2 Chapter 2 AFFECTED ENVIRONMENT

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

- Air Quality
- Noise
- Hazardous Materials
- Growth
- Land Use
- Parks and Recreation

2.1 FARMLANDS

2.1.1 Regulatory Setting

The California Environmental Quality Act requires the review of projects that would convert Williamson Act contract land to non-agricultural uses. The main purposes of the Williamson Act are to preserve agricultural land and to encourage open space preservation and efficient urban growth. The Williamson Act provides incentives to landowners through reduced property taxes to deter the early conversion of agricultural and open space lands to other uses.

2.1.2 Affected Environment

The project area is located within a rural, agricultural setting, with large parcels and very low residential density. Many of the parcels adjacent to the project area are farmland. At least 8 adjacent or nearby parcels have Williamson Act contracts with the County of Sonoma.

2.1.3 Project Impacts

Although the project would require the state to acquire "slivers" of certain parcels – that is, narrow strips of land adjacent to the highway – the project would not necessitate the cancellation of any Williamson Act contracts.

2.2 COMMUNITY IMPACTS

2.2.1 Affected Environment

The project area is rural, with scattered residences along the corridor. There are four roadside memorials or "descansos" within the project corridor. In some cases, when a person dies in a traffic accident, a friend or relative will mark the accident location with a handmade commemorative monument. Monuments range from wooden crosses and silk flowers to a small wooden altar with the name of the person that died painted upon it.

2.2.2 Project Impacts

The project is not expected to have impacts on the community. The project would make slight alterations to an existing highway, and is not expected to increase or decrease access to community features. The project area would retain its rural character. No businesses or residences would have to be relocated as part of the current project.

The roadside memorials may need to be removed as a result of construction of the currently proposed project. Federal, State and local legislation does not address treatment of roadside memorials. Caltrans does not have a stated policy on the treatment or continued maintenance of roadside memorials but discourages any objects within the state right of way that could pose a threat to the driving public in the form of obstacles. Removal of these roadside memorials would not constitute an adverse impact.

2.3 UTILITIES / EMERGENCY SERVICES

2.3.1 Utilities

2.3.1.1 Affected Environment

There are overhead utilities, underground gas, electric and telecommunications lines, underground sewer and water supply lines in the project area.

2.3.1.2 Project Impacts

The project might affect the area's utility lines. However, utilities would be relocated without interruption of service.

The proposed project would not require new water supplies to service the project and would not require additional wastewater treatment services or additional storm water services. Alterations might be required to the existing highway drainage system.

2.3.2 Emergency Services

2.3.2.1 Affected Environment

The Sonoma County Sheriff's Department provides protection for life and property in unincorporated Sonoma County, which includes the project area. The closest Sheriff's Office Substation is in Agua Caliente. The California Highway Patrol also has regular surveillance on Stage Gulch Road through the project limits. The Schellville Fire Station provides fire protection for the area.

2.3.2.2 Project Impacts

Some temporary impacts to emergency response time may occur as part of traffic control during construction.

2.3.2.3 Mitigation Measures

Alternative routes would be determined in consultation with the Sheriff, Fire and CHP before construction occurs. Construction could potentially impact emergency response vehicles, but such impacts could be minimized by implementing an Incident Management Plan, which includes the Freeway Service Patrol (FSP) and Construction Zone Enhanced Enforcement Program (COZEEP). It has not been determined which incident detection and response system would be used during construction.

2.4 TRAFFIC & TRANSPORTATION

2.4.1 Affected Environment

The Sonoma County General Plan designates SR 116 eastward from its intersection with Adobe Road as a Primary Arterial road. A Primary Arterial carries large traffic volumes over long distances. The portion of SR 116 in the project area consists of one lane in each direction and is a Roadway Improvement Category "A" on the Highway and Transit Plan map of the General Plan Circulation Element. This category means that the intent is to construct safety improvements, curvature reductions, traffic control devices, minor pavement widening, resurfacing, and intersection improvements / turn lanes along the road. The Circulation Element also designates SR 116 in the project area as an existing intercity transit route for Sonoma County Transit. Three school bus routes serving two school districts travel through portions of the proposed project area.

Traffic through the project area averages more than 16,000 trips per day. Future average daily trips are expected to increase to around 22,000 by 2024. Although SR 116 is located in rural Sonoma County, it is increasingly used as an east-west commute corridor.

2.4.2 Environmental Impacts

The project would not cause a substantial increase in traffic, degrade the level of service, or cause an increase in traffic congestion on Highway 116 or the Transfer Station Road. However, during the construction period, there would be construction activity that would require traffic controls such as temporary lane closures. For a discussion of temporary construction impacts to traffic, refer to section 2.11.1.2.

2.5 VISUAL / AESTHETICS

2.5.1 Affected Environment

The character of the landscape in the area of the project is distinctly rural. The landscape has an attractive and pleasant appearance. Views along Stage Gulch Road are dominated by farm-related land uses that include agricultural fields, grazing lands, vineyards, barns and other farm buildings, often with rolling foothills as a backdrop. A few widely scattered rural residences also are seen in the area. Scattered groups of mature, native California oak trees punctuate the grassy, rolling hills. Along some sections of the highway, mature trees and shrubs occur along the shoulders. Other sections lack significant vegetation and, consequently, allow motorists to enjoy long range views of the rural landscape. Although Stage Gulch Road between Adobe Road

and Arnold Drive is not a designated State Scenic Highway, it is identified in the Sonoma County General Plan as Scenic Highway Corridor.

For purposes of visual assessment, the project area was divided into three distinct landscape units. A landscape unit has certain visual attributes with regard to landform, vegetation and the built environment. The relationship of these elements to one another differs for each landscape unit and is what gives the unit its visual character. The three landscape units include the Adobe Road Unit (rolling hills, grazing lands and vineyards), Champlin Creek Unit (wooded creek valley), and the Arnold Drive Unit (flat recreational lands and residential development). The visual quality of all three landscape units was determined by Caltrans staff to be moderate.

