

endangered and six are federal species of special concern. Seven are state species of special concern and eight are listed as sensitive by the USDAFS. Three sensitive species were observed within the study corridor: arroyo toad (*Bufo californicus*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), and two-striped garter snake (*Thamnophis hammondi*). Refer to Table 3.6-1 for detailed status listings of sensitive amphibians and reptiles and Figures 3.6-1 through 3.6-3 for locations and habitat mapping.

Arroyo Toad. The arroyo toad was listed as endangered by the USFWS in December 1994. This species occurs in coastal and desert drainages from Monterey County, California, to northwestern Baja California, Mexico, but studies estimate that arroyo toads have lost up to 76 percent of their historical habitat in the last 100 years. Losses have been due to urban development, water diversion, agriculture, construction, introduced predators, sand and gravel mining activities, and reservoirs. The USFWS designated Critical Habitat for the species in 2001, but this designation was overturned in November 2002. The northern 2.4 km (1.5 mi) of the proposed project was previously designated as Critical Habitat for the species. A single adult arroyo toad was observed immediately adjacent to the study corridor on 15 May 2001. It was found about 213 m (700 ft) upstream of the main road into the CDC Bautista Conservation Camp. It was in a drying streambed that still had some moist spots. There was limited surface water about 305 m (1,000 ft) to the north. Arroyo toads have been recorded in Bautista Canyon downstream of the study corridor near Hixon Trail, approximately 3.2 km (2 mi) downstream of the northern terminus of the study corridor, by both AMEC biologists and other biologists. U.S. Geological Survey provided information on the specific downstream Hixon Trail locations (AMEC 2002a).

Mountain Yellow-legged Frog. The southern California population of this species has been recognized as a distinct vertebrate population segment and was listed as federally endangered in 2002. Small, isolated populations of the southern California population segment are still believed to persist in mountain streams of the San Gabriel, San Bernardino, and San Jacinto mountains. The USFWS has determined that the population segment of this species is declining, having previously occupied mountain streams from northern San Diego County to Los Angeles County. These true frogs are diurnal and feed on terrestrial and aquatic insects. Threats to the species include primarily exotic aquatic species, degradation of water quality, and habitat alteration. Critical Habitat has not been designated for this species. This species prefers small mountain streams characterized by large, rocky substrate. This species was not observed during 2001 general wildlife surveys. Because of its specific habitat requirements and lack of suitable habitat within the study corridor, this species is considered to have a low probability of occurrence (AMEC 2002a).

Other Sensitive Amphibians and Reptiles. Other sensitive species observed within the project study corridor include the San Diego horned lizard and the two-striped garter snake. Amphibians and reptiles that were not observed but have a probability of occurring within the study area include silvery legless lizard (*Anniella pulchra pulchra*), rosy boa (*Charina [Lichanura] trivirgata*), ring-neck snake (*Diadophis punctatus*), large-blotched ensatina (*Ensatina eschscholtzii klauberi*), and San Bernardino Mountain kingsnake (*Lampropeltis zonata parvirubra*).

Birds

A total of 17 sensitive bird species have been detected or have the potential to occur within the project study corridor. Of the 17 species observed or potentially occurring, 4 bird species are listed as state or federal threatened or endangered. Ten are federal species of special concern and 14 are listed as sensitive by the USDAFS. Seven sensitive species were observed within the study corridor: Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), turkey vulture (*Cathartes aura*), yellow warbler (*Dendroica petechia brewsteri*), southwestern willow flycatcher (*Empidonax traillii extimus*), purple martin (*Progne subis*), and Wilson's warbler (*Wilsonia pusilla*). Refer to Table 3.6-1 for detailed status listings of birds and Figures 3.6-1 through 3.6-3 for locations and habitat mapping.

Southwestern Willow Flycatcher. The southwestern willow flycatcher was formerly a common summer resident in lowland willow thickets in southern California, but following the large-scale invasion by brown-headed cowbirds in the 1920s, and the continuing loss of riparian habitat to development and flood control regimes, this subspecies of the widespread willow flycatcher (*Empidonax traillii*) has been nearly eliminated from the region. The southwestern willow flycatcher was listed by the state of California as endangered in 1990, and by the USFWS in 1995. The USFWS designated Critical Habitat for the species in 1997. The study corridor is not within the designated Critical Habitat for this species.

Southwestern willow flycatchers were detected several times during the 2001 protocol surveys. In the upper survey area (the riparian habitat of Bautista Creek near Tripp Flats), three sightings, spanning 47 days during the breeding season, were recorded. These sightings were confined to a very small area of willow riparian habitat, indicating the presence of a breeding territory. Two willow flycatchers were found in the lower survey area on 17 May 2001 (the riparian habitat of Bautista Creek in the vicinity of the CDC Bautista Conservation Camp). One of the flycatchers, which was silent, was found in the oak woodland near the Conservation Camp. The second, which was vocalizing, was found approximately 183 m (600 ft) downstream from the stream crossing. These areas were surveyed on subsequent visits and willow flycatchers were not found. The willow flycatchers observed in the lower survey area are assumed to have been migrants (AMEC 2002a).

Least Bell's Vireo. Least Bell's vireos were formerly widespread and common throughout low-lying riparian habitats of central and southern California, but they are now restricted to a limited number of locations. Habitat reduction, due largely to past and present flood control practices, has contributed to this species' significant population decline. Nest parasitism by brown-headed cowbirds has also seriously impacted the species. Least Bell's vireo is listed as both state and federal endangered and Critical Habitat has been designated. The study corridor is not within the designated Critical Habitat for this species. During protocol surveys for this species in 2001, least Bell's vireos were not detected in the study corridor. The riparian habitat along Bautista Creek in the vicinity of the study corridor is considered suitable habitat for this species, but the study corridor is not considered occupied (AMEC 2002a).

American Peregrine Falcon. Peregrine falcon is distributed throughout North America, South America, Africa, and Australia. This species was eliminated as a breeding resident from much of the continental United States during the 1950s but is currently being reintroduced into its historical range. This falcon is a rare winter visitor and breeding resident, most commonly observed from October through May. Peregrines are primarily found near large bodies of water where they feed on waterbirds. Peregrine falcon populations have declined due to pesticide contamination that caused declines in reproductive success because of eggshell thinning. This species continues to be threatened by pesticide poisoning on wintering grounds, low breeding densities and reproductive isolation, lack of gene flow between populations, and reduced availability of foraging habitats and avian prey. This species was recently delisted by the USFWS but is state listed as endangered. The peregrine falcon was not observed in the study corridor and has a low probability of occurrence (AMEC 2002a).

Coastal California Gnatcatcher. The coastal California gnatcatcher is a small, mostly gray, nonmigratory songbird found in southern California only in areas with coastal sage scrub. In western Riverside County, this species occurs in coastal sage scrub dominated by flat-top buckwheat, California sagebrush, brittlebush, black sage, and/or white sage (*Salvia apiana*). This habitat is represented in the study corridor by coastal sage-chaparral scrub, consisting of characteristic coastal sage scrub species such as flat-top buckwheat and black sage mixed with characteristic chaparral species such as red shank and chamise. Several studies have revealed a major loss of coastal sage scrub in recent years and corresponding severely reduced population levels of California gnatcatcher. The California gnatcatcher was listed as a federally threatened species by the USFWS on 25 March 1993. No Critical Habitat is designated in the vicinity of the project. No California gnatcatchers were detected in the survey corridor during focused protocol surveys for the species, and the study corridor is not considered occupied (AMEC 2002a).

Other Sensitive Birds. Other sensitive species observed within the project study corridor include Cooper's hawk, sharp-shinned hawk, turkey vulture, yellow warbler, purple martin, and Wilson's warbler. Birds that were not observed but have a low probability of occurring within the study area include northern goshawk (*Accipiter gentiles*), golden eagle (*Aquila chrysaetos*), cactus wren (*Campylorhynchus brunneicapillus cousei*), Swainson's thrush (*Catharus ustulatus*), black swift (*Cypseloides niger*), prairie falcon (*Falco mexicanus*), and gray vireo (*Vireo vicinior*).

Mammals

A total of five sensitive mammal species have been detected or have the potential to occur within the project study corridor. Of these five, one sensitive species, the mountain lion (*Felis concolor*), was detected within the study corridor. Of the five species, one is federally listed as endangered, the San Bernardino kangaroo rat (*Dipodomys merriami parvus*). Four are listed as sensitive by the USDAFS and three are state species of special concern. Refer to Table 3.6-1 for detailed status listings of mammals and Figures 3.6-1 through 3.6-3 for locations and habitat mapping.

San Bernardino Kangaroo Rat. The federally endangered San Bernardino kangaroo rat is one of 19 subspecies of the widespread and generally common Merriam's kangaroo rat (*D. merriami*). The San Bernardino kangaroo rat occurred historically from the San Bernardino Valley south to the Menifee Valley and formerly occupied up to 129,504 ha (320,000 ac). That area has been reduced to approximately 1,295 ha (3,200 ac) by development, agriculture, and flood control activities. The subspecies was emergency listed as endangered by the USFWS in January 1998; a final rule extending protection for the subspecies was made on 24 September 1998. Critical Habitat for the species was recently designated for the lower reach of Bautista Creek downstream of the northern terminus of the study corridor.

Federally permitted biologists and assistants conducted live trapping surveys for San Bernardino kangaroo rats for five consecutive nights, as required by USFWS terms and conditions. Seven species of small mammals were captured, but no San Bernardino kangaroo rats were found. This subspecies has recently been documented near the Hixon Trail, approximately 3.2 km (2 mi) downstream of the northern terminus of the study corridor. Habitat in this area of the project is mostly unsuitable for the species. San Bernardino kangaroo rats are associated with sage scrub vegetation on sandy soils. Their highest population density is found in intermediate-aged alluvial scrub. Areas of occurrence along the San Jacinto River and the lower reaches of Bautista Creek contain alluvial fan sage scrub, which is almost absent from the project study area. Drainages in the project study area, including Bautista Creek, are typically narrow creek beds surrounded by dense chaparral. Habitat along Horse Creek and Bautista Creek is marginally suitable for the San Bernardino kangaroo rat, and the areas determined to be the most similar to their typical habitat were trapped (AMEC 2002a). The study corridor is not considered occupied by the species.

Other Sensitive Mammals. Mountain lion tracks were observed within the study corridor and the species is known to occur throughout the region. Mountain lions use a large home range area and are susceptible to habitat fragmentation. The pallid bat and the western big-eared bat are two species of bats with a high probability of occurring within the study corridor. These bats are often found in caves, mines, or crevices. The American badger also has low probability of occurrence within the project study corridor.

Habitat Connectivity and Wildlife Movement

Habitat connectivity and wildlife movement are landscape-level issues that can influence the health of ecological communities and species populations. Habitats that become fragmented often cause species to be susceptible to adverse edge effects, such as exotic species introductions and increased predation. Furthermore, habitat connectivity is important for facilitating wildlife movement. Increased fragmentation or barriers to movement can create isolated species populations and reduced population success. Large mammal species, such as deer and mountain lion, utilize a large territory and can be affected by fragmentation and movement barriers.

The Bautista Canyon area is characterized by contiguous, relatively undisturbed, natural habitat. The canyon and the surrounding areas provide habitat for a diverse mix of wildlife species. The

specific location of wildlife movement corridors in Bautista Canyon has not been well documented. Based on AMEC biological surveys and input from the USDAFS, the primary wildlife movement corridor in the canyon is considered to be the Bautista Creek riparian corridor. Evidence of wildlife movement has been documented in and around the creek corridor. Evidence of wildlife movement has also been recorded in the Tripp Flats area. The existing Bautista Canyon Road acts as a minor barrier to wildlife movement for some species; however, the narrow dirt roadway and low vehicle speed and volume likely allow substantial wildlife movement across the existing road.

3.6.2 Regulatory Setting

Federal/State

As noted in Section 3.6, regulated waterways, wetlands, and riparian areas are resources subject to federal authority under Section 401 and 404 of the CWA and subject to state authority under Section 1600 of the California Fish and Game Code. Areas meeting the definition of “waters of the U.S.” are under the jurisdiction of the USACE. The CDFG regulates all unvegetated waterways and wetland and riparian habitats.

SBNF Land and Resource Management Plan (LRMP) – Biological Resources Goals

The following biological resource goals identified in the SBNF LRMP would apply to the project:

Riparian Areas

- *Protect and enhance riparian areas, giving emphasis to riparian dependent resources.*
- *Maintain water flow needed to support aquatic and riparian areas and dependent uses.*

Wildlife, Fish, and Sensitive Plants

- *Protect and improve habitats of threatened and endangered plants and animals to aid in the recovery of the species in cooperation with the state and other federal agencies.*
- *Maintain and improve habitats of emphasis species.*

Local

Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP)

The MSHCP is a comprehensive regional HCP focusing on conservation of species and associated habitats to address biological and ecological diversity conservation needs in western Riverside County. This plan is one of several regional multi-species habitat-planning efforts within southern California, which have been instigated with the overall goal of maintaining biological diversity within a rapidly urbanizing region. The MSHCP allows the County of Riverside and its cities to better control local land use decisions and maintain a strong economic

climate in the region while addressing the state and federal Endangered Species Acts. The MSHCP was released for public review in November 2002.

The MSHCP Planning Area encompasses approximately 0.5 million ha (1.26 million ac) (approximately 5,092 km² [1,966 mi²]). The Plan Area includes all unincorporated Riverside County land west of the crest of the San Jacinto Mountains to the Orange County line as well as the jurisdictional areas of the cities of Temecula, Murrieta, Lake Elsinore, Canyon Lake, Norco, Corona, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet, and San Jacinto. The plan will provide a coordinated reserve system and implementation that will facilitate the preservation of biological diversity as well as maintain the region's quality of life.

The project study corridor is located in the San Jacinto Mountains Bioregion, which is one of seven distinct bioregions identified for the MSHCP Area, and within the Tule Creek and Anza Valley, Subunit 4 area (County of Riverside 2002b).

A total of 142 species (83 animals and 59 plants) were considered to receive coverage under the Western Riverside County MSHCP. Of the 37 sensitive species observed or with a potential to occur within the project study corridor, 26 are addressed by the MSHCP (see Table 3.6-3). The following plan species within the Tule Creek and Anza Valley subunit were chosen for the upper San Jacinto and Bautista Creek area to provide reserve system design guidance:

- Quino checkerspot butterfly
- southwestern arroyo toad
- mountain yellow-legged frog
- San Bernardino kangaroo rat
- burrowing owl

Based on the MSHCP analysis, the following resource issues were identified for the Plan Area of the Bautista Canyon Road study corridor:

- Conservation of existing wetlands and wetlands functions and values in the Plan Area portion of the upper San Jacinto River, and Bautista, Tule, Temecula, Cottonwood, Wilson, Cahuilla, Tocalota, and Willow Canyon creeks with a focus on conserving existing habitats in the river and creeks.
- Conservation of stream courses and adjacent coastal sage scrub, grasslands, and chaparral supporting southwestern arroyo toad, with a focus on suitable breeding, foraging, and/or aestivating habitats along Temecula Creek, the upper San Jacinto River, and Bautista Canyon.
- Conservation of existing habitat values of the upper San Jacinto River and Bautista Creek for the benefit of San Bernardino kangaroo rat.
- Maintenance of regional habitat connection(s) from the SBNF to eastern Riverside County through coordination of conservation planning efforts with eastern Riverside County.

3.6.3 Thresholds of Significance

The project would result in a significant impact to the environment if it would:

- substantially reduce the habitat of a fish or wildlife species;
- cause a fish or wildlife population to drop below self-sustaining levels;
- threaten to eliminate a plant or animal community;
- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special species in local or regional plans, policies, or regulations, or by the CDFG or the USFWS;
- reduce the number or restrict the range of an endangered, rare, or threatened species;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or the USFWS;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA;
- substantially interfere 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;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted HCP, Natural Community Conservation Plan; or other approved local, regional, or state HCP.

3.6.4 Environmental Consequences

Effects to biological resources are assessed as direct or indirect and as permanent or temporary. Direct effects occur when biological resources are altered, disturbed, destroyed, or removed during the course of project construction and/or operation. Direct effects may result from activities such as removal, grading, or brushing of vegetation; felling trees; diverting or channelizing surface water flows; filling wetland habitat, and interfering with wildlife movement. Other direct effects may include the loss of individuals from habitat clearing and loss of foraging, nesting, or burrowing habitat for wildlife species. Indirect effects occur when project-related activities affect biological resources in the vicinity of the project, but not within the zone of direct impact. Potential indirect effects could include elevated noise levels, increased human presence, increased erosion and sedimentation in stream channels, alteration of stream drainage patterns, or changes in the amount and quality of surface water within floodplain areas occupied or supporting sensitive species. Both direct and indirect effects can be either temporary or permanent.

Direct permanent effects would occur in all areas where the reconstructed two-lane, paved Bautista Canyon Road is proposed. Because of engineering design constraints, the proposed alternative alignments stray from the current alignment of FH 224 in numerous locations, and direct permanent effects to plant communities and species habitat would occur. In addition,

direct permanent effects to vegetation communities would occur in all areas of cut slopes steeper than 1:1.5 (V:H). Direct temporary effects would occur in all areas of fill slopes, cut slopes 1:1.5 (V:H) or flatter, and where temporary construction activities would impact plant communities or wildlife habitat. However, following reconstruction of Bautista Canyon Road, direct temporary impact areas would not have permanent facilities or structures and would be restored through planned restoration and revegetation actions.

The calculation of direct effects to vegetation communities and species habitat is based on the existing conditions information and on the preliminary engineering design for the alternative alignments provided by the FHWA. In general, direct permanent effects were calculated using an average 10 m (34 ft) wide corridor, which includes the road, shoulders, and roadside drainage. Other direct permanent effects include steep cut slopes, pullouts, and interpretive overlook areas. Direct temporary effects were calculated as all temporary effects associated with roadway construction (e.g., fill slopes, cut slopes flatter than 1:1.5 (V:H), construction access roads, and staging areas). Impact acreages were calculated using AMEC's geographic information system (GIS) data. Indirect permanent effects to surrounding biological resources from the potential increased use of Bautista Canyon Road may occur from implementation of the proposed project. Indirect temporary effects to surrounding biological resources may occur from temporary construction activities associated with the proposed project (e.g., temporarily higher noise levels and sedimentation of stream courses).

3.6.4.1 Alternative A

Botanical Resources

The construction of Alternative A would directly impact upland scrub, chaparral, and riparian vegetation communities. A total of 22.4 ha (55.4 ac) of direct impact would result from the implementation of the proposed project under Alternative A. This includes 13.5 ha (33.3 ac) of permanent roadway effects and 8.9 ha (22.1 ac) of temporary roadway effects (see Table 3.6-4). Of the total direct effects stated above, 14.6 ha (36.2 ac) are direct effects to plant communities, which includes 8.4 ha (20.8 ac) of permanent effects and 6.2 ha (15.4 ac) of temporary effects. For Alternative A, total new disturbance outside of the existing roadway would be 16.1 ha (39.8 ac)

Zoological Resources

Implementation of the proposed project under Alternative A would result in the direct loss of habitat for wildlife species known or potentially occurring in Bautista Canyon. Alternative A would result in a total impact of 7.8 ha (19.2 ac) to chaparral habitats, 0.6 ha (1.5 ac) to upland scrub habitat, and 0.05 ha (0.13 ac) to riparian habitat (Table 3.6-4). The effects of the project on sensitive wildlife species and wildlife movement are discussed below.

Apart from the direct impact to wildlife habitat, the projected higher traffic speed and volume could cause an increase in wildlife road kills on Bautista Canyon Road. The increased traffic speed and volume would occur along the entire corridor. Vehicle speeds and volumes are

Table 3.6-4
Direct Effects to Vegetation Communities and Jurisdictional Areas from the Three
Alternative Alignments for the Bautista Canyon Road Project

Vegetation Community	Alternative A – 40 km/h (Permanent/ Temporary) (acres)	Alternative B – 55 km/h (Permanent/ Temporary) (acres)	Alternative C – 55/40/55 km/h (Permanent/ Temporary) (acres)
Upland Scrub	1.5 / 2.3	1.5 / 2.4	1.5 / 2.8
Big sagebrush scrub	1.1 / 1.7	1.1 / 1.7	1.1 / 1.8
Coastal sage-chaparral scrub	0.4 / 0.6	0.4 / 0.7	0.4 / 1.0
Chaparral	19.2 / 12.1	21.7 / 14.1	19.2 / 12.1
Southern mixed chaparral	16.9 / 8.9	18.6 / 10.5	16.6 / 8.6
Red shank chaparral	0.7 / 1.0	0.8 / 1.1	0.8 / 1.5
Bigberry manzanita chaparral	1.1 / 1.3	1.6 / 1.6	1.1 / 1.2
Chamise chaparral	0.5 / 0.9	0.7 / 0.9	0.7 / 0.8
Scrub oak chaparral	0.0 / 0.0	0.0 / 0.0	0.0 / 0.0
Upland Woodland	0.0 / 0.0	0.0 / 0.0	0.0 / 0.0
Southern coast live oak woodland	0.0 / 0.0	0.0 / 0.0	0.0 / 0.0
Riparian	0.13 / 0.94	0.13 / 0.76	0.08 / 0.51
Southern willow scrub	0.06 / 0.17	0.06 / 0.10	0.05 / 0.20
Southern cottonwood-willow riparian forest	0.07 / 0.77	0.07 / 0.66	0.02 / 0.31
White alder-live oak riparian forest	0.0 / 0.0	0.0 / 0.0	0.0 / 0.0
Open cottonwood-willow riparian forest	0.0 / 0.0	0.0 / 0.0	0.0 / 0.0
Ruderal/Disturbed	0.0 / 0.0	0.0 / 0.0	0.0 / 0.0
Plant Community Subtotal*	20.8 / 15.4	23.3 / 17.3	20.8 / 15.5
Overall Plant Community Subtotal*	36.2 (14.6 ha)	40.6 (16.4 ha)	36.3 (14.7 ha)
Existing Dirt Road-No Vegetation	12.5 / 6.7	10.8 / 5.7	11.8 / 7.0
Total*	33.3 / 22.1	34.1 / 23.0	32.6 / 22.5
Overall Impact Total*	55.4 (22.4 ha)	57.1 (23.1 ha)	55.1 (22.3 ha)
USACE Jurisdictional Wetlands	0.33 / 0.32	0.18 / 0.11	0.32 / 0.17
USACE Jurisdictional Non-wetland Waters of the U.S.	0.32 / 0.10	0.38 / 0.09	0.35 / 0.09
USACE Jurisdictional Impact Total*	0.65 (0.26 ha)	0.54 (0.22 ha)	0.67 (0.27 ha)

Note:

Steep slopes (steeper than 1:1.5 slopes) from drainage 13 to drainage 32 are considered permanent impacts due to revegetation constraints.

* Totals may not sum due to rounding.

ha – hectares

km/h – kilometers per hour

projected to increase moderately above the current levels. At the northern terminus (east of Fairview Avenue), traffic volumes are estimated to increase from the current level of 346 vehicles per day to 600 vehicles per day in 2006. Total volumes are projected to increase to 1,790 per day in 2025. Riverside County staff has estimated that paving Bautista Canyon Road would increase the average traffic speed along the reconstructed segment to approximately 53 km/h (33 mph). Traffic patterns (i.e., nighttime versus daytime) will factor into the level of effect on different species. Additionally, wildlife species have differing abilities to avoid oncoming vehicles; thus, it is difficult to generalize the effect on wildlife. Measures to avoid and minimize wildlife mortality have been incorporated into the proposed project and are discussed in Section 3.6.5. The effect of traffic on sensitive species is addressed further below.

Other potential effects of the roadway improvements on wildlife include behavioral modification (e.g., roadway aversion), habitat fragmentation and population isolation, pollution, habitat modification through exotic plant introductions, and hydrology modifications. Many of these effects exist with the current roadway, and the roadway improvements are not expected to significantly increase these effects. Habitat connectivity and wildlife movement are discussed further below.

Regulated Waterways, Wetlands, and Riparian Areas

Alternative A would impact a total of 0.13 ha (0.32 ac) of USACE jurisdictional non-wetland waters of the U.S. and a total of 0.13 ha (0.33 ac) of USACE jurisdictional wetlands (see Table 3.6-4). Total impact to jurisdictional waters and wetlands would be approximately 0.26 ha (0.65 ac). Alternative A would impact a total of 0.38 ha (0.94 ac) of CDFG jurisdictional riparian habitat and waterways. Habitat compensation measures to mitigate unavoidable effects to jurisdictional areas are discussed in Section 3.6.5.

Sensitive Species

Sensitive Plants. Direct effects to chaparral sand verbena are expected from implementation of the proposed project. This effect is considered less than significant because the level of impact is relatively low and the species is not federal or state listed. All other sensitive or listed plant species have a very low to moderate probability of occurring in the study corridor. For those plant species with a moderate probability of occurring in the study corridor, the project will have a less than significant impact on potential habitat. For those plant species with a very low to low probability of occurring in the study corridor, the project will have no effect on the species. Habitat compensation measures have been included in the project to mitigate the loss of potential habitat for these species, and these measures are included in Section 3.6.5. All sensitive plant species assessed are listed in Table 3.6-5.

The federally endangered slender-spineflower has a moderate probability of occurring in the study corridor, but species-specific surveys did not locate the species. The federally endangered Santa Ana River woolly-star has a very low probability of occurring in the vicinity of the study corridor and will not be affected by the project.

