707) 468-4027

IN REPLY REFER TO:
8000 (P)
CA-340

March 17, 2006

Susan D. Bauer, Chief
Environmental Management, M1 Branch
California Department of Transportation
703 B Street
Marysville, CA 95901-0911

Dear Susan:

I have reviewed the *Initial Study for the Bear Creek Bridge Replacement Project* for the Ukiah BLM Field Office and have a few comments regarding the biological resources within the project area.

The Initial Study doesn't mention the tule elk. Although not a State Species of Concern, the tule elk should be discussed because it is the key large mammal species extensively using the Biological Study Area and the surrounding area that could be affected by the design of the new bridge, as well as affecting the safety of motorists in this area.

Elk use has been increasing considerably in the project area since BLM began noxious plant eradication work including herbicide treatment of tamarisk in the creek and prescribed burning of yellow starthistle and medusahead on benchlands above Bear Creek. Craig Thomsen of UC Davis has also done extensive weed reduction work for several years on the private lands owned by Mr. Payne within the Biological Study Area, as well as within the Caltrans Botanical Management Area (BMA). The combined effect of this noxious plant reduction work translates to improved habitat for the elk, and they will likely further increase use in this area.

The existing bridge is not high enough to encourage elk passage underneath it, so the key issue is that the bridge be high enough to accommodate elk passage. California Department of Fish & Game Wildlife Biologist Scott Koller got a recommendation from his counterpart in Eureka who deals with elk crossings near Redwood National Park that an underpass should be a minimum height of twice the average height of the animals, or about 16 feet. Additionally, a study in Arizona with the DOT and Arizona Game and Fish Department found that elk are more likely to use an underpass if it has a naturally-sloped earthen side instead of an unnatural concrete wall (see the following link): http://www.fhwa.dot.gov/environment/ecosystems/az.htm).

Facilitating elk passage under the bridge is important because if elk are reluctant to go underneath it, they will then likely jump over the highway right-of-way fences and cross Highway 20, increasing the hazard to motorists. This is already a serious problem on a portion of Highway 20 in Lake County in the vicinity of the North Fork Cache Creek Bridge (Milepost 37.0) where elk/vehicle collisions are not unusual. A few years ago, ten elk were killed in two separate collisions on consecutive nights along this stretch.

About 25 elk are resident on the BLM lands adjacent to the project area. And just a few weeks ago, an additional 27 elk from the Concord herd were relocated to BLM lands less than two miles away from the project site. Because of these two factors then, it's very likely that there will be an increased elk presence near the project area. Despite the design of a new bridge that would more easily facilitate elk passage underneath it, some elk may still walk across the highway. Therefore, I am strongly recommending that Caltrans install "Elk Crossing" signs at either end of a stretch of Highway 20, beginning on the west end just east of the Scenic Overlook for eastbound traffic and on the east end at a point approximately ½ mile east of the 20/16 intersection for westbound traffic, in order to alert motorists to the possible presence of elk in the area. The design of the signs needs to show the head of an elk with the wording "Elk Xing" or something similar to what the National Park Service uses at Redwood National Park. I recommend this because the existing signs along the previously-mentioned Lake County stretch of Highway 20 are inadequate because they only include text with no graphic. The size of the lettering on those signs is too small to grab the attention of motorists who tend to speed up to pass slower vehicles on a long straightaway there.

In Chapter 2 (Affected Environment) in the mammal discussion on pages 66-68, there was no mention of the river otter or beaver, two key riparian-obligate species confirmed to be present in the project area. While neither of these is listed as a State Species of Concern, I think the study should acknowledge their presence here.

I thank you for the opportunity to comment on the *Initial Study for the Bear Creek Bridge Replacement Project*. If you have any questions or need further information, please feel free to call me in Ukiah at (707) 468-4078, or you may email at gmangan@ca.blm.gov

Sincerely,

Gregg Mangan

Gregg Mangan
Cache Creek Natural Area Manager

Caltrans Response to U.S. Department of Interior, Bureau of Land Management, Author Gregg Mangan