2.5.2 Project Impacts

The project would not have a substantial adverse effect on scenic vistas, would not substantially damage scenic resources, and would not substantially degrade the existing visual character or quality of the project area. No aspect of the project would create a new source of substantial light or glare.

Implementation of the project including shoulder widening, realignment of curves, and construction of retaining walls would, to some degree, cause both temporary and permanent changes in the appearance of the highway, as shown in the photo simulations below (Figures B2-D2). Temporary changes would result from removal of vegetation, primarily trees and shrubs that would be replaced, and ground surface disturbance from grading within the project limits. Permanent changes would result from alterations to topography, realignment of the highway, a wider paved surface, and new retaining walls.

Existing and Simulated Conditions Before and After Proposed Project

Figure B1. Existing Highway 116 looking east, just east of Spolini Road.

Figure B2. Photo simulation of same location with proposed retaining wall.

Figure C1. Existing Highway 116 looking west just east of Transfer Station Road.

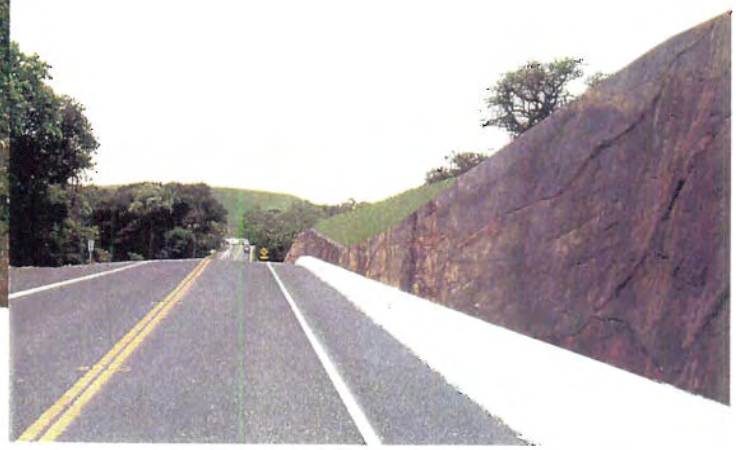

Figure C2. Photo simulation of proposed retaining wall at same location.

Figure D1. Existing Highway 116 looking eastward just west of Watmaugh Road

Figure D2. Photo simulation of proposed conditions at same location.

According to an estimate prepared in Spring 2004, the project will require removal of approximately 234 trees including 124 Coast Live Oaks, 37 Valley and Oregon Oaks, 2 Blue Oaks, 24 Bay, 24 Buckeyes, 5 Willows, 3 Maples, 3 Eucalyptus, 2 Black Walnut, 1 Plum, and 3 Redwoods. These types of trees are common within the project area. The affected trees do not exhibit the unique or outstanding visual characteristics necessary to be considered Scenic Resources. Even so, their removal would have some degree of visual impact. Trees that would be affected occur at various locations and on both sides of the highway. In each case, more trees exist than will be removed. Thus removal of a portion of trees will reveal views of similar trees. In no case would the removal of trees expose unsightly areas. The proposed retaining walls would be new features along this portion of Stage Gulch Road and thus have the potential to be particularly noticeable.

While there would be some evident difference in the highway's appearance, its overall character and that of the roadside landscape would be relatively unchanged by the project. Visual quality of the surrounding area would not be changed by the project because all project-related work would be confined to the existing and proposed right-of-way itself.

2.5.3 Mitigation Measures

A tree planting program would be implemented to mitigate barren slopes, enhance existing vistas, replace former oak pockets, mitigate proposed walls and re-establish the natural character of the area. To mitigate the visual effects of tree removal, disturbed areas will be re-vegetated according to Caltrans standards; native oaks would be replaced on a 5:1 ratio or transplanted within a short distance of their origin. Non-native trees of significance would be replaced at a 5:1 ratio with native oaks. All trees would need to be planted during the rainy season. A three-year Plant Establishment Period (PEP) would be employed. This includes truck watering once a week for the first year and twice a month for years two and three. Where roadway curves are improved, the pavement of the former roadway would be removed and trees would be planted as environmental mitigation. To reduce the visual impacts of retaining walls and improve their compatibility with the rural landscape, they would be given aesthetic treatment consisting of surface texturing and color. Such treatments also reduce glare and help to soften their appearance. Where slopes are cut back to provide more room for the highway, the graded surfaces would be rounded to improve their appearance, except where this would increase the project's disturbance to trees. Standard erosion control measures would be applied to all disturbed areas.

2.6 CULTURAL RESOURCES

2.6.1 Regulatory Setting

"Cultural resources" as used in this document refers to historic and archaeological resources.

Under California law, cultural resources are protected by the California Environmental Quality Act (CEQA) as well as Public Resources Code Section 5024.1, which established the California Register of Historic Places. Section 5024.5 requires state agencies to provide notice to, and to confer with the State Historic Preservation Officer (SHPO) before altering, transferring, relocating, or demolishing state-owned historic resources.

2.6.2 Affected Environment

A review of existing literature documenting cultural resources and on-the-ground field survey for archaeological and historic architecture resources in the project study area were completed between August 2003 and May 2004.

The literature search did not identify any archaeological resources within the project area. However the record search did indicate that one prehistoric archaeological site is located within a 1-mile radius of the project area. No archaeological resources were identified in the study area during the field survey.

A literature search for architectural resources indicated that there are three buildings that are 50 years or older within the identified study area. No other cultural resources were recorded within a 1-mile (1.6 kilometer) radius of the project Study Area. No resources listed on the California Register of Historic Resources exist within or adjacent to the project study area.

A Caltrans architectural historian surveyed the project Study Area, with full access to all adjacent parcels. Within the Study Area, five properties with buildings older than 50 years were identified. These properties have been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines using the criteria outlined in Section 5024.1 of the California Public Resources Code, and are not considered historic resources under CEQA.

