

2.4 Construction Phase Impacts

Tier I Corridor Alternatives

Adoption of a Tier I Corridor Alternative will not result in any construction; therefore, construction staging, schedule, hours, staging locations, and measures to protect resources are unknown at this time. If a Tier I Corridor Alternative is adopted, subsequent tiered projects with identified construction plans would be subject to separate environmental review and those environmental documents would examine construction phase impacts and propose measures to avoid, minimize, or mitigate impacts to specific resources.

The Tier I Corridor TSM Alternative would have similar but substantially fewer impacts in comparison with the Tier I Corridor HOV Lane Alternative due to the smaller overall project footprint and the need for less interchange and highway mainline work. It is likely that much of the detailed construction phase information and measures provided in Section 2.4.1 for the Tier II Auxiliary Lane Alternative would be applicable to other future tiered projects within the project corridor.

Tier II Auxiliary Lane Alternative

It is anticipated that the Tier II Auxiliary Lane Alternative would be constructed with minimum disruption to the traveling public or surrounding communities. Most construction work would be limited to highway mainline modifications, modifications to the Soquel Avenue/Drive interchange ramps, and construction of the Chanticleer Avenue pedestrian/bicycle overcrossing. The following describes the anticipated construction staging plan for the Tier II Auxiliary Lane Alternative.

Construction Schedule

It is anticipated that project construction of the Tier II Auxiliary Lane Alternative would take approximately 18 to 24 months. If this alternative is built in phases, the northbound auxiliary lane would be built first, and its construction would require approximately 12 to 15 months. Construction of the northbound auxiliary lane would be followed by construction of the southbound auxiliary lane, which would take approximately 6 to 9 months. Lastly, the pedestrian overcrossing would be constructed, which would take approximately 6 to 9 months. The total duration of construction activities would be longer if construction occurs in phases, because each phase would involve construction mobilization and closeout activities. However, the scale of the impacts of construction activities that would occur during each phase would be lesser than would occur if the project is built at one time.

Construction Hours

Most of the construction work for the Tier II Auxiliary Lane Alternative would be done during daylight hours, but there would be some work during night-time hours to permit

temporary closures for tasks that could interfere with mainline traffic or create safety hazards. Examples of these tasks include placing and removing temporary construction barriers, erecting falsework, striping operations, traffic control setup, installation of a storm drain crossing, and asphalt pavement overlay. Any required lane closures would be limited to night-time hours.

Staging Locations

At this time, it appears that no staging areas outside of the existing roadway right-of-way would be required. The anticipated staging areas available include areas within the construction limits, primarily near the existing interchanges.

2.4.1 Traffic and Transportation/Pedestrian and Bicycle Facilities

Environmental Consequences

Potential circulation impacts from project operation are discussed in Section 2.1.5.

Tier I Corridor Alternatives

It is anticipated that future tiered projects under either of the Tier I Corridor Alternatives may require temporary closure of existing bicycle, transit, or pedestrian facilities at times, and may require temporary rerouting of transit service due to interchange work and ramp closures. Increased congestion on Route 1 and on local streets would occur during construction due to short-term lane closures, detours, and as a result of signage stipulating reduced speeds through construction zones. Reduced operating speeds would affect private automobiles and buses that travel the Route 1 corridor.

Impacts to traffic and transportation circulation would result from the following likely scenarios for phased construction of either of the Tier I project alternatives:

- a) It is currently anticipated that both of the existing two lanes of traffic would remain open in both directions during daytime construction. Striping operations, traffic control set-up, installation of a storm drain crossing, asphalt pavement overlay, placing and removing temporary construction barriers, and short-term overcrossing falsework erection would occur at night using lane and mainline closures, as allowed on the closure charts that would be developed during the design phase. Ramp closures are expected during striping operations. During the first stage of construction, the two through lanes would be shifted toward the median barrier in both directions, and Type K concrete railing would be installed along the edge of the traveled way around the construction zone. During Stage 1, roadway widening and retaining wall construction would occur, as would clearing and grubbing.
- b) During the second stage of construction, traffic would be shifted away from the median barrier onto the newly widened Route 1 to allow for construction of the center

overcrossing pier and the concrete median barrier, shoulder, and roadway section. Type K railing would be installed around the median work zone, but none would be required to the outside. Erection of overcrossing falsework requiring a lane closure would occur at night.

- c) At the end of Stage 2, the landscaping work would require shoulder closure.
- d) The final asphalt pavement overlay would require a nighttime mainline closure.

Tier II Auxiliary Lane Alternative

Circulation impacts during construction of the Tier II Auxiliary Lane Alternative would be similar to the impacts described above for the Tier I Corridor Alternatives, except construction of the Tier II Auxiliary Lane Alternative is not anticipated to require closure of existing bicycle, transit, or pedestrian facilities, and it is not anticipated to result in rerouting of transit service. Temporary traffic impacts on Route 1 and adjacent streets would occur during construction due to short-term lane closures, detours, and as a result of signage stipulating reduced speeds through construction zones. Reduced operating speeds would affect private automobiles and buses that travel the Route 1 corridor.

Avoidance, Minimization, and/or Mitigation Measures

Tier I Corridor Alternatives

1. A Transportation Management Plan would be developed and implemented as part of the project construction planning phase for future tiered projects under either of the Tier I Corridor Alternatives, as described above. The Transportation Management Plan would address potential impacts to circulation of all modes (transit, bicycles, pedestrians, and private vehicles).
2. The Transportation Management Plan would include a public outreach program to communicate any such closures and detours as described below under Section 2.4.4, Community Impacts.
3. Temporary ramp closures would be limited to hours where traffic volumes show closure is acceptable.
4. Roadway and/or pedestrian access to all occupied residents and businesses and respective parking lots would be maintained during project construction.
5. In the event of temporary obstruction of pedestrian walkways or bicycle paths, the Transportation Management Plan would identify nearby alternate routes, including pedestrian routes that meet Americans with Disabilities Act requirements, as appropriate.
6. The Transportation Management Plan will include an evaluation of potential impacts as a result of diverting traffic to alternate routes. The Traffic Management Plan would include measures to minimize, avoid and/or mitigate impacts to alternate routes, such

as agreements with local agencies to provide enhanced infrastructure on arterial roads or intersections to deal with detoured traffic. The Traffic Management Plan may also provide for contracting with local agencies for traffic personnel, especially for special event traffic through or near the construction zone.

7. Coordination with Transit and private shuttle services to plan for any rerouting.

Tier II Auxiliary Lane Alternative

1. Implementation of a Transportation Management Plan that addresses circulation for transit, bicycles, pedestrians, and private vehicles.
2. The Transportation Management Plan would include a public outreach program to communicate any such closures and detours as described below under Section 2.4.4, Community Impacts.
3. Lane and ramp closure charts would be included in the final Transportation Management Plan and in the project specifications.
4. In the event of temporary obstruction of any pedestrian walkways or bicycle paths, the Transportation Management Plan would identify nearby alternate routes, including pedestrian routes that meet Americans with Disabilities Act requirements, as appropriate.
5. The Transportation Management Plan will include an evaluation of potential impacts as a result of diverting traffic to alternate routes. The Traffic Management Plan would include measures to minimize, avoid and/or mitigate impacts to alternate routes, such as agreements with local agencies to provide enhanced infrastructure on arterial roads or intersections to deal with detoured traffic. The Traffic Management Plan may also provide for contracting with local agencies for traffic personnel, especially for special event traffic through or near the construction zone.
6. Coordination with Transit and private shuttle services to plan for any rerouting.
7. To minimize disruption to the traveling public during construction of the Tier II Auxiliary Lane Alternative, a comprehensive strategy would be developed to minimize disruption, and assure the safe movement of vehicles through and around the construction site.