**Table 3.6-5
Effects and Mitigation Measures for Sensitive Species in the Bautista Canyon Road Project Study Corridor**

Species	Status	Occurrence Probability	Potential Impact	Proposed Conservation Actions	Effect on Species
Plants					
<i>Abronia villosa</i> var. <i>aurita</i> Chaparral Sand Verbena	USDAFS Proposed Sensitive	Observed	<ul style="list-style-type: none"> Direct impacts to existing populations Direct impacts to potential (shrubland) habitat: Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant
<i>Berberis nevini</i> Nevins Barberry	USFWS Endangered USDAFS Sensitive	Not Observed; Moderate	Direct impacts to potential (shrubland) habitat: Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant
<i>Brodiaea filifolia</i> Thread-leaved Brodiaea	USFWS Threatened USDAFS Sensitive	Not Observed; Low	Not likely to occur and no potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
<i>Calochortus palmeri</i> var. <i>munzii</i> Munz’s Mariposa Lily	USDAFS Sensitive	Not Observed; Low	Not likely to occur and no potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
<i>Calochortus plummerae</i> Plummer’s Mariposa Lily	USDAFS Sensitive	Not Observed; Moderate	Direct impacts to potential (shrubland) habitat: Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant
<i>Caulanthus simulans</i> Payson’s Jewel-flower	USDAFS Sensitive	Not Observed; Moderate	Direct impacts to potential (shrubland) habitat: Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant
<i>Chaenactis parishii</i> Parish’s Chaenactis	USDAFS Watch List	Not Observed; Low	Not likely to occur and no potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
<i>Deinandra mohavensis</i> Mojave Tarplant	USDAFS Sensitive	Not Observed; Moderate	Direct impacts to potential (riparian) habitat: Alt. A – 1.1 ac (0.4 ha) Alt. B – 0.9 ac (0.4 ha) Alt. C – 0.7 ac (0.3 ha)	Creation, restoration, and/or enhancement of impacts to jurisdictional wetlands.	Less than significant

Table 3.6-5 (continued)
Effects and Mitigation Measures for Sensitive Species in the Bautista Canyon Road Project Study Corridor

Species	Status	Occurrence Probability	Potential Impact	Proposed Conservation Actions	Effect on Species
Plants (continued)					
<i>Dodecahema leptoceras</i> Slender-horned Spineflower	USFWS Endangered	Not Observed; Moderate	Direct impacts to potential (riparian) habitat: Alt. A – 1.1 ac (0.4 ha) Alt. B – 0.9 ac (0.4 ha) Alt. C – 0.7 ac (0.3 ha)	Creation, restoration, and/or enhancement of impacts to jurisdictional wetlands; Preconstruction surveys; Best Management Practices for erosion and sedimentation control.	Less than significant There may be indirect impacts to the known occurrence of this plant due to increased visitors and fire starts
<i>Eriastrum densifolium</i> ssp. <i>Sanctorum</i> Santa Ana River Woolly-star	USFWS Endangered	Not Observed; Very low	Not likely to occur and no potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
<i>Galium californicum</i> ssp. <i>Primum</i> California Bedstraw	USDAFS Sensitive	Not Observed; Very low	Not likely to occur and no potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
<i>Monardella macrantha</i> ssp. <i>Hallii</i> Hall’s Monardella	USDAFS Sensitive	Not Observed; Low	Not likely to occur and no potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
<i>Penstemon californicus</i> California Beardtongue	USDAFS Sensitive	Not Observed; Low	Not likely to occur and no potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
<i>Poa atropurpurea</i> Bear Valley Blue-grass	USFWS Endangered	Not Observed; Very low	Not likely to occur and no potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
<i>Scutellaria bolanderi</i> ssp. <i>Austromontana</i> Southern Skullcap	USDAFS Sensitive	Not Observed; Low	Not likely to occur and no potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
<i>Streptanthus campestris</i> Southern Jewel-flower	USDAFS Sensitive	Not Observed; Moderate	Direct impacts to potential (chaparral) habitat: Alt. A – 31.3 ac (12.7 ha) Alt. B – 35.8 ac (14.5 ha) Alt. C – 31.3 ac (12.7 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant

Table 3.6-5 (continued)
Effects and Mitigation Measures for Sensitive Species in the Bautista Canyon Road Project Study Corridor

Species	Status	Occurrence Probability	Potential Impact	Proposed Conservation Actions	Effect on Species
Invertebrates					
Quino Checkerspot Butterfly <i>Euphydryas editha quino</i>	USFWS Endangered	Occurs	Direct impacts to occupied foraging habitat (vegetated areas within 1,000 of nearest point): Alt. A – 1.4 ac (0.6 ha) Alt. B – 1.4 ac (0.6 ha) Alt. C – 1.3 ac (0.5 ha) Direct impacts to potential suitable habitat in study corridor (vegetated): Alt. A – 9.6 ac (3.9 ha) Alt. B – 10.3 ac (4.2 ha) Alt. C – 10.3 ac (4.2 ha)	Reduced impact corridor width in the vicinity of the local colony; Restoring and revegetation of upland cut/fill slopes and abandoned roadway segments; Fencing around suitable habitat in vicinity of known local colony to keep construction equipment/personnel from inadvertently damaging the habitat.	Mitigated below a level of significance
Amphibians and Reptiles					
Silvery Legless Lizard <i>Anniella pulchra pulchra</i>	USDAFS Sensitive	Not Observed; High	Direct impacts to potential habitat (all types): Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant
Arroyo Toad <i>Bufo californicus</i>	USFWS Endangered	Occurs	Direct impacts to occupied upland habitat (vegetated): Alt. A – 5.7 ac (2.3 ha) Alt. B – 5.9 ac (2.4 ha) Alt. C – 6.5 ac (2.6 ha) Direct impacts to Critical Habitat (vegetated): Alt. A – 8.7 ac (3.5 ha) Alt. B – 9.1 ac (3.7 ha) Alt. C – 9.6 ac (3.9 ha) Indirect impacts from increased traffic volumes and speeds. Beneficial impacts on water quality.	Avoid construction during breeding season in the northern 1.5 miles; Implement toad exclusion and barrier system programs; Restoration and revegetation of cut/fill slopes and abandoned roadway segments; Creation, restoration, and/or enhancement of effects to jurisdictional wetlands; Best Management Practices to maintain water quality.	Mitigated below a level of significance
Rosy Boa <i>Charina [Lichanura] trivirgata</i>	USDAFS Sensitive	Not Observed; High	Direct effects to potential shrubland habitat: Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant

Table 3.6-5 (continued)
Effects and Mitigation Measures for Sensitive Species in the Bautista Canyon Road Project Study Corridor

Species	Status	Occurrence Probability	Potential Impact	Proposed Conservation Actions	Effect on Species
Amphibians and Reptiles (continued)					
Ring-neck Snake <i>Diadophis punctatus</i>	USDAFS Sensitive	Not Observed; Moderate	Direct effects to potential chaparral habitat: Alt. A – 31.3 ac (12.7 ha) Alt. B – 35.8 ac (14.5 ha) Alt. C – 31.3 ac (12.7 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant
Large-blotched Ensatina <i>Ensatina eschscholtzii klauberi</i>	USDAFS Sensitive	Not Observed; High	Direct effects to potential shrubland habitat: Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant
San Bernardino Mountain Kingsnake <i>Lampropeltis zonata parvirubra</i>	USDAFS Sensitive	Not Observed; High	Direct effects to potential chaparral habitat: Alt. A – 31.3 ac (12.7 ha) Alt. B – 35.8 ac (14.5 ha) Alt. C – 31.3 ac (12.7 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant
San Diego Horned Lizard <i>Phrynosoma coronatum blainvillii</i>	USDAFS Sensitive	Occurs	Direct effects to upland habitats (all): Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Mitigated below a level of significance
Mountain Yellow-legged Frog <i>Rana mucosa</i>	USFWS Endangered USDAFS Sensitive	Not Observed; Low	Not likely to occur and no potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
Two-striped Garter Snake <i>Thamnophis hammondi</i>	USDAFS Sensitive	Occurs	Direct effects to occupied riparian habitat: Alt. A – 1.1 ac (0.4 ha) Alt. B – 0.9 ac (0.4 ha) Alt. C – 0.7 ac (0.3 ha) Beneficial impact on water quality.	Creation, restoration, and/or enhancement of effects to jurisdictional wetlands; Best Management Practices to maintain water quality.	Mitigated below a level of significance
Birds					
Cooper's Hawk <i>Accipiter cooperii</i>	USDAFS Sensitive	Occurs	Direct effects to occupied riparian habitat: Alt. A – 1.1 ac (0.4 ha) Alt. B – 0.9 ac (0.4 ha) Alt. C – 0.7 ac (0.3 ha)	Creation, restoration, and/or enhancement of effects to jurisdictional wetlands; Preconstruction nest surveys.	Mitigated below a level of significance

Table 3.6-5 (continued)
Effects and Mitigation Measures for Sensitive Species in the Bautista Canyon Road Project Study Corridor

Species	Status	Occurrence Probability	Potential Impact	Proposed Conservation Actions	Effect on Species
Birds (continued)					
Northern Goshawk <i>Accipiter gentiles</i>	USDAFS Sensitive	Not Observed; Moderate	No potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
Sharp-shinned Hawk <i>Accipiter striatus</i>	USDAFS Sensitive	Occurs	Direct effects to upland foraging habitats (all): Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments; Preconstruction nest surveys.	Mitigated below a level of significance
Golden Eagle <i>Aquila chrysaetos</i>	USDAFS Sensitive	Not Observed; Moderate	No potential impacts anticipated.	No additional conservation measures are proposed for this species.	No effect
Cactus Wren <i>Campylorhynchus brunneicapillus cousei</i>	USDAFS Sensitive	Not Observed; Low	Not likely to occur and no potential effects anticipated.	No additional conservation measures are proposed for this species.	No effect
Turkey Vulture <i>Cathartes aura</i>	USDAFS Sensitive	Occurs	Direct impacts to upland foraging habitat (all types): Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments; Preconstruction nest surveys.	Less than significant
Swainson’s Thrush <i>Catharus ustulatus</i>	USDAFS Sensitive	Not Observed; Moderate	Direct effects to potential riparian habitat: Alt. A – 1.1 ac (0.4 ha) Alt. B – 0.9 ac (0.4 ha) Alt. C – 0.7 ac (0.3 ha)	Creation, restoration, and/or enhancement of effects to jurisdictional wetlands.	Less than significant
Black Swift <i>Cypseloides niger</i>	USDAFS Sensitive	Not Observed; Moderate	Direct effects to potential riparian habitat: Alt. A – 1.1 ac (0.4 ha) Alt. B – 0.9 ac (0.4 ha) Alt. C – 0.7 ac (0.3 ha)	Creation, restoration, and/or enhancement of effects to jurisdictional wetlands.	Less than significant
Yellow Warbler <i>Dendroica petechia brewsteri</i>	USDAFS Sensitive	Occurs	Direct effects to occupied riparian habitat: Alt. A – 1.1 ac (0.4 ha) Alt. B – 0.9 ac (0.4 ha) Alt. C – 0.7 ac (0.3 ha)	Creation, restoration, and/or enhancement of effects to jurisdictional wetlands.	Mitigated below a level of significance

Table 3.6-5 (continued)
Effects and Mitigation Measures for Sensitive Species in the Bautista Canyon Road Project Study Corridor

Species	Status	Occurrence Probability	Potential Impact	Proposed Conservation Actions	Effect on Species
Birds (continued)					
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i>	USFWS Endangered	Occurs	Direct effects to occupied riparian habitat: Alt. A – 1.1 ac (0.4 ha) Alt. B – 0.9 ac (0.4 ha) Alt. C – 0.7 ac (0.3 ha)	Restricted construction activities during breeding season.	Mitigated below a level of significance
Prairie Falcon <i>Falco mexicanus</i>	USDAFS Sensitive	Not Observed; Moderate	Direct effects to potential shrubland foraging habitat: Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments; Preconstruction nest surveys.	Less than significant
American Peregrine Falcon <i>Falco peregrinus anatum</i>	USDAFS Sensitive	Not Observed; Low	Not likely to occur and no potential effects anticipated.	No additional conservation measures are proposed for this species.	No effect
Purple Martin <i>Progne subis</i>	USDAFS Sensitive	Occurs	Direct impact to upland foraging habitat (all types): Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments; Preconstruction nest surveys.	Mitigated below a level of significance
Coastal California Gnatcatcher <i>Poliopitila californica californica</i>	USFWS Threatened	Absent	Not likely to occur and no potential effects anticipated.	No additional conservation measures are proposed for this species.	No effect
Least Bell's Vireo <i>Vireo bellii pusillus</i>	USFWS Endangered	Absent	Not likely to occur and no potential effects anticipated.	No additional conservation measures are proposed for this species.	No effect
Gray Vireo <i>Vireo vicinior</i>	USDAFS Sensitive	Not Observed; Moderate	Direct effects to potential shrubland foraging habitat: Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant
Wilson's Warbler <i>Wilsonia pusilla</i>	USDAFS Sensitive	Occurs	Direct effects to occupied riparian habitat: Alt. A – 1.1 ac (0.4 ha) Alt. B – 0.9 ac (0.4 ha) Alt. C – 0.7 ac (0.3 ha)	Creation, restoration, and/or enhancement of effects to jurisdictional wetlands.	Mitigated below a level of significance

Table 3.6-5 (continued)
Effects and Mitigation Measures for Sensitive Species in the Bautista Canyon Road Project Study Corridor

Species	Status	Occurrence Probability	Potential Impact	Proposed Conservation Actions	Effect on Species
Mammals					
Pallid Bat <i>Antrozous pallidus</i>	USDAFS Sensitive	Not Observed; Moderate	Direct impact to potential upland foraging habitat (all types): Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant
Western Big-eared Bat <i>Corynorhinus townsendii townsendii</i>	USDAFS Sensitive	Not Observed; Moderate	Direct impact to upland potential foraging habitat (all types): Alt. A – 35.1 ac (14.2 ha) Alt. B – 39.7 ac (16.1 ha) Alt. C – 35.6 ac (14.4 ha)	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Less than significant
San Bernardino Kangaroo Rat <i>Dipodomys merriami parvus</i>	USFWS Endangered	Absent	Not likely to occur within the study corridor. Potential indirect off-site effects.	Best Management Practices for erosion and sedimentation control.	Mitigated below a level of significance
Mountain Lion <i>Puma concolor</i>	USDAFS Sensitive	Occurs	Direct impact to occupied habitat (all types): Alt. A – 36.2 ac (14.6 ha) Alt. B – 40.6 ac (16.4 ha) Alt. C – 36.3 ac (14.7 ha) Indirect wildlife corridor effects.	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	Mitigated below a level of significance
American Badger <i>Taxidea taxus</i>	USDAFS Sensitive	Not Observed; Low	Not likely to occur and no potential effects anticipated.	Restoration and revegetation of upland cut/fill slopes and abandoned roadway segments.	No effect

Quino Checkerspot Butterfly. The approximate location of the observed local colony of the species is 304.8 m (1,000 ft) west of the existing Bautista Canyon Road. Minimal vegetation disturbance will occur from roadway reconstruction in the vicinity of the Quino checkerspot locality. The impact corridor is substantially narrower in this section of the roadway than in the remainder of the project. Most of the impact acreage in this section of the project would occur within the existing dirt road.

For the Quino checkerspot butterfly, Alternative A would result in direct effects to 0.6 ha (1.4 ac) of occupied foraging habitat (vegetated) and 3.9 ha (9.6 ac) of potential suitable habitat within the study corridor (vegetated). Although suitable habitat exists throughout the corridor, colonies tend to occupy relatively localized areas, and the species was only found at the Anza colony during 2001 focused surveys. The direct loss of unoccupied suitable habitat is considered less than significant because the species was not detected in these areas. The direct impact to occupied foraging habitat for this species is considered significant but would be mitigated below a level of significance through the general habitat compensation measures outlined in Section 3.6.5.

The loss of unoccupied suitable habitat would not affect the species. The project study area is not included in the final designated Critical Habitat and the proposed project would have no effect on Critical Habitat for the species.

Arroyo Toad. As described in Section 3.6.1, a single adult arroyo toad was observed immediately adjacent to the study corridor about 213 m (700 ft) upstream of the main road into the CDC Bautista Conservation Camp. Although the sighting was not within the defined study corridor for the project, the species is considered present in this reach of Bautista Creek and in the upland habitat surrounding the point location, which occurs within the study corridor. Based on historical records, physical and biological habitat characteristics, and 2001 focused protocol surveys for the species, the current range of the species in Bautista Creek is believed to extend no farther upstream than the sighting in the vicinity of the Conservation Camp.

In the vicinity of the arroyo toad sighting, no direct effects to or crossings of Bautista Creek are proposed. Direct effects to upland vegetation communities used by the species and potential impacts to buried and foraging individuals in and around the Conservation Camp sighting would occur. Riparian and upland habitat potentially used by the species in the vicinity of this sighting was considered occupied habitat. Direct effects to 2.3 ha (5.7 ac) of occupied upland habitat would result from implementation of Alternative A (see Table 3.6-5). This unavoidable impact to upland habitat is considered significant. Approximately 3.5 ha (8.7 ac) of the previously designated Critical Habitat for the arroyo toad would be affected by Alternative A. The impact to previously designated Critical Habitat is considered less than significant because the upstream portions of this area are not occupied by the species and because the Critical Habitat designation is no longer in place. The direct loss of suitable upland habitat would be mitigated through the habitat compensation measures. These measures are discussed further in Section 3.6.5.

Expected traffic and increased vehicle speeds along Bautista Canyon Road would result in indirect effects to the arroyo toad. Although a current barrier to migration, dispersal, and recolonization exists with the current roadway, the increase in traffic volume and speed from the project would contribute to habitat fragmentation by exacerbating the barrier effect. The exacerbation of the movement barrier effect would extend beyond the roadway improvement section, in both the northern and southern segments, as vehicle volumes and speed are projected to increase along the entire roadway. In the vicinity of the known arroyo toad sighting adjacent to the study corridor, the roadway is located away from Bautista Creek and at the edge of the upland habitat potentially used by the species. The toad is not considered to occupy Bautista Creek upstream of this location. Within the study corridor, the project would not likely have a significant impact on toad movement or habitat accessibility. Downstream of the study corridor where toads are known to occur in the vicinity of Hixon Trail, the existing roadway is at the outer edge of the Bautista Creek floodplain terrace, and is bounded on the uphill edge by a steep rock hill slope. Exacerbation of the movement barrier in the vicinity of Hixon Trail is not expected to result in a significant impact to toad movement or habitat accessibility. Habitat connectivity and wildlife movement are discussed further below.

Increased traffic volume and speed could also increase toad roadway mortality. Arroyo toads are active primarily at night and spend most of their adult life in uplands adjacent to stream channels. Activity also increases during rainy weather. The area upstream of the CDC Bautista Conservation Camp is not considered occupied by the species. In the vicinity of the Conservation Camp point locality, toad mortality may increase over the current levels, but estimating mortality with small population sizes is speculative and inaccurate. The effect of increased mortality within the study corridor is considered significant due to the endangered status of the species, but the increase in mortality is expected to be low within the study corridor because of the habitat characteristics and population status in this area of the canyon. Measures to reduce this impact to below a level of significance are discussed in Section 3.6.5.

Toad mortality due to an increase in traffic speed and volume in the vicinity of Hixon Trail is considered to be a significant impact to this species. U.S. Geological Survey (USGS) surveys for arroyo toad at Hixon Trail observed 15 individuals in this vicinity, which is approximately 3.2 km (2 mi) north of the northern terminus of the study corridor. On several occasions, arroyo toads were observed sitting on Bautista Canyon Road at this location. Measures to reduce the off-site impacts to the species below a level of significance are discussed in Section 3.6.5.

The northernmost 2.4 km (1.5 mi) of the study corridor was previously designated as Critical Habitat for the species. Approximately 3.5 ha (8.7 ac) of upland acreage would be impacted within the previously designated Critical Habitat, of which approximately 3.5 ha (8.7 ac) is natural vegetation. A substantial portion of the impact within the previously designated Critical Habitat occurs in unoccupied habitat. Most of the habitat in the upstream sections of Bautista Canyon does not appear suitable for the species. The effect of the proposed project on the previously designated Critical Habitat for the species is considered adverse but less than significant because a majority of this area is considered unoccupied and because the critical habitat designation is no longer in place.

Beneficial effects of the proposed project on arroyo toad primarily include improvements to water quality in Bautista Canyon. All low-water crossings of Bautista Canyon Creek and its tributaries would be upgraded to culverts. The main crossing of the creek would be a bridge. Erosion and sedimentation off the existing dirt segment of Bautista Canyon Road would be reduced with the paving of the roadway. Improvements to roadside drainage are also proposed. These components of the project would reduce the sediment load during winter flows in the creek and potentially improve habitat quality for the species in downstream sections of the creek.

Southwestern Willow Flycatcher. This species was observed nesting within the study corridor in riparian habitat adjacent to the existing roadway downstream from Tripp Flats Road. The proposed project would result in the relocation of the road farther away from the nest location. No direct effects to riparian vegetation communities would occur in the immediate vicinity of the southwestern willow flycatcher point location as the roadway is being relocated outside the floodplain and out of the riparian corridor. Direct effects to suitable riparian habitat from the project are considered significant and would include 0.4 ha (1.1 ac) under Alternative A. The significance determination is based on the finding that the project would modify the habitat of a species regulated by CDFG/USFWS and could result in a reduction in the number of endangered species. While significant, the impact is mitigable. Unavoidable effects to riparian habitat would be mitigated through the CWA Section 404 permit process with wetland creation, restoration, and/or enhancement. Habitat compensation and other specific measures to reduce the project's effects on this species are discussed in Section 3.6.5. The Wetland Mitigation Memorandum is provided in Volume II, Appendix H.

Indirect effects to the species from the project would include temporary construction noise and permanently increased traffic noise. Construction activities that would result in excessive noise (e.g., rock blasting) in the vicinity of this breeding territory would be limited to the period outside the breeding season (breeding season is considered from 15 March to 31 August). Permanently increased traffic noise in the vicinity of this breeding territory is offset by the relocation of the roadway away from the Bautista Canyon riparian habitat. The project would relocate the roadway centerline 72 m (236 ft) away from the species point location. Indirect noise effects to an occupied breeding territory are mitigated below a level of significance by these measures. Relocation of the road away from the nesting habitat would be considered a beneficial effect because it would also decrease human accessibility to the riparian habitat.

Other Sensitive Wildlife Species. Direct effects to other sensitive wildlife species are expected from implementation of this project, and these effects are summarized in Table 3.6-5. Impacts to sensitive species will include direct loss of suitable habitat and direct mortality. These impacts are considered less than significant or are considered mitigated below a level of significance (see Table 3.6-5). Increased traffic speed and volume on the roadway will increase road kill as discussed under the Zoological Resources section. Other potential effects of the roadway improvement on sensitive wildlife species are similar to the effects to general wildlife and include behavioral modification (e.g., roadway aversion), habitat fragmentation and population isolation, pollution, habitat modification through exotic plant introductions, and

hydrology modifications. Habitat compensation and other measures for sensitive wildlife species are discussed in Section 3.6.5.

The mountain yellow-legged frog is considered to have a low probability of occurring in the study corridor because the characteristics of Bautista Canyon in the study corridor do not meet the strict habitat requirements of this species. The project would have no effect on this species. Species-specific surveys for the least Bell's vireo did not detect the species and the study corridor is considered unoccupied. There would be no effect on least Bell's vireo from the proposed project. The American peregrine falcon has a low probability of occurring in the canyon, and there would be no effect on this species from the proposed project. Species-specific surveys for the coastal California gnatcatcher did not detect the species and the study corridor is considered unoccupied. There would be no effect on coastal California gnatcatcher from the project. Species-specific surveys for the San Bernardino kangaroo rat did not detect the species and the study corridor is considered unoccupied. Recent surveys in more suitable habitat off-site near Hixon Trail did detect the species. The off-site effects of the project on San Bernardino kangaroo rat are considered below a level of significance. Additionally, general measures to maintain water quality during construction would avoid downstream disturbance to this species.

Habitat Connectivity and Wildlife Movement

The proposed project would not significantly increase habitat fragmentation in Bautista Canyon or within Bautista Creek. The existing Bautista Canyon Road acts as a barrier to movement for some wildlife species; however, the low traffic speed and volume of the current roadway likely allow substantial wildlife movement. The proposed project would widen the roadway and increase traffic speed and volume. The increased traffic speed and volume would occur both in the improved roadway segment and in the existing, unimproved segments of Bautista Canyon Road to the north and south. While, this roadway improvement project has the potential to affect wildlife movement in the canyon, the effects would vary by species and are difficult to quantify. Observations by project biologists indicate that snakes seem to have the highest traffic-related mortality, being long, slow, and lingering on warm and paved surfaces. More pavement will likely lead to more road kill for reptiles. To minimize the effect of roadway improvement on wildlife movement, the right-of-way corridor width has been minimized, a bridge has been designed for the main crossing of Bautista Creek, and an oversized box culvert has been designed for Tripp Flats. These and other measures have been included in the project design to reduce the effects on wildlife movement below a level of significance (see Section 3.6.5).

Regional Resource Management Programs

Alternative A is consistent with the goals, resource issues, and design guidance identified in the MSHCP for the Tule Creek and Anza Valley, Subunit 4 areas. Target species, such as the Quino checkerspot butterfly and the southwestern arroyo toad that were observed within the study corridor, would be adversely affected with the implementation of Alternative A, and

conservation, mitigation, and habitat compensation measures have been integrated into the proposed project to reduce effects to below a level of significance.

Preservation of Bautista Creek would be maintained by siting the alignment of the roadway to avoid existing significant biological and cultural resources. A bridge is proposed over Bautista Creek, which would avoid significant effects to existing riparian habitat and would maintain regional connectivity of Bautista Creek and Bautista Canyon. Effects to other sensitive species and sensitive habitats would be mitigated to below a level of significance through habitat creation, restoration, and/or enhancement as described in Section 3.6.5.

3.6.4.2 Alternative B

Botanical Resources

The construction of Alternative B would directly impact upland scrub, chaparral, and riparian vegetation communities associated with Bautista Canyon. A total of 23.1 ha (57.1 ac) of direct impact would result from the implementation of the proposed project under Alternative B, which includes 13.8 ha (34.1 ac) of permanent roadway effects and 9.3 ha (23.0 ac) of temporary roadway effects (see Table 3.6-4). Of the total direct effects stated above, 16.4 ha (40.6 ac) are direct effects to plant communities, which include 9.4 ha (23.3 ac) of permanent effects and 7.0 ha (17.3 ac) of temporary effects. For Alternative B, total new disturbance outside of the existing roadway would be 17.9 ha (44.2 ac). The effects to sensitive plant species are similar to the effects under Alternative A and are discussed under the Sensitive Species section below.

Zoological Resources

The project under Alternative B would result in the direct loss of habitat for wildlife species known or potentially occurring in Bautista Canyon. Alternative B would result in a total impact of 8.8 ha (21.7 ac) to chaparral habitats, 0.6 ha (1.5 ac) to upland scrub habitat, and 0.05 ha (0.13 ac) to riparian habitat.

All other effects of the proposed project under Alternative B would be the same as those discussed under Alternative A (Section 3.6.4.1). The effects of the project on sensitive wildlife species and wildlife movement are discussed below.

Regulated Waterways, Wetlands, and Riparian Areas

Alternative B would impact a total of 0.15 ha (0.38 ac) of USACE jurisdictional non-wetland waters of the U.S. and a total of 0.07 ha (0.18 ac) of USACE jurisdictional wetlands (see Table 3.6-4). Total impact to jurisdictional waters and wetlands would be approximately 0.22 ha (0.54 ac). Alternative B would impact a total of 0.31 ha (0.76 ac) of CDFG jurisdictional riparian habitat and unvegetated CDFG jurisdictional waterways.

Sensitive Species

The effects of the proposed project under Alternative B on sensitive plant species are similar to the effects under Alternative A. Table 3.6-5 lists the effects from the project under Alternative B to potential habitat for sensitive plant species.

Effects to sensitive wildlife species are similar to those under Alternative A, except for the number of acres of impact to the habitat of the southwestern willow flycatcher, Quino checkerspot butterfly, arroyo toad, and other sensitive species, as shown in Table 3.6-5.

Alternative B would result in direct effects to 0.6 ha (1.4 ac) of habitat (vegetated) in the vicinity of the observed Quino checkerspot butterfly colony and 4.2 ha (10.3 ac) of potential suitable habitat within the study corridor (vegetated) of the Quino checkerspot butterfly. For the arroyo toad, direct effects to 2.4 ha (5.9 ac) of occupied upland habitat and 3.7 ha (9.1 ac) of vegetated habitat previously designated as Critical Habitat for the arroyo toad would result from the implementation of Alternative B (see Table 3.6-4). For the southwestern willow flycatcher, direct effects to occupied riparian habitat from the proposed project would include 0.4 ha (0.9 ac) under Alternative B. The project would relocate the roadway centerline 89.1 m (292 ft) away from the southwestern willow flycatcher species point location.

Habitat Connectivity and Wildlife Movement

Alternative B does not differ in its effects to habitat connectivity or wildlife movement from Alternative A. See Section 3.6.4 for a discussion of these effects. Measures to reduce the effects have been included in the project design and are discussed in Section 3.6.5.

Regional Resource Management Programs

Similar to the discussion provided for Alternative A, Alternative B is consistent with the goals, resource issues, and design guidance identified in the MSHCP for the Tule Creek and Anza Valley, Subunit 4 areas. Target species, such as the Quino checkerspot butterfly and the southwestern arroyo toad that were observed within the study corridor, would be adversely affected with the implementation of Alternative B, and conservation, mitigation, and habitat compensation measures have been integrated into the project to reduce the regional effects to below a level of significance.

3.6.4.3 Alternative C

Botanical Resources

The construction of Alternative C would directly impact upland scrub, chaparral, and riparian vegetation communities associated with Bautista Canyon. A total of 22.3 ha (55.1 ac) of direct impact would result from the implementation of the project under Alternative C, which includes 13.2 ha (32.6 ac) of permanent roadway effects and 9.1 ha (22.5 ac) of temporary roadway effects (see Table 3.6-4). Of the total direct effects stated above, 14.7 ha (36.3 ac) are direct effects to plant communities, which include 8.4 ha (20.8 ac) of permanent effects and 6.3 ha

(15.5 ac) of temporary effects. For Alternative C, the total new disturbance outside of the existing roadway would be 16.6 ha (41.0 ac). Effects to sensitive plant species are similar to the effects under Alternative A and are discussed below.

Zoological Resources

The project under Alternative C would result in the direct loss of habitat for wildlife species known or potentially occurring in Bautista Canyon. Alternative C will result in a total impact of 7.77 ha (19.2 ac) to chaparral habitats, 0.61 ha (1.50 ac) to upland scrub habitat, and 0.03 ha (0.08 ac) to riparian habitat.

All other effects of the proposed project under Alternative C would be the same as those discussed under Alternative A (Section 3.6.4.1). The effects of the project on sensitive wildlife species and wildlife movement are discussed below.

Regulated Waterways, Wetlands, and Riparian Areas

Alternative C would impact a total of 0.14 ha (0.35 ac) of USACE jurisdictional non-wetland waters of the U.S. and a total of 0.13 ha (0.32 ac) of USACE jurisdictional wetlands (see Table 3.6-4). Total impact to jurisdictional waters and wetlands would be approximately 0.27 ha (0.67 ac). Alternative C would impact a total of 0.21 ha (0.51 ac) of CDFG jurisdictional riparian habitat and unvegetated CDFG jurisdictional waterways.

Sensitive Species

The effects of the proposed project under Alternative C on sensitive plant species are similar to the effects under Alternative A. Table 3.6-5 lists the effects from the project under Alternative C to potential habitat for sensitive plant species.

Effects to sensitive wildlife species are similar to those under Alternative A, except for the number of acres of impact to the habitat of the southwestern willow flycatcher, Quino checkerspot butterfly, arroyo toad, and other sensitive species as shown in Table 3.6-5.

Alternative C would result in direct effects to 0.5 ha (1.3 ac) of habitat (vegetated) in the vicinity of the observed Quino checkerspot butterfly colony and 4.2 ha (10.3 ac) of potential suitable habitat within the study corridor (vegetated) of the Quino checkerspot butterfly. For the arroyo toad, direct effects to 2.6 ha (6.5 ac) of occupied upland habitat and 3.9 ha (9.6 ac) of vegetated habitat previously designated as Critical Habitat for the arroyo toad would result from the implementation of Alternative C (see Table 3.6-4). For the southwestern willow flycatcher, direct effects to occupied riparian habitat from the proposed project would include 0.3 ha (0.7 ac) under Alternative C. The project would relocate the roadway centerline 89 m (292 ft) away from the southwestern willow flycatcher species point location.

Habitat Connectivity and Wildlife Movement

Alternative C does not differ in its effects to habitat connectivity or wildlife movement from Alternative A. See Section 3.6.4 for a discussion of these effects. Measures to reduce the effects have been included in the project design and are discussed in Section 3.6.5.

Regional Resource Management Programs

Similar to the discussion provided for Alternative A, Alternative C is consistent with the goals, resource issues, and design guidance identified in the MSHCP for the Tule Creek and Anza Valley, Subunit 4 areas. Target species, such as the Quino checkerspot butterfly and the southwestern arroyo toad that were observed within the study corridor, would be adversely affected with the implementation of Alternative C, and conservation, mitigation, and habitat compensation measures have been integrated into the project to reduce the regional effects to below a level of significance.

3.6.4.4 Alternative D

Under the No Action alternative, improvements to Bautista Canyon Road would not occur. Existing conditions would remain the same as those described above in Section 3.6.1. Therefore, biological resource effects would not occur as a result of implementation of Alternative D.