2.6.3 Project Impacts

Although no historic resources were identified within the project boundaries, it is still possible that buried archaeological deposits exist. If artifacts are discovered during construction activities such as excavation, all earth moving activities within and around the immediate discovery area would be diverted until a qualified archaeologist can assess the find.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that disturbances and activities shall cease. The County Coroner must be notified of the find immediately so that he/she may ascertain the origin. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, then the coroner will notify the Native American Heritage Commission who will then notify the Most Likely Descendant (MLD). The MLD may inspect the remains with the approval of the landowner or the landowners' authorized representative. The MLD may recommend scientific removal and nondestructive analysis.

2.7 HYDROLOGY AND FLOODPLAIN

2.7.1 Affected Environment

According to the Federal Emergency Management Agency (FEMA), the entire project is in an area of minimal flooding. For purposes of Federal Executive Order 11988, which requires projects with federal involvement to determine whether the project would take place in a floodplain, FHWA has determined that the proposed project would not take place in a floodplain. (Federal Emergency Management Agency 1991)

2.7.2 Project Impacts

There are numerous ditches and culverts throughout the project area that convey water. The current hydrologic system is inadequate to accommodate the changes to the roadway and would need to be improved as part of the project.

2.7.3 Mitigation Measures

No mitigation for flooding is necessary.

All longitudinal drainage ditches would be replaced everywhere that it is possible within the project limits. In addition, any necessary alterations to driveway culverts (drainage pipes under driveways, connecting two ends of a longitudinal drainage ditch) such as relocation or realignment due to highway widening would also be accomplished wherever necessary. A longitudinal drainage ditch would need to be installed along the roadway east of the County Transfer Station Road (between SON-116 and proposed retaining wall #5 as shown on Figure 1I). It would be necessary to install a below ground drainage system (a series of buried pipes) under the roadway or shoulder with drainage inlet gutters behind the retaining wall. Inlets that come through the retaining wall would be necessary to drain water from behind the wall.

2.8 WATER QUALITY AND STORM WATER RUNOFF

2.8.1 Regulatory Setting

The primary federal law regulating water quality is the Clean Water Act (CWA), implemented in part by the U.S. Environmental Protection Agency (EPA). The EPA has delegated its authority in California in part to the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCB). Section 401 of the Act requires a water quality certification from the State Board or Regional Board when a project: 1) requires a federal license or permit (a Section 404 permit is the most common federal permit for Department projects), and 2) will result in a discharge to waters of the United States.

Section 402 of the Act establishes the National Pollutant Discharge Elimination System (NPDES) permit system for the discharge of any pollutant (except dredge or fill material) into waters of the United States. To ensure compliance with Clean Water Act Section 402, the State Water Resources Control Board (SWRCB) has issued Caltrans an NPDES Statewide Storm Water Permit to regulate storm water discharges from Caltrans facilities (Order No. 99-06-DWQ, CAS000003).

In addition, the SWRCB has issued a statewide Construction General Permit for construction activities (Order No. 98-08-DWQ, CAS000002), that applies to all storm water discharges from land where clearing, grading, and excavation result in disturbances of 0.4 hectares (1 acre) or more. All projects that are subject to the Construction General Permit require a Storm Water Pollution Prevention Plan (SWPPP).

2.8.2 Affected Environment

The Stage Gulch Project is in the San Pablo Basin watershed, which is within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (Region 2).

The direct receiving water bodies for the project are Champlin Creek and an unnamed tributary of Adobe Creek in the northwest. These water bodies are not on EPA's 303(d) List of impaired water bodies.

Rain water that falls over most of the project area discharges to Champlin Creek, which crosses SR 116 six times within the project limits. Champlin Creek, an intermittent stream, drains to Sonoma Creek and eventually to San Pablo Bay. A small portion of the northwest section of the project area drains to an unnamed tributary of Adobe Creek, which drains to Petaluma River and eventually to San Pablo Bay.

Sonoma Creek and Petaluma River are EPA's 303(d) listed impaired water bodies. Sonoma Creek is listed for nutrients, pathogens, sediments, and silt. Petaluma River is listed for Diazinon, nutrients, pathogens, sediments, and silt. Since the storm water discharges from the highway will travel through Champlin Creek and the unnamed tributary of Adobe Creek for more than a mile before reaching Sonoma Creek or Petaluma River, there should be no effects to these water bodies from the project.

2.8.3 Project Impacts

Caltrans has performed many studies to monitor and characterize highway storm water runoff throughout the State. Commonly found pollutants are Total Suspended Solids (TSS), nutrients, pesticides, metals, pathogens, litter, Biochemical Oxygen Demand (BOD), and Total Dissolved Solids (TDS). Some sources of these pollutants are natural erosion, phosphorus from tree leaves, combustion products from fossil fuels, the wearing of brake pads, and droppings of wild and domestic animals within State right-of-way.

The project proposes to widen shoulders throughout the project area to standard widths. Pavement decreases the amount of rain water that can soak into the ground, so the quantity of storm water runoff would increase. Also changes to the roadway such as curve improvements would necessitate drainage alterations, both within the creeks and in the roadway ditches and culverts.

Because of the area's high groundwater levels, ground water may be encountered in wall and drainage headwall excavations. Early discussion shall be initiated regarding the handling and disposal of this water during the design phase. Also, the ground water would be tested for potential contamination as part of the Hazardous Waste Site Investigation. Proper handling and disposal of the ground water would be based on the levels of contaminants reported in the Site Investigation Report.

2.8.4 Mitigation Measures

Project measures to protect water quality are documented in two types of permits required under the Clean Water Act. Permit requirements under Section 401 of the Act deal with protecting creeks and ditches that are subject to ACOE's 404 permit requirements. Permits for Section 402 of the same Act, including the NPDES permit and the Construction General Permit, protect the quality of the water that leaves the highway features such as roadways, banks, culverts and ditches.

1) Section 401 of the Clean Water Act

Caltrans must obtain a Section 401 Water Quality Certification or Waiver from the Regional Water Quality Control Board before final design of the project is completed. In

order to obtain the Section 401 certification, wetland and waters impacts (which are covered by Section 404 of the Clean Water Act) need to be determined. The Section 401 Certification or Waiver would describe all activities to be performed within the creek that could impact water quality. It would also include all the Best Management Practices (BMPs) to be implemented to minimize or eliminate water quality impacts.

