Invasive plant species that have the greatest possibility of negatively affecting the natural ecology in the project area are veldt grass, giant reed, ice plant, pampas grass, French broom, myopurum, cape ivy, and garden nasturtium.

Environmental Consequences

None of the species on the California list of noxious weeds is currently used by Caltrans for erosion control or landscaping. Removal of invasive species is considered a beneficial project impact. Caltrans removes and controls the spread of invasive plants wherever possible.

Avoidance, Minimization, and/or Mitigation Measures

To prevent new invasive species from being imported to the site, Caltrans requires that the project contractor use the following control measures:

- Only certified noxious-weed-free erosion control materials and fill would be used.
- All straw and seed material will be certified weed-free by the county agricultural commissioner prior to being used at the project site. The California Department of Food and Agriculture maintains a current listing of noxious weeds.

2.4 Construction Impacts

Refer to Section 2.3.1, 2.3.2, 2.3.3, 2.3.4, and 2.3.5 for potential impacts to biological resources during construction.

Affected Environment

Utilities

Domestic water services in the study area are provided by the Carpinteria Valley Water District, Montecito and Summerland Water District, and the Santa Barbara County Water Agency. Wastewater collection and treatment services are provided by the Carpinteria Sanitary District, Summerland Sanitary District, Montecito Sanitary District, the El Estero Wastewater Treatment Plant in the City of Santa Barbara, and through septic systems in the unincorporated areas of Santa Barbara County. Natural gas services in the study area are provided by the Southern California Gas Company, and electricity is provided by Southern California Edison. Other utility services in the study area include telephone and cable or satellite television services.

Traffic and Transportation/Pedestrian and Bicycle Facilities

Bicycle and Pedestrian Routes

Currently, there are approximately 299.7 miles of bikeways in Santa Barbara County. About 163.1 miles of bikeways are located in the South Coast region.

Cultural Resources

The archaeological area of potential effects encompasses the anticipated ground-disturbing activities for all of the project alternatives and includes all construction areas, equipment staging and material storage areas, and easements. A buffer around the outer limits of these zones was also included within the archaeological area of potential effects to accommodate minor design changes.

Water Quality

The project sits within the South Coast hydrologic unit made up of small coastal watersheds originating in the southern Los Padres National Forest and draining to the Santa Barbara coast.

Paleontology

The Paleontology Report documents the existence of two geologic units that lie within or adjacent to the project limits that are known to have sensitive paleontological significance.

Air Quality

Certain construction activities can be the source of temporary impacts to air quality. These potential impacts include dust-producing activities that occur during grading and paving. Standard provisions included on all Caltrans projects would address potential emissions generated by construction equipment, grading activities, and use of various construction materials.

Noise

The highway corridor is mostly residential areas mixed with small pockets of commercial, agricultural, and recreational areas. Except for the Summerland area, terrain through the corridor is relatively flat. U.S. 101 through the project limits is currently two lanes in each direction. Traffic on U.S. 101 is the main source of noise through the corridor; however, trains also travel through the area several times a day. In addition to permanent noise impacts, it is also important to look at potential noise impacts caused by construction and the potential work proposed for the railroad right-of-way. Railroad work was part of three of the five configurations proposed for the Cabrillo Boulevard

interchange. Selecting the F Modified configuration eliminates the need for railroad work during project construction. Work associated with replacing the Los Patos railroad overhead required temporary relocation of the railroad tracks (closer to the Andrée Clark Bird Refuge) and a permanent change to the railroad profile. The profile would be raised 0 to 4 feet for 0.67 mile for configurations J, M and M Modified.

Vibration

Certain construction activities can be the source of heavy vibrations, which tend to at minimum be annoying and at worst have potential to cause damage to homes and other structures. Effects can be caused by vibrations that are continuous over long periods of time or short, individual events. For example, equipment such as excavators, road graders, vibratory rollers, and paving machinery cause sustained vibrations that spread through the ground, diminishing in strength with distance. Buildings founded on the soil near the construction site respond to these vibrations with varying results, ranging from no perceptible effects (low vibration levels) to perceptible vibrations (moderate vibration levels) to slight architectural damage (high vibration levels).