3.6.5 Mitigation

The following special conservation measures have been incorporated into the proposed project to avoid, minimize, or compensate for potential effects to biological resources.

Habitat Compensation

To compensate for the impact to vegetation communities and to offset for the loss of wildlife habitat as a result of implementation of the proposed project, the following upland and wetland habitat compensation programs would be implemented.

Upland Habitat Compensation Program

Temporary construction effects to upland habitat would be mitigated through a comprehensive revegetation program that would be implemented by the FHWA. Cut and fill slopes adjacent to the roadway (excluding blasted rock slopes and cut slopes steeper than a 1:1.5 [V:H] ratio) and construction staging areas would be revegetated according to the Bautista Canyon Road Conceptual Landscape and Revegetation Plan (Volume II, Appendix F). This revegetation program would include appropriate seed mixes corresponding to the adjacent plant communities. The revegetation effort would also mitigate the erosion and sedimentation effects of construction by reducing the loss of topsoil and sedimentation into creeks and drainages. A preliminary estimate of the revegetation area is provided in Table 3.6-6. The acreages reported in Table 3.6-6 correspond with the temporary impact that would occur under each alternative

alignment. Through the revegetation program, temporary effects to these plant communities would be mitigated at approximately a 1:1 ratio. Due to the steepness of the cut slopes and the underlying substrate in some sections of the study corridor, revegetation of the steep cut slopes would not be feasible. The impact calculations in Table 3.6-4 consider steep cut slopes to be permanent effects.

**Table 3.6-6
Preliminary Upland Habitat Compensation Program¹**

Vegetation Community	Alternative A - 40 km/h acres (hectares)	Alternative B - 55 km/h acres (hectares)	Alternative C – 55/40/55 km/h acres (hectares)
Proposed Revegetation for Temporary Effects (1:1 ratio – temporary impact acres: revegetated acres)			
Upland Scrub			
Big Sagebrush Scrub	1.7	1.7	1.8
Coastal Sage-Chaparral Scrub	0.6	0.7	1.0
Chaparral			
Southern Mixed Chaparral	8.9	10.5	8.6
Red Shank Chaparral	1.0	1.1	1.5
Bigberry Manzanita Chaparral	1.3	1.6	1.2
Chamise Chaparral	0.9	0.9	0.8
Scrub Oak Chaparral	0.0	0.0	0.0
for Total Habitat Compensation Temporary Effects³	14.4 (5.8 ha)	16.5 (6.7 ha)	14.9 (6.0 ha)
Proposed Restoration for Permanent Effects			
Temporarily impacted dirt road sections ²	6.7	5.7	7.0
Completely abandoned dirt road sections ²	9.8	12.5	10.2
for Total Habitat Compensation Permanent Effects³	16.5 (6.7 ha)	18.2 (7.4 ha)	17.2 (7.0 ha)
Total Upland Habitat Compensation Program³	30.9 (12.5 ha)	34.7 (14.0 ha)	32.1 (13.0 ha)

Notes:

¹ Acreages reported are preliminary estimates of the proposed upland habitat compensation program. The Bautista Canyon Road Revegetation Plan is currently in development.

² A small portion of the reported acreage is dirt road sections that occur in wetlands or unvegetated drainages. Restoration or revegetation of abandoned road segments that occur in wetlands would be used to compensate for wetland effects, not for upland effects as reported here.

³ Total may not sum due to rounding.

ha – hectares; km/h – kilometers per hour

Permanent direct effects to upland habitats resulting from the proposed project would be mitigated through revegetation of the abandoned road sections. Restorable abandoned road sections include all areas where temporary construction effects occur on the existing dirt roadway and all other areas of the existing roadway within the study corridor where the existing Bautista Canyon Road will be abandoned. A preliminary estimate of the acreage that would be

restored through this project is provided in Table 3.6-6. This estimated acreage would be refined in the Bautista Canyon Road Revegetation Plan. A preliminary wetland mitigation strategy has been prepared and is currently under review by USACE.

Wetland Habitat Compensation Program

As noted, wetland mitigation opportunities are currently being investigated within the immediate Bautista Canyon watershed. A conceptual wetland mitigation plan has been developed for the project and is included in Volume II, Appendix H. Opportunities exist for creating and enhancing wetland habitat in Bautista Canyon within the study corridor and immediately downstream of the study corridor. The abandoned road section near the main Bautista Canyon Road crossing and the section in the riparian corridor near Tripp Flats have potential for wetland creation and enhancement. Specifics of the wetland habitat compensation program are currently in development. The details of this program would be developed in coordination with the requirements of the USACE, the RWQCB, and the CDFG. As a preliminary estimate, all temporary effects to wetland communities would be restored to their previous conditions. In some cases, the temporary effects (cut and fill slopes, construction staging areas) to wetland vegetation communities may change the physical characteristics of the site such that restoring it to wetland conditions is not possible. In such cases, the temporary impact to wetlands would be considered a permanent impact and would be mitigated as a permanent impact. It is important to note that the acreages reported in Table 3.6-7 reflect effects to wetland vegetation communities, which are greater than the acreages of impact to USACE jurisdictional areas. Only USACE jurisdictional areas are subject to the requirements of the USACE. In addition, Section 404 does not require compensatory replacement for riparian impacts. Riparian impact mitigation is provided in accordance with SBNF requirements. The development of this wetland habitat compensation program would be revised following negotiations with all the appropriate regulatory agencies.

Bautista Canyon Road Conceptual Landscape and Revegetation Plan

The Conceptual Landscape and Revegetation Plan (Volume II, Appendix F) provides recommendations for implementing the habitat compensation program including site preparation, seed and plant materials, monitoring and maintenance, irrigation, and development of performance criteria for chaparral, big sagebrush scrub, and riparian communities. Container plants or cuttings requiring irrigation would be limited to revegetation of riparian areas and the interpretive overlook site. Many of the cut slopes in the central portion of the alignment would be too steep to successfully revegetate. Methods such as rock staking would be used where appropriate to lessen negative visual effects. Sections 3.10 and 3.12 provide a more detailed discussion of mitigation measures associated with the effects of cut and fill slopes created by the project alternatives.

**Table 3.6-7
 Preliminary Wetland Habitat Compensation Program¹**

Vegetation Community	Alternative A acres (hectares)	Alternative B acres (hectares)	Alternative C acres (hectares)
Proposed Revegetation for Temporary Effects (1:1 ratio – temporary impact acres: revegetated acres)			
Southern Cottonwood-Willow Riparian Forest	0.7	0.6	0.3
Southern Willow Scrub	0.3	0.2	0.3
Total Habitat Compensation for Temporary Effects^{2,3}	1.0 (0.3 ha)	0.8 (0.3 ha)	0.6 (0.2 ha)
Proposed Restoration for Permanent Effects to Wetlands			
Wetland Creation (1:1 ratio)	0.17	0.13	0.16
Wetland Restoration/Enhancement (1:1 ratio)	0.16	0.13	0.16
Total Habitat Compensation for Permanent Effects³	0.33 (0.13 ha)	0.26 (0.10 ha)	0.32 (0.13 ha)
Total Wetland Habitat Compensation Program³	1.33 (0.5 ha)	1.26 (0.5 ha)	0.92 (0.3 ha)

¹Acreages reported are preliminary estimates of the proposed wetland habitat compensation program. These preliminary estimates reflect acreages based on effects to wetland habitat communities, which may differ from the acreages based on effects to USACE jurisdictional areas. The details of this wetland habitat compensation program may be modified upon negotiations with the regulatory agencies, including the USACE. Only effects to jurisdictional areas are subject to the requirements of the USACE.

² In some cases, the temporary effects (cut and fill slopes; construction staging areas) to wetland vegetation communities may change the physical characteristics of the site such that restoring it to wetland conditions is not possible. In such cases, the temporary impact to wetlands would be considered a permanent impact and mitigated accordingly.

³Totals may not sum due to rounding.
 ha – hectares

Weed control would also be addressed in the Conceptual Landscape and Revegetation Plan and would focus on those species with the potential to interfere with the reestablishment of native vegetation in the restoration area and those species that are not already so prevalent in areas immediately adjacent to the restoration area such as yellow star thistle, Russian thistle, and tocalote in upland communities, and tamarisk, castor bean, and poison-hemlock in riparian areas. Weed control methods would include a combination of manual removal and monitored use of herbicides.

General Conservation Measures

- A qualified biological monitor(s) having local experience with the biological resources of Bautista Canyon would be retained to oversee and monitor all construction activities occurring adjacent to areas occupied by listed species. If multiple segments of the corridor are concurrently under construction, multiple biological monitors may be necessary.
- The FHWA would hold preconstruction meetings to brief contractors on the location of sensitive resources and construction boundaries.

- The biological monitor would ensure that environmental fencing marking the limits of work is appropriately placed to avoid accidental effects and protect listed species or their habitat and that it remains in good condition for the duration of the project.
- All construction equipment shall be fueled and maintained at least 30.5 m (100 ft) from the nearest wetland or waters of the U.S. in designated staging areas with proper drip containment measures.
- The biological monitor would document in monthly construction reports all cases where construction has directly affected occupied listed species habitat or an individual of a listed species. Appropriate corrective actions would be recommended in these reports and the reports would be forwarded to the wildlife agencies.
- Unanticipated temporary damage to listed species habitat and wetlands during construction shall be restored to predisturbance habitat conditions. The appropriate enhancement shall be recommended by the biological monitor and approved by the USDAFS in coordination with the USFWS and FHWA.
- Permanent loss of listed species habitat would be compensated for based on the resource affected according to the procedures identified in this section.
- Compliance would be required with federal, state, and local regulations pertaining to hazardous waste and substances, and oily substances. The contractor would attend an environmental briefing and provide a list of the types, quantities, and use of hazardous materials brought onto the site and the types and quantities of wastes/wastewater that might be generated during construction.
- Appropriate BMPs shall be used such as diversion ditches, benches, berms, silt fences, and straw bales to retard and divert runoff to protected drainage courses and protect water quality during and after construction.

Resource Specific Conservation Measures

Quino Checkerspot Butterfly

- The improvement alternatives have been centered on the existing roadway in the vicinity of the known occupied habitat of the study corridor to reduce impact to natural vegetation in this area.
- Direct permanent loss of suitable habitat would be compensated through the habitat compensation measures described in this section.
- Seed mixes to be developed for the final revegetation plan for this project should include host and nectaring plant species used by the Quino checkerspot butterfly, including dot-seed plantain and owl's clover.

Arroyo Toad

- Construction in the northernmost 2.4 km (1.5 mi) of the study corridor (downstream section) would occur outside of the toad-breeding season (15 March through 15 August) to avoid effects to breeding toads, eggs, tadpoles, and maturing juveniles. This would also avoid

effects to the designated Critical Habitat during the breeding season. It is important to note that while construction truck traffic would be allowed in the downstream section, earthwork would not be permitted.

- A toad exclusion program would be developed to avoid and minimize direct impact to buried or foraging toads in the occupied downstream section of Bautista Canyon, near Hixon Trail. In areas where toad exclusion is required, construction areas would be surrounded by a low fence of plastic or wooden stakes, similar to a silt fence. The fence would be at least 305 mm (12 in) high, and at least 305 mm (12 in) would be spread outward and secured tightly against the ground to prevent toads from burrowing down under the fence. The exclusion area shall include all open trenches, soil piles, roadways, and staging areas. The enclosure shall be monitored for a minimum of three nightly visits, and any toads found would be relocated to adjacent suitable habitat by a qualified biologist. Monitoring would continue until no toads are found for at least two consecutive nights under suitable weather conditions. Once construction is complete in the occupied section, the fence shall be removed within 3 days after completion of construction.
- Revegetation of upland cut and fill slopes (with slopes 1:1.5 [V:H] or flatter) and construction staging areas would mitigate potential long-term erosion and sedimentation effects associated with construction of the project.
- A toad barrier system would be developed for Bautista Canyon Road in the off-site downstream section where the roadway is located within the riparian corridor of Bautista Creek. The arroyo toad population in Bautista Canyon is concentrated in an approximately 3.2 km (2 mi) long reach in the vicinity of Bautista Spring and the Hixon Trailhead. Implementation of the toad barrier system would be focused in this area. In general, the roadway in this section abuts the steep canyon slopes on the eastern edge the Bautista Creek floodplain. The Bautista riparian corridor parallels the roadway on the west. A toad barrier system would be developed to prevent toads from accessing the existing roadway.

The toad barrier system would use the existing culvert structures on Bautista Canyon Road in this section. Numerous culverts currently exist where tributaries drain from the eastern side of the road, beneath the roadway, and into Bautista Creek. On the western edge of the roadway, minor modifications to the existing culverts and/or curbs in the area of the culverts may be necessary to keep the toads off the roadway. These modifications could include constructing cribwalls or connecting existing cribwalls to the existing curbs.

In developing the details of this system, site-specific investigations would be necessary. A detailed toad barrier system plan would be developed and submitted to the USFWS and USDAFS for approval prior to implementation. Appropriate measures should be included in the detailed plan to avoid any impacts to toads from the construction of the toad barrier system.

The overall goal of the system would be to minimize toad mortality on the roadway. To evaluate the effectiveness of these measures, a biologist would monitor the effectiveness of the system in the first season. A monitoring report, including recommendations on system modifications, would be developed and submitted to the wildlife agencies within the first year of system implementation.

Southwestern Willow Flycatcher

- Construction activities resulting in excessive noise (e.g., rock blasting) within 0.4 km (0.25 mi) of the known breeding territory would occur outside of the breeding season (considered to occur from March 15 to August 31) to avoid construction noise effects to nesting birds.
- The proposed design would relocate the Bautista Canyon Road centerline between 72 and 89 m (236 and 292 ft) away from the species point location in the vicinity of Tripp Flats. This would act to mitigate any permanent indirect effects of increased traffic noise generation from the new roadway on this known breeding territory.
- Direct permanent loss of occupied riparian habitat would be compensated through the habitat compensation measures described in this section.

Habitat Connectivity and Wildlife Movement

- The project design includes a bridge at the main Bautista Creek crossing. This design will remove the effects of the existing dirt road crossing and enhance wildlife movement at this location.
- The project design includes a large, oversized box culvert at the Tripp Flats crossing. This design will allow for improved wildlife movement at this location.
- Following a review of numerous additional locations for oversized culverts for wildlife movement, the design team has included provisions for wildlife movement at the following locations:
 - Station 312+215 (Existing horseshoe bend west of the Bautista Crossing)
 - The Bridge at Bautista Creek
 - Station 320+440 (The base of the existing switchbacks)
 - Station 324+532 (145 m north of Tripp Flats Road)
 - Station 324+680 (Tripp Flats Road)
- In general, the project has been designed to reduce the overall right-of-way corridor width through using steep cut and fill slopes. This reduces the overall impact acreage and minimizes the effects on habitat connectivity.
- Other measures such as wildlife crossing signs will be used at appropriate locations along the improved roadway to minimize the effect of the project on wildlife movement.

Other Specific Measures

- BMPs will be used during construction of the roadway to avoid and minimize erosion and sedimentation. A Storm Water Pollution Prevention Plan (SWPPP) will be developed that defines BMPs to be implemented during construction of the project to avoid and minimize these effects.
- Preconstruction surveys for slender-horned spineflower would be conducted during the appropriate time of year in appropriate areas of the study corridor prior to construction to

ensure this species would not be impacted by the project. Avoidance or relocation measures may be necessary if the species is located within the study corridor during these surveys.

- Preconstruction raptor nest surveys would be conducted. Construction personnel would be informed of the general location of any raptor nests found and would be directed to avoid these locations to the maximum extent possible.

3.7 Hydrology/Water Resources

Surface and subsurface water are included in the water resource analysis. Surface water includes all lakes, ponds, rivers, and streams within a defined area or watershed. Subsurface water is commonly referred to as “groundwater.”

Water resources analyzed in this section include the surface waters located within the BMU of the SBNF and the San Jacinto watershed. Flood hazards associated with the 100-year floodplain (areas generally subject to random major flooding once every 100 years) are also discussed in this section. Jurisdictional waters of the U.S. and wetlands are discussed in Section 3.6, Biological Resources. The project study area for water resources includes the surface and subsurface water features found within the San Jacinto watershed, which overlaps the BMU.

3.7.1 Existing Conditions

Precipitation/Climate

Southern California's climate is Mediterranean, characterized by hot, dry summers and cool, moist winters. These conditions vary widely with topography and elevation. Mean annual rainfall within the project area averages 360 mm (14 in) and generally occurs from November through March. Temperatures are moderate, with only a few nights below freezing. Summer midday temperatures occasionally rise above 38°C (100°F).

The higher elevations within the SBNF have an average annual precipitation of approximately 760 mm (30 in). Snow occurs above 1,524 m (5,000 ft). Rainfall on the desert side of the SBNF ranges from 50 to 127 mm (2 to 5 in) with typical low humidity and extreme temperatures. High-intensity thunderstorms occur July through September. Flash flooding can occur, particularly on the desert slopes. The prevailing wind is from the southwest coastal area and strong, dry, northeasterly Santa Ana winds are common in fall and winter months (USDAFS 1988).

Elevations within the BMU range from 610 m (2,000 ft) to 1,707 m (5,600 ft) at Cahuilla Mountain. The average annual precipitation of approximately 305 mm (12 in) (USDAFS 1989a). Average annual snowfall is approximately 152 mm (6 in) in the Anza area with almost no snowfall in Hemet. Average annual temperatures in Hemet range from 27°C (81°F) in the summer to 11°C (52°F) in the winter. No annual temperature data were available for Anza (WRCC 2003).

Surface Water Hydrology

The project area is located within the San Jacinto watershed. The San Jacinto watershed includes an area of approximately 1,953 km² (754 mi²), which is drained by three principal creeks and one river (Bautista Creek, Indian Creek, Poppet Creek, and the San Jacinto River) as shown in Figure 3.7-1. Bautista Creek joins the San Jacinto River approximately 24 km (15 mi) northwest of the project's northern terminus. The majority of runoff flows in a westerly to southwesterly direction into Canyon Lake and then Lake Elsinore. Lake Elsinore is located within the City of Lake Elsinore in Riverside County and is the natural low point of the San Jacinto River and its drainage basin. Canyon Lake is a public water source managed by the Elsinore Valley Municipal Water District. Lake Elsinore is not a public water source (SARWQCB 1995; CRWQCB 2001; USEPA 2000).

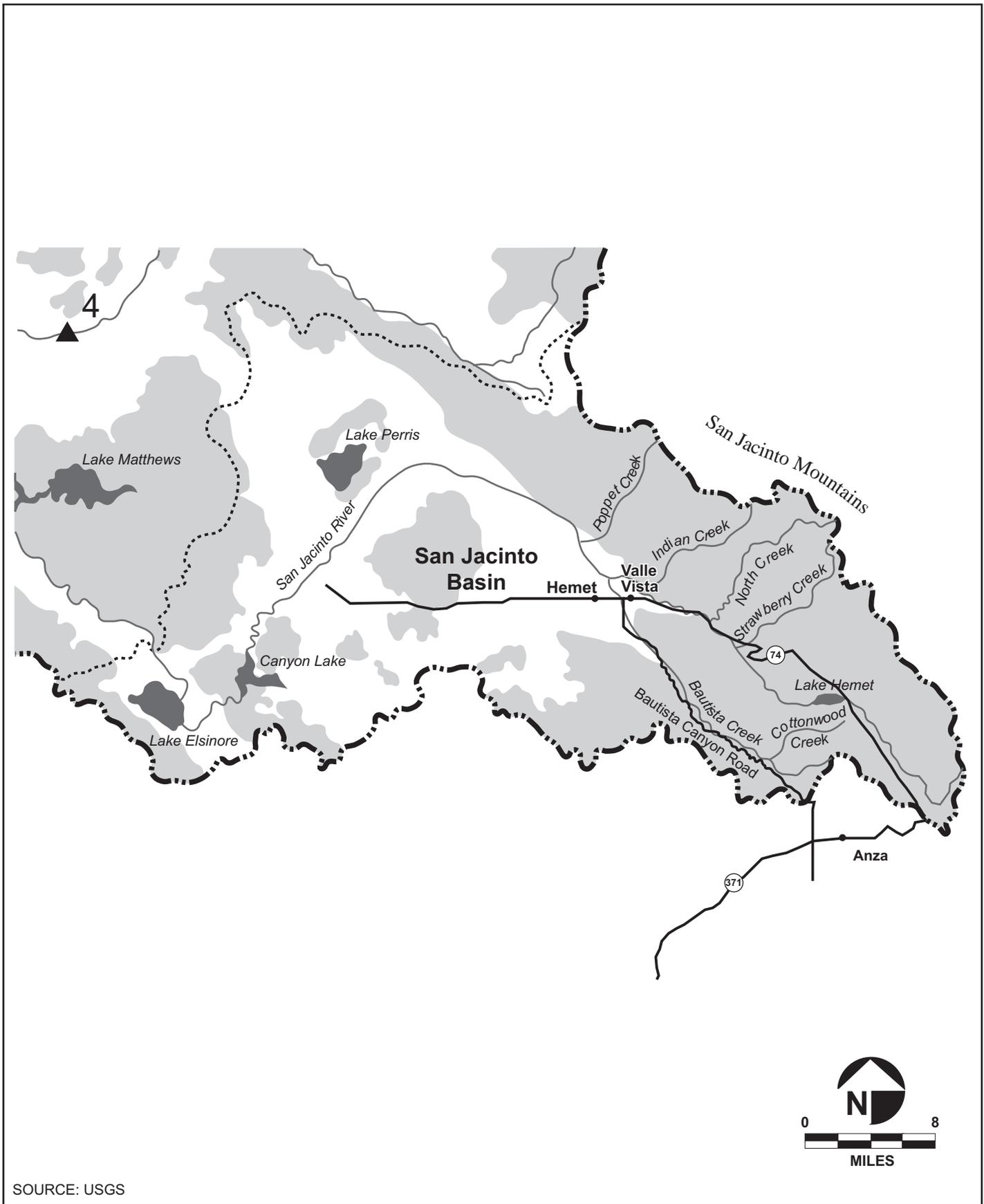
The Bautista Creek watershed consists of two major drainages: Bautista Creek and Cottonwood Creek. Bautista Creek is a subunit of the San Jacinto watershed as shown in Figure 3.7-1. The Bautista Creek watershed is approximately 50 km² (19 mi²) in size. Bautista Creek flows from south to north down the canyon, from Anza toward Valle Vista. The major drainages, including Bautista Creek, are characterized by southern willow scrub with patches of cottonwood willow riparian forest. Soils found in the project study area are generally composed of coarse to silty sand that are cohesive when in a dry state, but highly subject to erosion during high precipitation events.

Overall, the hydrologic systems in the mountains produce a fairly low output, though as noted, high stream flows can occur during tropical storm events. Numerous springs are located throughout the study area. Within the study area, water is found in springs at Tripp Flats and at the Ramona Indian Reservation in the upper end of the canyon, and also at Bautista Spring in the lower end. Bautista Creek itself, with a drainage area of 124 km² (47.6 mi²), typically sustains low-to-moderate flows from January through March, but often dries up completely during the driest months of summer and fall (SRI 2003).

Flood Hazards

Floods affecting Riverside County can be attributed to three types of storm events: (1) general winter storms that combine high-intensity rainfall and rapid melting of the mountain snow pack; (2) tropical storms out of the southern Pacific Ocean; and (3) summer thunderstorms, particularly in the desert areas. According to the Flood Insurance Study for the County of Riverside (FEMA 1996), most major floods in Riverside County have occurred as a result of general winter storms. However, serious flooding, including potentially lethal flash flooding, has also occurred as a result of summer thunderstorms. Flooding is more likely to occur in highly disturbed areas where soils have been compacted and the vegetation removed. Wildfire can also increase flood potential by damaging vegetation and creating hydrophobic soil conditions.

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SOURCE: USGS

San Jacinto Watershed

FIGURE

3.7-1

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There are three principal types of flood hazards. These include stream flooding (including bridge scour and stream erosion), flash flooding (including debris and mud flows), and sheetflow flooding (including alluvial fan flooding). Although Bautista Creek is outside of the mapped 100-year floodplain, Bautista Creek and other drainages within the project study corridor are ephemeral creeks subject to 50- and 100-year storm events, which can cause flooding (FEMA 2003). Thus, as required by the SBNF, drainage crossings will be designed to accommodate 50-year flood events. The proposed bridge over Bautista Creek would be designed to withstand 100-year flood events.

Groundwater

Groundwater was not encountered within any of the deep borings in the elevated central section of the project as described the interim geotechnical investigation (FHWA 2003). Further, a sustained water table was not clearly delineated within 4 to 6 m (13.1 to 19.7 ft) of the surface at the proposed pier location for the bridge crossing at Bautista Creek (FHWA 2003). No sole source aquifers or wellhead protection areas are known to occur in the area.

3.7.2 Regulatory Setting

Federal

Executive Order 11988

Executive Order (EO) 11988, *Floodplain Management*, directs each agency to “provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains....”

The federal Clean Water Act (CWA) of 1977 (33 *United States Code* [USC] 1251 *et seq.*) is the primary law regulating water pollution. Relevant sections include:

- Section 303, which requires states to establish and enforce water quality standards to protect and enhance beneficial uses of water for such purposes as recreation and fisheries.
- Section 313(a), which requires federal agencies to observe state and local water quality regulations.

State and Local

Santa Ana River Basin (8) Water Quality Control Plan

The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) are responsible for the protection and, where possible, the enhancement of the quality of California’s waters. The SWRCB sets statewide policy and, together with the RWQCBs, implements state and federal laws and regulations. Each of the nine RWQCBs adopts a Water Quality Control Plan or Basin Plan, which recognizes the

beneficial uses of the regions' ground and surface waters, and local water quality conditions and problems. The Santa Ana Regional Water Quality Control Board (SARWQCB) has jurisdiction over the San Jacinto River watershed and manages those resources consistent with the 1995 Santa Ana River Basin (8) Water Quality Control Plan (Basin Plan). The Basin Plan forms the basis for the SARWQCB regulatory program and establishes water quality standards for ground and surface waters in the region. Water quality standards, as used in the federal CWA, include both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses.

As discussed, Bautista Creek is a tributary to the San Jacinto River, which empties into Canyon Lake and then into Lake Elsinore. The main stream of the San Jacinto River is divided into seven reaches including Bautista Creek. Bautista Creek is located within Hydrologic Units 802.21 and 802.23 beyond Reach 7 (Cranston Bridge to Lake Hemet) of the San Jacinto River basin. Table 3.7-1 shows the water quality objectives designated in the Basin Plan for Bautista Creek from the headwaters to the Bautista Debris Basin. The Bautista Debris Basin was constructed in 1960 by the USACE to act as a sediment trap during the ephemeral flows of Bautista Creek.

**Table 3.7-1
 Santa Ana River Basin (8) Water Quality Control Plan Objectives for Bautista Creek**

Parameters of Concern	Objective (mg/l)
Total dissolved solids	250
Hardness	130
Sodium	25
Chloride	20
Tin	1
Sulfate	30
Chemical oxygen demand	5

mg/l = milligrams per liter

The USEPA publishes criteria for water quality that reflect the latest scientific knowledge regarding the effects of pollutants in any body of water. The overall Index of Watershed Indicators has assigned the San Jacinto watershed a score of 4, which indicates “Less Serious Problems – High Vulnerability” to stressors such as pollutant loading (USEPA 2001). These water quality assignments are defined as follows:

- **Watersheds with Less Serious Water Quality Problems** – watersheds with aquatic conditions below state or tribal water quality goals that have problems revealed by other indicators.
- **Watersheds with Higher Vulnerability to Stressors** – watersheds where data suggest significant pollution and other stressors and, therefore, a higher vulnerability to declines in aquatic health. These watersheds have the greatest need for actions to protect quality and prevent decline.

In addition to water quality standards, the Basin Plan defines beneficial uses for Bautista Creek (Hydrologic Units 802.21 and 802.23) from the headwaters to the Bautista Debris Dam as municipal and agricultural water supply, groundwater recharge, water contact recreation, water noncontact recreation, cold freshwater habitat, and wildlife habitat. Intermittent beneficial uses identified for Reach 6 of the San Jacinto River (Poppet Creek to Cranston Bridge), which includes the confluence of Bautista Creek with the San Jacinto River, include municipal and agricultural water supply, groundwater recharge, water contact recreation, water noncontact recreation, warm freshwater habitat, and wildlife habitat. Beneficial uses established for Canyon Lake include municipal and agricultural water supply, groundwater recharge, recreation, warm freshwater habitat, and wildlife habitat. Beneficial uses identified for Lake Elsinore include water contact recreation, water noncontact recreation, warm freshwater habitat, and wildlife habitat (SARWQCB 1995).

Section 303(d) of the CWA requires states to develop and update a list of surface water bodies for which water quality standards are not attained or are not expected to be attained with the implementation of technology-based controls. These water bodies are designated “impaired.” The resulting 303(d) list of impaired water bodies includes a description of the pollutants causing the impairment and a schedule for developing a total maximum daily load (TMDL) for each pollutant. The TMDL is the maximum load of a pollutant that can be discharged into the water body per day and still ensure the attainment of applicable water quality standards. Both Canyon Lake and Lake Elsinore are included on the 1998 CWA Section 303(d) list as impaired water bodies. Canyon Lake is listed as impaired with excess nutrients and pathogens. Lake Elsinore is listed as impaired with excess nutrients, organic enrichment or low dissolved oxygen, and sedimentation/siltation. The causes of the impairments are identified as unknown, nonpoint sources and storm water/urban runoff. The draft 2002 Section 303(d) list includes Canyon Lake (East Bay) because of its high sedimentation.