2) Section 402 of the Clean Water Act

According to Caltrans NPDES permit and the Construction General Permit, Best Management Practices (BMPs) would be incorporated into this project to reduce or avoid the discharge of pollutants during construction as well as permanently to the Maximum Extent Practicable (MEP). These BMPs fall into three categories: Design Pollution Prevention BMPs, Temporary Construction Site BMPs, and Permanent Treatment BMPs.

One construction activity that needs precautions to protect water quality is the extraction of groundwater from pits or ditches, known as de-watering. Caltrans shall consult with RWQCB regarding the handling and disposal of this water during the design phase. If the water is found to be uncontaminated and acceptable by the RWQCB to be discharged back into the creek, appropriate Temporary Construction Site BMPs or Permanent Treatment BMPs would be required to reduce or avoid any potential discharge of pollutants.

This project's Design Pollution Prevention BMPs are primarily used to reduce erosion, stabilize disturbed soil areas, and maximize vegetated surfaces. Erosion control measures would be provided on all disturbed areas. Project construction activity is characterized primarily by the widening of Highway 116 throughout the corridor, including one section of significant realignment. Cutting and fill for the realignment and retaining walls generally necessitate mitigation in the form of vegetated swales and would include permanent erosion control measures such as hydro-seeded revegetation and erosion control netting. (Cutting consists of excavation of existing soil, and fill consists of importing additional material to construct the roadway, usually soil or gravel). Due to the sensitivity of the creeks, particular attention would be given to insure these areas receive the most effective application of the previously mentioned permanent erosion control measures.

Outlet protection and velocity dissipation devices placed at the downstream end of culverts and channels are also Design Pollution Prevention BMPs that reduce runoff velocity and control erosion and scour. The need for these devices in this project will be further investigated during the design phase.

The final category of BMPs, Permanent Treatment BMPs, are effective at removing contaminants of concern, including total dissolved solids (TDS), particulate metals and litter. These BMPs include Biofiltration Swales, Infiltration Basins, and Detention Basins. Due to potential high ground water within the project area, infiltration basins do not seem feasible. Biofiltration Swales and Detention Basins are being investigated as possible alternatives.

2.9 GEOLOGY / SOILS / SEISMIC / TOPOGRAPHY

This section discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and

retrofit of structures. The Department's Office of Earthquake Engineering is responsible for assessing the seismic hazard for Department projects. The current policy is to assess the hazard if the project area was subjected to the Maximum Credible Earthquake (MCE), from young faults in and near California. The MCE is defined as the largest earthquake that can be expected to occur on a fault.

2.9.1 TOPOGRAPHY AND SEISMICITY

2.9.1.1 Affected Environment

Sonoma County lies in the California Coast Ranges, a northwest-trending band of folded and faulted mountains that roughly parallel the San Andreas fault zone. The Coast Ranges consist of folded Tertiary sedimentary rocks, with minor metamorphic and volcanic components.

The region is highly seismically active, with numerous active and potentially active faults. East of the San Andreas fault zone, the bedrock is the Cretaceous Franciscan Formation. The Rodgers Creek fault zone is a major strike-slip fault in Sonoma County.

Seismicity

The project passes through the Rodgers Creek fault zone. The Rodgers Creek fault has been active in the last 11,000 years (Wagner and Bortugno 1982) but has not had a major historical earthquake (Working Group on Northern California Earthquake Potential 1996). The most recent major earthquake may have occurred about 230 years ago (Budding et al. 1991). The Rodgers Creek fault zone is considered to be the northern extension of the Hayward fault zone. The Working Group on Northern California Earthquake Probabilities (2003) considers the Rodgers Creek and Hayward fault zones capable of rupturing together. They have assigned the Rodgers Creek-Hayward faults a probability of 27% of producing one or more earthquakes of M 6.7 or greater in the next 30 years.

There have been no major historical earthquakes attributed to the Rodgers Creek fault. However, the project area has experienced large ground motion produced by regional earthquakes, and numerous small earthquakes have occurred in Sonoma County. The following are historical earthquakes that produced shaking at the site.

The 1906 Great San Francisco Earthquake

The April 18, 1906, Mw 7.7 earthquake produced strong shaking at the project site and resulted in near total destruction in nearby Santa Rosa. In the less populated Petaluma and Sonoma Valleys, chimneys toppled. Damage was reported in Lakeville, at the eastern end of the site.

The 1969 Santa Rosa Earthquake

On October 1, 1969, a pair of earthquakes of M 5.6 and M 5.7 on the southern end of the Healdsburg fault caused damage in Santa Rosa. No deaths occurred, but damage was sustained to structures. Numerous breaks in the water system pipes and pavements were reported. The damage was largely confined to a northwest-trending zone above the fault trace.

Liquefaction

Seismic activity can trigger liquefaction in areas that are underlain by deep, unconsolidated soils that are saturated with groundwater. Highway 116 near Champlin Creek (KP 68.8-71.8/PM 42.6-44.5) crosses areas considered to have moderate liquefaction hazard (Knudsen et al. 2000).

2.9.1.2 Impacts and Protective Measures

Since the Rodgers Creek fault crosses in the project area, ground shaking is a near-certainty in the event of an earthquake on this fault. However, this project does not increase the risk to the public above the current risk.

Ground rupture could occur on Highway 116 in the event of an earthquake large enough to produce surface rupture (generally a magnitude 6 or greater). Most ground rupture is limited to the active fault trace and generally does not result in an offset of more than a few centimeters.

The project would require a retaining wall to be constructed across the fault zone. To minimize the risks associated with fault rupture, the wall would be a flexible soil nail wall. Each nail acts independently and the soil nail wall will be built in several stepped lifts rather than as a single face. In the event of fault rupture, the wall would fail over a limited area immediately adjacent to the rupture. The failure would not compromise the wall and the wall could be repaired quickly.

Typically, no special mitigation measures are taken for roads built on liquefiable soils. In road construction, the native soil may be removed and replaced with a suitable fill. Mitigation measures may be taken for structures such as bridges or retaining walls, planned in liquefiable zones. Most of the retaining walls on this project are soil nail walls, which do not have foundations, and are flexible and built to withstand deformation.