2.4.2 Utilities and Emergency Services

Existing utilities and emergency services for the Tier I and Tier II project areas are described in Section 2.1.4, Utilities and Emergency Services.

Environmental Consequences

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

It is anticipated that most utility relocation work would be performed in advance of the highway work. Caltrans and RTC would coordinate with all utility providers during the design phase of the project so that effective design treatments and construction procedures are incorporated to avoid adverse impacts to existing utilities during construction and to ensure that work is in accordance with the appropriate requirements and criteria. Design, construction, and inspection of utilities relocated for the project would be done in accordance with Caltrans requirements.

Nonetheless, the potential exists for construction activities to encounter unexpected utilities within the area of roadway improvements. In addition, utility relocations may require short-term, limited interruptions of service. Any short-term, limited service interruptions of known utilities would be scheduled well in advance and appropriate notification provided to users. It is expected that local communities would not be adversely affected by temporary service interruptions during construction.

Emergency services could also be affected by construction activities: detours and closures of roads and ramps could delay emergency vehicle access.

Avoidance, Minimization, and/or Mitigation Measures

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

Implementation of the Transportation Management Plan in compliance with Caltrans and local policies would involve planning with emergency service providers throughout the project construction to avoid emergency service delays. The following impact avoidance and minimization measures would be required for construction of the Tier II Auxiliary Lane Alternative and would apply to future tiered projects under the Tier I Corridor Alternatives:

1. Coordination with utility providers would be initiated during the preliminary engineering phase of the project and would continue through final design and construction.
2. Caltrans and RTC would coordinate with the affected service provider in each instance to ensure that work is in accordance with the appropriate requirements and criteria.
3. Design, construction, and inspection of utilities relocated for the project would be done in accordance with Caltrans requirements.
4. If unexpected underground utilities are encountered, the construction contractor will coordinate with the utility provider to develop plans to address the utility conflict, protect the utility if needed, and limit service interruptions.
5. A public outreach plan implemented in conjunction with project construction and the Transportation Management Plan will involve communication with the affected

communities to plan any utility interruptions and keep the public informed of construction activities.

6. Caltrans and RTC will coordinate with emergency service providers and through the public information program to avoid emergency service delays by ensuring that all providers are aware well in advance of road closures or detours.

2.4.3 Community Impacts

Section 2.1.3 describes permanent community impacts that could result. Impacts to the community during construction are described below.

Environmental Consequences

Tier I Corridor Alternatives

During project construction, temporary lane closures on Route 1 are likely to occur, and adjacent streets could experience episodes of increased congestion as a result of construction. Roadway obstruction from construction activities may limit the use of some properties located within the project vicinity. This impact would be localized and temporary. A Transportation Management Plan would be developed to assist the remaining local businesses in continuing operation during the construction period. The Transportation Management Plan would identify and provide alternate traffic detour routes, pedestrian routes, and residential and commercial access routes to be used during the construction period.

There would be no disconnection of the communities within the project area during the construction period. Community members would still be able to utilize various community services and facilities during the construction period with some degree of inconvenience due to construction equipment obstruction and temporary partial lane closures. With a continuing public outreach program to keep the area residents and businesses informed of the project construction schedule, there would be no adverse impacts pertaining to community connection and cohesion within the project area.

Construction impacts, including noise and fugitive dust from construction activities and short-term roadway closures requiring alternative traffic routing, would have greater effects on residents of the immediate project area than upon other Route 1 users. These effects would be experienced by ethnic minority and low-income individuals only to the extent that these populations are concentrated in the immediate project area. However, these effects would not fall disproportionately on ethnic minority and low-income individuals because all residents of the immediate project area would experience the same effects. There is no way to construct the corridor improvements without these temporary effects.

Temporary construction easements would also be required during construction. Temporary easements would be acquired from land surrounding the project area and could include land

from residences and businesses. These impacts are temporary; the land would be returned to the residence and/or business following completion of construction.

Construction phase impacts would be mitigated by adhering to Caltrans's standard specifications for noise control and dust abatement and/or construction Best Management Practices for noise and fugitive dust control. Detour routes would be planned in coordination with Caltrans and the traffic departments of the County and City of Santa Cruz and the City of Capitola and would be noticed to emergency service providers, transit operators, and Route 1 users in advance. With these measures in place, there would be no disproportionate adverse effects on minority and low-income residents.

The Tier 1 Corridor HOV Lane Alternative would create temporary construction-related employment, which is considered a beneficial impact.

Impacts during construction would be similar to those described for the Tier 1 Corridor HOV Lane Alternative, but they may last a shorter amount of time because of the larger scope of project construction anticipated for the Tier I Corridor HOV Lane Alternative.

Tier II Auxiliary Lane Alternative

Impacts during construction would be similar to those described for the Tier 1 Corridor Alternatives, but they would last a shorter amount of time because of the smaller scope of project construction for the Tier II Auxiliary Lane Alternative.

Avoidance, Minimization, and/or Mitigation Measures

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

The following standard impact minimization measures would be implemented during construction of the Tier II Auxiliary Lane Alternative and are also expected to be implemented under future tiered projects part of either Tier I Corridor Alternative:

1. The Transportation Management Plan described in Section 2.4.1 Avoidance, Minimization and/or Mitigation Measures will include traffic rerouting, a detour plan, and public information procedures will be developed during the design phase with participation from local agencies, transit and shuttle services, local communities, business associations, and affected drivers. Early and well-publicized announcements and other public information measures will be implemented prior to and during construction to minimize confusion, inconvenience, and traffic congestion.
2. As part of the Transportation Management Plan, construction planning will minimize nighttime construction in residential areas and minimize daytime construction impacts on commercial areas.
3. During the construction phase of the project, some parking restrictions may be required on a temporary basis. A public outreach program would be implemented throughout the construction period to keep the public informed of the construction

schedule and scheduled parking and roadway closures, including detour routes and if available, alternative parking.

4. The acquisition of temporary construction easements shall conform to the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

2.4.4 Air Quality

Potential permanent air quality impacts from project operation are discussed in Section 2.2.6.

Regulatory Setting

Fugitive Dust

According to the Environmental Protection Agency, construction activities for large development projects are estimated to add approximately 1.2 tons of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, then emissions can be reduced by up to 50 percent. Caltrans' Standard Specifications (Section 10) pertaining to dust minimization requirements requires use of water or dust palliative compounds and will reduce potential fugitive dust emissions during construction.

Naturally Occurring Asbestos

Santa Cruz County is not listed as a county containing serpentine and ultramafic rock (Governor's Office of Planning and Research, October 26, 2000); therefore, the impact from naturally occurring asbestos during project construction would be minimal to none. If structures that may contain asbestos are to be demolished, then the contractor would have to comply with the Rules and Regulations of the Monterey Bay Unified Air Pollution Control District.

Affected Environment

Air quality impacts could occur through the release of pollutants such as carbon monoxide, nitrogen oxides, volatile organic compounds, particulate matter (PM₁₀ and PM_{2.5}), and toxic air contaminants present in emissions from operation of construction equipment. The particulate matter emissions also occur from fugitive dust release during grading, excavation, and various other earth-moving activities. The construction emissions analysis provided in the following section is derived from the project *Air Quality Study Report* (2013).