Bautista Creek and the San Jacinto River are not listed as impaired water bodies on the current CWA Section 303(d) list. However, the SARWQCB has recommended Reach 6 of the San Jacinto River to be on the Monitoring Priority 1 Water Bodies List for the 2002 Section 303(d) list update. The parameters of concern that had exceedances of water quality standards were hardness, total dissolved solids, chloride, aluminum, and sodium. The SARWQCB deemed that these exceedances did not warrant listing on the 303(d) list in 2002, but required additional monitoring to further evaluate whether there was water quality impairment.

In addition to the Basin Plan, the following acts, orders, and regulations apply to waters within the project study area:

- The Porter-Cologne Water Quality Control Act of 1969 mandates that the waters of the state be protected such that activities that may affect waters of the state are regulated to attain the highest water quality.
- California Regional Water Quality Control Board, Santa Ana Region, Order No. 01-34, National Pollutant Discharge Elimination System (NPDES No. CAG 618005) establishes watershed-wide waste discharge requirements for discharges of storm water runoff associated with new development in the San Jacinto watershed. A SWPPP is required.

- State Water Resources Control Board Order No. 99-08-DWQ (NPDES General Permit No. CAS000002) establishes waste discharge requirements for discharges of storm water runoff associated with construction activity and State Water Resources Control Board Resolution No. 2001-046.
- Order No. 96-30 (NPDES No. CAS618033) establishes waste discharge requirements for the Riverside County Flood Control and Water Conservation District, the County of Riverside, and the incorporated cities of Riverside County within the Santa Ana Region Storm Water Runoff Management Program.
- August 23, 2002, Draft California Regional Water Quality Control Board, Santa Ana Region, Order No. R8-2002-0011 (NPDES No. CAS 618033) establishes waste discharge requirements for the Riverside County Flood Control District, the County of Riverside, and the incorporated cities of Riverside County within the Santa Ana Region Area Wide Urban Runoff Program.

Local

The Riverside County Flood Control and Water Conservation District's mission is to protect people and property from flooding through responsible and efficient storm water management. The District has developed and adopted Master Drainage Plans (MDPs) that address many individual watershed areas within the District's jurisdiction. The MDPs include proposed drainage facilities to protect property from serious flooding. Conceptual designs and project cost estimates are included in most plans. Some MDPs are the bases for Area Drainage Plans (ADPs), which are funding mechanisms established to pay for major drainage facilities within some MDPs. The ADPs impose fees that must be paid by land developers.

Specific mitigation measures have been incorporated in the Riverside County Stormwater/Urban Runoff Management and Discharge Controls Ordinance No. 754.1 and the SWPPPs for development projects under NPDES Permit No. CAG 618005. Implementation of these measures will ensure that the quality of storm water runoff leaving the project site will meet all regulatory standards and will maintain the beneficial uses for public and commerce.

SBNF Land and Resource Management Plan (LRMP) Water Goal

The SBNF LRMP established goals to provide the broad, overall direction for the management of resources. The following Plan goal for water would apply to the proposed action:

Water

- *Maintain and enhance water quality to meet or exceed beneficial use requirements.*

County of Riverside General Plan/REMAP Local Hazard – Flooding and Dam Inundation Policies

The following policies have been established to address hazards to life and property from significant flood events on the rivers and creeks located within the REMAP area:

Local Hazard – Flooding and Dam Inundation

REMAP 13.1 Adhere to the flood proofing and flood protection requirements of the Flood Management Review Board.

REMAP 13.4 Protect life and property from the hazards of potential dam failures and flood events through adherence to the Flood and Inundation Section of the General Plan Safety Element.

3.7.3 Thresholds of Significance

The proposed project would have a significant impact on the environment if it would:

- violate any water quality standards or waste discharge requirements;
- 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;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;
- otherwise substantially degrade water quality;
- place within a 100-year flood hazard area structures that would encroach to displace, impede, or redirect flood flows;
- expose people or structures to a significant risk of loss, injury, or death due to inundation by mudflow; or
- expose people or structures to a significant risk of loss, injury, or death involving flooding.

3.7.4 Environmental Consequences

3.7.4.1 Alternative A

Surface Runoff. Implementation of Alternative A would result in the construction of impervious surfaces (i.e., pavement) and compaction of adjacent areas. Compacted areas would be revegetated after construction. Revegetation would reduce infiltration, resulting in additional surface runoff within the study area. This runoff would be generated primarily within the paved 13.2 km (8.2 mi) segment and the two pullout/parking areas. Runoff would flow into principal drainages, and eventually into the proposed drainage ditches (see Figure 2.2-6). The ditches would be equipped with energy dissipaters to minimize the effects of surface runoff. The proposed drainage facilities would be designed to accommodate projected runoff associated with a 50-year flood event. Construction activities that disturb more than 1 acre require a NPDES permit to mitigate construction-related water quality effects. A SWPPP would be required pursuant to the NPDES permit to identify the various BMPs to be implemented on-site during construction. Compliance with NPDES permit requirements would minimize construction-related erosion and sedimentation.

As noted, operation of Alternative A would not substantially alter existing drainage patterns. Runoff would increase; however, the storm water drainage system would be designed to accommodate flows associated with a 50-year flood event. Thus, no flooding is anticipated. The proposed project would not create substantial additional sources of polluted runoff, or otherwise substantially degrade water quality.

Drainage. Alternative A would be designed to keep water from collecting and flowing in the roadway, as it currently does in many areas. The project would require installation of culverts to accommodate projected runoff at drainage concentration points (FHWA 2002). All drainage crossings are anticipated to be culverts except at Bautista Creek, which would be a bridge crossing. The proposed bridge over Bautista Creek and proposed culverts would not involve grading of the channel bed or drainages; therefore, no alteration to the course or flow of flood waters would occur with implementation of Alternative A.

As noted, outlet points at all culverts would incorporate energy dissipation structures to prevent channel erosion associated with high discharge velocities. The proposed structures would be riprap aprons. Based on the data provided in the project hydraulic and floodplain analyses (FHWA 2002), no significant effects to runoff patterns, drainage capacities, or erosion would be expected in association with the culverts proposed for Alternative A.

Hydraulics. As noted, the proposed design incorporates a number of drainage facilities at major stream crossings, including culverts at drainage concentration points and a bridge crossing at Bautista Creek. New culverts would be built under the roadway at existing drainage crossings.

A floodplain analysis was performed for the Bautista Creek crossing location for each alternative (FHWA 2002). An initial fluvial geomorphic and channel stability assessment indicated that sediment and debris transport are concerns due to the evidence of flash flood conditions found

within the stream corridor. Analysis indicates that the culvert proposed at Tripp Flats and the next upstream culvert would each require a minimum 3 m by 3 m (10 ft by 10 ft) box culvert. All other tributaries would require smaller box culverts, corrugated metal arched culverts, or circular culverts. All culverts would be designed to maintain existing drainage patterns to the maximum extent feasible and would accommodate projected 50-year storm flows. The proposed bridge over Bautista Creek would be designed to accommodate 100-year storm flows.

For the proposed bridge crossing over Bautista Creek, the hydraulic and floodplain data (FHWA 2002) includes an analysis of the proposed bridge design (see Figure 2.2-4) with respect to flow depth, scour, velocity and volume. Results of this study are summarized in Table 3.7-2. As shown in Table 3.7-2, modifications to existing runoff would not change flow areas or velocities. The bridge would be built about 4 m (13 ft) above the creek. The placement of a single mid-span pier support column for the bridge would not result in significant floodplain effects, and would minimally alter surface flows in the main channel. Thus, no significant changes to drainage patterns are anticipated.

**Table 3.7-2
 Summary of Flows at Alternative A Bridge Crossing**

Existing Channel				Proposed Channel			
Q 100 ¹	Flow Area	Velocity	Flow Depth	Q 100 ¹	Flow Area	Velocity	Flow Depth
59 cm/s 2,084 cf/s	13.1 m ² 141 ft ²	4.5 m/s 15 ft/s	1.7 m 5.6 ft	59 cm/s 2,084 cf/s	13.1 m ² 141 ft ²	4.5 m/s 15 ft/s	1.7 m 5.6 ft

Source: FHWA 2003

¹100-year storm flow projections
 cf/s – cubic feet per second
 cm/s – cubic meters per second
 ft/s – feet per second
 m² – square meters
 m/s – meters per second
 ft² – square feet

Scour. Fill slopes located beneath the proposed bridge structure would require abutment slope protection to counter potential scour during flow events. These protective features would be designed to current FHWA design standards. This design is considered adequate to preclude any significant potential effects to stability of the bridge support slope. Current bridge design includes the placement of one pier structure at least 1 m (3.3 ft) above the channel on the south bank. All aspects of proposed bridge design would be subject to review by the County of Riverside prior to project approval. The 100-year discharge would be used for bridge scour and stability analyses.

Erosion/Sedimentation. Proposed construction and excavation activities could increase the potential for erosion and transport of material both within Bautista Creek and downstream of the study area to the San Jacinto River during storm events. As an ephemeral stream, Bautista Creek is dry most of the year; however, during storm events, existing runoff is loaded with sediment from the exposed ground surrounding the entire project area, including the existing

unpaved segment of Bautista Canyon Road. Specifically, the removal of stabilizing vegetation cover, creation of manufactured slopes, and use of fill could result in erosion and sedimentation effects, particularly during construction. This is a concern because, as discussed above, the San Jacinto River is on the Monitoring Priority 1 Water Bodies List, and sediment-laden runoff could degrade water quality.

The movement of eroded materials into local drainages during storm events could significantly affect surface water quality both directly through increased sediment loads and indirectly through the presence of small-diameter particles to which contaminants such as organic compounds could adhere. Areas under construction would be especially susceptible to erosion between the beginning of construction and the establishment of permanent cover in revegetated areas. These potential effects would be mitigated through the preparation of a SWPPP, including an erosion control plan that would be implemented prior to ground-disturbing activities. The SWPPP and erosion control plan would reduce the short-term construction effects from erosion and sedimentation to below a level of significance.

Over the long-term, implementation of Alternative A would reduce existing erosion and sediment transport into local drainages during storm events.

Contaminants. Proposed construction activities could result in short-term effects to local water quality through the accidental direct or indirect discharge of hazardous materials such as vehicle fuels, lubricants, and chemicals (i.e., herbicides, etc.) into drainage courses. Potential discharge of such contaminants would be associated with vehicle operation and maintenance activities during construction (refueling and changing fluids). The introduction of construction-related contaminants into local drainages could degrade local water quality and associated resources (habitat quality). However, project specifications would prohibit construction equipment from operating in waters of the U.S., and all work areas would be separated by the use of a dike or other suitable barrier to prevent sediment, petroleum products, chemicals, and liquid or solid material from entering waters of the U.S. This would reduce the potential effects to below a level of significance.

The operation of motor vehicles along the proposed 13.2 km (8.2 mi) segment could result in the generation of additional contaminants associated with incidents such as fuel or oil leaks, tire degeneration, and refuse disposal. These contaminants could be carried into local drainages through storm water runoff. These effects are not expected to degrade local water quality because of the minute quantity and the long distance between the project site and the San Jacinto River, which is well downstream [approximately 24 km (15 mi)] from Bautista Creek.

Flood Hazards. No structures are proposed to be placed within a 100-year flood hazard zone; therefore, construction of Alternative A would not impede or redirect flood flows. The proposed alignment would be designed so that the roadway would be located outside of the 100-year floodplain. The proposed bridge over Bautista Creek would not encroach into the 100-year floodplain; however, it would be designed to accommodate 100-year storm flows. The proposed alignment would be designed so that the roadway would not expose people or structures to a significant risk of loss, injury, or death involving flooding or to inundation by mudflow.

Alternative A is consistent with the flooding and dam inundation policies of REMAP. Because the proposed alignment shifts the roadway out of the 100-year floodplain and proposes a bridge over Bautista Creek, Alternative A would provide an all-weather, safe creek crossing. As noted, all culverts and drainage facilities would be designed to accommodate 50-year storm flows and would meet current FHWA design standards.

Alternative A would be in conformance with the regulatory requirements as described in Section 3.7.1. Short-term water quality effects due to construction activities and long-term water quality effects due to runoff and soil erosion would be mitigated through erosion control measures and BMPs as described in Section 3.7.5.

Alternative A would be consistent with the SBNF LRMP water quality goal to “*maintain and enhance water quality to meet or exceed beneficial use requirements.*” Incorporation of BMPs and implementation of the mitigation measures as described in Section 3.7.5 would reduce surface water and water quality effects.

3.7.4.2 Alternative B

Based on the available level of hydrological analysis, potential effects associated with Alternative B are anticipated to be similar to those described above for Alternative A because construction activities and design features are very similar.

3.7.4.3 Alternative C

Based on the available level of hydrological analysis, potential effects associated with Alternative C are anticipated to be similar to those described above for Alternative A because construction activities and design features are very similar.

3.7.4.4 Alternative D

Under the No Action alternative, improvements to Bautista Canyon Road would not occur. The unpaved segment of Bautista Canyon Road would continue to erode, thus contributing to sedimentation in Bautista Creek during storm events. Under the No Action alternative, flood hazards would continue in portions of Bautista Creek, thus exposing people to risk from flood waters, mud flows, or other direct and indirect effects associated with storm water runoff.

3.7.5 Mitigation

- A Conceptual Landscape and Revegetation Plan has been prepared (Volume II, Appendix F) and an erosion control plan would be prepared to reduce erosion and sedimentation from disturbed areas and cut and fill slopes. Additionally, all applicable requirements of the NPDES Program in effect at the time of project construction would be implemented to the satisfaction of the County of Riverside Transportation and Land Management Agency.
- Prior to the issuance of any construction or grading permit and/or the commencement of any clearing, grading, and excavation, a SWPPP would be prepared and submitted for approval

to the Riverside County Transportation and Land Management Agency pursuant to County Ordinance No. 754.1. Examples of BMPs that may be implemented during site grading and construction as part of the SWPPP could include the following:

General Construction and Site Supervision

- Disallow the placement of any soils materials in the path of known drainage areas.
- Provide temporary desilting basins to ensure that surface water flow does not carry significant amounts of on-site soils and contaminants downstream.
- Restrict the use of chemicals that may be transferred to surface waters by storm water flows or leach to groundwater basins through water percolation into the soil.
- Design surface and subsurface drainages to preclude ponding and flows over slopes or disturbed areas.
- Clean up leaks, drips, and other spills immediately. This will prevent contaminated soil or residue on paved surfaces.
- Make sure portable toilets are in good working order. Check frequently for leaks.
- Dispose of all wastes properly. Materials that cannot be recycled must be taken to an appropriate landfill or disposed of as hazardous waste. Never bury waste materials or leave them in the roadway or near a creek or streambed.

Vehicle and Equipment Maintenance

- All construction vehicle maintenance must be conducted in staging areas where appropriate controls have been established to ensure that fuels, motor oil, coolant, and other hazardous materials are not deposited into areas where they may enter surface water and groundwater.
- Storage of all vehicles, equipment, materials, and soil stockpiles shall be located outside established drainage courses to preclude off-site discharge through measures such as impervious liners and containment walls. The location and design of such facilities shall be coordinated with the County of Riverside Transportation Department and the SARWQCB.
- Project operations shall include a schedule for regular inspection and maintenance of all project-related drainage facilities to ensure proper working conditions.
- All vehicles and heavy equipment shall be regularly maintained and inspected frequently for leaks.

Erosion Control Methods

- Temporarily cover or seed excavated and graded areas where loose, bare soil might otherwise be subject to wind and water erosion.
- If possible, schedule excavation and grading activities for dry weather periods.

- Require permanent slopes and embankments be vegetated as soon as possible following final grading.
- Use sandbags, matting, mulches, berms, or similar devices along all pertinent graded areas to temporarily minimize sediment transport.
- Scarify applicable compacted areas to induce runoff infiltration and revegetation.
- Protect disturbed soil during and after construction. Plant fast-growing annuals and perennials to shield and bind soil.
- Consider planting temporary vegetation for erosion control on slopes or where construction is not immediately planned.

Federal Lands Highway projects are constructed using guidelines included in the *Standard Specifications For Construction of Roads and Bridges on Federal Highway Projects (FP)*, which contain BMPs that are employed on Central Federal Lands Highway Division's federal highway projects. For each individual project, the FP is normally supplemented with a set of Special Contract Requirements (SCRs), which either modify an FP requirement or add a new requirement. In addition to the above-listed BMPs, the following BMPs would be implemented to reduce erosion, sediment, and water quality impacts to below a level of significance:

- The contractor shall not operate mechanized equipment or discharge or otherwise place any material within the wetted perimeter of any waters of the U.S. within the scope of the CWA (33 USC § 1251 et seq.). This includes wetlands, unless authorized by a permit issued by the USACE according to 33 USC § 1344 and, if required, by any state agency having jurisdiction over the discharge of materials into waters of the U.S. In the event of an unauthorized discharge:
 - (a) Immediately prevent further contamination
 - (b) Immediately notify the proper authorities
 - (c) Mitigate damages as required
- Separate work areas, including material sources, by the use of a dike or other suitable barrier that prevents sediment, petroleum products, chemicals, or other liquid or solid material from entering the waters of the U.S. Use care in constructing and removing the barriers to avoid any discharge of material into, or the siltation of, the water. Remove and properly dispose of the sediment or other material collected by the barrier.
- Limit the combined grubbing and grading operations area to 30,000 m² of exposed soil at one time.
- Unless a specific seeding season is identified in the contract, apply permanent turf establishment to the finished slopes and ditches within 30 days.
- Apply temporary turf establishment or other approved measures on disturbed areas that will remain exposed for over 30 days.
- Construct and maintain erosion controls on and around soil stockpiles to prevent soil loss.
- Following each day's grading operations, shape earthwork to minimize and control erosion from storm water runoff.
- Inspect all erosion control facilities at least every 7 days, within 24 hours after more than 10 mm of rain in a 24-hour period, and as required by the contract permits.

- Maintain temporary erosion control measures in working condition until the project is complete or the measures are no longer needed. Clean erosion control measures when half full of sediment.
- For projects with water quality issues, the contractor shall be required to designate an individual, other than the project superintendent, whose primary responsibility is to serve as the water quality supervisor for the duration of the project. The water quality supervisor's responsibilities include directing the implementation of effective erosion/sediment control measures to control construction site drainage and water quality; directing the construction, operation, and dismantling of temporary erosion control features; and being available to modify site drainage and implement storm and winter shutdown procedures. Winter shutdown procedures are included in the erosion control plan.
- For projects with water quality issues, should a contractor's truck or other vehicle accidentally dump pollutants that could pollute any water body along the project, emergency action shall be taken to prevent contamination of the water body. The carrier of the spilled material is responsible for cleanup of spilled material, which includes reporting. The appropriate agencies are immediately informed of any such event. No in-stream fueling of any vehicle is permitted. In-stream activity is limited to that necessary to place structures and for wetland replacement measures. The contractor shall locate an oil storage facility that exceeds a certain capacity (as specified in Environmental Protection Agency [EPA] regulations) and where the occurrence of spills could contaminate water bodies along the proposal, the contractor shall comply with those EPA regulations in the preparation and implementation of a Spill Prevention Control and Countermeasure Plan.

3.8 Cultural Resources

Cultural resources include prehistoric resources, traditional cultural properties, and historical-period resources. Prehistoric resources are physical properties associated with human activities that predate written records and are generally identified as archaeological sites. Prehistoric resources can include village sites, temporary camps, lithic scatters, roasting pits/hearths, milling features, petroglyphs, rock features, and burials. Traditional cultural properties can include archaeological resources, buildings, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other groups consider essential for the continuance of traditional cultures. Historical-period resources include resources that postdate the advent of written records in a region.

A cultural resources study was performed to address potential impacts associated with construction and operation of the proposed project. The purpose of the study was to identify all prehistoric and historical-period cultural resources within the study area containing the archaeological Area of Potential Effects (APE) for the project, to evaluate the significance of those resources within the APE, and to assess the potential project effects on historic properties. All sites identified within the APE were mapped and recorded in detail, and several were tested to determine the depth and complexity of subsurface deposits. The study was conducted in conjunction with extensive Native American consultation conducted by the County of Riverside, the FHWA, and the SBNF, and included Native American monitoring of the

archaeological testing program. On the basis of that consultation, the County of Riverside and the FHWA requested preparation of an ethnobotanical study.

The cultural resources were evaluated in accordance with the requirements of the National Historic Preservation Act (NHPA) for eligibility for nomination to the National Register of Historic Places (NRHP). The cultural resources also were evaluated as “historical resources” eligible for listing in the California Register of Historical Resources (CRHR), as required by CEQA. The cultural resources report is entitled, *Along the Trail of Juan Babtiste and Juan Bautista de Anza: Cultural Resources Inventory and Evaluation of the Bautista Canyon Road Project (California Forest Highway 224)*, dated December 2003 (SRI 2003). The ethnobotanical study is entitled, *Traditional and Contemporary Uses of Bautista Canyon Floral Resources*. The conclusions of both reports are summarized below. The complete reports, with an extensive historical background, are on file with the County of Riverside.

Area of Potential Effects

Studies to identify and evaluate cultural resources pursuant to the NHPA must carefully define the APE for the proposed undertaking. The regulations implementing the NHPA provide the following definition of APE:

Area of potential effects means the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking [36 CFR 800.16(d)].

The APE for archaeological resources is defined as the area subject to ground-disturbing activities from construction and maintenance of the roadway, as well as portions of sites adjacent to the roadway that may be subject to increases in use leading to illicit artifact collection or excavation. This includes the road right-of-way (ROW), the footprint of cut and fill slopes, and a buffer of 5 m (16 ft), extending for the 13.2 km (8.2 mi) length of the project study area. The actual width of the APE ranges from approximately 15 m (49 ft) along straight sections of roadway with little or no cuts and fill, to as much as 80 m (263 ft) in areas with large cut or fill slopes adjacent to the road. The proposed pavement width is 8 m (26 ft).

The cultural resources field survey covered a study area 50 m (165 ft) wide on each side of the preliminary alignments. This study area, or survey area, was designed to encompass the APE for direct effects on archaeological resources once it was defined based on the 30 percent design completion.

Consultation with Native American tribes and traditional practitioners resulted in information that the project area contained plant resources used for basketry, medicinal purposes, and other cultural purposes. To more fully identify and evaluate these uses, an ethnobotanical study was prepared. The APE for the ethnobotanical study was defined by SBNF as extending 500 m (1,650 ft) on each side of the existing roadway (CSRI 2003).

3.8.1 Existing Conditions

Cultural Setting

The cultural setting of the project area includes prehistoric developments, description of ethnic groups and how Native American cultures developed through history, and historical land uses. The following sections summarize information provided in more detail in the cultural resources report on file with the County of Riverside (SRI 2003).

Prehistory

The general pattern of cultural development in the region is one of early hunting cultures appearing as early as 12,000 years ago, followed by the development of a diversified hunting and gathering subsistence system. Over time, emphasis on plant food resources increased somewhat, with a generalized hunting and gathering way of life persisting into historical times and characterizing the lifeway of the ethnographic inhabitants of the San Jacinto Mountains, and adjacent upland areas.

Early Holocene cultures date from about 12,000 to 7,000 years ago, and were adapted to the post-Pleistocene environment in which the megafauna had largely disappeared and a hotter, drier climate forced groups to settle near reliable water sources. The local expression of these early cultures, known as San Dieguito, was a hunting culture with a flaked-stone industry that included large flake-and-core scrapers, choppers, hammer stones, drills, and graters. Prehistoric subsistence patterns began to show marked changes starting around 8,500 years ago, roughly corresponding to the transition between Early and Middle Holocene cultures. These changes were almost certainly in response to warming climatic conditions and the resulting changes in flora and fauna, and are visible in the archaeological record as a reduced number of projectile points, scrapers, and choppers, and an increased number of ground stone artifacts. Although hunting and fishing were not entirely replaced by plant processing, the relative importance of animals in the prehistoric diet decreased. During the latter part of the Middle Holocene, from 3,500 to 1,500 years ago, the subsistence base broadened, as indicated by the appearance of the mortar and pestle. Introduction of such innovations suggests an intensification of food production and an accompanying increase in population. By AD 500, clear changes in material culture become obvious. One of the most striking changes is the shift from the earlier atlatl-and-dart to the bow-and-arrow as the primary weapon system. Late Holocene cultures in southern California reflect both *in situ* cultural adaptations in response to environmental changes as well as outside influences from the influx of Shoshonean (Takis-speaking) populations from the desert regions.

In the study area, the occupation began prior to 300 BC, grew slowly, and increased dramatically after AD 1500, a pattern thought to reflect an increase in local population caused by an influx of people from the Colorado Desert following the desiccation of Lake Cahuilla (SRI 2003).

Ethnography and Ethnohistory¹⁰

The project study area is located in an area ascribed to the Cahuilla, whose ethnographic territory encompassed the San Geronio Pass, the San Jacinto Mountains, and the Coachella Valley to the east of the project study area. Aboriginally, the Cahuilla were hunters and gatherers who utilized both large and small game, as well as numerous plant resources for food. The ethnohistoric settlement pattern consisted of permanent villages located in proximity to reliable sources of water, and within range of a variety of floral and faunal food resources, which were exploited from temporary camp locations surrounding the main village. Each village of 75 to 200 people was occupied by one or more patrilineal¹¹ clans that belonged to one of two exogamous¹² moieties¹³, the Wildcats (*tuktum*) or the Coyotes (*'istam*). Cahuilla villages were arranged according to ecological factors and a desire for privacy, with no standard form. Villages located along streams generally extended some distance along both banks, and those situated around springs were more clustered. Some desert villages had 25–50 houses scattered over a 7.5 to 12.5 km² (3 to 5 mi²) area. The disruption of Native culture began with Spanish explorations in 1772 and culminated in the smallpox epidemics of 1862–1863 in the valleys and again in the mid-1870s in the mountains, along with the arrival of increasing numbers of American settlers in the mountains. In the 1870s, surviving members of Cahuilla clans in the Santa Rosa Mountains area gathered in the vicinity of hot springs in Anza Valley and formed a village. American settlers of the area knew this village, reported to have 857 residents in 1872, as Cahuilla. It formed the nucleus of the Cahuilla Reservation established in 1875. By 1969, membership had dwindled to 89, with 23 residents. Other reservations in the area with ties to the Bautista Canyon area include Soboba, established in 1883; Ramona, in 1893; and Santa Rosa, in 1907. All were created around areas that had been inhabited by the Cahuilla for generations. Of these, the Ramona Reservation is closest to the project alignment, located about a mile northeast of the southern terminus of the project.

Native Uses of Plants in Bautista Canyon

Many of the plants found in Bautista Canyon were used by the Cahuilla for food, medicine, and craft manufacture. Important staple foods were acorns, with those from black oak being favored; holly-leaved cherries; juniper berries; and yucca blossoms and stalks. California sagebrush, white and black sage, buckwheat, elderberry, yerba santa, and mugwort all had medicinal uses. Chamise was the preferred firewood and stalks of rush, sumac, and deer grass furnished materials for baskets. The results of the ethnobotanical study conducted for the project were that numerous plants growing in the Bautista Canyon study area were found to have both traditional and contemporary uses by the Cahuilla and neighboring groups. Of the 193 recorded plants found during surveys conducted for the proposed project, 64 have documented traditional uses among the Cahuilla. These include 26 species used for food; 19 used for utilitarian purposes, including basket weaving; 13 used for medicinal purposes; and 6 used for ritual purposes. During field trips and interviews, Cahuilla elders identified several

¹⁰ Ethnography is a branch of anthropology concerned with the description of ethnic groups. Ethnohistory is the scientific study of how cultures have developed through history.

¹¹ Describes family relationships traced through the male line, or societies in which only such relationships are recognized.

¹² Exogamy is the custom in some societies of marrying outside their people's own tribe, clan, or social group.

¹³ Two halves into which society is divided for ritual and marriage purposes.

additional species that grow in Bautista Canyon but were not documented in the botanical surveys, either because they were outside of the survey area or perhaps were not visible during the time of the surveys.

History

The travel corridor incorporating what is now known as Bautista Canyon is perhaps best known historically for its role in the Juan Bautista de Anza expeditions that culminated in the founding of San Francisco. Anza passed through Bautista Canyon on several occasions between 1774 and 1776. Later, the canyon served as an important travel corridor between San Jacinto Valley and the high country now known as the Anza Valley and beyond. The canyon was possibly first used by cattlemen to move stock from the valley to mountain pastures following the drought years of 1862 to 1865. Tripp Flats, at the head of the canyon, was homesteaded sometime in the late 1870s. Eventually a wagon road, later improved into an automobile road, was constructed through the canyon, linking the valley and mountain areas more closely. A more detailed discussion of the history of the Bautista Canyon is provided in the cultural resources report on file with the County of Riverside (SRI 2003).

Identified Resources

Archaeological Resources

As a result of the archaeological field survey, 24 cultural resource localities were identified in the 100 m (328 ft) wide project study area. Of the total, 21 were formally recorded as archaeological sites.¹⁴ Of the 21 formally recorded sites, 15 are late prehistoric or protohistoric¹⁵ sites of Native American origin, and the remaining 6 sites date from the historical period¹⁶. The recorded sites are listed and briefly described in Table 3.8-1. One previously recorded site could not be relocated. Two isolated artifacts also were identified within the study area. One is a prehistoric ceramic vessel previously collected by SBNF personnel, and the other is a historical-period plumb bob collected by SRI staff (Table 3.8-1). A detailed description of the sites can be found in the cultural resources report on file with the County of Riverside.