There are no federal or state standards for vibration impacts. The traditional view has been that highway traffic and most construction vibrations pose no threat to buildings and structures, and that annoyance to people is similar to typical noise issues experienced from living near highways. Caltrans, however, has conducted research and developed a Transportation and Construction-Induced Vibration Guidance Manual to assess the potential for construction-related vibration impacts.

Safe levels for continuous vibrations, such as from traffic, are not as well defined. The Transport and Road Research Laboratory in England has researched continuous vibrations to some extent and developed a summary of vibration levels and reactions of people and the effects on buildings (see Table 2.43). These are the criteria used by Caltrans to evaluate the severity of vibration problems.

Table 2.43 Vibration Level and Intensity

Peak Particle Velocity (inches per second)	Human Reaction	Effect on Buildings
0.006 to 0.019	Threshold of perception—possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relatively short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling—houses with plastered walls and ceilings Special types of finish such as lining of walls and flexible ceiling treatment would minimize "architectural" damage
0.4 to 0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: A Survey of Traffic-Induced Vibrations by Whiffen, A.C. England, 1971

Annoyance levels in this table are subjective and can vary depending on the activity level of the observer. Annoyance can occur at lower peak particle velocities for more sedentary observers. The "architectural damage risk level" for continuous vibrations (peak particle velocity of 0.2 inch per second) shown in Table 2.43 is 0.1 of the maximum safe level of 2 inches per second for single events. Table 2.43 shows an upper level of 0.08 inch per second for continuous vibrations to which "ruins and ancient monuments" should be limited. This criterion level may also be used for fragile historical buildings or buildings that are in very poor condition.

In any situation, the probability of exceeding architectural damage risk levels for continuous vibrations from construction is very low. However, if pavement-breaking activities or extensive pile driving is involved, damage to nearby buildings or non-reinforced structures is a remote possibility. This may also be true if these operations occur next to historical buildings (unless in excellent condition), buildings in poor condition, or buildings previously damaged in earthquakes. Buildings outside the limits for architectural and structural damage may still be close enough to pile driving sites that the annoyance level from vibrations may be exceeded.

Environmental Consequences

Utilities/Emergency Services

The proposed project construction would have the potential to impact utilities such as domestic water service, wastewater collection and treatment, natural gas service, electric service, and telephone and television utilities. The proposed project would also potentially impact emergency service providers during construction.

Traffic and Transportation/Pedestrian and Bicycle Facilities

Construction of the overall six-lane facility would improve local vehicular travel and decrease local intersection delay within the corridor, which would enhance bicycle and pedestrian circulation at other locations as well. As with any larger road construction project, a certain amount of delay and inconvenience is anticipated by the public. These inconveniences can be minimized by careful development of a construction staging plan and a traffic management plan. These plans are finalized during the design process.

Construction of the HOV lanes in the median would occur in one stage. Under the first stage, temporary striping would provide for no less than two 11-foot-wide lanes in each direction with traffic being separated from the median work zone by temporary concrete barriers. All construction would occur within the barriers. After completion, traffic would be shifted to its final configuration.

Asymmetrical or directional freeway widening would be accomplished in two stages. In the first construction stage, northbound traffic would be shifted toward the median by 4 feet, allowing temporary concrete barriers to be installed near the outside edge of the travel way. This would allow all future northbound outside widening to be accomplished. In the second stage, temporary striping would provide for no less than two 11-foot-wide lanes in each direction with traffic being separated from the median work zone by temporary concrete barriers. All construction can occur within the barriers and, after construction is completed, traffic would be shifted to its final configuration.

Reconstruction of paired bridges (one in each direction) would occur in two stages. Under the first stage, temporary pavement would be provided for a transition of lanes to no less than four 11-foot-wide lanes on one of the bridges, with northbound and southbound traffic separated by temporary concrete barriers. Once traffic is shifted, construction on the vacated bridge would provide a minimum of four 12-foot-wide travel lanes for a total width of 50 feet.

In stage two, after completion of the first bridge, all traffic lanes would be shifted to the new bridge and roadway, again with northbound and southbound movements separated by temporary concrete barrier. After all traffic is shifted to the new bridge, the second bridge would be built. Once this construction is complete, traffic would be shifted to its final configuration.