Environmental Consequences

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

During construction of the Tier II Auxiliary Lane Alternative and future tiered projects under either of the Tier I Corridor Alternatives, short-term degradation of air quality may occur due to the release of particulate emissions (i.e., airborne dust) generated by excavation, grading, hauling,

and various other activities related to construction. Emissions from construction equipment are also anticipated and would include carbon monoxide, nitrogen oxides, volatile organic compounds, directly emitted particulate matter (PM₁₀ and PM_{2.5}), and toxic air contaminants such as diesel exhaust particulate matter. Ozone is a regional pollutant that is derived from nitrogen oxides and volatile organic compounds in the presence of sunlight and heat.

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces.

Construction-related effects on air quality from most highway projects are greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate PM₁₀, PM_{2.5}, and small amounts of carbon monoxide, sulfur dioxide, nitrogen oxides, and volatile organic compounds. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM₁₀ emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM₁₀ emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Heavy trucks and construction equipment powered by gasoline and diesel engines would generate carbon monoxide, sulfur dioxide, nitrogen oxides, volatile organic compounds, and some soot particulate (PM₁₀ and PM_{2.5}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, carbon monoxide and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

Sulfur dioxide is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Off-road diesel fuel meeting federal standards can contain up to 5,000 parts per million of sulfur, whereas on-road diesel is restricted to less than 15 parts per million of sulfur; however, under California law and Air Resources Board regulations, off-road diesel fuel used in California must meet the same sulfur and other standards as on-road diesel fuel, so sulfur dioxide-related issues due to diesel exhaust will be minimal. Some phases of construction, particularly asphalt paving, would result in short-term odors in the immediate area of each paving sites. Such odors would be quickly dispersed below detectable thresholds as distance from the site increases.

Tier I Corridor Alternatives

Under the Tier I Corridor Alternatives, construction activity would generate criteria pollutant emissions, toxic air contaminant emissions, and odors; however, construction activity for

each project segment would likely be completed in less than 5 years, and the quantification of emissions is not required per Environmental Protection Agency and Caltrans. As previously explained, subsequent Tier II projects would be subject to separate environmental review; daily construction emissions estimates would be provided at that time.

Assumptions used for the construction calculations are as follows:

- 8.9-mile corridor length
- 8-year construction period
- A maximum of 7 acres of land disturbed per day
- A maximum of 1,000 cubic yards per day of soil to be imported
- A maximum of 1,000 cubic yards per day of soil to be exported

Table 2.4-1 shows the estimated daily emissions associated with each construction phase. Construction emissions would be temporary and not result in any long-term impacts. Therefore, the Tier I Corridor HOV Lane Alternative would not result in an adverse impact related to construction emissions.

Table 2.4-1: Daily Construction Emissions – Tier I Corridor Alternatives

Construction Phase	Pounds per Day				
	Volatile Organic Compound	Nitrous Oxide	Carbon Monoxide	PM _{2.5}	PM ₁₀
Grubbing/Land Clearing	13	93	53	19	75
Grading/Excavation	12	132	60	19	75
Drainage/Utilities	7	47	40	17	73
Paving	5	32	39	1	2
Total Emissions (Tons)	10	94	53	17	67
Average Emissions (Tons per Year)	1.3	12	6.6	2.1	8.4

Source: Sacramento Metropolitan Air Quality Management District, Road Construction Emissions Model.

Tier II Auxiliary Lane Alternative

Table 2.4-2 shows the estimated daily construction emissions. Assumptions used for the construction calculations are as follows:

- 1.4-mile corridor length
- 2-year construction period
- A maximum of 8.5 acres of land disturbed per day
- A maximum of 2,000 cubic yards per day of soil to be imported
- A maximum of 2,000 cubic yards per day of soil to be exported

Construction emissions would be temporary and not result in any long-term impacts; therefore, the Tier II Auxiliary Lane Alternative would not result in an adverse impact related to construction emissions.

Construction activity may generate a temporary increase in mobile source air toxics emissions. Construction emissions would be temporary and not result in any long-term impacts; therefore, the Tier II Auxiliary Lane Alternative would not result in an adverse impact related to construction mobile source air toxics.

Table 2.4-2: Daily Construction Emissions – Tier II Auxiliary Lane Alternative

Construction Phase	Pounds per Day				
	Volatile Organic Compound	Nitrous Oxide	Carbon Monoxide	PM _{2.5}	PM ₁₀
Grubbing/Land Clearing	7	73	30	21	88
Grading/Excavation	9	139	42	22	90
Drainage/Utilities	5	43	21	20	87
Paving	4	32	23	2	2
Total Emissions (Tons)	2	23	8	5	20
Average Emissions (Tons per Year)	1.0	12	4.0	2.5	10

Source: Sacramento Metropolitan Air Quality Management District, Road Construction Emissions Model.

Avoidance, Minimization, and/or Mitigation Measures

Construction impacts would not be adverse, and no mitigation measures are required; however, the following standard Caltrans construction emission minimization measures shall be used to control emissions for the Tier I and Tier II project alternatives:

1. The construction contractor shall comply with Caltrans’ Standard Specifications Section 7-1.01F and Section 10 of Caltrans’ Standard Specifications (2006).
 - a. Section 7, “Legal Relations and Responsibility,” addresses the contractor’s responsibility on many items of concern, such as air pollution; protection of lakes, streams, reservoirs, and other water bodies; use of pesticides; safety; sanitation; convenience of the public; and damage or injury to any person or property as a result of any construction operation. Section 7-1.01F specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.
 - b. Section 10 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are contained in Section 18.

2. The construction contractor shall apply water or dust palliative to the site and equipment as frequently as necessary to control fugitive dust emissions.
3. The construction contractor shall spread soil binder on any unpaved roads used for construction purposes and on all project construction parking areas.
4. The construction contractor shall wash off trucks as they leave the right-of-way as necessary to control fugitive dust emissions.
5. The construction contractor shall properly tune and maintain construction equipment and vehicles.
6. The construction contractor shall use low-sulfur fuel in all construction equipment as provided in California Code of Regulations Title 17, Section 93114.
7. The construction contractor shall develop a dust control plan documenting sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts to existing communities.
8. The construction contractor shall locate equipment and materials storage sites as far away from residential and park uses as practical. Construction areas shall be kept clean and orderly.
9. The construction contractor shall establish Environmentally Sensitive Areas for sensitive air receptors within which construction activities involving extended idling of diesel equipment would be prohibited, to the extent that is feasible.
10. The construction contractor shall use track-out reduction measures, such as gravel pads, at project access points to minimize dust and mud deposits on roads affected by construction traffic.
11. The construction contractor shall cover all transported loads of soils and wet materials prior to transport or provide adequate freeboard (space from the top of the material to the top of the truck) to reduce PM₁₀ and deposition of particulate matter during transportation.
12. The construction contractor shall remove dust and mud that are deposited on paved, public roads due to construction activity and traffic to decrease particulate matter.
13. The construction contractor shall route and schedule construction traffic to avoid peak travel times as much as possible to reduce congestion and related air quality impacts caused by idling vehicles along local roads.
14. The construction contractor shall install mulch or plant vegetation as soon as practical after grading to reduce windblown particulate in the area.
15. According to Caltrans Standard Specification Provisions, idling time for lane closure during construction is restricted to 10 minutes in each direction.
16. The construction contractor must comply with Monterey Bay Unified Air Pollution Control District rules, ordinances, and regulations in regards to air quality restrictions.