Juan Bautista de Anza National Historic Trail

Based on meticulous research in the 1920s, it has been determined that Bautista Canyon was identified as Cañada de San Patricio, part of the route followed by expeditions led by Juan Bautista de Anza in 1774 and 1776. One of their campsites, also called San Patricio, has been identified as Tripp Flats, located on private land southwest of the study area. The diaries kept by members of the Anza expeditions – Anza himself, and Frs. Garcés, Díaz, and Font – were carefully reviewed in an effort to determine the route followed by the parties. All indications are

¹⁴ Location of a significant event, a prehistoric or historic occupation or activity or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure; and consisting of at least three associated artifacts or a single feature at least 45 years of age.

¹⁵ Proto historic refers to the period immediately prior to actual historic contact, when some historical influences from Euroamericans, including diseases as well as trade goods, were affecting Native American culture.

¹⁶ From AD 1772 to present time.

that, after leaving the campsite at Tripp Flats, they descended down the streambed of Bautista Creek. On one return trip, a member of the party noted that the streambed had become clogged with rocks as a result of heavy rains. This suggests that any physical remnants of the “Anza trail” would likely be short-lived and, indeed, no intact traces of a trail or any other features or artifacts that could be tied to Anza’s passages were identified during the field survey.

In August 1990, Congress passed Public Law 101-365 making the Juan Bautista de Anza National Historic Trail (Anza NHT) a component of the National Trails System, to be administered by the National Parks Service (NPS). The Anza NHT is an historic route that consists of “recreational trail” components and “auto route” components. A designated recreational trail consists of existing trails that are linked up along the historic route. Linked trails serve as a Recreational Trail Retracement Route. Of the 1,200 mi length of the Anza NHT from Nogales, Arizona, to San Francisco, California, 161 mi are components that cross federal lands. The historic route enters Riverside County from the south via Coyote Canyon, crosses the Cahuilla Indian Reservation, and descends to the Hemet/San Jacinto area via Bautista Canyon. The route follows the San Jacinto River to Mystic Lake, then through the Bernasconi Pass near Perris Lake State Recreation Area, passes through March Air Force Base to enter the urbanized area of Riverside today. It crosses the Santa Ana River and proceeds westerly through Pedley toward Mission San Gabriel (NPS1996: C-17).

The only trail component through a national forest is the 8 mi segment of Bautista Canyon Road that passes through the SBNF (i.e., the location of the proposed project). Here, the Anza NHT consists of a designated auto route (marked) but no recreational trail. Because this currently unpaved section of the trail route crosses federal lands in an area that is little changed from the 1774-1776 landscape that Anza’s expeditions traversed, it has been identified as 1 of 17 “high-potential” segments “to interpret the trail’s historical significance and to provide opportunities for high-quality recreation” (NPS 1996: 1-2, 20-23). The designated auto route (marked) through Bautista Canyon follows S22 to SR 79 north, to SR 371 west, and to Bautista Canyon Road. Bautista Canyon Road becomes Fairview Avenue. The auto route follows Fairview Avenue to Florida Avenue, turns west on Florida Avenue to the Ramona Expressway to I-215 northwest, to SH 60.

There are no existing trails that serve the purpose of a recreational trail retracement route through Bautista Canyon. The City of Riverside Trails Master Plan identifies trails which approximate the historic route and which connect to the existing Santa Ana River National Recreation Trail. This river trail could be used to skirt highly urbanized areas in San Bernardino County to connect with the County of Los Angeles Schabarum Trail via planned open space on the San Bernardino-Orange County line south of the Chino Hills. According to the Comprehensive Management and Use Plan for the Anza NHT, these trail connections could be marked as recreational links to the Anza NHT and would provide an off-road recreational experience of an environment somewhat similar to that Anza experienced (NPS 1996: C-17).

Although the Anza NHT, in its segment along Bautista Canyon Road, appears to cross the probable route followed by Anza in the portions of the canyon downstream from the CDC Bautista Conservation Camp and out of the project area, and in the vicinity of stream crossings,

no intact cultural resource properties that could be associated with Anza's use were identified in those areas. Thus, the Anza NHT in this project area is not a historical resource subject to consideration under the NHPA.

Bautista Canyon Historical Landscape

The portion of Bautista Canyon within the project study area has changed very little since construction of the existing road in 1914–1917, and other than that modification, it still represents the historic landscape present during use of the area by Native Americans and early explorers such as Anza. The landscape in Bautista Canyon is considered by Native Americans to be an ethnographic landscape that includes former residential and activity areas now recorded as archaeological sites, as well as floral resources used both traditionally and currently for basketry materials, medicinal purposes, food, and manufacture of useful items.

NHPA Historic Properties and CEQA Historical Resources

Section 106 of the NHPA requires federal agencies to take into account the effects of an undertaking on “historic properties,” defined as cultural resources included in or eligible for listing in the NRHP. As lead federal agency, the FHWA must make a determination of NRHP eligibility for cultural resources prior to making a finding of effect, according to the following criteria:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

- (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or*
- (b) that are associated with the lives of persons significant in our past; or*
- (c) that embody the distinctive characteristics of a type, period, method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack distinction; or*
- (d) that have yielded, or may be likely to yield, information important to prehistory or history [36 CFR 60.4].*

If cultural resources do not meet the above criteria, they are not historic properties and are not further considered in the Section 106 process.

Under state law, CEQA requires lead agencies to evaluate whether a project may cause a substantial adverse change in the significance of a “historical resource” (PRC § 21084.1). A historical resource is defined by criteria similar to those listed above (PRC § 5024.1) as eligible for listing in the CRHR and includes resources determined eligible for listing in the NRHP (CCR § 4851[a][1]). Thus, the County may apply the determinations of NRHP eligibility by

FHWA to its findings of historical significance under CEQA. Cultural resources determined to be not eligible for listing in the NRHP might still qualify as historical resources under CEQA, however, and thus a separate finding that they are not historical resources must be made in order to exclude them as such.

Cultural Resources Determined Eligible for Listing in the NRHP and CRHR

Bautista Canyon Archeological District:

The pattern of prehistoric and protohistoric archaeological sites, along with specific and general plant collecting areas important in Native American cultural traditions, reflects Native American use of a landscape that retains integrity of location, setting, materials, feeling, and association that is hardly altered from its period of significance. Therefore, the prehistoric and protohistoric sites recorded in the archaeological studies for this project (SRI 2003), along with several previously recorded archaeological sites (RIV-1889, RIV-3090, RIV-3091, and RIV-3092) immediately adjoining the study area in the CDC Bautista Conservation Camp, are considered elements of an archaeological district.

Prehistoric and protohistoric archaeological resources listed in Table 3.8-1 are eligible for listing under Criterion (d) of the NHPA because they have the potential to yield information important to prehistory or history (SRI 2003). Sites BC-3, BC-4, BC-6, BC-7, BC-14, and BC-15/20 individually and collectively contain important information on chronology, settlement and subsistence, and Native American land use of Bautista Canyon. Sites BC-8 and BC-13 contribute important information regarding the patterning of plant resources collecting and processing, and Sites BC-1, BC-9, BC-10, BC-16, BC-18, and BC-21 contribute information related to lithic technology and exploitation of lithic resources in the canyon.

Anza NHT Historic Transportation Corridor:

Bautista Canyon Road (BC-23) is a historical-period cultural resource in its own right, having been constructed during 1914–1917, and a portion of an apparent earlier alignment (BC-22) may date to the 1890s. These two historic period sites listed in Table 3.8-1 are eligible for listing under Criteria (a) and (b) of the NHPA because of their association with events and persons that have made significant contributions to our history. Because the historic landscape of Bautista Canyon is virtually intact and possesses integrity of setting, feeling, and association, those portions of sites BC-23 (Bautista Canyon Road) and BC-22 (Pre-1918 wagon road segment) that are situated in the APE are considered contributing elements of a larger historic transportation corridor known as the Juan Bautista de Anza National Historic Trail. The period of significance for BC-23 extends from 1774-1917 and is considered significant at local, state, and national level, while the period of significance for BC-22 extends from 1890-1925 and is considered significant at the local level. The Juan Bautista de Anza National Historic Trail transportation corridor is a dynamic cultural feature evolving from prehistoric Native American use, passage of the Anza expedition, use by cattlemen to move stock from the valley to mountain pastures, use eventually as a wagon road, and later improved to an automobile road.

**Table 3.8-1
Bautista Canyon Road Existing Cultural Resources**

CHRIS ¹ Designations	Field No(s).	SBNF No.	Within APE ¹ ?	Eligibility for NRHP ¹	Description
P-33-13174	–	05-12-55-238	yes	Yes	Bautista Canyon Archaeological District and Ethnobotanical Traditional Cultural Property.
P-33-1889 CA-RIV-1889	–	05-12-55-27	no	Yes	Previously recorded lithic scatter located within CDF Bautista Conservation Camp.
P-33-3090 CA-RIV-3090	–	05-12-55-125	no	Yes	Previously recorded bedrock mortar located within CDF Bautista Conservation Camp.
P-33-3091 CA-RIV-3091	–	05-12-55-124	no	Yes	Previously recorded late-prehistoric seasonal camp located within CDF Bautista Conservation Camp.
P-33-3092 CA-RIV-3092	–	05-12-55-123	no	Yes	Previously recorded late-prehistoric seasonal camp and basketry plant collecting area located within CDF Bautista Conservation Camp.
P-33-13175 CA-RIV-7340	BC-7	05-12-55-239	yes	Yes	Activity area with a bedrock milling feature, 10 metates, 3 manos, an extensive lithic scatter including 2 biface fragments. Road through site leads to CA-RIV-3092.
P-33-13176 CA-RIV-7341	BC-8	05-12-55-240	no	Yes	Bedrock milling features (2).
P-33-13177 CA-RIV-7342	BC-9	05-12-55-241	yes	Yes	Lithic resource procurement and reduction area with shallow subsurface deposit.
P-33-13178 CA-RIV-7343	BC-6	05-12-55-242	no	Yes	Extensive midden area in with roasting features, subsurface deposit up to 50 cm (20 in) deep; bedrock mortar with pestle; large stands of <i>Juncus textilis</i>
P-33-13179 CA-RIV-7344/H	BC-10	05-12-55-243	no	Yes	Lithic scatter with historical-period bottle base.
P-33-13180 CA-RIV-7345H	BC-12	05-12-55-244	no	No	Early 20th century temporary camp consisting of scatter of cans and bottles; possibly associated with old road to Tripp Flats.
P-33-13181 CA-RIV-7346	BC-21	05-12-55-245	no	Yes	Lithic scatter from single reduction episode.
P-33-13182 CA-RIV-734/H	BC-4	05-12-55-141	yes	Yes	Bedrock milling feature, metate, and lithic scatter; tested, no subsurface deposit in APE; large area of <i>Juncus textilis</i> at east edge of site along creek.
P-33-13183 CA-RIV-7348	BC-13	05-12-55-246	yes	Yes	Bedrock milling feature with 2 mortars, 3 slicks, on large boulder dislodged during road construction.
P-33-13184 CA-RIV-7349	BC-14	05-12-55-247	no	Yes	Temporary camp consisting of bedrock milling features, midden, lithic scatter, and pottery.
P-33-13185 CA-RIV-7350	BC-15/ BC-20	05-12-55-248 (was –140, Lotus C)	no	Yes	Temporary camp with numerous bedrock features (mortars and metate slicks), pestle and several mano fragments, pottery sherds, and quartz flakes.
P-33-13186 CA-RIV-7351	BC-3	05-12-55-140 Loci A and B	yes	Yes	Large habitation site on both sides of road but mostly on northeast side; contains midden thermal features, house pits, bedrock milling features, and artifact scatter; tested, cultural deposit to 50 cm (20 in) in depth.
P-33-13187 CA-RIV-7352H	BC-22	05-12-55-249	yes	Yes	Pre-1918 road alignment enters APE through BC-3.
P-33-13188 CA-RIV-7353	BC-16	05-12-55-250	no	Yes	Lithic scatter
P-33-13189 CA-RIV-7354	BC-1	05-12-55-103	yes	Yes	Lithic procurement and reduction site on both sides of road; large flaked stone scatter, cores, and bifaces.
–	BC-2	05-12-55-102	no	No	Bedrock milling feature and lithic scatter recorded by SBNF in 1980; not relocated.

CHRIS ¹ Designations	Field No(s).	SBNF No.	Within APE ¹ ?	Eligibility for NRHP ¹	Description
P-33-13190 CA-RIV-7355	BC-18	05-12-55-251	yes	Yes	Lithic scatter.
P-33-13191 CA-RIV-7356H	BC-19	05-12-55-252	no	No	Early 20 th -century trash scatter with glass and cans.
P-33-13192 CA-RIV-7357H	BC-11	05-12-55-253	no	No	1950s automobile dump.
P-33-13193 CA-RIV-7358H	BC-17	05-12-55-254	yes	No	Early–mid-20th century farmstead.
P-33-13194 CA-RIV-7359H	BC-23	05-12-55-255	yes	Yes	Current road alignment constructed 1914–1917; portion of the Juan Bautista de Anza National Historic Trail automobile route.
Isolated Resources					
P-33-13195	BC-5	05-12-55-139	no	No	Complete olla found during fire break construction in 1989 Bautista Burn; collected by SBNFS. Because the olla has been collected and removed from its setting, it lacks integrity and is not considered a contributing element to the archaeological district.
P-33-13196	BC-24	05-12-55-13196	yes	No	Plumb bob; collected by SRI.

Source: SRI 2003

1. CHRIS – California Historical Resources Information System, Primary (P-33- nnnnn) numbers and trinomial site numbers (CA-RIV- nnnn); APE – Area of Potential Effects for direct effects on archaeological sites; NRHP – National Register of Historic Places

Bautista Canyon Ethnobotanical Traditional Cultural Property:

The ethnobotanical resources of the canyon and the ethnographic landscape that contains them, and the associated prehistoric and protohistoric archaeological resources, are important in maintaining the cultural identity of the local Cahuilla people and other traditional practitioners. The Cahuilla have historically and still use numerous plants for food, medicine, construction, and utilitarian purposes. The Cahuilla and other tribes in the area value the isolated setting and serenity with the low traffic volume that exists in Bautista Canyon, where prayers are said before they collect plants. Tribal members often come to Bautista Canyon to collect plants. The unpaved segment of Bautista Canyon Road is located mainly along the bottom of the canyon near Bautista Creek, which provides convenient access to plant collecting areas. Table 3.8-2 provides a brief summary of each plant species that were used by the Cahuilla.

**Table 3.8-2
Traditional Use of Canyon Plants**

Botanical Name	Common Name	Traditional Use
<i>Abronia villosa</i>	Sand verbena	Children’s game
<i>Adenostoma fasciculatum</i>	Chamise	Construction material and medicine
<i>Adenostema sparsifolium</i>	Redshank, ribbonwood	Building materials, firewood, and medicine
<i>Anemopsis californica</i>	Yerba mansa	Medicine
<i>Apocynum cannabinum</i>	Indian hemp	Medicine and traditional goods
<i>Arctostaphylos</i>	Manzanita	Food, medicine, construction, tools,

Botanical Name	Common Name	Traditional Use
		firewood
<i>Artemisia ludoviciana</i>	Silver wormwood	Construction material and basketry
<i>Artemisia tridentate</i>	Big sagebrush	Food, construction, medicine, and air purifier
<i>Asclepias</i>	Milkweed	Gum, food, and construction material
<i>Astragalus</i>	Milkvetch	Spice
<i>Avena barbata</i>	Slender wild oat	Food
<i>Baccharis viminea</i>	Mulefat	Medicine and construction material
<i>Brassica sp.</i>	Wild mustard	Food
<i>Bromus tectorum</i>	Cheatgrass	Food
<i>Calochortus concolor</i>	Mariposa lily	Food
<i>Capsella bursa-pastoris</i>	Shepherd's purse	Food and medicine
<i>Ceanothus</i>	California lilac	Firewood
<i>Centarium venustum</i>	Canchalagua	Medicine
<i>Chenopodium sp.</i>	Pigweed	Food
<i>Chenopodium californicum</i>	Pigweed	Personal hygiene products and medicine
<i>Chlorogalum pomeridianum</i>	Soap plant	Personal hygiene products and stupefying agent to catch fish
<i>Croton californicus</i>	California croton	Medicine
<i>Cucurbita foetidissima</i>	Calabazilla, wild squash	Soap and medicine
<i>Cuscuta californica</i>	California dodder	Scouring pad
<i>Datura wrightii</i>	Jimsonweed	Hallucinogenic and medicine
<i>Dichelostemma/Brodiaea M.</i>	Wild hyacinth	Food and personal hygiene products
<i>Distichlis spicata</i>	Saltgrass	Salt and brushing material
<i>Dudleya sp.</i>	Live-forever, pygmy weed	Food
<i>Elymus condensatus</i>	Rye grass	Traditional goods and construction material
<i>Ephedra nevadensis</i>	Mormon tea	Tea, medicine, and food
<i>Equisetum</i>	Scouring rush	Medicine and cleaning agent
<i>Eriodyction crassifolium/trichocalyx</i>	Woolly yerba santa	Medicine
<i>Eriogonum</i>	Buckwheat	Medicine
<i>Eriophyllum confertiflorum</i>	Golden yarrow	Food and medicine
<i>Erodium cicutarium</i>	Red-stern Filaree	Food

Botanical Name	Common Name	Traditional Use
<i>Escholzia californica</i>	California poppy	Personal products and medicine
<i>Ferocactus cylindraceus</i>	Barrel cactus	Food, water, and cooking vessel
<i>Gutierrezia californica</i> / <i>Microcephalia</i>	California matchweed	Medicine
<i>Heteromeles arbutifolia</i>	Toyon	Food
<i>Hordeum murinum</i>	Barley	Food
<i>Juncus</i>	Rush	Baskets
<i>Juniperus californica</i>	Juniper	Food, medicine, clothing, and construction material
<i>Justicia californica</i>	Chuparosa	Food
<i>Larrea tridentate</i>	Creosote bush	Medicine
<i>Lathyrus laetiflorus</i>	Wild pea greene	Food
<i>Lotus scoparius</i>	Deerwood	Construction material
<i>Lupinus</i> sp.	Lupine	Possibly for food
<i>Marrubium vulgare</i>	Horehound	Medicine
<i>Medicago polymorpha/hispida</i>	Burclover	Food
<i>Muhlenbergia rigens</i>	Deer-grass	Baskets
<i>Nicotina</i>	Tobacco	Smoking, ritual use, and medicine
<i>Scirpus</i>	Bulrush	Food, construction material, and traditional goods
<i>Solanum xanti/Douglasii</i>	Purple nightshade	Medicine and dyes
<i>Solidago californica</i>	Goldenrod	Personal hygiene products and medicine
<i>Simmondsia chinensis</i>	Jojoba	Food
<i>Trichostema lanatum</i>	Woolly bluecurls	Medicinal tea
<i>Typha latifolia</i>	Broad-leaf Cattail	Food, medicine, construction material and ceremonial bundles
<i>Urtica dioica/Holosericea</i>	Stinging nettle	Food, tools, traditional goods, and medicine
<i>Yucca whipplei</i> <i>Yucca schidigera</i>	Spanish bayonet Mohave yucca	Food Food, construction materials, traditional goods, personal hygiene products, and jewelry.
The following species are considered sensitive or endangered and the Cahuilla have expressed concern that they be protected; however, these plants were not observed within the project study area:		
<i>Caulanthus simulans</i>	Payson's jewel-flower	Use unknown.
<i>Dodecahema leptoceras</i>	Slender-horned	Use unknown

Botanical Name	Common Name	Traditional Use
	Spineflower	
<i>Eriastrum densifolium</i> ssp. <i>Sanctorum</i>	Santa Ana River wooly-star	Use unknown
<i>Monardella macrantha</i> ssp. <i>Hallii</i>	Hall's monardella	Use unknown
<i>Scutellaria bolanderi</i> ssp. <i>Austromontana</i>	Southern skullcap	Use unknown

Source: *Traditional and Contemporary Uses of Bautista Canyon Floral Resources by Cultural Systems Research, Inc.* 29 August 2003.

Thus, the canyon is considered to be eligible for listing in the NRHP as a traditional cultural property (TCP) under Criterion (c) of the NHPA (CSRI 2003). The boundaries of the TCP minimally include the APE investigated for the ethnobotanical study (i.e., 500 m [1,640 ft]) on each side of the road for the length of the study corridor. Although Native Americans consulted during the course of cultural resources studies consider the TCP to include the entire canyon, it is not feasible to define the boundaries beyond the area investigated (i.e., the ethnobotanical APE).

Taking both the previously recorded and newly identified archaeological sites into account, along with the ethnobotanical resources and the landscape in which they occur, the boundaries of the Bautista Canyon Archaeological District and Ethnobotanical Traditional Cultural Property include all the cultural resources located within 500 m (1,640 ft) of the existing road in the study area. This boundary encompasses all of the prehistoric and protohistoric archaeological resources, as well as specific plant collecting areas, identified in current and previous studies in the project area.

Resources determined eligible for listing in the NRHP also are considered to be "historical resources" eligible for listing in the CRHR.

Cultural Resources Determined Not Eligible for Listing in the NRHP or CRHR

Historical period resources (a roadside camp [BC-12], a trash scatter [BC-19], a series of junked automobiles used for erosion control [BC-11], and a small farmstead [BC-17]) also do not meet the criteria for eligibility for either the NRHP or the CRHR, nor are they considered to be unique archaeological resources, and thus are not considered contributing elements to the district. They have been recorded and have no further potential to contribute information important to history, nor are they associated with important events or persons. Because they have been collected and removed from their settings, the ceramic olla recorded as BC-5 and the plumb bob recorded as BC-24 lack integrity and, therefore, are not considered contributing elements to the archaeological district.

3.8.2 Regulatory Setting

Federal

The provision of funding for the Bautista Canyon Road improvements through the FLHP by FHWA is considered an “undertaking” subject to compliance with Section 106 of the NHPA of 1966, as amended (16 USC § 470), and its implementing regulations, published as 36 CFR 800. As lead federal agency, FHWA must take into account the effects of the proposed undertaking on “historic properties”; that is, cultural resources included in or eligible for listing in the NRHP. To accomplish this, the agency must first identify cultural resources within the APE for the undertaking, and then evaluate the significance of the resources to determine whether they are historic properties. The Section 106 process of identification and evaluation also requires Native American consultation. Determinations of NRHP eligibility and findings of effect under Section 106 are made by the lead federal agency in consultation with Indian tribes and the State Historic Preservation Officer (SHPO). FHWA and the project SEE team have conducted extensive consultation with Native American groups, including the Ramona Band of Cahuilla Indians, Soboba Tribe, Cahuilla Band of Mission Indians, Pechanga Band of Mission Indians, Southern California Indian Basketweavers Organization, Traditional Practitioners, and Santa Rosa representatives. Table 1.2-2 lists meeting dates and issues discussed.

The undertaking may also be subject to compliance with Section 4(f), first enacted as part of the DOT Act of 1966, and amended in the Federal-Aid Highway Act of 1968. In January 1983, as part of an overall recodification of the DOT Act, Section 4(f) was amended and codified in 49 USC § 303. Still commonly referred to as Section 4(f), Section 303(c) requires that:

The Secretary [of Transportation] may approve a transportation program or project [...] requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if:

(1) there is no prudent and feasible alternative to using that land; and

(2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

State

The Bautista Canyon Road realignment also is considered a project subject to CEQA (Public Resources Code [PRC] § 21000 *et seq.*) and the CEQA Guidelines (California Code of Regulations [CCR] § 15000 *et seq.*), as amended to date. The County, as lead agency for the proposed project under CEQA, must determine whether the project will have a significant impact on the environment. For potential impacts to an archaeological or historical resource to be considered significant under CEQA, the resource in question must be determined to be a “historical resource”; that is, one that is listed in or determined eligible for listing in the CRHR, included in a local register of historical resources, or determined by the lead agency to be a

historical resource. The term “historical resource” may apply to archaeological sites. However, for an archaeological site that does not meet the criteria for consideration as a “historical resource,” a determination must be made as to whether it qualifies as a “unique archaeological resource” (PRC § 21083.2[g]).

A cultural resource property that is listed in, or determined eligible for, the NRHP also is listed automatically in the CRHR (CCR § 4851[a][1]). Thus, for purposes of this study, cultural resources are evaluated for significance with reference to their eligibility for listing in the NRHP, according to the criteria published in 36 CFR 60.4.

Local

SBNF Land and Resource Management Plan (LRMP) – Historical and Cultural Resources Goal

- *Inventory, protect, evaluate, and enhance historical and cultural resources in accordance with legislative and administrative direction.*

3.8.3 Thresholds of Significance

Federal Thresholds

Section 106 of the NHPA requires federal agencies to take into account the effects of an undertaking on historic properties, defined as cultural resources included in or eligible for listing in the NRHP (36 CFR 800.16(l)). Only those resources determined to be historic properties and within the APE are considered subject to the effects of an undertaking.

The lead federal agency must apply the criteria of adverse effects in consultation with the SHPO and any Indian tribe that attaches cultural significance to the identified historic properties. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5 (a)(1)).

State Thresholds

Under CEQA, the project would have a significant impact on the environment if it would:

- cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5;
- cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines § 15064.5; ;

- directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- disturb any human remains, including those interred outside formal cemeteries.

3.8.4 Environmental Consequences

The width of the APE, as described in the introduction to this section, varies slightly at various locations among the three alternatives; however, any given archaeological site is either in or out of the APE for all the alternatives. Seven prehistoric and protohistoric sites and two historic period sites determined to be historic properties and located within the APE are subject to adverse effects. These are: BC-7, BC-9, BC-22, BC-23, BC-4, BC-13, BC-3, BC-16, and BC-1. Sites BC-23 (Bautista Canyon Road) and BC-22 (Pre-1918 wagon road segments) will be subject to adverse effects resulting from alteration or diminishing of the setting, feeling, and association of these historic properties with the Anza NHT transportation corridor. Preliminary designs would have affected site BC-6 also; however, the portion of the project in the vicinity of that site has been realigned to avoid the site completely. Plant collecting areas within the Ethnobotanical TCP will also be adversely affected. Details of project effects from each alternative are considered below.

3.8.4.1 Alternative A

Potential direct effects to archaeological sites under Alternative A are listed in Table 3.8-3. The area disturbed is the portion(s) of each site within the APE for that alternative, including the 5-m buffer area.

**Table 3.8-3
 Site Areas Disturbed by Alternative A**

Site	BC-7	BC-9	BC-4	BC-13	BC-3	BC-16	BC-1	BC-22	BC-23
Area disturbed	373 m ²	206 m ²	918 m ²	35 m ²	4,088 m ²	263 m ²	1,498 m ²	63 m ²	65,327 m ²

The proposed project design has been adjusted in several locations to avoid direct adverse effects to known collecting areas for basketry plants, particularly with regard to *Juncus* stands located at sites BC-6 and BC-4. However, plant-collecting areas will be affected by changed access as a result of turnouts being removed, along with higher speeds on the roadway, making it more difficult for traditional practitioners to pull off the road to collect plants. The proposed project would also introduce noise and visual intrusions that will adversely affect the serenity currently associated with plant gathering in Bautista Canyon by Native Americans, thus diminishing the integrity of the setting, feeling, and association of the TCP. Potential effects to these historic sites could be mitigated to below a level of significance (under CEQA) with the implementation of mitigation measures as described in Section 3.8.5.

Implementation of Alternative A could result in potential adverse effects to human remains interred outside formal cemeteries if any remains are exposed during site excavation and grading. These impacts would be mitigated to below a level of significance (under CEQA) with the implementation of mitigation measures as described in Section 3.8.5.

SBNF Land and Resource Management Plan (LRMP)

Alternative A would be consistent with the SBNF LRMP’s historical and cultural resources goal to “...Inventory, protect, evaluate and enhance historical and cultural resources in accordance with legislative and administrative direction.” The Alternative A alignment was selected to avoid existing sensitive cultural resource sites. The cultural resources report included cultural resources records, checks, literature review and archival research, and an intensive archaeological survey of the study area that encompassed the APE for archaeological resources. The study was conducted in conjunction with extensive Native American consultation and included Native American monitoring of the archaeological testing program. As a result of that consultation, an ethnobotanical study for the project study area was also prepared. Therefore, the proposed action would be consistent with the SBNF LRMP’s historical and cultural resources goal.

A positive benefit of the proposed Bautista Canyon Overlook area is that it would enhance historical and cultural resources by providing an area for motorists and SBNF users to stop and enjoy expansive views of Bautista Canyon. The conceptual design for the overlook area includes a pullout area with parking for five vehicles, an ADA-accessible pathway to the overlook area, and an interpretive sign display (see Figure 2.2-5). The interpretive display would provide visitors with information about the Juan Bautista de Anza NHT and a cultural history to include Native Americans who inhabited the Bautista Canyon area thousands of years ago.

3.8.4.2 Alternative B

The direct adverse effects to historic properties and the Ethnobotanical TCP would be similar to those described for Alternative A. Alternative B would be consistent with the SBNF LRMP’s historical and cultural resources goal and would also result in the same positive benefit as described under Alternative A. Potential direct effects to archaeological sites under Alternative B are listed in Table 3.8-4. The area disturbed is the portion(s) of each site within the APE for that alternative, including the 5-m buffer area.

**Table 3.8-4
 Site Areas Disturbed by Alternative B**

Site	BC-7	BC-9	BC-4	BC-13	BC-3	BC-16	BC-1	BC-22	BC-23
Area disturbed	305 m ²	206 m ²	1,015 m ²	35 m ²	4,106 m ²	241 m ²	1,498 m ²	70 m ²	55,353 m ²

3.8.4.3 Alternative C

The direct adverse effects to historic properties and the Ethnobotanical TCP would be similar to those described for Alternative A. Alternative C would be consistent with the SBNF LRMP’s historical and cultural resources goal and would also result in the same positive benefit as described under Alternative A. The direct effects to archaeological and historic sites under

Alternative C are listed in Table 3.8-5. The area disturbed is the portion(s) of each site within the APE for that alternative, including the 5-m buffer area.