Currently, tule elk, beaver, and river otter are not listed as threatened or endangered; nonetheless, these species have the potential to occur within the project area. Federal and State environmental laws only require agencies to evaluate impacts and provide mitigation to impacted Special Status Species and their habitat. However, Caltrans understands the intent of CEQA is to maintain conditions between ecological systems and the general welfare of people within the state exist in productive harmony. Caltrans recognizes the recent relocation efforts to introduce tule elk back into Colusa County and the conservation efforts to preserve habitat to ensure prosperity of the herds. More importantly, Caltrans realizes the potential conflict that can arise between motorists and elk attempting to cross the highway. This plausible hazard, and reduction of safety to the traveling public, warrants discussion. Therefore, Caltrans is investigating the initiatives raised in the comment letter. The comment letter states the "…underpass should be a minimum height of twice the average height of the animals, or about 16-feet." At this stage of project development, preliminary design has the height of the bridge at 10.5-feet during low-flow periods of Bear Creek. Depending upon design feasibility and construction costs, Caltrans is considering variations in the structural height of the bridge. The possibility for raising the bridge an additional 3.5-feet to accommodate elk passage and the compatibility of the road re-alignment must be further investigated. The comment letter also made a suggestion to install "Elk Crossing" signs for the westbound and eastbound travel lanes. Caltrans will seriously consider and investigate the option of installing these signs to alert motorists to the possible presence of elk in the area.

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DEPARTMENT OF PLANT SCIENCES
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COLLEGE OF AGRICULTURAL AND
ENVIRONMENTAL SCIENCES
AGRICULTURAL EXPERIMENT STATION
COOPERATIVE EXTENSION

March 24, 2006

Susan D. Bauer, Chief
Environmental Management, M1 Branch
Caltrans
703 B Street
Marysville, CA 95901-0911

Dear Susan:

I reviewed the Bear Creek Bridge Replacement Project Initial Study and have several concerns and comments.

1) There was no mention of tule elk in the study, yet they are an important wildlife species in the area. The new bridge should be designed to insure that elk can easily pass under Highway 20 to enable them to use their critical Bear Creek riparian habitat. Additionally, without the use of Bear Creek as a natural migration corridor, the elk will create a safety hazard to passing motorists as they attempt to cross on Highway 20.

2) It is unclear what is planned for the existing stretch of Highway 20 adjacent to the Bear Creek Botanical Management Area (BCBMA) west of Hwy 16. The BCBMA has local, regional, and statewide value as a spectacular Inner Coast Range serpentine prairie remnant. If the existing Highway 20 is removed, I would encourage that any modifications and post-project revegetation be done in a manner that enhances this state-designated Botanical Management Area, i.e., restoring natural topography, matching soil type, using local plant material collected from the BCBMA, and managing invasive plants.

3) Some improved plans and actions will be needed for revegetating the disturbed serpentine slopes and the Bear Creek riparian areas as part of post-construction mitigation. The unusual serpentine and riparian soils along with many invasive weeds in the area will require that special attention be taken to successfully re-establish native vegetation.

Thank you for the opportunity to comment.

Sincerely,

Craig Thomsen
Bear Creek Watershed Coordinator
Rangeland Ecologist

Caltrans Response to University of California, Davis Department of Plant Sciences, Author Craig Thomsen

Currently, tule elk are not listed as threatened or endangered; nonetheless, this species warrants acknowledgement because of its known existence within the project area and the efforts to reestablish the herd populations. Therefore, Caltrans is investigating the possibility of raising the bridge to accommodate the passage of elk and installing "Elk Crossing" signs to alert motorists to the possible presence of elk in the area. A final determination on whether or not to raise the bridge will be based on design feasibility, additional environmental impacts, and construction costs.

In regards to future-planned projects for the existing stretch of Highway 20 adjacent to the Bear Creek Botanical Management Area, Caltrans has no other programmed projects in the foreseeable future, other than the proposed project. Once the new segment of highway has been relocated, the original alignment will be reclaimed. The old pavement will be pulverized, and the materials underneath the pavement used to build the prism of the roadway will be removed. The exposed ground will be contour graded to match the natural surrounding area, and seeded with erosion control mix and plant species native to the area. Post-construction, a Caltrans biologist, revegetation specialist, and landscape architect will all work closely to ensure the appropriate plant and grass species are replanted. Because of Craig Thomsen's expertise and familiarity of the Botanical Management Area, coordination efforts with this individual will provide valuable information once re-vegetation efforts begin.

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit

Arnold
Schwarzenegger
Governor

Sean Walsh
Director

March 23, 2006

Susan Bauer
Department of Transportation, District 3
703 B Street
Marysville, CA 95901

Subject: Bear Creek Bridge Replacement Project
SCH#: 2006022103

Dear Susan Bauer:

The State Clearinghouse submitted the above named Negative Declaration to selected state agencies for review. The review period closed on March 22, 2006, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Appendix G Reference

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