2.4.5 Noise

Potential noise and vibration impacts from project operation are discussed in Section 2.2.7.

Regulatory Setting

Construction noise sound control shall conform to the provisions in Section 14-8.02 “Noise Control” of Caltrans’ 2010 Standard Specifications and Standard Special Provisions. The requirements state that construction noise levels generated during construction shall comply with applicable local, state, and federal regulations and that all equipment shall be fitted with adequate mufflers according to the manufacturers’ specifications. Temporary construction noise impacts would be unavoidable at areas located immediately adjacent to the proposed project alignment.

Environmental Consequences

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

During the construction phases of the Tier II Auxiliary Lane Alternative and future Tier II projects stemming from either of the Tier I Corridor Alternatives, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Table 2.4-3 summarizes noise levels produced by construction equipment commonly used on roadway construction projects. As indicated, equipment involved in construction is expected to generate noise levels ranging from 80 to 89 A-weighted decibels at a distance of 50 feet. Noise produced by construction equipment would be reduced over distance at a rate of approximately 6 decibels per doubling of distance. No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with Caltrans’ Standard Specifications and would be short-term, intermittent, and dominated by local traffic noise.

Table 2.4-3: Construction Equipment Noise

Equipment	Maximum Noise Level at 50 feet, A-weighted decibels
Auger Drill Rig	86
Backhoe	75
Compactor	76
Concrete Pump	81
Crane	85
Dozer	85
Excavator	83
Front End Loader	74
Grader	75
Heavy Duty Dump Trucks	77

Equipment	Maximum Noise Level at 50 feet, A-weighted decibels
Vibratory Roller	78
Pavement Breaker	88
Pile Driver, Impact	101
Pile Driver, Vibratory	96
<i>Source: Noise Study Report, 2013.</i>	

Avoidance, Minimization, and Compensation Measures

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

Implementing the following standard measures during construction of the Tier II Auxiliary Lane Alternative and future tiered projects under either of the Tier I Corridor Alternatives would minimize temporary construction noise impacts:

1. Construction activities shall comply with Section 14-8.02 “Noise Control” of Caltrans’ 2010 Standard Specifications and Standard Special Provisions.
2. All internal combustion engines must be equipped with the manufacturer-recommended muffler. Do not exceed a maximum sound level (L_{max}) of 86 decibels (A-weighted) at 50 feet from the job site activities from 9 p.m. to 6 a.m.
3. As directed by the resident engineer, the contractor shall implement appropriate additional noise abatement measures including, but not limited to, changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, or installing acoustic barriers around stationary construction noise sources.

2.4.6 Geology/Soils/Seismic/Topography

Regulatory Setting

The existing geology, soils, seismic, and topography conditions are described in Section 2.2.3, Geology/Soils/Seismic/Topography, along with potential, permanent impacts.

Environmental Consequences

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

The improved areas within the project corridor are expected to produce a low erosion potential. It is anticipated that no new embankments will be required for the Tier I Corridor Alternatives. In addition, the project area is not expected to have any substantial amount of expansive soils. The project area has relatively low potential for landslides. Slopes located along the creeks in the project corridor may pose local slump or landslide risk.

Risk to the General Public and Workers

The proposed project does not pose risks to the general public or construction workers. The project would not expose construction workers, highway users, or structures to potential substantial adverse effects from soil erosion and/or surface drainage. The general public may be exposed to adverse effects from seismic activity due to the proximity of the Zayante-Vergales Fault. The San Andreas, Sargent, Monterey Bay Zone, and Calaveras-Pacines-San Benito faults also pose a potential danger to the general public and highway workers.

Avoidance, Minimization, and/or Mitigation Measures

Tier I Corridor Alternatives

The measure recommended below for the Tier II Auxiliary Lane Alternative applies conceptually to the Tier I Corridor Alternatives. Similar avoidance and minimization measures described below, based on project-specific conditions, would be incorporated into construction of any future tiered projects under either of the Tier I Corridor Alternatives.

Tier II Auxiliary Lane Alternative

The proposed project would meet all seismic engineering requirements under the Tier II Auxiliary Lane Alternative; therefore, no mitigation is required. As a standard practice, a site-specific seismic hazard engineering analysis would address seismic safety and erosion control, and it would inform the project construction plan and construction Worker Health and Safety Plan. The following Construction Best Management Practices related to shoring and slope stability will be implemented:

1. Open excavations will be shored, taking into consideration surcharge loads from nearby structures and examination of the potential for lateral movement of the excavation walls.
2. Heavy construction equipment, building materials, excavated soil, and vehicle traffic shall be kept away from the edge of excavations, generally a distance equal to or greater than the depth of the excavation.
3. During wet weather, storm runoff shall be directed from entering excavation areas as feasible.
4. Sidewalks, slabs, pavement, and utilities adjacent to proposed excavations shall be adequately supported during construction.

2.4.7 Cultural Resources

Potential permanent impacts to cultural resources are discussed in Section 2.1.7.

Environmental Consequences – Archaeological Resources

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

As described in Section 2.1.7, Cultural Resources, a systematic and thorough program of subsurface investigation has been conducted in addition to secondary research to identify buried cultural resources. As a result of these efforts, it is not anticipated that construction activities under the Tier II Auxiliary Lane Alternative or future tiered projects under the Tier I Corridor Alternatives would disturb any unknown buried cultural resources. In the unlikely event that buried cultural resources are inadvertently discovered during any ground-disturbing activities, Caltrans and Federal Highway Administration would comply with 36 *Code of Federal Regulations* 800.13 (b)(3), and if applicable, (c), as stipulated in the 2004 Section 106 Programmatic Agreement for Federal-aid Highway Programs in California regarding post-review discoveries.

Environmental Consequences – Historic Architectural Impacts

No construction-phase adverse impacts to historic architectural resources are anticipated under the Tier I Corridor Alternatives or the Tier II Auxiliary Lane Alternative because there are no National Register of Historic Places-listed or eligible for listing historic architectural resources located in the project's Area of Potential Effects that could be affected by construction activities.

Avoidance, Minimization, and/or Mitigation Measures

Potential impacts to archaeological resources resulting from construction activities under both the Tier I Corridor Alternatives and the Tier II Auxiliary Lane Alternative will be mitigated by implementing the following impact avoidance and minimization measures during or prior to project construction:

1. If human remains are inadvertently discovered, disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner will be contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, then the coroner will notify the Native American Heritage Commission, who will then notify the Most Likely Descendent. At this time, the person who discovered the remains will contact Caltrans District 5's Office of Cultural Resources so that they may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code 5097.98 will be followed as applicable.
2. In the unlikely event that buried cultural resources are inadvertently discovered during any ground-disturbing activities, Caltrans and Federal Highway Administration would comply with 36 *Code of Federal Regulations* 800.13 (b)(3), and if applicable, (c), as stipulated in the 2004 Section 106 Programmatic Agreement

for Federal-aid Highway Programs in California regarding post-review discoveries. All earth-moving activity within and around the immediate discovery area would be diverted until a qualified archaeologist could assess the nature and significance of the find.

2.4.8 Paleontology

The existing paleontological conditions are described in Section 2.2.4, Paleontology, along with potential permanent impacts to paleontological resources.