If parts of the project area are found to be susceptible to liquefaction during exploratory drilling, mitigation measures such as stone columns, sub-excavation, dynamic compaction, or de-watering methods could be implemented during construction.

2.9.2 SITE GEOLOGY AND SOILS

2.9.2.1 Affected Environment

The project site is mapped in andesitic and basaltic lava flows of the Sonoma Volcanics (Wagner and Bortugno 1982). The Pliocene Sonoma Volcanics extend over about 3,200 km^2 in Sonoma and Napa Counties. They are about 1,500 meters thick. Andesitic and rhyolite flows make up the bulk of the section, along with tuffs and agglomerates. Quaternary deposits in the project area are restricted to alluvium along the creek bed and in the flat eastern end of the project site.

The slope stability map for Sonoma County (California Division of Mines and Geology 1980) shows numerous slides that toe out into the right-of-way along Champlin Creek. The project passes through a narrow canyon (KP 68 to 70.4/PM 42.2 to 43.6) that is mapped as 'relatively unstable rock and soil units,' on slopes greater than 15%. The Sonoma Volcanics are generally highly erodable. Erosion is present along the cuts between KP 68 and 70.4 (PM 42.2 to 43.6). At other areas along the alignment, the cuts

2.10.1.1 Affected Environment

Champlin Creek is an intermittent creek that flows from west to east, and empties into Rodgers Creek, then Fowler Creek before draining into Sonoma Creek and into San Pablo Bay, approximately 13.2 kilometers (8.2 miles) to the southeast of the project site.

Climate in this area is typical of northern California's Mediterranean type climate with warm summers and comparatively warm wet winters. The average annual air temperature is 14° C to 16° C (58°F to 60°F), the average frost free period is 260 to 290 days, and the average annual rainfall is 55.9 to 88.9 centimeters (22.0 to 35.0 inches). Brief periods of flooding can occur from December through April (Miller, 1972).

Because of the area's history of agricultural landuse, the natural environment of the project site and the immediately surrounding area has been greatly diminished in quality from its natural state. Historically, the plant cover of the area consisted of annual and perennial grasses, forbs, and several scattered oak trees (Miller, 1972). Stretches of Champlin Creek adjacent to Highway 116 are disturbed and generally lack riparian cover; however, there is substantial riparian cover nearby, which provides for good habitat through the project area.

The project area, though moderately disturbed by historic activities, contains five different natural communities: roadside vegetation, agricultural/vineyard, pasture/grassland, oak/bay woodland and riparian habitat. Roadside vegetation varies, but in general contains ruderal grasses, thistles and other herbaceous annual weeds. Yellow star thistle is common in the project area. None of the species on the California list of noxious weeds is currently used by the Department for erosion control or landscaping in Sonoma County. The agricultural/vineyard land contains cultivated crops, almost exclusively planted in grapes used for wine-making. The pasture/grassland has been extensively grazed and is not representative of an undisturbed, pre-agricultural grassland environment. Typical vegetation types found within this community are wild oats, perennial rye-grass, purple needle grass and pigweed. The two remaining natural communities are discussed in detail below.

Riparian Community

Highway 116 crosses the riparian habitat of Champlin Creek in several locations. This habitat corridor is made up of mixed oak woodland species. The riparian corridor is suspected of supporting migration of Red Legged Frog, Northwestern Pond Turtle, and Steelhead (Steelhead in the lowland reaches of Champlin Creek). The highway has several culverts or crossings that allow for some wildlife passage. Further discussion of threatened or endangered species is found in Section 2.10.5 below.

The dominant vegetation types found in the riparian corridor of Champlin Creek and its drainages typically includes plants such as mugwort, cattail, a variety of rushes and sedge grasses, Poison Oak, California blackberry, nettles, and willows. Coast live oaks, valley oaks, California bays, and California buckeyes are the most common tree species of the riparian corridor.

Oak/Bay Woodland

The oak-bay woodland community occurs primarily through the middle one-third of the project. Dominant plants in this area include mugwort, hairy honeysuckle, sticky monkeyflower, purple needlegrass, snowberry, and poison oak. Coast live oaks and

Black Oaks are the most common tree species of the oak-bay woodland community, but there are also valley oaks, California bays, Big Leaf Maple, Madrone and California buckeyes.

On the south side of Stage Gulch Road and west of the intersection with transfer station access road, vegetation along the creek consists mainly of valley oak, coast live oak, California bay laurel, California buckeye, coyote brush, and poison oak.

All of the above communities can provide habitat for various animal species, which are discussed in more detail below, in section 2.10.3.

2.10.1.2 Project Impacts

The project proposes to realign the highway at a critical section of this corridor and restore the creek, thus providing a more natural, uninterrupted habitat for wildlife. Work would be necessary to realign the creek in those sections where the road (and its culverts) would be removed. Impacts to this riparian habitat would include culvert extensions and replacements, and the inclusion of some fill slopes into the creek area. Widening of the highway adjacent to the creek would likely require some loss of trees which would reduce the shading of the water, thereby raising the water temperature for aquatic species.

Impacts to plants would be due to disturbance of small areas of grassland, oak woodland and riparian areas adjacent to the roadway to be widened and in the area of realignment. According to an estimate prepared in Spring 2004, the project would require removal of approximately 234 trees including 124 Coast Live Oaks, 37 Valley and Oregon Oaks, 2 Blue Oaks, 24 Bays, 24 Buckeyes, 5 Willows, 3 Maples, 3 Eucalyptus, 2 Black Walnuts, 1 Plum, and 3 Redwoods.

2.10.1.3 Minimization and Mitigation Measures

By adopting the proposed realignment of the highway it would be possible to limit the tree impacts within the riparian area. Where it is possible, the realignment and widening would be shifted away from riparian areas and ACOE jurisdictional waters. In order to do work that might affect the creek, Caltrans would enter a Steambed Alteration Agreement (Section 1601) with the California Department of Fish and Game (CDFG). CDFG would ensure that the Agreement includes work practices and restrictions that protect the creek. The Agreement is also likely to require creek restoration measures.