Construction of single bridges to carry both directions of traffic would also occur in two stages. Under the first stage, temporary pavement would be provided for standard transition of all lanes to no less than four 11-foot-wide lanes on one side of the existing structure, with northbound and southbound traffic separated by temporary concrete barriers. Once traffic is shifted, construction of the remaining half of the bridge would provide a minimum of four 11-foot-wide travel lanes against for a total width of 50 feet.

In stage two, after completion of the first half of bridge construction, all traffic lanes would be shifted to the new bridge construction and roadway, again with northbound and southbound movements separated by temporary concrete barrier. Once traffic is shifted, the other half of the bridge would be constructed. Once this construction is complete, traffic would be shifted to its final configuration.

None of the three build alternatives would permanently impact bicycle or pedestrian facilities, including the Pacific Coast Bike Route. During construction of the Cabrillo interchange, bicycles, pedestrians, and persons with disabilities would have continual access through construction areas.

With the F Modified configuration for the Cabrillo Boulevard/Hot Springs Road interchange, two lanes would remain open on U.S. 101 in each direction (except for intermittent nighttime lane closures). Cabrillo Boulevard would remain open (except for intermittent nighttime lane closures), and access to and from Cabrillo Boulevard would be maintained. No traffic would be diverted to Los Patos Drive. The Hermosillo off-ramp would be the only northbound off-ramp open in the Montecito vicinity for a maximum of one month. Estimated duration for construction of the Cabrillo Boulevard/Hot Springs Road Interchange is 24 to 29 months.

Visual/Aesthetics

Building the entire project would not occur all at one time along the total length of the corridor. Rather, the project would be separated into construction phases. Expected total duration for construction would be about 10 years. However, at any given location within a community, visual impacts from construction would be limited to a few years.

Visual impacts would occur as a result of construction vehicles and equipment and other elements on and near the project site. Temporary storage of construction materials would also be visible in the area. In addition, required safety devices such as orange cones, fencing, and signage would affect views temporarily while the project is under construction. Workers would be present and visible throughout the construction phases. Views of stopped and slowed vehicles on the highway would also increase due to construction-related traffic delays. On certain local roadways, visibility of vehicular traffic may increase.

Additional vehicles, equipment, materials, safety devices, and workers would not be unexpected visual elements seen at a construction site. However, because of the overall duration of work and the great number of affected viewers, substantial visual impacts would result from the proposed construction activities.

Cultural Resources

Caltrans concluded in a Finding of Adverse Effect (February 2011) and in a Revised Finding of Adverse Effect (September 2011) that the proposed project would have an adverse effect on the National Register-eligible Via Real Redeposited Midden. Comprehensive studies conducted by Caltrans suggest that the National Register-eligible property is not only located below the level of proposed U.S. 101 construction but is also located outside the state right-of-way—and therefore outside the Area of Direct Impact. Although Caltrans does not anticipate impacts to the redeposited midden, we nevertheless deem it prudent to consider the remote possibility of discoveries during construction. In the unlikely event that archaeological resources are encountered during construction, the *Treatment and Data Recovery Plan for the South Coast 101 High Occupancy Vehicle Lanes Project, Santa Barbara County, California* will be implemented, in accordance with the June 20, 2013 *Programmatic Agreement between the California Department of Transportation and the California State Historic Preservation Officer Regarding the South Coast 101 HOV Lanes Project, U.S. Route 101, Santa Barbara County, California* (see Appendix D, *State Historic Preservation Officer Correspondence)*.

Water Quality

Temporary impacts to water quality are expected during construction. The largest percentage of construction pollutants would be sediment, construction debris from demolished structures, and dust generated during excavation, grading, hauling, demolition, and various other activities (see Table 2.44). The impacts of these activities would vary each day as construction progresses. Due to uncertainties concerning the exact design details, timing, equipment usage rates associated with specific project

features and potential work required, the following analysis assumes a conservative amount of soil disturbance and asphalt and concrete usage. The estimated total project disturbance area is 97 acres. There is only a slight difference in the overall footprint of each alternative. The following table lists potential construction site activities, materials and associated pollutants that could occur during project construction.