Environmental Consequences

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

Paleontological resources could be adversely affected by ground disturbance and earth moving associated with project construction. The project would involve three distinct construction elements: shallow excavations of 3 to 5 feet for median and outside roadway widening; deeper excavations for roadway widening/retaining walls in cut sections; and construction of drainage structures and deeper excavations to place new foundations for widened/replaced bridge structures, new pedestrian/bicycle overcrossings, retaining walls, and sound walls. All three elements have the potential to disturb geologic formations and affect associated fossils. Sensitivities would be similar for both corridor alternatives, because both traverse the same geologic units. The Tier I Corridor HOV Lane Alternative would be expected to have a greater potential for adverse impacts because it would involve more roadway widening and bridge structures than the Tier I Corridor TSM Alternative.

Although fossils are not known to directly underlie the proposed project right-of-way, numerous fossil localities have been reported in published scientific literature and museum archival record searches around Route 1 in the general project vicinity. The presence of fossils in the Pliocene Purisima Formation, Plio-Pleistocene Aromas Sand, and Pleistocene terrace deposits suggests that there is a potential for additional similar fossil remains to be uncovered by excavations during project construction. Under Caltrans and Society of Vertebrate Paleontology criteria, all of these units have a high sensitivity for producing additional paleontological resources. Identifiable fossil remains recovered from any of these stratigraphic units during project construction could be scientifically important.

The planned clearing, grading, and deeper excavation along the Tier II Auxiliary Lane Alternative right-of-way could result in adverse impacts to paleontological resources. In addition, construction of supporting facilities, such as temporary construction offices, laydown areas, and parking areas, would have potential to cause adverse impacts on paleontological resources, if they will involve new ground disturbance. Thus, any project-related ground disturbance could have adverse impacts on paleontological resources.

Avoidance, Minimization, and/or Mitigation Measures

Tier I Corridor Alternatives

The avoidance, minimization, and/or mitigation measures proposed for Tier II apply conceptually to the Tier I Corridor Alternatives.

Tier II Auxiliary Lane Alternative

If paleontological resources are discovered during project construction, a Paleontological Mitigation Plan will be completed. The plan will include requirements, performance standards, and methods described below. This mitigation measure would reduce potential adverse impacts to highly sensitive stratigraphic units during project construction:

1. **Assessment Before Construction Starts:** This may include a field survey to delimit the specific boundaries of sensitive areas and pre-excavation meetings with contractors and developers. In some cases it may be necessary to conduct field surveys and/or a salvage program prior to grading to prevent damage to known resources and to avoid delays to construction schedules. Such a program may involve surface collection and/or quarry excavations. A review of the initial assessment and proposed mitigation program by the Lead Agency before operations begin will confirm the adequacy of the proposed program.
2. **Adequate Monitoring:** An excavation project will retain a qualified project paleontologist. In areas of known high potential, the project paleontologist shall designate a paleontologic monitor to be present during 100 percent of the earth-moving activities. If, after 50 percent of the grading is completed, it can be demonstrated that the level of monitoring should be reduced, the project paleontologist shall so amend the mitigation program. Paleontologists who monitor excavations must be qualified and experienced in salvaging fossils and authorized to divert equipment temporarily while removing fossils. They shall be properly equipped with tools and supplies to allow rapid removal of specimens. Provision shall be made for additional assistants to monitor or help in removing large or abundant fossils to reduce potential delays to excavation schedules. If many pieces of heavy equipment are in use simultaneously but at diverse locations, each location shall be individually monitored.
3. **Macrofossil Salvage:** Many specimens recovered from paleontological excavations are easily visible to the eye and large enough to be easily recognized and removed. Some may be fragile and require hardening before moving. Others may require encasing within a plaster jacket for later preparation and conservation in a laboratory. Occasionally specimens encompass all or much of a skeleton and will require moving either as a whole or in blocks for eventual preparation. Such specimens require time to excavate and strengthen before removal and the patience and understanding of the

- contractor to recover the specimens properly. It is thus important that the contractors and developers are fully aware of the importance and fragility of fossils for their recovery to be undertaken with the optimum chances of successful extraction. The monitor must be empowered to temporarily halt or redirect the excavation equipment away from the fossils to be salvaged.
4. **Microfossil Salvage:** Many vertebrate fossils (e.g., small mammal, bird, reptile, or fish remains) are too small to be visible within the sedimentary matrix. Fine-grained sedimentary horizons and paleosols most often contain such fossils. They are recovered through concentration by screen washing. If the sediments are fossiliferous, bulk samples are taken for later processing to recover any fossils. An adequate sample comprises 12 cubic meters (6,000 lbs or 2,500 kg) of matrix for each site horizon or paleosol, or as determined by the supervising paleontologist. The uniqueness of the recovered fossils may dictate salvage of larger amounts. To avoid construction delays, samples of matrix shall be removed from the site and processed elsewhere.
 5. **Preservation of Samples:** Oriented samples must be preserved for paleomagnetic analysis. Samples of fine matrices shall be obtained and stored for pollen analysis. Other matrix samples shall be retained with the samples for potential analysis by later workers, for clast source analysis, as a witness to the source rock unit and possibly for procedures that are not yet envisioned.
 6. **Preparation:** Recovered specimens are prepared for identification (not exhibition) and stabilized. Sedimentary matrix with microfossils is screen washed and sorted to identify the contained fossils. Removal of excess matrix during the preparation process reduces storage space.
 7. **Identification:** Specimens are identified by competent qualified specialists to a point of maximum specificity. Ideally, identification is of individual specimens to element, genus, and species. Batch identification and batch numbering (e.g., “mammals, 75 specimens”) shall be avoided.
 8. **Analysis:** Specimens shall be analyzed by stratigraphic occurrence, and by size, taxa, or taphonomic conditions. This results in a faunal list, a stratigraphic distribution of taxa, or evolutionary, ecological, or depositional deductions.
 9. **Storage:** Adequate storage in a recognized repository institution for the recovered specimens is an essential goal of the program. Specimens will be cataloged and a complete list will be prepared of specimens introduced into the collections of a repository by the curator of the museum or university. Adequate storage includes curation of individual specimens into the collections of a recognized, nonprofit paleontologic specimen repository with a permanent curator, such as a museum or a university. A complete set of field notes, geologic maps, and stratigraphic sections

accompany the fossil collections. Specimens are stored in a fashion that allows retrieval of specific, individual specimens by researchers in the future.

10. **Site Protection:** In exceptional instances the process of construction may reveal a fossil occurrence of such importance that salvage or removal is unacceptable to all concerned parties. In such cases, the design concept may be modified to protect and exhibit the occurrence with the project's design, e.g., as an exhibit in a basement mall. Under such circumstances, the site may be declared and dedicated as a protected resource of public value. Associated fragments recovered from such a site will be placed in an approved institutional repository.
11. **Final Report:** A report is prepared by the project paleontologist including a summary of the field and laboratory methods, site geology and stratigraphy, faunal list, and a brief statement of the significance and relationship of the site to similar fossil localities. A complete set of field notes, geological maps, stratigraphic sections, and a list of identified specimens accompany the report. The report is finalized only after all aspects of the program are completed. The Final Report together with its accompanying documents constitute the goals of a mitigation project. Full copies of the Final Report are deposited with the Lead Agency and the repository institution.
12. **Compliance:** The Lead Agency assures compliance with measures to protect fossil resources from the beginning of the project by:
 - a. requesting an assessment and program for impact mitigation that includes salvage and protection during the initial planning phases;
 - b. by arranging for recovered specimens to be housed in an institutional paleontologic repository; and
 - c. by requiring the Final Report.