**Table 3.8-5
 Site Areas Disturbed by Alternative C**

Site	BC-7	BC-9	BC-4	BC-13	BC-3	BC-16	BC-1	BC-22	BC-23
Area disturbed	305 m ²	206 m ²	918 m ²	35 m ²	4,088 m ²	263 m ²	1,498 m ²	63 m ²	62,283 m ²

3.8.4.4 Alternative D

Under the No Action alternative, improvements to Bautista Canyon Road would not occur. Existing conditions would remain the same as those described above in Section 3.8.1. Therefore, adverse effects to historic properties would not occur as a result of implementation of Alternative D. Degradation of historic sites by unauthorized users would continue to occur, as would ongoing erosion and disturbance from grading during road maintenance.

3.8.5 Mitigation

The following mitigation measures would be implemented to reduce adverse effects to historic properties and historical resources to below a level of significance:

- In consultation with Native American tribes, the SBNF, NPS, State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation, prepare a Memorandum of Agreement (MOA) according to the provisions of the NHPA (36 CFR 800.6).
- The MOA should contain provisions for the FHWA project engineer and the County of Riverside to prepare and implement mitigation measures for archaeological sites subject to direct adverse effects. The measures should address data recovery from imperiled features and cultural deposits in affected site areas, archaeological monitoring of sensitive areas for unanticipated discoveries during construction, Native American monitoring of project-related archaeological activities, and curation of all recovered cultural materials in a federally approved repository.
- The MOA also should address issues of protecting archaeological sites and collecting areas for basketry materials from degradation by unauthorized uses, while providing for access to qualified researchers, traditional practitioners, and agency staff.
- Any revegetation plan or visual treatment plan for the project should be prepared and implemented in consultation with traditional practitioners and designed to enhance the growth and distribution of desirable species and minimize changes in the canyon setting of the project.
- If human remains are discovered, work shall halt in that area and procedures set forth in the California Resources Code (§ 5097.98) and State Health and Safety Code (§ 7050.5) shall be followed by the archaeological monitor after notification to the County coroner by the FHWA project engineer. If Native American remains are present, the County coroner shall contact the Native American Heritage Commission to designate a Most Likely Descendant, who will arrange for the dignified disposition and treatment of the remains. Ground-

disturbing activities shall be allowed to resume in the area of discovery upon completion of the above requirements, to the satisfaction of the FHWA project engineer.

3.9 Hazardous Materials

This section discusses existing conditions and potential impacts associated with the disturbance and contact with hazardous materials located within the study area. Where impacts have been identified, mitigation measures are provided.

3.9.1 Existing Conditions

An Initial Site Assessment (ISA) was performed for the project area in April 2002 (AMEC 2002c). The findings are summarized below in Table 3.9-1. The objective of the ISA was to identify areas of potential hazardous material contamination associated with previous or ongoing, on- and off-site activities. The assessment was based on discernible visual observations and on documented present and historic uses of the properties adjacent to the study corridor. The ISA was performed in general conformance with the scope of the Caltrans Environmental Branch Guidelines for Hazardous Waste Studies and the American Society for Testing and Materials (ASTM) Standard E 1527-00. This section summarizes the ISA document. The complete document is available for public review at the Riverside County Administration Building, Transportation Department; also see Volume II, Appendix I.

Hazardous Substance, Petroleum Product, and Hazardous Waste Storage, Handling, and Disposal

Based on observations made during the site reconnaissance, evidence of potential hazardous substance and petroleum product release, and/or disposition was observed at several of the open dumping areas along Bautista Canyon Road located at Kilometer posts 2.2, 3.6, 4.8, and 7.3 (mile posts 1.4, 2.2, 3.0 and 4.5) as described in Table 3.9-1. In addition, staining and burning were found at Kilometer posts 2.2 and 3.6 (mile posts 1.4 and 2.2).

Storage Tank Management

There are no observed aboveground storage tanks (ASTs) or underground storage tanks (USTs) currently along Bautista Canyon Road. However, a review of regulatory agency database listings and contact with regulatory agencies indicate that USTs are registered to the Laborers School located at 36401 Tripp Flats Road, Anza, 0.2 km (0.01 mi) southwest of the site and outside of the project construction area. These tanks are not within the study area and, thus, would not be affected by project activities.

**Table 3.9-1
Kilometer Post Site Observations**

Kilometer post* (Mile post)	Observations
0.0– 0.5 (0.0 – 0.3)	Power lines adjacent to west side of road with capacitors (owned by Anza Electrical Cooperative). Runs westward after MP 10.6.
0.6 (0.4)	Fiber-optic cable posts (owned by Verizon) located along the roadway from MP 10.3 to MP 18.5 approximately every 0.9 m (3 ft).
2.0 (1.2)	Storm pipe located under road; discharges west of road.
2.0 (1.2)	Road washout; evidence of erosion control (silt fencing).
2.2 (1.4)	Evidence of open dumping (furniture, scrap metal, trash, etc.). Extends approximately 9 to 15 m (30 ft to 50 ft) downhill in a westerly direction and approximately 15 m (50 ft) north along the roadway.
2.2 (1.4)	Four 1-gallon metal denatured alcohol containers dumped in culvert south of “main dump.”
2.2 (1.4)	White, powdery substance was observed to have leaked down the hillside toward the culvert.
3.0 (1.9)	Mattress and box spring dumped next to Bautista Creek on west side of roadway.
3.3 (2.1)	Evidence of open dumping (decomposing furniture) on east side of roadway.
3.6 (2.2)	Evidence of open dumping – approximately 15 quart-size motor oil containers, five 1-gallon antifreeze containers – on east side of roadway. Also evidence of open burning within the same area.
4.1 (2.5)	Evidence of open dumping (trash and front end of automobile) on east side of roadway.
4.3 (2.7)	Dumped sofa on east side of roadway.
4.6 (2.9)	Dumped chair on east side of roadway.
4.8 (3.0)	Evidence of open dumping (futon, household wastes, washer and dryer, paint cans, motor oil, and miscellaneous debris) on east side of roadway.
5.1 (3.2)	Evidence of open dumping (gutter, box with used filters, miscellaneous debris) on west side of road.
5.1 (3.2)	Dumped sofa on east side of roadway.
5.6 (3.5)	Evidence of open dumping (tire and motor oil containers) on east side of road.
6.1 (3.8)	Evidence of open dumping (tire, crushed concrete, sofa, etc.) on east side of road.
6.3 (3.9)	Evidence of open dumping (cans and cardboard debris) on east side of road.
6.6 (4.1)	Dumped tires on east side of roadway.
6.8 (4.2)	Approximately 15 dumped tires on east side of roadway.

Table 3.9-1 (continued)
Kilometer Post Site Observations

Kilometer post* (Mile post)	Observations
7.3 (4.5)	Evidence of open dumping (5-gallon metal drum with unknown substance and sofa) on east side of road.
7.5 (4.7)	Approximately 20 dumped tires on east side of roadway.
7.7 (4.8)	Evidence of open dumping (wood debris, concrete, spent rifle shells, bottles, etc.) on east side of road.
7.9 (4.9)	Dumped washer, oven, and television on west side of roadway.
8.4 (5.2)	Approximately 30 dumped tires on east side of roadway.
10.2 (6.3)	Dumped truck bed on east side of roadway.
10.4 (6.5)	Roadway to Tripp Flats on west/right.
10.6 (6.6)	Approach road FDR 6S16 veers east/left.
11.6 (7.2)	San Bernardino National Forest boundary.
11.6 (7.2)	Private driveway on west/right with evidence of open dumping.
11.9 (7.4)	Approach road FDR 6S18 veers west/right.
11.9 (7.4)	Dumped refrigerator on east side of roadway.
12.6 (7.8)	Flying W Ranch driveway east side of roadway.
13.2 (8.2)	End of native soil surface; beginning of asphalt pavement surface.

*Kilometer posts were determined by odometer readings starting at the north terminus of the project to the south terminus and may not correspond with actual distance.

Polychlorinated Biphenyl-Containing Equipment

Aerial four-strand power lines with capacitors are located adjacent to the roadway between 0.0 to 0.5 km (0.0 to 0.3 mi) posts. The poles vary from 9 to 152 m (30 to 500 ft) or more from the side of Bautista Canyon Road. Anza Electric Cooperative (AEC) owns the utility poles and infrastructure. AEC was contacted 5 April 2002 to obtain records indicating the presence of polychlorinated biphenyls (PCBs) associated with the capacitors. According to the AEC, the equipment along Bautista Canyon Road has not been tested for PCBs; however, given the age of the capacitors, it is not expected to contain PCBs (AMEC 2002c).

Other Hazardous Substances

A fiber-optic line owned by Verizon Communication Services is located parallel to Bautista Canyon Road. Verizon Communications Service was contacted 5 April 2002 to obtain information regarding potential hazardous materials used in relation to the fiber-optic lines. Materials used in the construction and operations of the fiber-optic line do not contain hazardous substances (AMEC 2002c).

Regulatory Literature Search

The ISA included a review of existing federal, state, and local lists and files of reported hazardous waste sites and hazardous substance/petroleum product sources and releases for properties within the project study area. Based upon the search, neither Bautista Canyon Road nor the surrounding properties located within the ASTM-designated search radius, which varies from 1/8 of a mi to 1 mi depending on the agency list, were located in the regulatory database listings with one exception. As noted above, The Laborers School (CDC Bautista Conservation Camp) located 0.01 mi (0.2 km) southwest of the site at 36401 Tripp Flats Road in Anza is listed in the State Regional Water Quality Control Board, Region 9 AST database. As noted, the site is not located in the study area. The following agencies were contacted to identify records indicating hazardous materials spills.

California Department of Toxic Substances Control (DTSC)

No files or records for the study area were found.

Santa Ana Regional Water Quality Control Board (Region 8) (SARWQCB)

No files or records for the study area were found.

County of Riverside Department of Environmental Health (DEH)

No files or records for the study area were found.

County of Riverside Agricultural Commissioner/Weights and Measures Department (AWM)

No files or records for the study area were found.

United States Department of Agriculture Forest Service (USDAFS)

The USDAFS was contacted on 20 March 2002 to obtain information regarding the use of fertilizers, herbicides, and pesticides and the location and files on methamphetamine laboratory dumps on or near the project site. No history of fertilizer, herbicide, or pesticide use along the corridor was found. Four dump sites were located off Bautista Canyon Road along and north of the study area. One dump site was located at a stream crossing. Another dump site was located 1.3 km (0.8 mi) above CDC Bautista Conservation Camp (see Table 3.9-1). Two other dumps were located by Hixon Trail. The dump sites contained empty containers of primarily denatured alcohol.

Riverside County Sheriff Department, Hemet Station (RCSD)

The RCSD in Hemet was contacted on 26 March 2002 to obtain information regarding the methamphetamine laboratory dumps. Most of the dump sites contained empty 19-liter

(5-gallon) gray crushed freon containers, empty 3.8-liter (1-gallon) camp fuel containers (denatured alcohol), and empty containers of 1,000-count pseudo-ephedrine pill bottles. The dump sites often contained solvents such as acid and the binders from the pill capsules. The presence of containers of denatured alcohol was confirmed during the site reconnaissance.

3.9.2 Regulatory Setting

Local

The Riverside County Hazardous Waste Management Plan (HWMP) serves as the County's primary planning document for the management of hazardous materials.

3.9.3 Thresholds of Significance

The proposed action would result in a significant impact to the environment if it would:

- create an adverse hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- create an adverse hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- emit hazardous emissions or handle hazardous or acutely hazardous materials or waste within 0.25 mi of an existing or proposed school; or
- be located on a site that is included on a list of hazardous materials sites compiled pursuant to USC § 65962.5 and, as a result, create an adverse hazard to the public or the environment.

3.9.4 Environmental Consequences

3.9.4.1 Alternative A

The proposed action is a roadway reconstruction project and would not create an adverse hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Further, the proposed project would not create an adverse hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Field surveys noted evidence of several methamphetamine laboratory dump sites located along and north of the site. Empty containers for freon, denatured alcohol, pseudo-ephedrine pills and, occasionally, acids were found. Although the waste tire dump sites pose a potential fire hazard and vector (e.g., mosquitoes, rodents, etc.) control issue, the quantity reported does not exceed the regulatory enforcement limit of 500 tires; therefore, they do not pose a significant environmental hazard impact. The empty containers for freon, denatured alcohol, pseudo-ephedrine pills and acids would not pose a significant health or environmental hazard impact

because they were found empty. As a condition of project approval, existing dump sites would be cleared, handled, and disposed of prior to site excavation and grading activities in compliance with the Occupational Safety and Health Administration (OSHA) and federal, state, and local regulations.

Visual evidence of potential hazardous substance and petroleum product release, and disposition observed at several of the open dumping areas along the project site, including staining and burning from unknown substances, could pose a potential hazard to construction personnel during excavation and grading. Additional sampling and testing in the areas where staining and burning were observed would be required to further characterize the nature of the staining, and in the areas where petroleum product release was observed, to reduce potential adverse effects from hydrocarbons to below a level of significance (AMEC 2002c).

The proposed project is a roadway reconstruction project and would not emit hazardous emissions or handle hazardous or acutely hazardous materials or waste within 0.4 km (0.25 mi) of an existing or proposed school.

The proposed project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to USC § 65962.5 and, as a result, would not create an adverse hazard to the public or the environment.

3.9.4.2 Alternative B

Hazardous materials effects would be the same as those described for Alternative A because a deviation in the roadway alignment would not change the effects related to exposure to hazardous materials.

3.9.4.3 Alternative C

Hazardous materials effects would be the same as those described for Alternative A because a deviation in the roadway alignment would not change the effects related to exposure to hazardous materials.

3.9.4.4 Alternative D

Under the No Action alternative, improvements to Bautista Canyon Road would not occur. Existing conditions would remain the same. Therefore, effects from hazardous materials would not increase as a result of implementation of Alternative D.

3.9.5 Mitigation

Although there was no documentation of unauthorized releases or of existing hazardous substances or petroleum product contamination at the project site, the evidence observed (e.g., of petroleum products release, and staining and burning from unknown substances) indicates the potential for contamination from hydrocarbons. Additional soil sampling and analysis in areas where staining and burning and petroleum product release were observed would be required prior to the commencement of excavation and grading operations in order to reduce

potential contamination from hydrocarbons and a potential hazard to construction personnel during excavation and grading activities.

3.10 Visual Resources

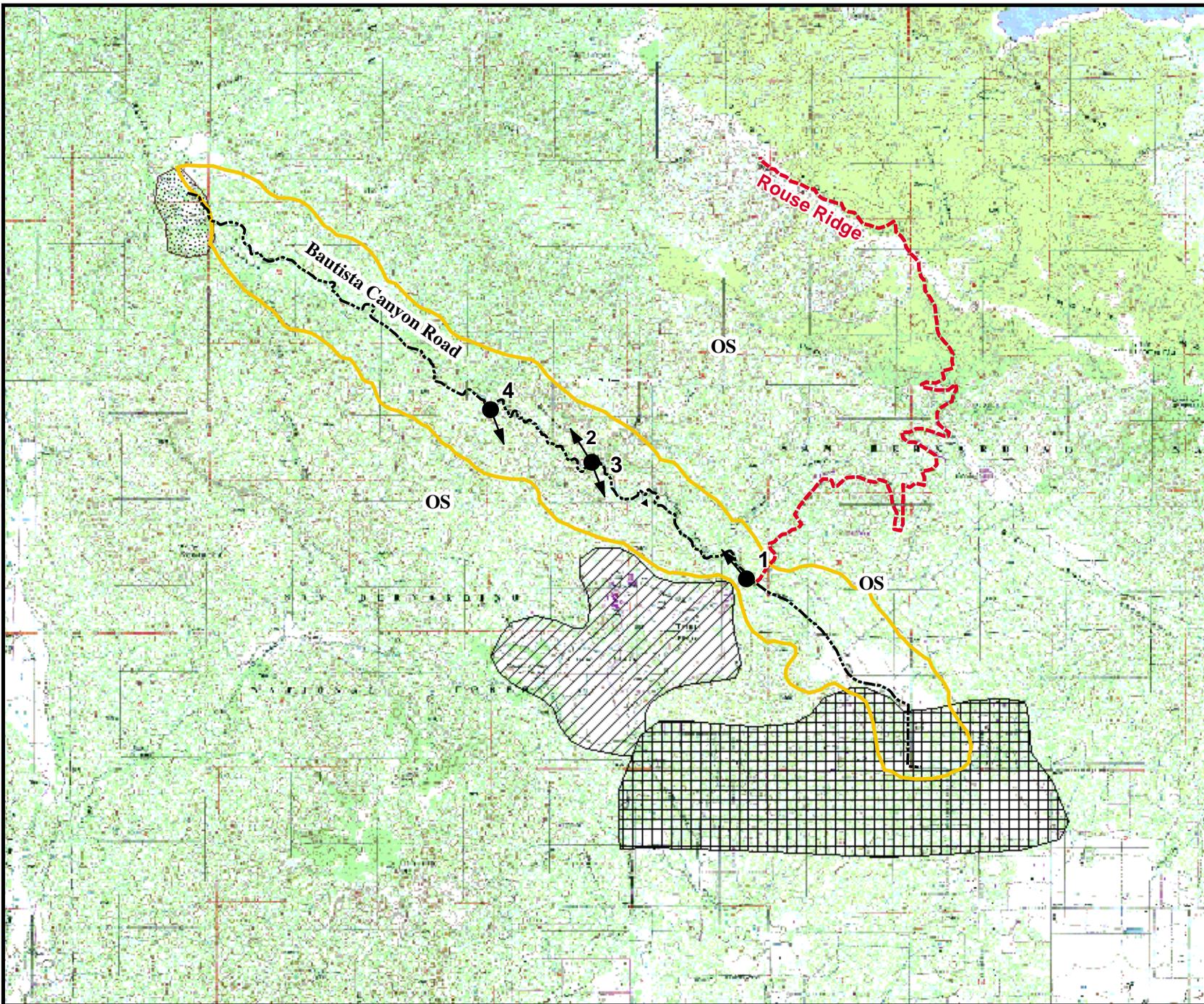
3.10.1 Existing Conditions

Project Viewshed

The project viewshed is defined as the surrounding geographic area from which improvements are likely to be seen based upon topographic and land use patterns. The steep slopes abutting the existing roadway largely define the outer viewshed limit for the project area. Because of the steepness of the surrounding hillsides, undulating topography, and the fact that Bautista Canyon Road is completely surrounded by open space, the roadway is not visible from residential or other land use areas within the project study area (see Figure 3.10-1).

The northern limit of the viewshed is located where the existing Bautista Canyon Road asphalt pavement ends and the unpaved segment begins. With the exception of the CDC Bautista Conservation Camp, natural open space surrounds the northerly viewshed area. The southern limit of the viewshed is where the roadway changes from dirt road to asphalt pavement again at the southern end of the project area. Rural residential land use surrounds the southern viewshed area. The eastern and western limits of the viewshed extend out approximately 0.8 km (0.5 mi) from Bautista Canyon Road. Most views to the east and west are blocked by lower ridgelines on either side of the roadway and Bautista Canyon. Natural open space surrounds the eastern and western viewshed area. The USDAFS Tripp Flats Forest Service Station is approximately 1 mi west of Bautista Canyon Road. A dirt access road intersects with Bautista Canyon Road. The station is not visible from the roadway. More distant views of the San Jacinto and San Bernardino mountains can be seen from very limited viewpoints along Bautista Canyon Road looking to the north and east.

Native vegetation grows in most of the nonvertical cuts and fills, reducing the visual impact of the existing road corridor. The existing vegetation along the road helps minimize the current visual effect so that the road does not dominate the landscape visual quality. Additionally, the native vegetation helps soften the impact of the existing road by screening and softening the color contrast between the road and surrounding landscape. In areas where vertical cuts have been made, vegetation is sparse and the underlying soil or rock is exposed. Earth and rock colors range from light tans to darker browns and rust colors.



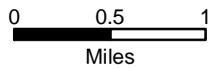
Legend

- Bautista Canyon Road
- Fire Road
- OS Natural Open Space
- Grid Rural Residential
- Diagonal lines USFS Rancho Springs Station
- Stippled CDC Bautista Conservation Camp
- Yellow outline Viewshed Boundary
- Black dot with arrow Photo Simulation Viewpoints

Map Notes:

USGS - 1:24,000 topo digital raster graphics

AMEC - Viewshed boundary, landscape units



1 inch equals 1 miles

Project Viewshed and Landscape Units

FIGURE 3.10-1

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Landscape Units and Viewers

Elevations along Bautista Canyon Road (unpaved segment) range from 823 m to 1,219 m (2,700 ft to 4,000 ft) above mean sea level (MSL). The lowest elevations are found at the northern end of the project study area and from this point Bautista Canyon Road steadily increases in elevation toward the southern end of the project area. The elevations along Rouse Ridge are approximately 1,524 m (5,000 ft) and higher. The landscape in the project area extends from the canyon floor to small mountains and peaks on either side on the canyon. Within the immediate project area, steep, shrub-covered hills are typical. Bautista Canyon and other tributary canyons paralleling Bautista Canyon Road provide the most evident topographic relief in the project area. Water flow within Bautista Creek and other creeks traversing the roadway is intermittent.

Vegetation in the project area is mostly natural chaparral and scrub. Chaparral, coastal sage-chaparral scrub, and sagebrush scrub vegetation are primarily associated with the steep hillsides. Some riparian forest, southern willow scrub, and oak woodland vegetation are also found along the canyons and creek beds. Disturbed habitat is found along the road and in former construction staging areas in various locations along the roadway and is dominated by nonnative annual species and perennial broad-leafed species.

A landscape unit is defined as an identifiable geographic area and generally distinguishable by variations in the landscape's visual character such as landforms, water features, vegetation, or man-made developments (FHWA 1986). Four landscape units with distinct characteristics have been identified and are shown in Figure 3.10-1. Each is described below, along with a description of the relationship between the landscape unit and associated visual features. Natural open space is the dominant landscape unit within the project area.

1. **Natural Open Space.** The wide valley known as Bautista Canyon is a prominent landscape unit within the study area. Parallel to Bautista Canyon Road, it is similar to other canyons in the region and in the SBNF and provides visual relief from urban development and freeway corridors within Riverside County. Bautista Canyon Road follows the canyon floor between the communities of Valle Vista and Anza. Overhead single-pole power lines parallel Bautista Canyon Road from the northern terminus to the south end of the existing dirt road segment. Bautista Canyon Road is somewhat visible from Rouse Ridge (FS road 5S15), a low-use fire road.

The canyon is an important open space element of the SBNF BMU and County of Riverside REMAP. Bautista Canyon Road is designated a NHT and believed to be in proximity to the actual route of the Juan Bautista de Anza expedition. Recreational trail users use the designated and volunteer trails in this area. Users include Native American groups who come to the canyon to gather *Juncus* and other species used for basketry, and OHV enthusiasts. Recreational users and motorists are considered sensitive viewers because of their expectation of a scenic experience, especially sight seers.

2. **Rural Residential.** A rural residential community is located at the southern end of Bautista Canyon Road, and just north of SH 371 in the community of Anza. Within this

landscape unit, visibility is typically limited by intervening structures, topography, and vegetation. The closest residence is about 40 m (131 ft) to the east of Bautista Canyon Road. No homes actually front Bautista Canyon Road. Residential viewers are considered sensitive to roadway projects.

3. **CDC Bautista Conservation Camp.** The CDC Bautista Conservation Camp is located immediately adjacent to the west side of the roadway at the northern end of the study area. The Conservation Camp is located at a slightly lower elevation than Bautista Canyon Road and the nearest buildings are located approximately 160 m (525 ft) from the roadway. Visibility of the roadway is limited by intervening structures, topography, and vegetation. Camp residents are not considered sensitive to roadway improvement projects.
4. **USDAFS Tripp Flats Forest Service Station.** The USDAFS Tripp Flats Forest Service Station is located approximately 0.8 km (0.5 mi) west of the roadway and approximately 3.7 km (2.3 mi) north of the southern terminus. The station cannot be seen from the roadway.

3.10.2 Regulatory Setting

Federal

The visual resources analysis for the Bautista Canyon Road Project was conducted in accordance with the objectives and methods described in the *Visual Impact Assessment for Highway Projects*, FHWA, March 1981, and based on input from the SBNF and USDA Visual Resource Management System. The following steps were performed for this assessment:

1. Define the visual environment and document existing landscape characteristics within the project viewshed.
2. Identify major viewer groups and determine anticipated viewer response.
3. Identify views for the visual assessment based on representative viewer types and typical viewing conditions.
4. Document the type and degree of visual changes in the study area expected based on a review of project alternative engineering plans.

The visual study geographic limits consist of the viewshed boundary for the project (see Figure 3.10-1). The viewshed boundary was determined in the field and through analysis of USGS topographic maps. The character of the existing visual environment within this study area was then documented through field reconnaissance and photographic records.

Viewer groups within the viewshed limit were determined through a review of the REMAP, USGS topographic maps, and field reconnaissance. As described, a total of four landscape units were identified through this process.

Viewer responses to visual changes from the proposed action were based on input from the SBNF. Viewer types and activities were based on existing land use information. Viewer types

or groups are based on FHWA guidelines where physical factors are acknowledged to modify perception. Therefore, the physical location of a group, the number of people in a group, and the duration of their view are considered in evaluating viewer response. Activities can both encourage a viewer to observe the surroundings more closely (scenic driving) or discourage observing (commuting in heavy traffic). In conformance with FHWA guidelines, viewer sensitivity is distinguished among project viewers in rural residential and recreational areas, with both considered to have a relatively high sensitivity.

Visual effects were based on visual management standards adopted for the SBNF. The visual quality objectives (VQOs) for the SBNF are the adopted visual management standards for the forest. Visual resource management input was provided by the SBNF on 19 December 2001 for the project build alternatives (SBNF 2001). The purpose of the input was to discuss the potential visual effects of the proposed action and to provide alternatives to reduce the visual impact caused by the proposed road design. The following management prescriptions for the Bautista Canyon view corridor are based on SBNF input:

- The VQO has been designated as “**Partial Retention**” with much of the landscape visible from a foreground (0 to 0.5 mi) and middle-ground (0.5 to 4 mi) range. The current road alignment is located in an area where the VQO is “Partial Retention.” The “Partial Retention” refers to landscapes where the valued landscape character “appears slightly altered.” Noticeable deviations must remain “visually subordinate” to the landscape character being viewed. The term “appears slightly altered” refers to a landscape character that has been modified, but the activity (road) does not dominate the overall character of the landscape.
- The proximity of the viewer to the surrounding scenery has led to Bautista Canyon being classified as “**Sensitivity Level 1.**” This classification refers to the highest viewer sensitivity. Sensitivity levels are a relative measure of a landscape’s aesthetic importance from the standpoint of location and visual exposure to the public. In determining types of use on the national forest roads and trails, recreation use is the highest. Driving for pleasure is one of the most prevalent recreation experiences in the SBNF.
- The Landscape Character in this part of the SBNF is classified as “**Variety Class C**” type landscape. “Class C” landscapes are landscapes where the landforms, vegetation patterns, and cultural land uses have lower scenic value. Distinctive landforms, water features, and rock-form are often absent from a “Class C” characteristic landscape. For most of the year, the stream in the canyon is a dry stream adding only a small amount of value to the overall scenic attractiveness.

The selection of representative views was made based upon the major viewer group(s) that would be affected by the project and the types of planned roadway improvements that would represent areas of large cuts and fills. Four views were selected for analysis. The evaluation of visual changes within the study area was made based upon an assessment of the existing visual character of the landscape seen from each view, and the degree to which the project would change or contrast with that view. This discussion documents the existing visual resources and the types of viewers within the project area viewshed. The degree of visual change expected to result from the preferred alternative and an analysis of impact is provided.

SBNF Land and Resource Management Plan (LRMP) Visual Goal – Visual Resources

- *Meet adopted VQOs in all areas.*

3.10.3 Thresholds of Significance

The proposed action would result in a significant impact to the environment if it would:

- have a substantial adverse effect on a scenic vista¹⁷;
- substantially degrade the existing visual character or quality of the site and its surroundings;
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; or
- create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.
- fail to meet SBNF VQO visual management standards.

3.10.4 Environmental Consequences

Visual effects may be associated with changes in either the built or natural environment and can be short-term or long-term in duration. The presence of heavy machinery during construction of the project is considered a short-term visual impact. The large trucks, bulldozers, etc., which would be visible both within the construction zone and on neighborhood roads used to access the site, would be absent once construction is complete. Long-term visual changes are associated with alteration of the natural topography, cutting of slopes and filling of low points to prepare a suitable roadbed, and construction of the bridge over Bautista Creek. The focus of this analysis is on long-term permanent physical changes.

The magnitude of visual impact depends upon the degree of alteration, the scenic quality of the area disturbed, and the sensitivity of viewers. The degree of alteration refers to the maximum height and depth of cut and fill areas, while acknowledging any unique topographic formation or natural landmark.

Special zoning and planning overlay zones often indicate scenic quality. Sensitive viewers, typically residents or recreation users, are those who utilize the outdoor environment or value a scenic viewpoint to enhance their activity. Changes in an existing landscape where there are no identified scenic values or sensitive viewers are not considered significant. It is also possible to acknowledge a visual change, such as introduction of a new roadway in an undeveloped area, that would not be significant either because viewers are not sensitive or because the surrounding scenic quality is not high.