Table 2.44 Construction Site Activities, Materials, and Associated Pollutants

Construction Site Activity	Construction Site Materials	Pollutant
Vehicle and Equipment Cleaning, Fueling, and Maintenance	Vehicle Fluids	Oil Grease Petroleum Coolants
Concrete Cement Operations and Concrete Waste Management	Portland Concrete Cement and Masonry Products	Portland Concrete Cement
		Masonry Products
		Sealant (Methyl Methacrylate)
		Incinerator Bottom Ash Bottom Ash Steel Slag Foundry Sand Fly Ash
		Mortar Concrete Rinse Water
	Curing Compounds	Non-Pigmented Curing Compounds
Landscaping	Landscaping and Other Products	Aluminum Sulfate
		Sulfur-Elemental
		Fertilizers-Inorganic
		Fertilizers-Organic
		Natural Earth (Sand Gravel and Topsoil)
		Herbicide
		Pesticide
		Lime
Excavation and Grading	Contaminated Soil	Aerially Deposited Lead
		Petroleum

Source: California Department of Transportation 2003a.

The current 303(d) list (2010) states that the impairment of water bodies in the watershed for this project are total coliform, fecal coliform, indicator bacteria, boron, nitrate as nitrite (NO_3) pathogens, nutrients, priority organics, organic enrichment, and low dissolved oxygen. Impairment sources are from natural sources, transient encampments, groundwater loadings, removal of riparian vegetation, agriculture, urban runoff/storm sewers, other urban, and unknown. Of the 303(d) listed pollutants of concern, only three are typically found in storm water runoff from construction activities associated with a highway. These are fecal coliform, nitrate, and pH. None of these constituents was found to exceed the water quality objectives as listed in Table 2.24 303(d) Listed Water Bodies HSA 315.34. In addition, the 303(d) listing does not identify highway runoff as a source for the impairments.

Other Waters

Temporary impacts to creeks would result from construction-related activities such as equipment access, temporary water diversions and de-watering, and temporary fill placement. Table 2.45 summarizes potential temporary and permanent impacts to the creeks that might result from construction-related activities to unlined portions of creek channels in the following creeks: Arroyo Paredon Creek, Toro Canyon Creek (partially lined), Romero Creek, San Ysidro Creek and Oak Creek.

Table 2.45 Impacts to Other Waters of the U.S. at Creeks for Preferred Alternative

Creek	Temporary Impacts (acres)	Permanent Impacts (acres)
Franklin	0.074	0.0
Santa Monica	0.108	0.0
Arroyo Paredon [a]	0.078	0.0
Toro Canyon [b]	0.039 [b]	0.0
Greenwell [a,]	0.006	0.042
Romero (Picay) [a]	0.021	0.0
San Ysidro [a]	0.037	0.0
Oak [a]	0.016	0.0

Source: Addendum Natural Environment Study 2012

At creeks, temporary impacts will be re-graded, as needed, to reflect their preexisting state. All partially modified creek channels are within the active floodplain and will quickly reestablish with vegetation naturally.

Erosion

The project area contains predominately Natural Resources Conservation Service Group C and D soils that have a moderate to high erosion risk. Group C soils are sandy clay loam and have low infiltration rates. Group D soils have a mixture of clay, loam, and sand and have a very low infiltration rate that creates high runoff potential. Compliance with the Caltrans Storm Water Management Plan would address most concerns with erosion. However, unusual situations such as unexpected rain and improper use of best management plans could result in temporary impacts to surface water quality.

Chemical Releases

Potential sources of temporary surface water impacts include construction materials, contaminants in the existing roadway, vehicle leaks, traffic accidents, and illegal dumping. Temporary construction site storm water best management practices would minimize or eliminate chemical releases to ground and surface waters. Preliminary investigations indicated that groundwater at certain locations is contaminated.

Shade Canopy

Riparian shade canopy is important to maintain cool water temperatures for "cold" beneficial uses of all drainages designated as such. Removal of trees that currently provide riparian shade may temporarily cause warming of surface waters. Removal of trees would also reduce available shade for wildlife that use nearby waterways.