The supervising paleontologist is responsible for:

1. the assessment and development of the program for impact mitigation during initial planning phases;
2. the repository agreement;
3. the adequacy and execution of the mitigation measures; and
4. the Final Report.

Acceptance of the Final Report for the project by the Lead Agency signifies completion of the program of mitigation for the project. Review of the Final Report by a vertebrate paleontologist designated by the Lead Agency will establish the effectiveness of the program and adequacy of the report. Inadequate performances in either field comprise noncompliance, and may result in the Lead Agency removing the paleontologist from its list of qualified consultants.

2.4.9 Hazardous Waste/Materials

Potential permanent impacts from hazardous materials are discussed in Section 2.2.5.

Environmental Consequences

Tier I Corridor Alternatives

Two principal types of hazardous wastes or materials may cause impacts during construction: hazardous materials used during the construction process, and hazardous wastes that may be generated during construction. Section 2.2.5, Hazardous Waste/Materials, discusses the potential for encountering pre-existing hazardous wastes within the project area and identifies appropriate mitigation measures.

Some of the existing overpasses for roadways and railroad within the project area appear to have been constructed in the 1950s; therefore, they could be a potential source for asbestos-containing materials and lead-based paint. Within the proposed right-of-way of both corridor alternatives, there are buildings and structures that may also contain asbestos-containing materials and lead-based paint.

Quality of groundwater in the project area would be determined through additional consultation with the Regional Water Quality Control Board and detailed research of studies of nearby hazardous wastes sites where groundwater has been impacted.

The degree of hazard associated with these impacts on human or environmental receptors would depend upon the chemical properties, concentrations, or volumes of contaminants; the nature and duration of construction activities; and contaminant migration pathways. The largest potential exposure risk is to the construction workers.

Tier II Auxiliary Lane Alternative

The Tier II Auxiliary Lane Alternative is expected to result in similar environmental impacts as identified above for the Tier I Corridor Alternatives, except that there are no known quality issues associated with groundwater in the Tier II Auxiliary Lane Alternative as neither identified recognized environmental condition was documented to affect groundwater.

Avoidance, Minimization, and/or Mitigation Measures

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

The following measures will be implemented during the construction phase for the Tier II Auxiliary Lane Alternative and are anticipated to be required for future tiered construction projects under either of the Tier I Corridor Alternatives:

1. The construction contractor will prepare a Worker Health and Safety Plan for use during construction. The Worker Health and Safety Plan will address any hazardous materials handling during construction activities pursuant to Title 8 of the California

Code of Regulations regarding workers' safety and the use of protective equipment during excavation, moving, or handling of contaminated soil or water. The Worker Health and Safety Plan will establish measures to avoid or minimize potential worker and public exposure to airborne contaminant migration by incorporating dust suppression techniques in construction procedures. The plan will also address avoidance and minimization of worker and environmental exposure to contaminant migration via surface water runoff pathways by implementation of comprehensive measure to control drainage from excavations. In addition, the Worker Health and Safety Plan will address handling, storage, and disposal of any hazardous materials used in the construction process. Because construction workers are in the closest proximity to potential hazards, a plan that avoids impacts to construction workers will provide adequate protection for surrounding residents, workers, and the traveling public.

2. Advanced consultation with representatives of the Soquel Creek Water District, Santa Cruz Environmental Health Department, and Central Coast Regional Water Quality Control Board will be carried out if any dewatering is to be performed during project construction activities. This consultation will be helpful in determining the degree of water treatment and water disposal options during dewatering activities, as well as groundwater investigation/sampling requirements prior to dewatering activities.
3. Paint exceeding hazardous waste criteria under *California Code of Regulations* Title 22 will require disposal in a Class I disposal site. Paint used for lane striping of the existing roadway will be tested for lead-based paint prior to removal to determine proper disposal methods.
4. Wooden poles within the project footprint would be properly managed if removed and disposed of.
5. If soil, groundwater or other environmental medium with suspected contamination is encountered unexpectedly during construction activities (e.g., identified by odor or visual staining, or if any underground storage tanks, abandoned drums or other hazardous materials or wastes are encountered), work shall cease in the vicinity of the suspect material, the area shall be secured as necessary, and all appropriate measures shall be taken to protect human health and the environment. Appropriate measures shall include notification of regulatory agency(ies) and compliance with the various regulatory agencies' laws, regulations and policies.
6. Soil generated by construction activities shall be stockpiled onsite in a secure and safe manner. All contaminated soils determined to be hazardous or non-hazardous waste shall be adequately profiled (sampled and analyzed) prior to acceptable reuse or disposal at an appropriate off-site facility. Specific sampling and handling and transport procedures for reuse or disposal shall be in accordance with applicable

local, state and federal agencies laws, in particular, the Regional Water Quality Control Board, the Department of Toxic Substances Control, and County of Santa Cruz Environmental Health Services. Groundwater pumped from the subsurface shall be contained onsite in a secure and safe manner, prior to treatment and disposal, to ensure environmental and health issues are resolved pursuant to applicable local, state and federal laws, regulations and policies. Material from structures that are removed or modified by the project will be handled and disposed of in accordance with all local, state, and federal requirements.

2.4.10 Biological Resources

Affected Environment

This section focuses on the impacts to biological resources in that project vicinity that could result during the project construction phase under each build alternative. Potential impacts and associated impact avoidance, minimization, and mitigation measures that would result from implementation and operation of the proposed project are described in Section 2.3, Biological Environment.

Environmental Consequences

Natural Communities

Permanent, adverse effects on natural communities would result from constructing either of the Tier I Corridor Alternatives and the Tier II Auxiliary Lane Alternative as described in Section 2.3.1.

Wetlands and Other Waters of the United States

Tier I Corridor Alternatives

As described in Section 2.3.2, the Tier I Corridor HOV Lane Alternative has the potential to temporarily affect 0.22 acre of United States Army Corps of Engineers wetlands, 0.10 acre of United States Army Corps of Engineers other waters of the United States, 0.46 acre of California Coastal Commission jurisdictional areas, and 1.41 acres of California Department of Fish and Wildlife jurisdictional areas during construction.

The Tier I Corridor TSM Alternative has the potential to temporarily affect 0.03 acre of United States Army Corps of Engineers wetlands, 0.02 acre of United States Army Corps of Engineers other waters of the United States, 0.33 acre of California Coastal Commission jurisdictional areas, and 0.95 acre of California Department of Fish and Wildlife jurisdictional areas during construction.

Tier II Auxiliary Lane Alternative

Construction of the Tier II Auxiliary Lane Alternative would not disturb United States Army Corps of Engineers jurisdictional wetlands in Rodeo Creek Gulch; however, temporary impacts would likely affect 0.06 acre of other waters of the United States and 0.15 acre of California Department of Fish and Wildlife jurisdictional areas during construction.

Plant Species

Tier I Corridor Alternatives

Three special-status plant species were observed within the Biological Study Area during the field surveys: Anderson's manzanita, Pajaro manzanita, and Monterey pine. However, the area in which Anderson's manzanita and Pajaro manzanita were observed is well outside the area of direct project impact within the Biological Study Area, and this area is very unlikely to be affected by project-related activities. The observed Monterey pines are not a native population and are not considered sensitive. Due to the long project timeframe, and despite the primarily urban or disturbed conditions present, other special-status species could become established before project construction. Additional surveys to determine the presence or absence of special status plant species will be required as part of the technical studies to be prepared for additional Tier II projects.