Four representative views along the middle segment of the proposed roadway reconstruction project were selected to show the existing roadway and conditions compared to the proposed

¹⁷ Webster's Dictionary defines "scenic" as picturesque with attractive or impressive natural scenery. "Vista" is defined as a scenic or panoramic view.

roadway and conditions post-construction. The photo simulations of the post-construction conditions show the paved corridor and represent what the cut and fill slopes would look like after they are revegetated or the rock stained. The four views were chosen at different locations along the proposed alignments to depict what would be seen from the motorist's perspective (see Figure 3.10-1). Photo simulations (Figures 3.10-2 through 3.10-5) show existing views, the proposed roadway, and adjacent cut and fill slopes.

View 1 (Figure 3.10-2) is looking northwest and was taken on Bautista Canyon Road from the southern end of the study area segment. This view gives a close foreground perspective from the motorist's viewpoint. At this location, the proposed alignment is being shifted westward away from Bautista Creek.

View 2 (Figure 3.10-3) is also looking toward the northwest from about midpoint along Bautista Canyon Road, but shows a middleground and background view of Bautista Canyon. At this location the proposed alignment nearly follows the existing roadway alignment as it meanders around the hillsides. Some grading occurs due to roadway widening.

View 3 (Figure 3.10-4) was taken at the same location as View 2, but the viewer is looking toward the southeast. As shown in Figure 3.10-4, the proposed roadway alignment is shifted slightly downhill from the existing roadway to accommodate proposed design speeds and greater curve radius.

View 4 (Figure 3.10-5) is also looking toward the southeast, but is located farther north from Views 2 and 3 along Bautista Canyon Road showing middleground and background. Here again the proposed alignment is deviating from the existing alignment to accommodate proposed design speed and greater curve radius.

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Photo Simulation - View 1

**FIGURE
3.10-2**

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Photo Simulation - View 2

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3.10-3

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Photo Simulation - View 3

**FIGURE
3.10-4**

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Photo Simulation - View 4

F I G U R E

3.10-5

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3.10.4.1 Alternative A

Implementation of Alternative A would have an adverse effect on a scenic vista and would substantially degrade the existing visual character and quality of the site and its surroundings. The proposed road would be a dominant human-made feature and would change the scale of the landscape experience, primarily when viewed from a driver's perspective, because the proposed action would realign the roadway from its canyon floor location. The proposed width of the new road would reduce visibility into the canyon in some places for uphill travelers in a typical car due to the proximity of the lane away from the downhill side of the roadway. Motorists on the creek side of the roadway would have better views of Bautista Canyon. The opportunity for viewing into the canyon would also diminish for motorcycles traveling uphill due to the proposed expansion of the road width. The scale of the proposed road would also exceed the human scale¹⁸ of the existing road, because the vegetation that borders the existing road would be removed or would be farther away as a result of widening the road and shoulders. Implementation of Alternative A would result in a total of 22.7 ha (56.1 ac) of disturbance within [6.6 ha (16.3 ac)] and outside of [16.1 ha (39.8 ac)] the existing roadway.

Alternative A would result in a major visual impact as currently designed and would not meet the VQO standards of "Partial Retention" set by the SBNF. The proposed road would dominate the existing landscape in all aspects including form, line, color, and texture and it would change the landscape character of the canyon. The proposed cuts and fills would be dominant features along the road edges and change the natural form, line, color, and texture of the existing landscape, altering the natural scenery of the canyon when viewed from an inferior or a superior position¹⁹ in the canyon. Large cuts that are mostly composed of exposed rock could remain an adverse visual impact for decades (see Figures 3.10-2 through 3.10-5). The visual effect of large fills, however, could be reduced to below a level of significance with appropriate revegetation. Guard railing could also add to the overall adverse effect on the scenic quality due to the introduction of unnatural colors and forms not currently found in the landscape. Installation of guardrails would be installed only when absolutely needed for safety. To minimize visual effect, FHWA has proposed use of weathered steel guardrails, which are rust colored. This is anticipated to reduce the adverse visual effects of these barriers.

Most of the visual impact would be seen from Bautista Canyon Road itself while traversing the canyon in either direction. The greatest effect would occur within the "foreground," which ranges from 0 to 0.8 km (0 to 0.5 mi). The proposed new road alignment would also be visible from Rouse Ridge (road 5S15). Most of the visual impact from this road would briefly occur at one or two locations along the top of the ridge. From the Rouse Ridge fire road, Bautista Canyon Road would be somewhat visible below (see Figure 3.10-1). The roadway would not be visible from other locations because of the adjacent topography.

¹⁸ Human Scale - The size or proportion (scale) of a space, a part of a building, an article of furniture, or any other object, relative to the structural or functional dimensions of the human body.

¹⁹ Observer Position is a term employed to describe the observer's elevation relationship between the viewer and the landscape he or she sees. It is used to indicate if the viewer is essentially below, essentially at the same level, or essentially above the visual objective. Three specific terms are used: 1) observed inferior, viewer below object; 2) observer normal, viewer on level of object; 3) observer superior, viewer above object. (*Visual Impact Assessment for Highway Projects, FHWA, no date*).

To reduce visual effects, reseeding disturbed vegetation and colorizing the exposed rock faces on the road cuts would be required as part of project design. Fills would be blended into the natural contours, rather than left as flat faces. Cut edges would be rounded back to the natural slope and revegetation of exposed slopes would follow. As part of the project design, materials such as wood or steel used for signposts or safety railing would also be stained or painted with colors that are not shiny and that complement the surrounding landscape. All guardrails shall be constructed with metal rails of “self weathering steel,” or galvanized steel guardrails may be given a dip treatment in galvanprime or similar solutions, which turn the metal a dull or even very dark gray. A clear stain would be used on wood posts, or posts can be treated and left to self-weather.

The proposed roadway has been designed to minimize high cuts and deep fills where possible. The design speed has been reduced to the minimum established guidelines for a rural collector, which will allow the road to follow the canyon contours. Guardrail installation would be limited. Guardrails would be installed only in areas where it is critical to protect the safety of the motorist. The roadway width has been reduced to the minimum established regulations [7.8 m (26 ft)] for a rural collector. In areas where road fills were excessive in size at several sites along the road, the roadway design was realigned vertically or horizontally to reduce fills at several points on the road. An erosion control and revegetation plan for all soil disturbances, including road cuts and road fills, is proposed. Existing landscape vegetation has been collected as a seed source for reseeding. The implementation of these design features would reduce the significant visual effects. Additional measures would be required to ensure that visual impacts associated with steep cuts and fills that cannot be revegetated and with guardrail construction materials are mitigated.

Implementation of the above project design features and required mitigation discussed in Section 3.10.5 would reduce adverse visual impacts relative to the thresholds of significance defined in Section 3.10.3, and would ensure the project complies with VQO objectives defined by the SBNF.

Vista Opportunity

- **Bautista Canyon Overlook**

A 0.1 ha (0.3 ac) overlook area would be constructed and located approximately 5.5 km (3.4 mi) from the north end of the project area on the east side of the roadway. The conceptual design includes an asphalt pullout area with parking for five vehicles and a 2 m (6 ft) wide natural pathway to an interpretative overlook (see Figure 2.2-5). The overlook area would meet ADA standards.

The Bautista Canyon Overlook site would offer the best view of the canyon from the low end to the high end, providing an ideal site for interpreting historical information. A minimum impact design would be required as part of the project design. The overlook would provide a positive visual benefit to motorists and other recreational users by providing a convenient off-road

opportunity to stop and enjoy canyon views and also an opportunity to learn about the history of Bautista Canyon and the Juan Bautista de Anza expedition and NHT.

Alternative A would not substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. Bautista Canyon Road is not designated a state scenic highway.

Alternative A would not create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area. No roadway lighting is proposed along the reconstructed segment of Bautista Canyon Road.

The long-term, direct, and indirect adverse visual effects of the cut and fill slopes, which would range up to 32 m (104 ft) in height, could be mitigated with the implementation of mitigation measures described in Section 3.10.5.

SBNF Land and Resource Management Plan (LRMP) Visual Goal – Visual Resources

Alternative A as proposed would not be consistent with the SBNF LRMP visual resource goal to “meet adopted Visual Quality Objectives [VQOs] in all areas.” However, the proposed design features described above and mitigation measures described in Section 3.10.5 would reduce visual quality effects of Alternative A to the extent necessary to meet the “Partial Retention” VQO adopted by the SBNF for the Bautista Canyon view corridor.

No significant short-term, or unavoidable visual effects would result with the implementation of Alternative A.

3.10.4.2 Alternative B

Visual effects would be similar to those described for Alternative A. Alternative B would result in more total disturbance [23.4 ha (57.8 ac)] than Alternative A, both within [5.5 ha (13.6 ac)] and outside of [17.9 ha (44.2 ac)] the existing roadway. Resulting significant impacts would be mitigated to below a level of significance. The Bautista Canyon Overlook would be located at the same location as described in Alternative A and would result in a beneficial impact.

Like Alternative A, Alternative B as proposed would not be consistent with the SBNF LRMP visual resource goal. However, the proposed design features described above and mitigation measures described in Section 3.10.5 would reduce visual quality effects of Alternative B to the extent necessary to meet the “Partial Retention” VQO adopted for the Bautista Canyon view corridor.

3.10.4.3 Alternative C

Visual effects would be the same as those described for Alternative A. Alternative C would result in similar total disturbance [22.8 ha (56.3 ac)] to Alternative A, both within [6.2 ha (15.3 ac)] and outside of [16.6 ha (41.0 ac)] the existing roadway. Resulting significant impacts would be mitigated to below a level of significance. The Bautista Canyon Overlook would be

located at the same location as described in Alternative A and would result in a beneficial impact.

Like Alternative A, Alternative C as proposed would not be consistent with the SBNF LRMP visual resource goal. However, the proposed design features described above and mitigation measures described in Section 3.10.5 would reduce visual quality effects of Alternative C to the extent necessary to meet the “Partial Retention” VQO adopted for the Bautista Canyon view corridor.

3.10.4.4 Alternative D

Under the No Action alternative, improvements to Bautista Canyon Road would not occur. Existing visual conditions would remain the same. Consequently, Alternative D would not result in significant or unmitigable impacts.

3.10.5 Mitigation

The following recommendation measures would be required as part of project design and approval to reduce the significant visual effects of Alternatives A, B, and C:

- Implement an Erosion Control and Revegetation plan for all soil disturbances, including road cuts and road fills. Use the existing landscape vegetation as a seed source for reseeding.
- Colorize the largest and most visible exposed rock surfaces (cut slopes too steep to revegetate) with Permeon or other types of aging chemicals to soften the color contrast of the exposed rock and reduce the visual impact.
- Blend fills into the natural contours, rather than leave them as flat faces.
- Round cut edges back to the natural slope and revegetate exposed slopes.
- Stain or paint materials such as wood or steel used for signposts or safety railing with colors that are not shiny and that complement the surrounding landscape.
- Construct guardrails with metal rails of “self weathering steel,” or galvanized steel guardrails.

3.11 Recreation

Recreation can be separated into two major categories: passive and active recreation. Passive recreation includes recreational activities such as camping, horseback riding, picnicking, fishing, and sightseeing. Active recreation includes activities such as hiking, bicycling, motorcycling, skiing, swimming, and other active sports. The project study area for recreation includes the BMU of the SBNF. In addition to the discussion below, recreational impacts are also addressed in the Section 4(f) evaluation found in Section 4.3 of this document.

3.11.1 Existing Conditions

Off-Highway Vehicle (OHV) Trails

Currently, there are two designated Off-Highway Vehicle (OHV) trails and some dispersed recreation within the BMU (USDAFS 1988). No other developed recreation facilities or resources are found within the project study area. The OHV trails are described as follows:

Alessandro Trail - This is a 24 km (15 mi) trail that begins at the top of Tripp Flats, just north of the ranger station at an elevation of approximately 1,219 m (4,000 ft). The trail proceeds down toward Bautista Creek and the CDC Bautista Conservation Camp at Bautista Canyon Road.

Hixon Trail – This OHV trail begins at Bautista Canyon Road approximately 8.9 km (5.5 mi) north of the CDC Bautista Conservation Camp. It crosses Bautista Creek and extends in a southerly direction toward Hixon Flat at an elevation of approximately 1,036 m (3,400 ft).²⁰ Hixon Trail is not located within the study limits, but intersects Bautista Canyon Road within the logical termini.

Juan Bautista de Anza National Historic Trail (Anza NHT)

In August 1999, Congress passed Public Law 101-365 making the Anza NHT a component of the National Trails System, to be administered by NPS. Of the 1,930 km (1,200 mi) length of the Anza NHT from Nogales, Arizona, to San Francisco, California, 259 km (161 mi) are components that cross federal lands. The only trail component within the study area is a 13.2 km (8.2 mi) segment of Bautista Canyon Road that passes through the SBNF (SRI 2003). This segment of the Anza NHT functions as an auto route (FH 224) and rural collector linking the communities of Anza and Valle Vista/Hemet. Native American tribes also use this segment of the Anza NHT to access plant collecting areas.

3.11.2 Regulatory Setting

SBNF Land and Resource Management Plan (LRMP) Recreation Goals – Recreation

- *Provide a wide range of developed and dispersed recreational opportunities with a shift toward day use activities.*
- *Expand interpretive services program and activities.*

²⁰ Source: USGS. 2001. Survey Results for the Arroyo Toad in the SBNF Final Report.

3.11.3 Thresholds of Significance

The proposed action would result in a significant impact to the environment if it would:

- increase the use of existing neighborhood, regional parks, national forests, or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- include recreational facilities or require the construction or expansion of recreational facilities or require the construction or expansion of recreational facilities that might have a significant physical effect on the environment.

3.11.4 Environmental Consequences

3.11.4.1 Alternative A

The increased traffic on Bautista Canyon Road may lead to increased awareness of the existence of an OHV trail in the area which could increase use of the OHV trail. Similar increased awareness of SBNF as a recreational resource could result. As noted in Section 2.4.1, construction of the proposed project would result in a temporary closure of Bautista Canyon Road. Thus, access to the NHT auto route would be restricted. The County of Riverside and FHWA will define an alternative route in consultation with the NPS and ensure appropriate signage is in place prior to initiating the road closure. The impact would be temporary and occur only during construction. Operation of the proposed project would not adversely affect any existing neighborhood or regional parks or otherwise cause the physical deterioration of recreational facilities.

As noted in Section 2.2, the proposed project would include construction of a 0.1 ha (0.3 ac) overlook area and a 0.1 ha (0.3 ac) OHV trailhead pullout at the Alessandro Trailhead (Figure 2.2-5). Each facility would have five parking spaces. Improved access to OHV and hiking areas within the SBNF may increase the number of users. It is assumed all users would be required to purchase Adventure Permits from the SBNF and comply with any restrictions and/or requirements. Activities would be restricted to daytime use; and thus, would be consistent with the SBNF LRMP recreation goal referenced above. Thus, while use of the area may change as a result of the project, no significant adverse impacts to recreation are anticipated.

3.11.4.2 Alternative B

Recreation effects would be the same as those described for Alternative A.

3.11.4.3 Alternative C

Recreation effects would be the same as those described for Alternative A.

3.11.4.4 Alternative D

Under the No Action alternative, improvements to Bautista Canyon Road would not occur. Existing conditions would remain the same as described above in Section 3.11.1. No impact to recreational resources would occur.

3.11.5 Mitigation

To minimize effects associated with the temporary closure of the NHT auto route, the FHWA recommends signing an alternate route using SH 371 and/or 74. Specific details would be determined during consultation with the NPS.

3.12 Soils/Geology

Geological resources are defined as the geology, soils, and topography of a given area. The geology of an area includes bedrock materials, mineral deposits, and fossil remains. The principal geologic factors influencing the stability of structures are soil stability and seismic properties. Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. Soil structure, chemical composition, and erodibility all determine the ability of the ground to support structures and facilities.

Topography is typically described with respect to the elevation, slope, aspect, and surface features found within a given area. The project study area for geological resources includes Bautista Canyon Road located in the BMU of the SBNF where proposed construction and ground-disturbing activities would occur.

An interim geotechnical investigation report, titled *California Forest Highway 224, Bautista Canyon Road, SBNF CA PFH 224-1(1), Interim Geotechnical Report, February 2003* (FHWA 2003), was prepared by FHWA's Technical Services Branch for the proposed project to characterize surface and subsurface soil and rock conditions. The report can be found in Volume II, Appendix J of this EIS/EIR. Relevant sections are summarized and used as a basis to address geology and soils impacts associated with the proposed project.

3.12.1 Existing Conditions

Geologic Setting

Bautista Canyon Road is a narrow, northwest-trending canyon located on the southwestern flank of the San Jacinto Mountains. San Jacinto Peak, at an elevation of 3,293 m (10,804 ft) above mean sea level (MSL), anchors the northern end of Peninsular Ranges, which extends south through Baja California, and from the Pacific Ocean to the Colorado Desert. Bautista Canyon is flanked on the east and west by smaller mountains and peaks – Rouse Ridge at 1,500 m (4,921 ft) and Thomas Mountain at 2,002 m (6,569 ft) to the northeast and Cahuilla Mountain at 1,719 m (5,640 ft) to the southwest. The core of these mountains is granitic rock that was forced upward beneath ancient sedimentary formations of sandstone, shale, and limestone. As part of the natural cycle of mountain evolution, erosion has removed the overlying rock in many areas, exposing the granitic core. The Hot Springs, Buck Ridge, and

San Jacinto Faults traverse the REMAP area generally from northwest to southeast (see Figure 3.12-1). The dominant structure in the vicinity of the proposed project is the northwest-trending San Jacinto Fault Zone that parallels the proposed project alignments to the east.

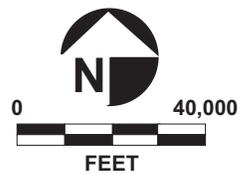
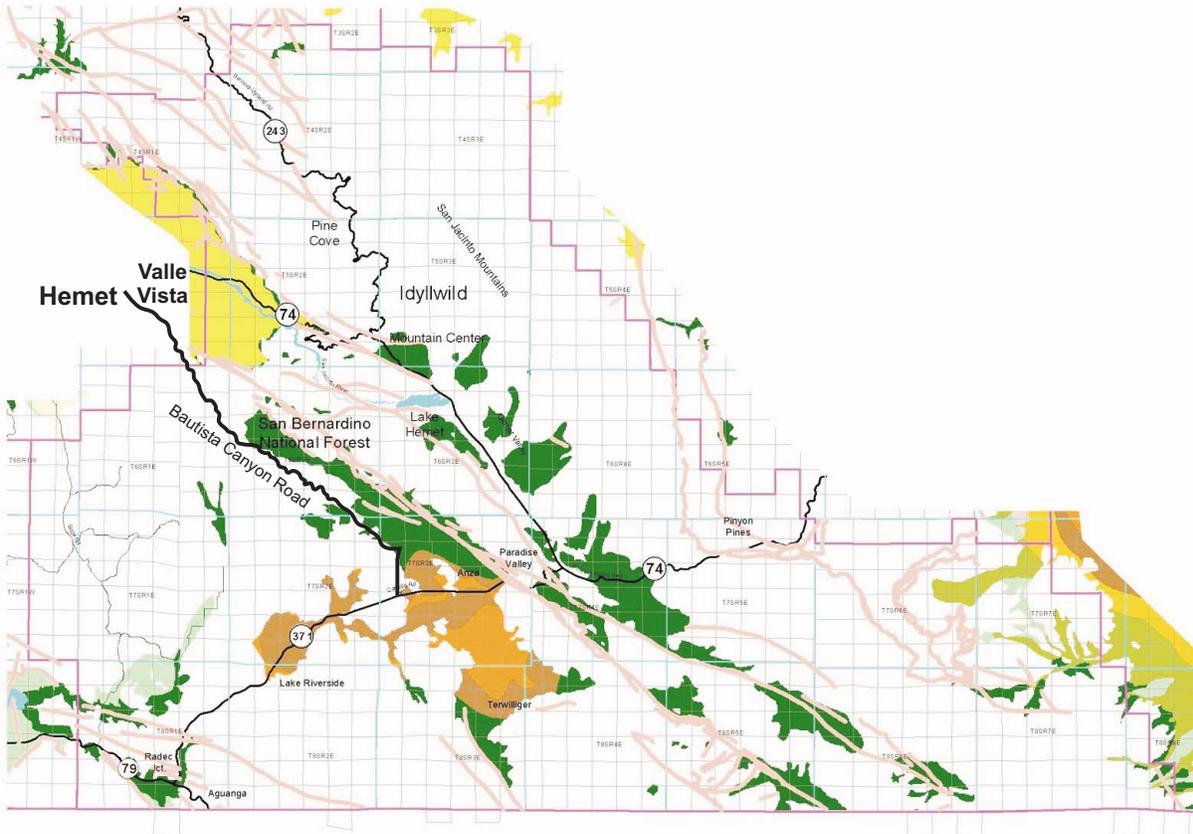
Soils and Mineral Resources

It is estimated that 90 percent of the soils in the SBNF are of granitic origin. They are generally coarsely textured and highly permeable (see Figure 3.12-2). Because of the sharp relief, soils on steep slopes are generally shallow and highly erodible as described in Table 3.12-1.

Soils found within the project study area are rated from moderate to very low in soil productivity. Therefore, no prime agriculture lands exist within the project study area. There is one mine, located approximately 3.2 km (2 mi) northwest of the landing strip near the Tripp Flats Forest Service Station and 2.4 km (1.5 mi) west of Bautista Canyon Road. No surface mines are located within the project study area.

Topography

Bautista Canyon descends from an elevation of 1,262 m (4,140 ft) above MSL at its upper end near Anza Valley to 610 m (2,000 ft) at its mouth near Valle Vista, 24 km (15 mi) to the northwest. The project area is located in the upper portion of the canyon, from 855 to 1,260 m (2,800 to 4,140 ft) above MSL. Bautista Canyon is separated from the main mass of the San Jacinto Mountains by Blackburn Ridge, Rouse Ridge, and Thomas Mountain to the northeast, whereas the Santa Rosa Hills, Red Mountain, Little Cahuilla Mountain, and Cahuilla Mountain define its southwestern rim. The topography along Bautista Canyon Road varies from almost flat relief (5 to 7 percent slopes) in the northern and southern segments to slopes over 30 percent along the mid segment. Natural slopes within the canyon typically occur at approximately 1:1.2 to 1:2.5 (V:H). Cut slopes along the existing Bautista Canyon Road have been constructed at slopes of approximately 1:1.33 to 1:3 (V:H). The majority of existing cut slopes are between 1.8 to 3.7 m (6 to 12 ft) in height. However, several cut slopes extend to approximately 6.1 to 9.1 m (20 to 30 ft) in height (FHWA 2001). Many areas along existing cut slopes exhibit signs of localized erosional and sloughing failures.

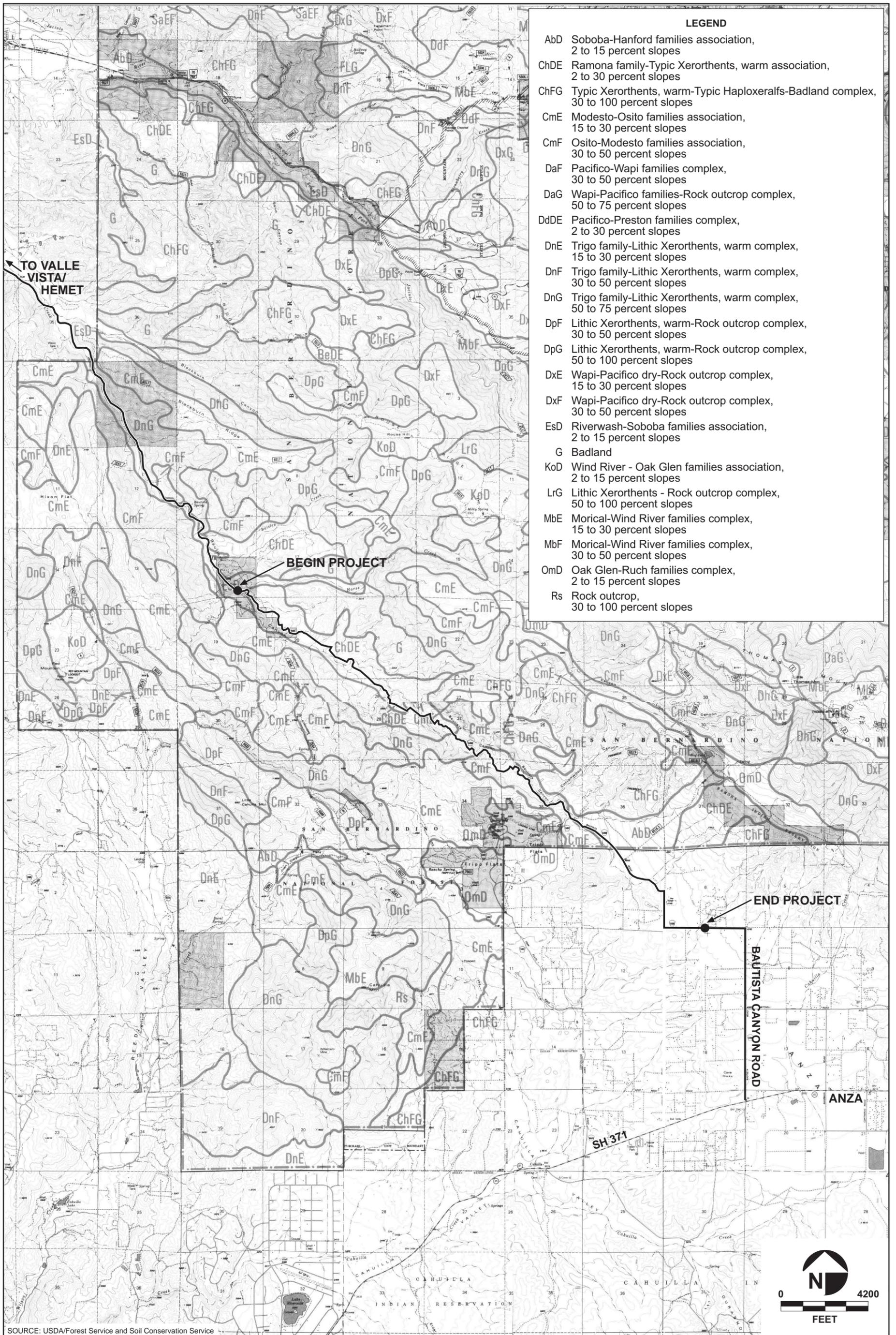


SOURCE: County of Riverside

Seismic Hazards

FIGURE
3.12-1

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Soils Map

FIGURE

3.12-2

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**Table 3.12-1
 Description of On-Site Soil Properties**

Soil Series	Physical Characteristics	Maximum Erosion Hazard
Modesto	Moderately deep to deep, well-drained soils derived from granitic and metamorphic rock.	Moderate
Osito	Shallow, well-drained soils derived from granitic rock, metamorphic rock, or sandstone.	Very High to High
Ramona	Well-drained soils formed in recent alluvium weathered from granitic rocks.	Moderate to High
River Wash	Unstabilized sandy, gravelly, cobbly, and stony material associated with intermittent drainages.	High
Soboba	Very deep, excessively drained soils formed from recent alluvium weathered from granitic and metamorphic rocks.	Moderate
Trigo	Shallow, somewhat excessively drained soils formed from material weathered from granitic and metamorphic rocks or sandstone.	Very High

Regional and Local Seismic Setting

As noted, Bautista Canyon Road resides within a high seismic region, adjacent to the San Jacinto and Elsinore Fault Zones. The San Jacinto Fault Zone, which cuts through Bautista Canyon, diverges from the San Andreas Fault on the north side of the San Gabriel Mountains and extends southeastward into the Imperial Valley. It may be the most seismically active fault zone in California. Since 1890, the San Jacinto Fault Zone has produced more moderate-to-large earthquakes than any other fault zone in southern California. Two large earthquakes, one in 1899 and the other in 1918, apparently were centered in the southern San Jacinto Valley (SRI 2003).

Active faults in the region with the greatest potential to impact the proposed project lie within the San Jacinto Fault Zone just east of Bautista Canyon and include the Casa Loma-Clark Fault (paralleling the Bautista Canyon lineament), Buck Ridge Fault, and Hot Springs Fault. The Buck Ridge and Casa Loma fault system is the least active in the San Jacinto Fault Zone (FHWA 2003).

At the mouth of Bautista Canyon, the San Jacinto Fault lies beneath Bautista Creek and its fan. Farther upstream, the fault and the stream diverge, with the fault following Blackburn Canyon and then continuing along the slope of Rouse Ridge about 3 km northeast of Bautista Creek, roughly paralleling the stream. Tributary drainages of Bautista Creek on the northeast side of the canyon that cross the fault have distinct “dog-leg” bends caused by right-lateral fault movement. As the fault continues up the canyon, it passes through the Ramona Indian Reservation, 2 km (1.2 mi) northeast of the upper end of the project area. A body of water at

the northwest end of the reservation, known as Hog Lake, is a sag pond on the fault. Springs and wetlands at the southeast end of the reservation also are fault-related (SRI 2003).

Liquefaction

Liquefaction occurs in saturated soils, that is, soils in which the space between individual particles is completely filled with water. This water exerts a pressure on the soil particles that influences how tightly the particles themselves are pressed together. During seismic events, water pressure can increase to the point where the soil particles can easily move with respect to each other. When liquefaction occurs, the strength of the soil decreases; thus, reducing the ability of the soil deposit to support foundations for buildings and bridges.

Surface reconnaissance indicates the presence of moderate-to-loose compacted sands (with unknown quantities of silt) potentially extending to a depth of 6 m (19.7 ft) at the proposed center pier location of the proposed bridge site. These sands may occasionally be fully saturated, or may support a fairly shallow water table for extended periods, possibly with a liquefaction range of 0 to 6 m (0 to 19.7 ft) from the surface, although a water table was not identified in the seismic refraction data following a large precipitation event. No other potential liquefaction sites appear to be located within the proposed project area (FHWA 2003).