Temporarily impacted portions of creeks are expected to recover to pre-project conditions or better with implementation of replanting and other measures included in the environmental document. Non-native invasive plants that are removed from creek banks during construction would be re-planted with native species. Because post-construction replanting of riparian areas is planned, and total area of riparian canopy at U.S. 101 bridge sites is limited (except for San Ysidro Creek where much of the shade canopy will be retained), it is not expected that the proposed project will have any substantial or long-term effects to creek habitat or water temperature within the project area.

Groundwater Hydrology

During construction, there can be substantial short-term change in groundwater flow paths, lower groundwater table from de-watering, change in surface water-flow rates and volumes, and domestic water uses from stream diversions and wells. Due to elevated pollutant levels, groundwater at certain locations would be tested if de-watering is needed to determine how polluted groundwater can be disposed of. Out of all of the samples

taken, none meet drinking water standards, a beneficial use of all surface water bodies. Groundwater may be used to irrigate and control dust during construction of this project.

Paleontology

Due to the possibility of encountering scientifically sensitive specimens during excavation into middle- to upper-Pleistocene sedimentary rocks of the Marine terrace deposits, and inter-fingerings of the Santa Barbara Formation into the Casitas Formation, paleontological mitigation in the form of monitoring, salvage, and data recovery is indicated where excavation will disturb in-situ deposits of these strata. The uppermost few feet of sediment in the project area is mostly covered by younger alluvial and fluvial fan deposits and is less likely to yield significant fossil remains, but deeper excavation for the proposed walls and structures has a chance of encountering fossils. Because the Rincon Formation is next to proposed excavation sites, mitigation in the form of monitoring, salvage, and data recovery may also be necessary in this formation.

Air Quality

During construction, the proposed project would generate air pollutants. The exhaust from construction equipment contains hydrocarbons, oxides of nitrogen, carbon monoxide, suspended particulate matter, and odors. Use of asphalt, concrete, and other chemicals during construction activities would emit organic gases and other potentially harmful compounds. However, the largest percentage of pollutants would be windblown dust generated during excavation, grading, hauling, demolition, and various other activities. The impacts of these activities would vary each day as construction progresses. Dust and odors occurring very close to the right-of-way could potentially cause occasional annoyance and complaints from nearby residences.

The six major sources of air pollutants on a construction project are reactive organic gas (ROG) emissions from asphalt use; particulate matter (PM) from grading. Emissions from construction vehicles contribute carbon monoxide (CO), reactive organic compounds (ROC), oxides of nitrogen (NOx), and PM emissions from construction vehicles. ROC and NOx combine in the presence of sunlight to form ozone. These pollutants can contribute to respiratory ailments. The total estimated construction emissions are included in Table 2.46.

Table 2.46 Estimated Construction Emissions (Vehicles)

Constituent	No-Build Alternative	Build Alternatives	Build Alternatives
	Quarterly (tons)	Quarterly (tons)	Total (tons)
Carbon Monoxide (CO)	0	**4.7**	**104.1**
Reactive Organic Gas (ROG)	0	**1.2**	**26.4**
Oxides of Nitrogen (NOx)	0	**14.3**	**315.6**
Diesel PM_{10}	0	**0.6**	**14.2**

Source: Air Quality Study 2010. These figures include an estimate of all construction vehicles expected to be used on the project.

Total suspended particulate matter would be the major air pollutant. Of particular concern would be PM_{10} (particulate matter smaller than 10 microns in diameter). PM_{10} is about 65 percent of suspended particulate matter and is considered a health hazard that can lead to respiratory ailments, especially in the young and the elderly who are more prone to respiratory ailments. The main source of air pollutants associated with construction activities would be from soil grading and the application of asphalt products, both from the activities themselves and the vehicles that perform the operations.

Air emissions are considered to be equivalent for the various build alternatives due to the similar size, scope, and nature of the proposed project features. As such, projected short-term construction related emissions have only been evaluated as a single-build alternative under the maximum possible footprint required (Alternative 2). The project is expected to be phased, and each sub-phase would have a unique amount of working days depending on the project features required within the specific jurisdiction. In total, the entire project is expected to take approximately 10 years to complete, and the current estimate of total area that the project would disturb is about 97 acres.