Tier II Auxiliary Lane Alternative

None of the special-status plant species listed in Table 2.3.3-1 was observed within the Tier II Auxiliary Lane Alternative project area, and additional occurrences would be considered rare to unlikely given the disturbance associated with potential habitat throughout most of the project area; therefore, the proposed Tier II Auxiliary Lane Alternative is not likely to adversely affect any special-status plants. However, due to the long project timeframe, and despite the primarily urban or disturbed conditions present, there is a potential that other special-status species could become established before project construction. Additional surveys to determine the presence or absence of special status plant species will be conducted prior to the preparation of the final Environmental Impact Report/Environmental Assessment.

Animal Species

Tier I Corridor Alternatives

The Tier I Corridor HOV Lane Alternative could affect the following special-status species: foothill yellow-legged frog, California red-legged frog, Santa Cruz long-toed salamander, California tiger salamander, western pond turtle, tidewater goby, central California coast steelhead, monarch butterfly, California linderiella, Cooper's hawk, tricolored blackbird, great blue heron, short-eared owl, burrowing owl, white-tailed kite, least Bell's vireo, pallid bat, hoary bat, roosting bats, badger, and nesting birds.

Tier II Auxiliary Lane Alternative

The Tier II Auxiliary Lane Alternative has the potential to affect the California red-legged frog and tidewater goby, discussed further in the Threatened and Endangered Species section below. The Tier II Auxiliary Lane Alternative could also affect nesting birds, foothill yellow-legged frog, western pond turtle, and roosting bats.

Threatened and Endangered Species

Tier I Corridor Alternatives

The Tier I Corridor HOV Lane Alternative could affect the following threatened and endangered species: tidewater goby, central California coast steelhead, California tiger salamander, Santa Cruz long-toed salamander, California red-legged frog, white-tailed kite, least Bell's vireo, marsh sandwort, Monterey spineflower, robust spineflower, seaside bird's beak, San Francisco popcorn flower, and Santa Cruz tarplant.

Tier II Auxiliary Lane Alternative

The Tier II Auxiliary Lane Alternative could affect the following threatened and endangered species: California red-legged frog and the tidewater goby. Construction activities have the potential to encroach upon suitable habitat, interrupt passage, or result in direct take of California red-legged frog and tidewater goby.

Nesting Birds

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

The removal of vegetation and/or the removal of nests could directly affect nests and any eggs or young residing in nests of birds protected under the Migratory Bird Treaty Act. Because birds can be sensitive to noise disturbance, indirect impacts could also result from noise and disturbance associated with construction, which could alter perching, foraging, and/or nesting behaviors.

Avoidance, Minimization, and/or Mitigation Measures

General Measures

General avoidance, minimization, and/or mitigation measures are identified in Section 2.3.1, Avoidance, Minimization, and/or Mitigation Measures.

Natural Communities

The measures described in Section 2.3.1, Avoidance, Minimization, and/or Mitigation Measures, will address construction phase impacts to natural communities for the Tier II Auxiliary Lane Alternative and are anticipated to apply to future tiered projects under either of the Tier I Corridor Alternatives.

Wetlands and Other Waters

The measures described in Section 2.3.2, Avoidance, Minimization, and/or Mitigation Measures, will address construction phase impacts to wetlands and other waters for the Tier II Auxiliary Lane Alternative and are anticipated to apply to future tiered projects under either of the Tier I Corridor Alternatives.

Special-Status Plant Species

The measures described in Section 2.3.3, Avoidance, Minimization, and/or Mitigation Measures, will address construction phase impacts to special-status plant species for the Tier II Auxiliary Lane Alternative and are anticipated to apply to future tiered projects under either of the Tier I Corridor Alternatives.

Special-Status Wildlife Species

The measures described in Section 2.3.4, Avoidance, Minimization, and/or Mitigation Measures, will address construction phase impacts to special-status wildlife species for the future tiered projects under either of the Tier I Corridor Alternatives.

Tier II Auxiliary Lane Alternative

The measures described in Section 2.3.4, Avoidance, Minimization, and/or Mitigation Measures, will address construction phase impacts to special-status wildlife species for the Tier II Auxiliary Lane Alternative.

Threatened and Endangered Species

Tier I Corridor Alternatives

The measures outlined in Section 2.3.1, Avoidance, Minimization, and/or Mitigation Measures, will avoid or minimize temporary effects on threatened and endangered species habitats. The measures described in Section 2.3.5, Avoidance, Minimization, and/or Mitigation Measures, include species-specific measures for protection of threatened and endangered species, including tidewater goby, central California coast steelhead, California red-legged frog, Santa Cruz long-toed salamander, and California tiger salamander. These measures would apply to future tiered projects under the Tier I Corridor Alternatives.

Tier II Auxiliary Lane Alternative

The measures outlined in Section 2.3.1, Avoidance, Minimization, and/or Mitigation Measures, will avoid or minimize temporary effects on threatened and endangered species habitats. The measures described in Section 2.3.5, Avoidance, Minimization, and/or Mitigation Measures, that are specific to the protection of tidewater goby and California red-legged frog will apply to the Tier II Auxiliary Lane Alternative.

Nesting Birds

The measures described in Section 2.3.6, Avoidance, Minimization, and/or Mitigation Measures, will address construction phase impacts to nesting birds for the Tier II Auxiliary Lane Alternative and are anticipated to apply to future tiered projects under either of the Tier I Corridor Alternatives.

Invasive Species

The measures described in Section 2.3.7, Avoidance, Minimization, and/or Mitigation Measures, will address construction phase impacts to invasive species for the Tier II Auxiliary Lane Alternative and are anticipated to apply to future tiered projects under either of the Tier I Corridor Alternatives.

2.4.11 Visual/Aesthetics

Regulatory Setting

The existing conditions and permanent impacts are described in Section 2.1.6, Visual/Aesthetics.

Environmental Consequences

Tier I Corridor Alternatives

Short-term impacts of the Tier I Corridor Alternatives include the visual presence of construction equipment, temporary roadside barriers, and construction signage. As part of the work, much of the existing mature vegetation within the right-of-way will be removed. Some vegetation would be replanted as part of the project mitigation where suitable land exists per Caltrans setback requirements. New plantings can be expected to become established in their new location within a 1- to 3-year time frame. During this time, new top growth to the leaves and branches will be less while the plants put on more root growth. After establishment, the new plantings should start to achieve their standard growth rates for their species. The new tree plantings will take decades to achieve a mature size, depending on the individual species.

The removal of vegetation within the corridor would negatively affect views for travelers on the highway, as well as community members adjacent to the corridor, if mitigation measures are not employed. Vegetation within the existing interchanges and along the outside edges of the highway will likely be removed by construction activities under both of the Tier I Corridor Alternatives. In some instances, there will not be adequate space for new plantings, while other locations will have reduced landscape areas.

For the Tier I Corridor HOV Lane Alternative, approximately 109 acres of vegetated area will be disturbed by construction activities. Most noticeable will be the removal of mature vegetation and skyline trees. Of the area cleared, a total of approximately 65 acres would be available for replanting. Impacts to the existing landscaping under the Tier I Corridor TSM

Alternative would total approximately 61 acres of disturbed landscaping, with approximately 23 acres of that available for replanting.