Groundwater

Groundwater was not encountered within any of the deep borings on the elevated central section of the project (FHWA 2003).

3.12.2 Regulatory Setting

Federal

SBNF Land and Resource Management Plan (LRMP) – Soils Goal

- *Maintain long-term soil productivity and prevent permanent degradation of soils.*

Local

County of Riverside General Plan/REMAP Seismic Policies

REMAP 15.1 Protect life and property from seismic related incidents through adherence to the Seismic Hazards section of the General Plan Safety Element.

3.12.3 Thresholds of Significance

The project would result in a significant impact to the environment if it would:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving (1) rupture of a known earthquake fault, (2) strong seismic ground shaking, (3) seismically related ground failure, including liquefaction, or (4) landslides;
- result in substantial soil erosion or the loss of topsoil;
- 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; or
- 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.

3.12.4 Environmental Consequences

3.12.4.1 Alternative A

No unique geologic features or hazards are known to be present in the study area. However, to minimize risks, design and construction of the proposed Bautista Creek Bridge would comply with local, state, and national bridge design standards. These standards would include seismic safety standards to reduce effects from major seismic events. Additionally, further geotechnical review would be performed prior to final design to determine construction limits and foundation designs. Therefore, with the implementation of these measures during project design, no short-term, long-term, direct, indirect, or unavoidable geologic or seismic effects would occur as a result of the implementation of Alternative A.

Implementation of Alternative A would not result in substantial soil erosion or the loss of topsoil. Roadway improvements and bridge construction all would require grading and excavation of cut and fill slopes. It is estimated that 225,000 m³ (294,300 yd³) of material would be excavated. Fill needs would be met through the on-site balance of cut and fill. All construction fill would be subject to applicable composition standards. Short-term and long-term soil erosion effects resulting from project grading activities would be minimized by implementation of a Riverside County approved SWPPP (see Section 3.7, Hydrology/Water Resources). In areas of cut where solid rock exists, soil stability and erosion effects would not be significant, and steeper slopes could be cut in these locations, thereby resulting in a positive benefit by reducing the proposed roadway's footprint.

The implementation of Alternative A would result in cut and fill slopes ranging from approximately 0 to 25 m (0 to 82 ft) high on soils that have moderate to very high erosion risks. In general, fill slopes would be no steeper than 1:2 (V:H). Construction could result in significant soil erosion effects; however, erosion control measures would be implemented to minimize erosion. All cut and fill slopes would be revegetated per the recommendations of the Conceptual Landscape and Revegetation Plan prepared for the project. Revegetation treatment on cut slopes would depend on the steepness of the slope. Slopes up to 1:1.5 (V:H) would

have the topsoil replaced and would be seeded. Slopes greater than 1:1.5 (V:H) may not be seeded.

Topsoil and crushed native vegetation (duff) would be salvaged and stored for reapplication within areas containing native vegetation. Fill slopes up to 1:1.5 (V:H) would be smoothed and topsoil reapplied, as feasible, and would be seeded with a native seed mix. With the implementation of the project Revegetation Plan and the slope and erosion control measures described above, topsoil loss would be minimized; thus, soil erosion effects would be reduced to below a level of significance.

As noted, foundations for bridge construction would be designed based on the recommendations of the Interim Geotechnical Investigation Report and additional testing performed prior to final bridge design. Implementation of the measures described above and outlined in the Interim Geotechnical Investigation Report would reduce geologic effects associated with liquefaction to below a level of significance.

Surface mapping of soil and rock conditions along the northern and central segments of the proposed project indicate dense, silty sands with boulder material would be encountered in the northern portion of the project area, along with possible mixed cut slope conditions (alluvium and outcropping rock). Although drilling indicated highly weathered, jointed granitic rock occurs throughout the central portion of the project, pneumatic rock breakage or blasting may be required in large cuts where less weathered granitic or gneissic rock is encountered. The high cuts in the southern portion of the project may require blasting to achieve sufficient fragmentation of the large blocks for efficient handling. Due to the weathered and jointed nature of the rock mass, special attention would be paid to production blasting prior to final trim blasting to minimize over break. Scaling²¹, and possibly spot bolting²², will be critical elements in arriving at stable rock cuts along Bautista Canyon and would be required during project excavation as a condition of project approval.

Project design and construction techniques would occur consistent with federal and state regulations and standards, with appropriate consideration provided to geologic and soil characteristics in the canyon. Thus, no impact to geologic or soil resources as described above is anticipated to occur from the project or to the forest resulting from a seismic, liquefaction, landslide, or related geologic event.

SBNF Land and Resource Management Plan (LRMP) – Soils Goal

With the implementation of the proposed slope revegetation plan (Volume II, Appendix F) and use of BMPs during construction, Alternative A would be consistent with the soils goal to “*maintain long-term soil productivity and prevent permanent degradation of soils.*”

²¹ Scaling – the removal of loose rocks and stones.

²² Spot bolting – the use of a few roof bolts at spot locations.

County of Riverside General Plan/REMAP

Alternative A would be consistent with the seismic policy to “*Protect life and property from seismic related incidents through adherence to the Seismic Hazards section of the General Plan Safety Element.*” The proposed Bautista Creek Bridge would be designed to meet California state seismic standards.

3.12.4.2 Alternative B

Based on the available level of geotechnical analysis, potential effects associated with this alternative are anticipated to be similar to those described above for Alternative A. This is based on the fact that these alternatives would entail construction of relatively similar facilities under generally similar geologic conditions. Erosion control measures would be necessary to prevent accelerated erosion; these measures are described above in Alternative A. Construction of Alternative B would require the excavation of approximately 303,000 m³ (396,300 yd³) of excavation. All construction fill would be subject to applicable composition standards.

The implementation of Alternative B would result in cut and fill slopes ranging from approximately 0 to 25 m (0 to 82 ft) high on soils that have moderate to very high erosion risks. Construction could result in significant soil erosion effects. However, erosion control measures would be necessary to prevent accelerated erosion and are described above in Alternative A.

3.12.4.3 Alternative C

Based on the available level of geotechnical analysis, potential effects associated with this alternative are anticipated to be similar to those described above for Alternative A. This is based on the fact that these alternatives would entail construction of relatively similar facilities under generally similar geologic conditions. Erosion control measures would be necessary to prevent accelerated erosion; these measures are described above in Alternative A. Construction of Alternative C would require approximately 235,000 m³ (307,400 yd³) of excavation. Excess cut would be met through the on-site balance of cut and fill, with all construction fill subject to applicable composition standards.

The implementation of Alternative C would result in cut and fill slopes ranging from approximately 0 to 25 m (0 to 82 ft) high on soils that have moderate to very high erosion risks. Construction could result in significant soil erosion effects. However, erosion control measures would be necessary to prevent accelerated erosion and are described above in Alternative A.

3.12.4.4 Alternative D

Under the No Action alternative, improvements to Bautista Canyon Road would not occur. Existing conditions would remain the same as those described above in Section 3.12.1. Under existing conditions, the generation of wind-entrained fugitive dust and surface erosion during storm events would continue. Because there are no drainage controls in place, erosion contributes to soil loss and sedimentation in Bautista Creek and other surface water drainages. These effects would continue as a result of Alternative D implementation.

3.12.5 Mitigation

The following mitigation measures would reduce potential geologic effects to below a level of significance:

- Detailed surface geologic structure mapping shall be required prior to project approval at additional locations along the central portion of the project area, and on the limited rock outcrop exposures along the southern canyon section – a section where little is currently known about the rock mass. This mapping shall encompass a detailed rock mass kinematics analysis, identifying potential failure conditions in planned rock cuts.
- Following field mapping and data analyses, final design recommendations shall be developed for large rock cuts, including recommendations for rock mass stabilization, as required prior to project approval.
- Topsoil locations and stripping depths shall be determined with the assistance of USDAFS personnel prior to project excavation.
- Bridge foundation recommendations shall build on the seismic information acquired to date and additional pier borings, recommended in the Interim Geotechnical Investigation Report, focusing on deep foundation alternatives for yet-to-be-determined scour depths, groundwater levels, and soil/rock reactivity within the Bautista Creek drainage. Box culvert bearing capacities shall also be developed.
- All cut slopes shall be observed during grading as directed by a geotechnical engineer to ensure conformity with anticipated subsurface conditions.

3.13 Public Services/Utilities

Public services/utilities are defined as various basic services provided by public and private entities for the purpose of enhancing the quality of life. Such services include schools, law enforcement and fire protection, health services, potable water supply systems, wastewater treatment and disposal, solid waste collection and disposal, and utilities. Public services/utilities related to the study area are described below.

3.13.1 Existing Conditions

Schools/Public Facilities

There are two school districts that serve Hemet and the greater Hemet area including Anza. Hemet Unified School District serves all but a portion in the north-central area of the city, which is served by the San Jacinto Unified School District (<www.ci.hemet.ca.us/facts>). Valle Vista Elementary School is located near the northern logical terminus along Fairview Avenue. No other schools are located in the study area.

In addition to Valle Vista Elementary School, there are two other public facilities located near the northern logical terminus in the community of Valle Vista. These are the Valle Vista Library and the Valle Vista Community Center, which are located adjacent to Fairview Avenue. As noted,

the CDC Bautista Conservation Camp is located just west of the northern end of the project area at the Horse Creek and Bautista Creek junction. The Tripp Flats Forest Service Station and a privately-owned landing strip are located on the west side of Bautista Canyon Road toward the southern end of the project area (see Figure 1.3-2). No public facilities are located within the project's southern terminus area.

Law Enforcement Protection

The SBNF has one law enforcement officer for the entire San Jacinto Ranger District. Most law enforcement within the SBNF is provided through forest officers and cooperative law enforcement programs. Riverside County Sheriff's Department provides service to the SBNF. The Hemet station office is located at 42950 Acacia Avenue in Hemet (<www.co.riverside.ca.us/sheriff>).

Fire Protection

The County of Riverside contracts with the State of California for fire protection services [California Department of Forestry and Fire Protection (CDF)]. The nearest fire stations to the project area would be Station #29 located at 56550 SH 371 in Anza and Station #72 located at 25175 Fairview Avenue in Valle Vista. The CDF operates a joint Air Attack/Helitack base at the Hemet/Ryan Airport (<www.rvcfire.org>). The SBNF has one fire engine co-located with the CDF at the Anza station.

Health Services

Medical services are provided by the Hemet Valley Medical Center located at 1117 E. Devonshire in Hemet. The facility is a 240-bed full-service acute care hospital with 24-hour emergency department (<www.ci.hemet.ca.us/facts>).

Water

The Eastern Municipal Water District (EMWD) service area extends from Moreno Valley to Temecula, encompassing Perris, San Jacinto, Hemet, and parts of Murietta in Riverside County. The EMWD boundary ends at the southern end of Fairview Avenue. The EMWD provides water to the agricultural uses in that area, but service does not extend to the project area. Water service could be provided by either annexing to EMWD's system or by wells. EMWD also provides temporary water at a stub-out facility located on Fairview Avenue (Odencrans 2003).

Wastewater

EMWD also provides sewerage transmission lines and treatment facilities for the city of Hemet. Sewage is treated at the EMWD sewage treatment plant located in San Jacinto. Sewer service ends at SH 74 at Fairview Avenue in Hemet. Areas outside of this boundary would be on septic systems. No sewer service is available within the project study area (Odencrans 2003).

Solid Waste

Waste Management, Inc. provides solid waste services to Riverside County. Solid waste is taken to one of eight landfills (Badlands, Blythe, Desert Center, Edom Hill, El Sobrante, Lamb Canyon, Mecca II, or Oasis). There also are seven transfer stations (Anza, Burrtec's Coachella, Idyllwild, Moreno Valley, Perris, Pinyon Flats, or Robert A. Nelson) located throughout Riverside County. The Riverside County Waste Management Department operates and maintains the landfills within Riverside County, with the exception of the El Sobrante Landfill, which is owned by Waste Management, Inc. (<www.rivcowm.org>).

Electricity and Fiber-Optic Cable

As described in Section 3.1, Bautista Canyon Road is located in the SBNF, which is an open space and conservation area. No major public services or utilities are located within the SBNF, with the exception of a buried fiber-optic telephone cable owned by Verizon California, Inc., and an aerial power line owned by Anza Electric Cooperative. These facilities are located parallel to the existing alignment of Bautista Canyon Road. The fiber-optic cable and appurtenant maintenance handholds are located within or adjacent to the roadway within the study area. The aerial, 4-strand power line, owned by Anza Electric Cooperative, generally follows the corridor.

3.13.2 Regulatory Setting

There are no regulations applicable to public services in the project area.

3.13.3 Thresholds of Significance

The proposed action would result in a significant impact to the environment if it would:

- result in substantial adverse physical effects associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause adverse environmental effects, in order to maintain acceptable service ratios, response times, or other performance objectives for:
 - Fire protection
 - Police protection
 - Schools
 - Parks
 - Other public facilities
- require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause adverse environmental effects;
- require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause adverse environmental effects;
- not have sufficient water supplies available to serve the project from existing entitlements and resources, such that new or expanded entitlements are necessary;

- result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- be served by a landfill that does not have sufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- not comply with federal, state, and local statutes and regulations related to solid waste.

3.13.4 Environmental Consequences

3.13.4.1 Alternative A

Because the proposed project is a roadway reconstruction project and a transportation facility, Alternative A would not adversely affect public services.

Schools/Public Facilities

Construction and operation of Alternative A would not adversely affect access to or otherwise impact the Valle Vista Library, Valle Vista Community Center or Valle Vista Elementary School. As noted, traffic volumes along Fairview Avenue may increase during construction. A crossing guard would be used to ensure the safety of school children in the area. No long-term impacts to schools or public facilities are anticipated as a result of project implementation.

Law Enforcement

Bautista Canyon Road is the primary route of vehicular access to this portion of the SBNF for administrative use and emergency response, including law enforcement patrols. During construction, provision would have to be made to allow emergency access into Bautista Canyon through the closed segment of road. These arrangements would be made between Riverside County, FHWA, SBNF, and emergency services. Operation of the project would improve access to Bautista Canyon for law enforcement patrols, and thus, would not have any adverse effects on the provision of law enforcement services.

Fire Protection

Implementation of Alternative A would provide improved USDAFS fire/emergency medical vehicle access to Bautista Canyon. Improving the route would greatly enhance the ability of state and federal fire crews to reach the area faster and with less wear and tear on their vehicles. Additionally, improvements to Bautista Canyon Road would reduce the response time to emergency calls within the canyon for Valle Vista fire station from the north and Anza fire station from the south. Like law enforcement, provisions would have to be made to allow fire and emergency vehicle access into Bautista Canyon through the closed segment of road. These arrangements would be made between Riverside County, FHWA and the SBNF as part of final project approvals.

Health Services

Construction and operation of Alternative A would not adversely affect access to or otherwise impact the Hemet Valley Medical Center or other medical facilities in the Valle Vista and Anza areas.

Water

No water service exists in the project area and none would be provided as part of the proposed project. No impact to the provision of water service would occur.

Wastewater

No wastewater service exists in the project area and none would be provided as part of the proposed project. No impact to the provision of wastewater service would occur.

Solid Waste

Construction of Alternative A would generate solid waste. The waste material would be collected and disposed of at an appropriate landfill. Operation of Alternative A would not generate solid waste and, thus, would not impact solid waste management service.

Electricity and Fiber-Optic Cable

During site preparation, existing power lines and approximately seven AEC power poles along Bautista Canyon Road would be relocated. The power poles would be moved outside the roadway clear zone (see Figures 2.2-1 through 2.2-3) to ensure consistency with AASHTO Roadside Standards. If any poles are relocated outside of the ROW, a special use permit would be obtained from the USDAFS. The existing fiber-optic cable would be abandoned and new fiber-optic lines would be placed within the new roadway section and the ROW. No disruption of electric or cable services would occur, as electrical and fiber-optic service would be temporarily rerouted.

Therefore, no significant long-term, indirect, or unavoidable effects to public services/utilities would result with the implementation of Alternative A.

3.13.4.2 Alternative B

Public service/utility impacts would be the same as those described for Alternative A.

3.13.4.3 Alternative C

Public service/utility impacts would be the same as those described for Alternative A.

3.13.4.4 Alternative D

Under the No Action alternative, improvements to Bautista Canyon Road would not occur. Existing conditions would remain the same and would continue to make travel over this segment of the roadway very slow. Consequently, response times for fire and sheriff emergency vehicles using the unpaved portion of Bautista Canyon Road would continue to be adversely affected by road conditions. While the project presents an opportunity to improve overall accessibility to the study area, impacts to public services would not be significant under the applicable significance thresholds if the project were not constructed.

3.13.5 Mitigation

No significant impacts are anticipated; thus, no mitigation would be required.

3.14 Fire Hazard and Risk

This section discusses the existing setting and possible effects and mitigation measures pertaining to fire hazard and risk that could result from implementation of the proposed action.

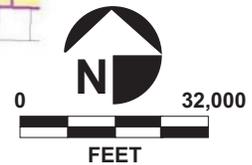
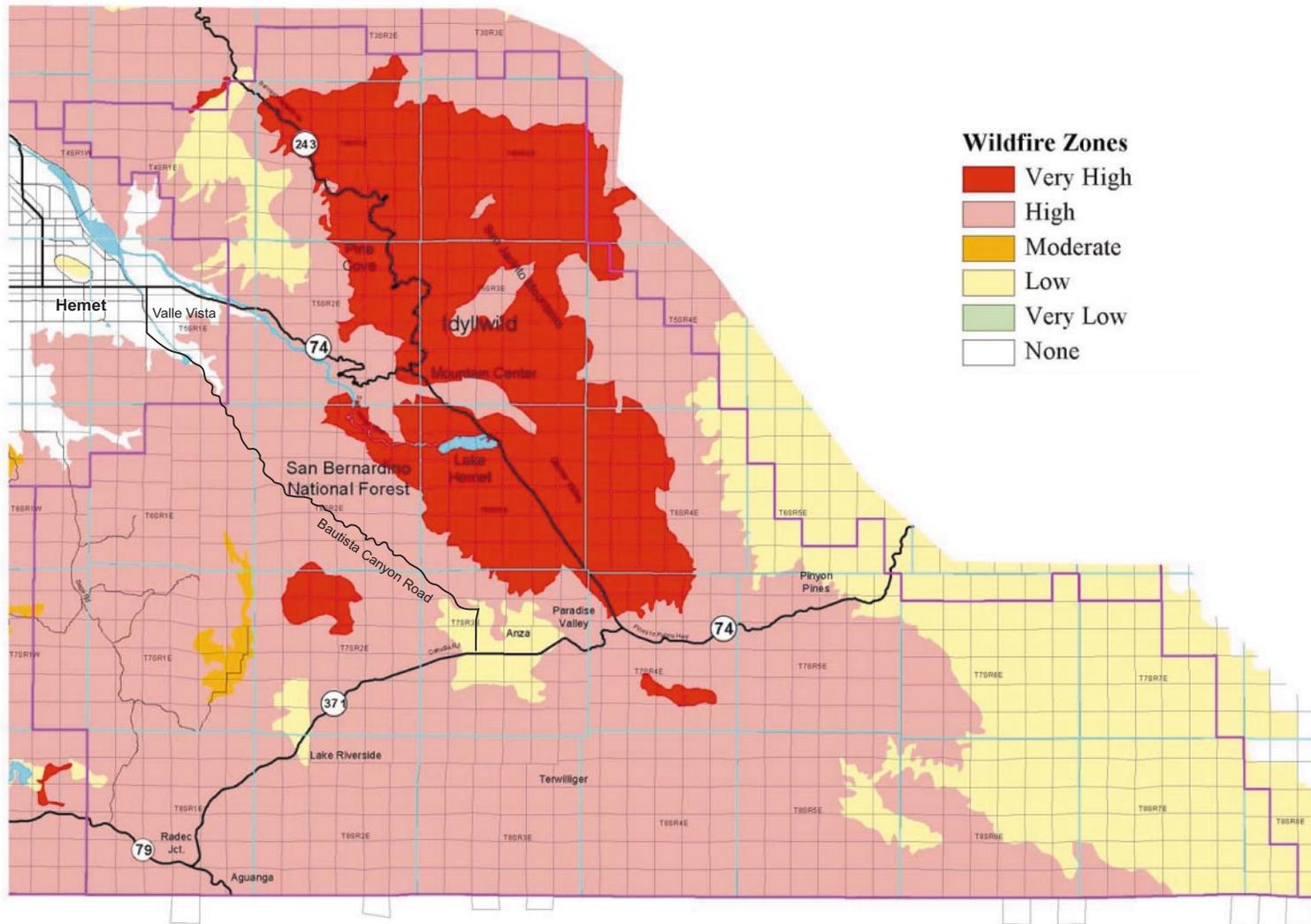
3.14.1 Existing Conditions

Fire History

Due to the rural and mountainous nature of the REMAP area as well as the local vegetation, much of the plan area and the area around Bautista Canyon Road is subject to wildfires. This threat is present in both natural environments and built communities (County of Riverside 2002a) as shown in Figure 3.14-1. Several forms of chaparral occur within the study corridor including bigberry manzanita chaparral, chamise chaparral, red shank chaparral, scrub oak chaparral, and southern mixed chaparral (AMEC 2002b).

Chaparral vegetation is adapted to fire and under natural conditions burns regularly, forming a mosaic of differently aged stands. Chaparral is widely distributed throughout California on dry slopes and ridges at lower elevations where it occupies thin, rocky, or heavy soils. It typically consists of shrubs with resilient broad leaves; however, species composition varies considerably. Chaparral communities require fire to regenerate and the various species within chaparral have adapted to fire through unique methods. High fire hazard species, such as chamise, red shanks, California sagebrush, buckwheat, and sage, are found within these chaparral communities. These species contain volatile oils, which give chaparral and scrub their pungent odors. These oils are also highly flammable. Chaparral is also susceptible to the accumulation of discarded branches and other debris, which forms an understory of dry and discarded vegetation over long periods of time (Bakker 1971). Lightning causes most fires within the SBNF; however, in chaparral, the combination of weather, topography, the accumulation of dry, discarded vegetation, and human presence has increased the dangers that lead to large, high-intensity wildfires (USDAFS 1988).

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SOURCE: County of Riverside

Wildfire Susceptibility Zones

FIGURE

3.14-1

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With the advent of fire prevention following formation of the San Jacinto Forest Reserve, fuel loads grew and the formerly self-limiting chaparral fires became much larger. Several large fires during the twentieth century had their origins in Bautista Canyon. In 1924, a large fire covering approximately 4,921 ha (12,160 ac) burned on the east side of Bautista Canyon Road in the northern section of the project study area. In the fall of 1928, a fire dubbed the "Worst Fire in the History of Riverside County" burned over 20,235 ha (50,000 ac) from Bautista Canyon all the way to the San Diego County line and beyond before it was contained. In November 1943, a fire started in Bautista Canyon and ran northeast over Rouse Ridge into Mountain Center. Soldiers from Camp Haan finally contained it before it spread into Idyllwild and Lake Hemet, but not before it burned several buildings (SRI 2003). A small fire of approximately 389 ha (960 ac) occurred in 1958 in the northern end of the project study area that burned on both sides of the roadway. Smaller fires have recently occurred within the project study area. In 1979, 130 ha (320 ac) burned the southern end of the project study area just south of Tripp Flats and 648 ha (1,600 ac) burned in 1994 to the north of the project study area just south of Fairview Avenue and in the orchard area (USFS 2003).

Beginning in the Great Depression years of 1933 and 1934 and continuing through 1942, the Civilian Conservation Corps (CCC) built many public works projects in the forest. These included firebreaks, truck trails, and hiking trails. The CCC operated out of five camps in the San Jacinto Mountains. It is likely that many of the forest roads in the project area, such as the Cottonwood Truck Trail, were constructed during this period. A CCC camp was planned for Bautista Canyon, but was never built (SRI 2003).

The CDC Bautista Conservation Camp was established in 1987 by the CDF in cooperation with the CDC and Riverside County Fire Department. It houses minimum-security prisoners who are trained as firefighters (SRI 2003).

USDAFS Fire Management Program

The USDAFS fire management program emphasizes prevention and suppression activities to include fire suppression, management of hazardous fuels (dead plant material), and fire restrictions. The USDAFS has 25 fire engines, 4 hand crews, and one bulldozer located throughout the SBNF during the summer months. Working in conjunction with firefighting aircraft, these crews down flames, construct fire lines, and mop up hot spots to protect local communities. During the winter months, the crews work at removing hazardous fuels to reduce fire hazard. The USDAFS also works closely with local communities, fire safety councils, and other fire agencies such as the Inland Empire Fuels Alliance to address hazardous fuel concerns. Projects such as construction of fuel breaks, thinning of trees, prescribed burning of brush, and removal of dead trees are helping to reduce fire hazard. An approved spark arrestor is required for any internal combustion engine operated on state or county highways or designated forest roads. These include chainsaws, generators, motorcycles, and OHVs (USDAFS 2003).

Fire Projections

With greater use of Bautista Canyon, there is a potential for more fires, which could be caused by accidents, smoking, shooting, arson, fireworks, etc.

3.14.2 Regulatory Setting

Federal

SBNF Land and Resource Management Plan (LMRP) – Fire and Fuels Goal

The SBNF plan has established the following goal to address the fire hazards within the SBNF:

- *Emphasize both a fuel reduction and resource improvement program through vegetation management and an efficient fire organization to minimize wildfire losses.*

3.14.3 Thresholds of Significance

The proposed action would result in a significant impact to the environment if it would:

- expose people or structures to a significant risk of loss, injury, or death involving wildland fires, particularly where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands; or
- impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

3.14.4 Environmental Consequences

3.14.4.1 Alternative A

Historical data indicate that lightning-caused fire risk remains constant over time and is expected to remain so in the future. However, human-caused ignitions are more variable and highly dependent upon human activities. The potential exists for increased fire risk during project construction. Some slash²³ would be generated during the widening and/or realignment activities. This slash would be piled and removed off-site to an appropriate location for possible recycling and would not be burned on-site. Construction equipment operations or other construction activities could potentially start a fire in the project study area, especially adjacent to chaparral or any native dry vegetation. Gasoline- and diesel-powered equipment would be required to have appropriate spark arresters and/or catalytic converters. These fire prevention devices would reduce the fire risks to below a level of significance. Once the project is complete, a 0.6-m (2-ft) shoulder, a 1.2-m (4-ft) fore slope, and variable cut and fill slopes will be revegetated and would provide a buffer between the native vegetation and the roadway.

²³ A complex of woody forest debris left on the ground after logging, land clearing, thinning, pruning, brush removal, or natural processes such as ice or snow breakage, wind, and fire as defined by the USDAFS.

Any fire risk from project construction would be mitigated by fire prevention and precautionary requirements for construction projects such as fire safety orientation and education for all construction personnel prior to commencing construction operations. Disposal of flammable construction debris would occur off-site. Current and projected fire risk resulting from increased human use would be mitigated by SBNF fire prevention contact with forest users and signage in developed recreation areas. No additional mitigation would be necessary.

Upon project completion, it is expected that public use within Bautista Canyon would increase as described in Section 3.3. Thus, fire risk could increase in response to greater human presence within the canyon. Higher vehicle volumes could increase the probability of wildfires starting as a result of human carelessness and/or exhaust sparks. The addition of a buffer zone, as discussed above, would help reduce fire hazards. Implementation of Alternative A would improve fire and emergency vehicle response time within the project study area. As shown in Table 3.3-3, travel time along the 13.2 km (8.2 mi) segment of Bautista Canyon Road would decrease to 20 minutes under Alternative A.

The risk of wildfires starting inside the SBNF would be reduced with the USDAFS fire management program and other measures discussed above. The project would not expose the public to a higher wild fire potential; and thus, would not create or expose the public to a significant impact.

Emergency Response Plan

Implementation of Alternative A would not impair or interfere physically with an adopted emergency response plan or emergency evacuation plan. A positive benefit of the proposed action, recognized by the CDF, Riverside Unit and Riverside County Fire Department²⁴, would enhance the ability of fire crews to travel to Anza and the surrounding area more quickly with less wear and tear on their vehicles.

3.14.4.2 Alternative B

Fire hazard and risk effects would be the same as those described for Alternative A. The alignment deviation would not change the effects related to fire hazard or risk. However, implementation of Alternative B would provide for a safer and more rapid response within the canyon, as Alternative B would provide the fastest travel time of 14 minutes along the 13.2 km (8.2 mi) segment. The roadway design and surface would be improved, resulting in more rapid response times under safer driving conditions.

3.14.3.3 Alternative C

Fire hazard and risk effects would be the same as those described for Alternative A. Travel time for emergency responders would be 17 minutes along the 13.2 km (8.2 mi) segment of Bautista Canyon Road, which is 3 minutes less than for Alternative A and 3 minutes longer than for Alternative B. The roadway design and surface would be improved, which would result in

²⁴ Letter dated 13 February 2001 from the California Department of Forestry, Riverside Unit and Riverside County Fire Department in response to the Notice of Preparation for the proposed action.

more rapid response times under safer driving conditions. This would be a beneficial effect of implementing each build alternative.

3.14.4.3 Alternative D

Under the No Action alternative, conditions along Bautista Canyon Road would remain the same and would continue to make travel over this segment slower and more hazardous. Consequently, the response times for fire and sheriff emergency vehicles using the roadway would remain the same. In comparison to the build alternatives, this would result in a continued adverse effect.

Fire risk is not expected to change from its current high level. Over the long term, risk would not be expected to vary from historical levels and would remain significant and unmitigable.

3.14.5 Mitigation

No additional mitigation would be required.