Preserving the visual quality of the project area would require tree planting at approximately the ratio of one tree planted for each tree removed. Tree replacement ratios associated with oak woodland and riparian habitat would be compensated for at a ratio of 5:1. The determination of the overall mitigation area as well as the species to be planted would be established as the mitigation plan/proposal is developed in cooperation with the various regulatory agencies.

In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, the landscaping and erosion control included in the project would not use species listed as noxious weeds. In areas of particular sensitivity, extra precautions would be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and

cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

2.10.2 WETLANDS AND OTHER WATERS

2.10.2.1 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 Army Corps of Engineers (ACOE) has the primary responsibility to enforce the wetlands provisions of the Clean Water Act. The pertinent sections and provisions of the Clean Water Act are discussed in detail in Section 2.8, Water Quality and Storm Water Runoff.

At the state level, wetlands and waters are regulated primarily by the 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 top of bank of lakes and streams, or the outer edge of riparian vegetation. Waters of the U.S., including wetlands under jurisdiction of the ACOE, may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

2.10.2.2 Affected Environment

Wetlands, as defined by the ACOE, occur throughout the project area. These areas are primarily associated with roadside ditches and with Champlin Creek.

2.10.2.3 Project Impacts

In those locations where culvert extensions are proposed, permanent losses of ACOE jurisdictional areas may result. In the area of the realignment, enhancement and restoration activities would temporarily affect ACOE jurisdictional waters. Widening Highway 116 to provide standard shoulder widths would affect approximately 0.34 acres of ACOE jurisdictional "waters of the U.S," about 0.11 acre of which would be permanent and 0.23 acre of which would be temporary. Of the areas lost to permanent impacts, about 0.035 acres would be wetlands and 0.073 acres would be classified as "other waters of the U.S." Temporary impacts to jurisdictional wetlands are about 0.028 acres of wetlands and 0.21acres of "other waters of the U.S."

2.10.2.4 Minimization and Mitigation Measures

Impacts to ACOE jurisdictional wetlands and waters of the U.S. would be avoided using measures outlined in sections for Water Quality (Section 2.8), Natural Communities (Section 2.10.1), and Threatened and Endangered Species (Section 2.10.4). Because the project proposes alteration to an existing roadway, relocating the project is not a

practicable alternative, although a portion of the road is being realigned to minimize harm to the environment.

Based on the above considerations, Caltrans and ACOE have determined that there is no practicable alternative to the proposed construction in ACOE jurisdiction and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

ACOE Nationwide permits (#3, #14, #27and #41) would be necessary. All criteria set forth by the Army Corps would be met before and during construction.

2.10.3 ANIMAL SPECIES

2.10.3.1 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. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.15.5. All other special-status animal species are discussed here, including CDFG fully-protected species and species of special concern.

2.10.3.2 Affected Environment

Caltrans biologists identified several animal species identified during field surveys conducted between January 2001 and August 2004. Birds observed in the area include red-tailed hawks, red-shouldered hawks, turkey vultures, downy woodpeckers, chickadees, and barn swallows. Bullfrogs, Pacific treefrogs, bluegills, crayfish, and minnows were observed in some of the deep ponded areas of Champlin Creek. A California red-legged frog was identified in August 2004; this "threatened" species is discussed further in Section 2.15.5. A California vole was also observed near the roadway.

Due to the proximity of the roadway there were also several animal carcasses identified including a deer, a gopher snake, a mourning dove, sparrows, and a common king snake. Two juvenile northwestern pond turtles, a federally-listed species of concern, were also found dead beside the roadway.

Cliff swallow nests and bat guano remains were observed inside some of the Champlin Creek culverts during the field surveys.

2.10.3.3 Project Impacts

Shoulder widening and realignment of the highway would necessitate removal of some mature trees, causing the potential loss of foraging, roosting, and nesting habitat for birds, bats, and other small animals.

Construction activities would disturb creek areas, which provide habitat for the northwestern pond turtle during the wet season, and would potentially disturb upland

areas where the pond turtles travel between Champlin Creek and the agricultural ponds during the hot dry months of the summer.

2.10.3.4 Minimization and Mitigation Measures

Because of the importance of oak woodland habitat, the project design would avoid and minimize the loss of trees from the proposed realignment. Oak trees will be replanted in or near the project area in a ratio to be determined in consultation with the California Department of Fish and Game. Tree planting would be an integral component of the restoration of Champlin Creek, which would further improve habitat for native flora and fauna. The determination of the overall mitigation area as well as the species to be planted would be established as the mitigation plan/proposal is developed in consultation with the pertinent regulatory agencies.

Construction activities in the creeks would be prohibited in the winter and spring, as described below in the discussion of the red-legged frog. This would also prevent wet-season impacts to the northwestern pond turtle. During all seasons of the year, the Caltrans biologist would monitor for the northwestern pond turtle in the appropriate habitat. Any turtles with the potential to be disturbed by project activities would be relocated.

2.10.4 THREATENED AND ENDANGERED SPECIES

2.10.4.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): United States Code (USC), Section 1531, *et seq.* (see also 50 CFR Part 402). This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration, are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NOAA Fisheries) to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an incidental take permit. Section 3 of FESA defines "take" as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

The primary state law protecting threatened and endangered species is the California Endangered Species Act (CESA). The state has also enacted California Fish and Game Code, Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. The California Department of Fish and Game (CDFG) is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take

incidental to otherwise lawful development projects; for these actions an incidental take permit can be issued by CDFG. For projects requiring a Biological Opinion under Section 7 of the Federal Endangered Species Act (FESA), CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

2.10.4.2 Affected Environment

The project area includes habitat of the California red-legged frog (CRLF), which is on the US Fish and Wildlife Service's list of "threatened" species. The Central California Coastal steelhead, which is also on the "threatened" list, could potentially use Champlin Creek for habitat.