Assuming a total of 97 acres of soil disturbance and that all project grading is done in an initial four-month period (88 working days) for each sub-phase (352 total soil-disturbing days), and that the disturbed soil is continually worked throughout the 88-day duration per phase, about 0.3 acre per day would be disturbed during the initial clearing, grubbing, and grading period for each sub-phase. Assuming 10.25 pounds of PM_{10} per acre per day average, average daily emissions of PM_{10} dust are estimated be about 31 pounds (10.25 x 0.3 = 3.1) per day. However, most of the construction impacts to air quality are short term and therefore would not result in long-term adverse conditions.

Noise

Caltrans follows the Federal Highway Administration Noise Standards to minimize noise levels during construction. Caltrans understands that local standards may differ from state and federal standards, but as a state agency we are obligated to maintain consistency in applying state and federal standards equally across the state. When there is an inconsistency between state and local standards, state standards must be followed.

Two types of short-term noise impacts would occur during project construction. First, construction crew commutes and the transport of construction equipment and materials to the project site would incrementally raise noise levels on access roads leading to the site. The pieces of heavy equipment for grading and construction activities would be moved onsite, remain for the duration of each construction phase, and not add to the daily traffic volume in the project vicinity. There would be the potential for a relatively high single noise exposure event due to the passing of trucks/equipment. However, thresholds of 86 dBA and a distance of 50 feet must not be exceeded. Because the projected construction traffic volumes would be low when compared to existing traffic volumes on U.S 101, the associated long-term noise level change would not be perceptible to the human ear. Therefore, short-term construction-related worker commutes and equipment transport noise impacts would not be substantial.

The second type of short-term noise impact is related to noise generated during excavation, grading, and roadway construction. Construction is performed in steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated and, therefore, the noise levels along the alignments as construction progresses. During construction in the vicinity of the Cabrillo and Sheffield interchanges, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction.

It should be noted that although Caltrans standards minimize noise levels to the greatest extent possible, there are times where construction noise levels may exceed local noise thresholds due to the high probability for night work. Given the congested nature of the project limits, certain construction activities will need to occur when traffic volumes are at their lowest.

Table 2.47 summarizes noise levels produced by construction equipment commonly used on roadway construction projects. Construction equipment is expected to generate noise levels ranging from 70 to 90 dBA at a distance of 50 feet, and noise produced by

construction equipment would be reduced over distance at a rate of about 6 dBA per doubling of distance.

Table 2.47 Construction Equipment Noise

Equipment	Maximum Noise Level (dBA at 50 feet)
Scrapers	89
Bulldozers	85
Heavy Trucks	88
Backhoe	80
Pneumatic Tools	85
Concrete Pump	82

Source: Federal Transit Administration 1995.

Noise Impacts Resulting from Temporary Relocation of Railroad Tracks

With three of the configurations (J, M, and M Modified) considered for the Cabrillo interchange, the temporary shoofly would be relocated 0 to 30 feet (average distance is 15 feet) closer to the Andrée Clark Bird Refuge. The current location of the railroad is approximately 100 feet north of the bird refuge. Noise levels of a train on a structure pass are 85 dBA at 50 feet or 82 dBA at 100 feet. Doubling the distance toward the noise source increases the noise impacts by 6 dBA. Where the railroad would be relocated approximately 15 feet closer to the bird refuge, the noise level generated by the train would increase by only 0.7 dBA, resulting in an 82.7 dBA. With Caltrans' selection of the F Modified configuration, railroad work would not be part of the project.

Vibration

In general, three zones of lessening intensity were established to classify the expected impacts from proposed construction activities. These zones of influence are general in nature and are defined as the following:

- Perception—A 300-foot-radius zone within which residents would begin to perceive vibrations.
- Annoyance—A 100-foot-radius zone within which continuous vibrations begin to annoy people.
- Damage—A generalized 60-foot-radius zone within which continuous vibrations may cause architectural damage.

To assess the potential for damage to structures from activities such as pile driving, a minimum safe distance for existing structures was calculated using factors such as soil type, pile type, and pile hammer strength. This included assuming default values for unknown soil types, and a conservative energy rating for a driving hammer at just below the point of pile damage based on standard plan driven piles of 15-inch diameter (see Table 2.48).