Tier II Auxiliary Lane Alternative

Approximately 9.3 acres of existing vegetation within the highway corridor would be removed by construction activities. Of these, approximately 3 acres are available for replanting; however, it could be many years before the vegetation would reach the size of the existing.

Avoidance, Minimization, and/or Mitigation Measures

Tier I Corridor Alternatives

The adoption of a Tier I Corridor Alternative would not result in roadway construction. The avoidance, minimization, and mitigation measures shown below for the Tier II Auxiliary Lane Alternative could potentially apply to the Tier I Corridor Alternatives based on the preceding impact analysis. The project impacts and resulting avoidance, minimization, and mitigation measures will be revisited after a Tier I Corridor Alternative is selected and segments of the corridor become Tier II construction-level projects, subject to separate environmental review.

Tier II Auxiliary Lane Alternative

Of the avoidance and minimization measures outlined in the Visual Impact Assessment (Section 7.2, Tier II Visual Mitigation), the following apply to the construction phase of the Tier II Auxiliary Lane Alternative. See the full report for a more in-depth description of the anticipated effort involved with the various measures.

1. The project will be designed to protect as much existing vegetation as feasible, especially eucalyptus and other skyline trees.
2. Disturbed areas will be revegetated to the greatest extent feasible.
3. The landscaping and revegetation for the project will include a 3-year plant establishment period to ensure adequate revegetation of the areas affected by the project.

2.4.12 Hydrology and Floodplain

Regulatory Setting

The existing conditions and permanent impacts are described in Section 2.2.1, Hydrology and Floodplain.

Environmental Consequences

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

Construction activities under the Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative could result in temporary changes in water volume or flow and increased

siltation, sedimentation, erosion, and water turbidity from bankside activities and construction access.

Avoidance, Minimization, and/or Mitigation Measures

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

The following standard impact avoidance and minimization measures would be implemented during construction of the Tier II Auxiliary Lane Alternative and are also expected to be implemented under future tiered projects as part of either of the Tier I Corridor Alternatives:

1. Preparation and implementation of a Storm Water Pollution Prevention Plan during project construction that identifies all onsite drainage facilities, placement of appropriate stormwater and non-stormwater pollution controls, erosion and sediment control, spill response and containment plans, inspection scheduling, maintenance, and training of construction personnel.

2.4.13 Water Quality and Stormwater Runoff

Regulatory Setting

The existing conditions and permanent impacts are described in Section 2.2.2, Water Quality and Stormwater Runoff.

Environmental Consequences

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

Stormwater

During construction of the Tier II Auxiliary Lane Alternative and future tiered projects under either of the Tier I Corridor Alternatives, there is a potential for temporary water quality impacts due to grading activities and removal of existing vegetation, which can cause increased erosion. Stormwater runoff from the project site may transport pollutants to nearby creeks and storm drains if Best Management Practices are not properly implemented.

Generally, as the Disturbed Soil Areas increase, the potential for temporary water quality impacts also increases. The Tier I Corridor TSM Alternative has an estimated total Disturbed Soil Area of 101 acres, considering the comprehensive project footprint, and the Tier I Corridor HOV Lane Alternative similarly has an estimate of 250 acres of Disturbed Soil Area. Based on these preliminary calculated areas, the Tier I Corridor HOV Lane Alternative would have potentially more water quality impacts during construction than the Tier I Corridor TSM Alternative. Fueling or maintenance of construction vehicles will occur within the project site during construction; therefore, there is a risk of accidental spills or releases of fuels, oils, or other potentially toxic materials. An accidental release of these materials may pose a threat to water quality if contaminants enter storm drains, open channels, or surface

water receiving bodies. The magnitude of the impact from an accidental release depends on the amount and type of material spilled.

Groundwater

Construction of the Tier II Auxiliary Lane Alternative and future tiered projects under either of the Tier I Corridor Alternatives would not involve substantial excavations that would affect groundwater resources. Excavation work would mostly consist of roadbed construction for the new auxiliary or HOV lanes. New footings are proposed for the widening or reconstruction of bridges, and dewatering may be needed for improvements in perennial creeks or at locations with high groundwater. Based on United States Geological Survey Topography Maps, there are four perennial streams: Soquel Creek, Rodeo Creek Gulch, Aptos Creek, and Valencia Creek.

Water Resources

During construction of the Tier II Auxiliary Lane Alternative and future tiered projects under either of the Tier I Corridor Alternatives, there is a potential for temporary water quality impacts to jurisdictional biotic/aquatic (wetland) areas and waters of the United States or state. Potential temporary impacts can occur to United States Army Corps of Engineers, California Department of Fish and Wildlife, or California Coastal Commission jurisdictional biotic/aquatic (wetland) areas associated with creeks and drainages that cross or are adjacent to the project area by changing the water's chemical and biological compositions. These temporary impacts can result from temporary stream diversion installation and removal, streambed disturbance during culvert removal and replacement, vegetation removal, and road construction (Morro Group Inc., 2004). The Tier I Corridor HOV Lane Alternative would have potentially more water quality impacts during construction than the Tier I Corridor TSM Alternative due to the proposed larger area of impacts. The Tier II Auxiliary Lane Alternative would have fewer impacts due to the smaller area of impact and fewer local waterways. Temporary water quality impacts due to grading activities will be addressed with Construction Site Best Management Practices.

Avoidance, Minimization, and/or Mitigation Measures

Tier I Corridor Alternatives and Tier II Auxiliary Lane Alternative

The following standard impact minimization measures would be implemented during construction of the Tier II Auxiliary Lane Alternative and are also expected to be implemented under future tiered projects as part of either of the Tier I Corridor Alternatives.

1. The Caltrans National Pollutant Discharge Elimination System Permit and Construction General Permit require Best Management Practices to be incorporated into the project contract documents to reduce the discharge of pollutants, stormwater impacts and water quality degradation during construction.

2. The United States Army Corps of Engineers, National Oceanic and Atmospheric Administration Fisheries Service, United States Fish and Wildlife Service, California Department of Fish and Wildlife, and Regional Water Quality Control Board may require additional measures to avoid, minimize, or compensate for impacts to waterways during construction as part of their permit approval processes.

Temporary impacts to water quality would be minimized by implementing standard Best Management Practices as recommended in the Caltrans Statewide Storm Water Management Plan, which would include the following elements:

1. Minimum construction control measures, such as limiting access routes, stabilization of devegetated areas, and using sediment controls and filtration.
2. Erosion and sediment control, including soil stabilization, measures to prevent a net increase in sediment load in stormwater, and controls to reduce tracking sediment onto roads and erosion.
3. Non-stormwater management will include provisions to reduce and control discharges other than stormwater.
4. Post-construction stormwater management will include measures for ongoing (permanent) protection for water resources.
5. Waste management and disposal will address equipment maintenance waste, used oil and batteries, etc. All waste must be disposed of as required by state and federal law.
6. Maintenance, inspection and repair, and monitoring measures require an ongoing program to ensure that all controls are in place and operating as designed.
7. RTC will prepare and submit an annual report on the construction project to the Regional Water Quality Control Board, which must certify compliance with the Storm Water Pollution Prevention Plan.

2.4.14 No Build Alternative

The No Build Alternative assumes that there would be no major construction on Route 1 through the project limits other than the improvements currently planned, programmed improvements, and continued routine maintenance (described in Section 1.5.4). These projects would be subject to individual environmental review, and construction impacts would be analyzed, as necessary; therefore, the No Build Alternative would not result in an adverse impact related to construction.

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