The surrounding environment consists mainly of vineyards and grazing pastures. Field surveys conducted by Caltrans biologists did not indicate the presence of any sensitive species of plants and no suitable habitat was present on site that could provide for growth of any sensitive plants that may have been historically present in the area. Correspondence occurred with California Department of Fish and Game (CDFG) on May 27, 2003 concerning sensitive animal species potentially found in the area. CDFG believes Champlin Creek, that is crossed by SR 116 at five locations, may provide a migration corridor for a federally-listed threatened anadromous fish, the Central California Coastal steelhead, despite the shallow and intermittent flows of the creek through the project area. Correspondence with CDFG indicates that Central California Coastal steelhead may be found in isolated pools with sufficient water, and that it is possible that short reaches of Champlin Creek with perennial water provide possible habitat for steelhead. However, no records of steelhead in Champlin Creek near the project area have been found.

During a field review on August 27, 2004, Department biologists observed a mature CRLF just downstream from the Sonoma County Transfer Station Road (see Photo 1). According to the California Natural Diversity Database (CNDDB), there have been ten additional sightings of the frog within 10 kilometers of the project area over the past ten years (**Figure E**).

Photo 1. Mature California red-legged frog observed by Caltrans staff during field review immediately north of Transfer Station Road in Champlin Creek (August 27, 2004).

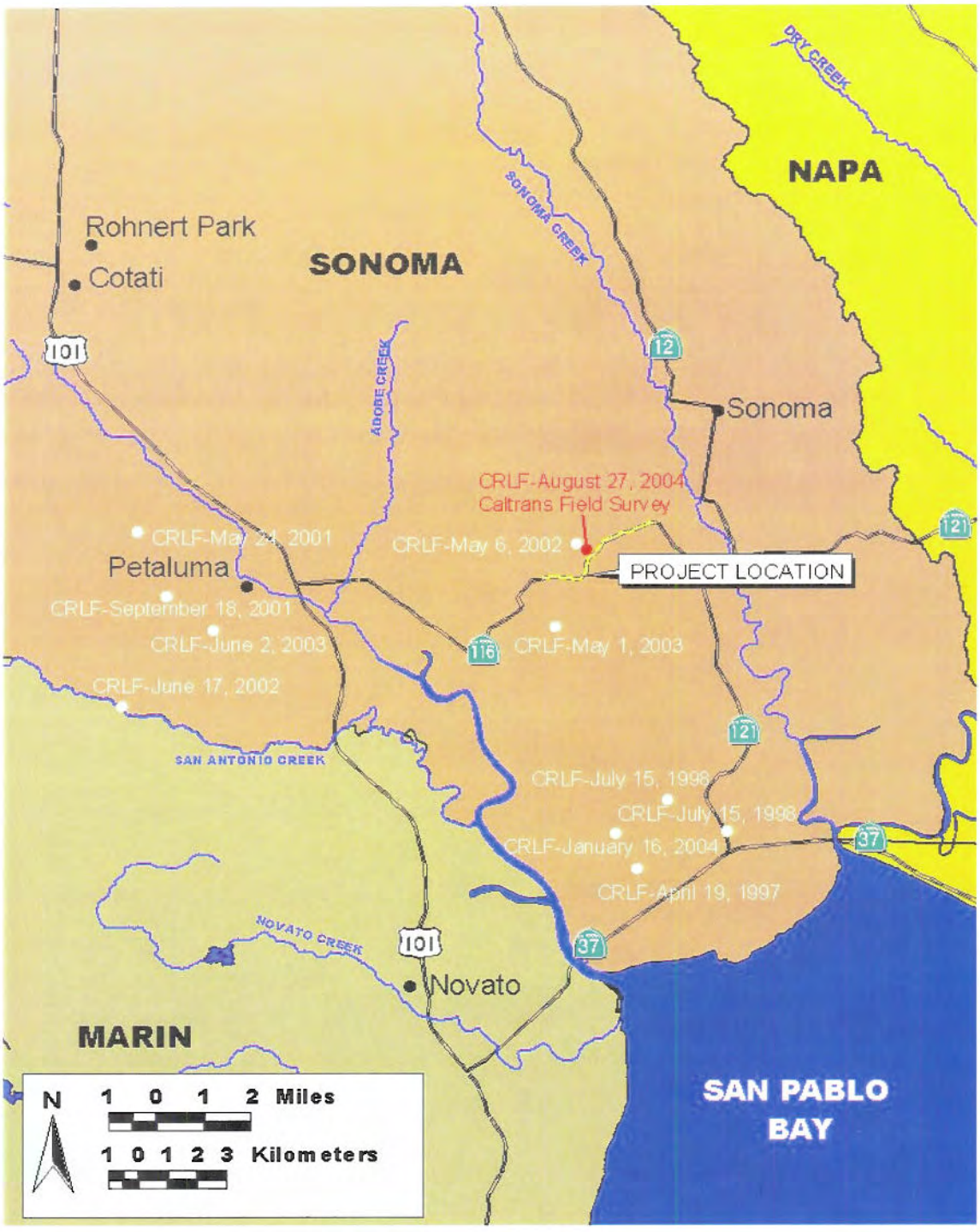

Figure E. County Map of Sonoma showing the approximate location of the Sonoma 116 Curve Improvement and Widening Project and the proximity of the 13 historical sightings of California red-legged frog in the county as indicated by the California Natural Diversity Database (CNDDB, September 26, 2003) and Caltrans.

2.10.4.3 Project Impacts

Permanent impacts to wildlife habitat would result from extending the existing culverts for the roadway widening and straightening of the two curves within the project limits. Drainage would be modified where necessary. The road widening adjacent to Champlin Creek could potentially result in removal of some of the larger trees near the creek. This loss of tree canopy would likely result in decreased shading of the creek and a resulting rise in creek water temperature which may impact the aquatic species that reside in the creek.

Temporary impacts would result from grading the creek banks near the culvert crossings for contractor access. Additional temporary impacts would be incurred through removal of existing culverts to install fish-friendly passages and at restoration locations along Champlin Creek.

Reconstruction of the two culverts under the Sonoma County Transfer Station Road would result in the relocation of the CRLF pond identified by Caltrans staff on August 27, 2004. This would be considered a loss of a pond measuring approximately 150 square feet.

2.10.4.4 Avoidance and Minimization Measures

Construction activities would be limited to the dry summer months (June to October) to avoid impacts to CRLF breeding behavior during the spring. Construction materials used to maintain flow and divert water from the project area during the construction period, including cofferdams, pipe, filter fabric, and gravel would be removed after completion of the project from the streambed. Excess soil may be disposed of at an upland site approved by Caltrans. Native riparian plantings and restoration of a portion of the Champlin Creek will mitigate for impacts incurred during construction. The Department's standard water quality BMPs would be employed which would aid in the conservation and protection of the resources within and adjacent to the project area.

Exclusion measures would be taken during construction to avoid impacts to CRLF and habitat that supports CRLF. Exclusion fences would be placed at the perimeter of the project area to prevent CRLF from getting into the project area. Relocation of any CRLF would require an incidental take permit from the USFWS. CRLF would be removed and relocated from the site by a USFWS-approved biologist. The construction crew would be educated on how to respond to CRLF if found within the project area, and a Caltrans biologist would be on call to respond to findings of CRLF in the project area.

Mitigation has been proposed in an area between KP 69.75 and 70.31(PM 43.34 to 43.69) where SR 116 would be realigned. The existing roadway over Champlin Creek in this area would be removed, and Champlin Creek would be restored. Native tree plantings would occur in the area to increase shading over the creek, which would benefit threatened and endangered species.

2.11 TEMPORARY CONSTRUCTION IMPACTS

2.11.1 Affected Environment

The proposed project has the potential to create a number of temporary construction impacts to resources located in the project limits. These impacts include soil disturbance due to excavation and vegetation removal and traffic disruption caused by temporary lane closures. The resources impacted would include air quality/noise, traffic/ circulation (Section 2.4), and public services (Section 2.2).

2.11.2 Project Impacts

The proposed project would generate air pollutants during construction. Trucks and construction equipment emit hydrocarbons, oxides of nitrogen (NOx), carbon monoxide (CO), and suspended particulate matter (PM_{10} and $PM_{2.5}$). Most pollution would consist of wind-blown dust generated by excavation, grading, hauling, and various other activities. The impacts from the above activities would vary from day to day as construction progressed.

Some temporary noise disturbance would occur during construction, associated with operation of construction machinery and equipment.

Construction activity would require traffic controls such as lane closures. Traffic would be subject to delays during various periods throughout the construction. Such delays may affect public services such as public transit and school bus schedules. Emergency services may also experience delays during these periods. Some night construction would be necessary in order to reduce impacts to traffic circulation during the day. Temporary closure of Transfer Station Road would be necessary to improve the drainage underlying the road and to increase the profile of the road where it intersects with SR 116. Waste management vehicles using the transfer station would need to be re-routed to other facilities during this temporary closure.

2.11.3 Mitigation Measures

The Special Provisions and Standard Specifications in the construction contract for the proposed project would include requirements to minimize or eliminate construction-related dust through the application of water or dust palliatives. Caltrans and its contractors would comply with "fugitive dust" emissions rules and policies to minimize construction dust impacts.

During construction, Caltrans would implement a Traffic Mitigation Plan (TMP) to minimize traffic impacts using such measures as a public awareness campaign, alternative routes (detours), one-way traffic controls, and night work. Caltrans recognizes the importance of public awareness to its projects. Various media would be utilized during the campaign, such as press releases, a web page, a telephone hotline and public meetings. Changeable message signs and ground-mounted signs would be employed to provide advance notice to motorists regarding potential delays and/or available detours during construction throughout the project. Temporary lane closures may be required for construction of retaining walls and replacement of drainage culverts that cross Stage Gulch Road. Temporary concrete barriers would be used where

excavation takes place. Construction would be carefully staged to keep traffic delay to a minimum.

Coordination with Sheriff, Fire, CHP, public transit and local school districts would occur to minimize the temporary impacts to these services.

2.12 CUMULATIVE IMPACTS

2.12.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably-foreseeable future actions, combined with the potential impacts of this project. A cumulative effects assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines Section 15130 describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines.

The Department has identified three proposed projects near Stage Gulch for its analysis of cumulative impacts:

- Transfer Station Road Project;
- Carneros View Winery Production Facility and Tasting Room; and
- Tolay Park.

2.12.2 Affected Environment

The proposed highway project's impacts to the following environmental resources are less than significant, but need to be studied for their potential to contribute to a cumulatively-significant impact.

- California Red Legged Frog
- Steelhead Trout
- Water Quality
- Visual Quality

2.12.3 Project Impacts and Mitigation Measures

Impacts from the proposed highway project and the three other identified projects can be considered in combination.

California Red Legged Frog and Steelhead Trout
Impacts to both CRLF and Steelhead from the proposed project and reasonably foreseeable projects can be expected. The Transfer Station Road Project and Carneros View Winery have the potential to impact Champlin Creek with sheet piling and or soil movement during construction; however, effective protective measures for both species are available. Measures such as seasonal avoidance (construction windows) and habitat replacement would be used by the proposed project and would be available for use by the above-listed projects. The Tolay Park project is in itself a habitat restoration project and would be funded and regulated in part by the responsible agencies. Cumulative impacts from the above-listed projects would not be significant.

Water Quality
Construction of any of the four projects listed has the potential to cause erosion, which can effect water quality. However, measures are available that prevent water quality impacts due to erosion. Effective measures are also available to treat the types of contaminants associated with highway projects. The Regional Water Quality Control Board, which takes a cumulative approach to analyzing water quality, has the authority to impose protective measures on all the identified projects. Cumulative impacts from the above-listed projects would not be significant.

Visual Quality
All of the above listed projects would cause some alteration to the physical environment. However, measures to lessen the impacts such as aesthetic treatments, vegetation screening and habitat restoration would be implemented. Such measures will ensure that the cumulative impacts from the above-mentioned projects would not constitute a substantial adverse change to the visual character of the area and would not be a significant impact.