Table 2.48 Minimum Safe Distance for Existing Structures

Structure Type	Minimum Safe Distance from Vibration Source (feet)	Maximum Peak Particle Velocity (inches per second)
Historic, extremely fragile structures	179	0.08
Historic, fragile structures	147	0.10
Historic old structures	64	0.25
Old structures	54	0.30
New or modern construction	34	0.50

Source: Vibration Study 2010 and Addendum to the Vibration Study 2013

Using this methodology, specific properties and structure types that are located within or next to the zones of concern were further evaluated to determine their risk of architectural damage or human annoyance. The historic properties that have been identified as eligible for the National Register of Historic Places were specifically evaluated for potential vibration impacts. As shown in Table 2.49, no historic properties would be affected by construction-related vibration.

Table 2.49 Structures within Zones of Concern

Structure Type	Number of Structures within Zone of Concern	Safe Distance Threshold Used for Analysis
Historic, any age	0	42 to 179 feet *
Older (1969 or earlier), non-historic	43	64 feet
Newer (1970 to present)	34	34 feet
Mobile home	19	64 feet

** Depending on structure stability*
Source: Vibration Study 2010 and Addendum to the Vibration Study 2013

In addition, the Summerland World War I Monument, a historical resource for the purposes of the California Environmental Quality Act, would not be affected by construction-related vibration. The monument is 20 feet from a proposed soundwall, but alternate construction methods would be used as a protective measure.

Properties that fall within established safe buffer zones would have site-specific low vibration construction methods used to ensure there are no impacts due to construction-induced vibration.

Avoidance, Minimization, and/or Mitigation Measures

Utilities and Emergency Services

Coordination between Caltrans and service providers would strive to ensure utility and services are not disrupted. Preconstruction utility location would be required in conjunction with service providers to avoid disruption of any utility service. Before and during construction, all utilities in conflict with the proposed project would be relocated, avoided, or protected in place. Design would continue to minimize the need for utility relocations and reconstruction.

Traffic and Transportation/Pedestrian and Bicycle Facilities

A Traffic Management Plan would be developed before building the project. Measures would be taken to avoid impacts to emergency services with alternate routes made available for use during construction. During all temporary closures, detour routes would be provided for vehicles, pedestrians, and bicycles. Caltrans plans to work closely with County Public Works regarding the construction traffic management plan for neighborhood streets surrounding the Sheffield Drive Interchange and with City of Santa Barbara Public Works with regard to a construction traffic management plan for neighborhood streets surrounding the Cabrillo Boulevard interchange. At the completion stage of the project, Caltrans would evaluate local streets to determine to what extent repair or repaving is required and to ensure that the project meets the Americans with Disabilities Act requirements. The plan would consider phasing and scheduling associated with other construction projects in the corridor to minimize delays to the driving public.

The Traffic Management Plan for this project may include the following items:

- Public awareness campaign—Flyers, brochures, press releases, website, and advertising, as required, would inform travelers of the project.

- Construction Zone Enhanced Enforcement Plan—Additional California Highway Patrol officers would be assigned to the construction zone during peak travel times to ensure construction zone safety.
- Temporary facilities—Changeable message signs and ramp-detour notices would alert travelers to road closures, detours, and other pertinent information.
- Temporary access—Access would be provided to residences and businesses as necessary.
- Emergency services—Emergency services would be notified before any required roadway or highway lane closures.
- Maintenance schedule—The maintenance of traffic and sequencing of construction would be planned and scheduled to minimize traffic delays.
- Detour signs—When ramps are closed, detour signs would direct traffic to the nearest available ramp.

Cultural Resources

Caltrans concluded in a Finding of Adverse Effect (February 2011) and in a Revised Finding of Adverse Effect (September 2011) that the proposed project would have an adverse effect on the National Register-eligible Via Real Redeposited Midden. Caltrans has conducted extensive studies to characterize the location, extent, and composition of the midden deposit. Background research documented previous construction activities within the project Area of Potential Effects to assess the likelihood of finding any original ground or areas that had not been previously disturbed. The current South Coast 101 HOV Lanes project is limited to the existing state right-of-way—all of which has been highly disturbed by prior construction of the existing mainline highway and structures, as well as by utilities installation. A thorough archaeological survey was made of the project area, and a detailed geoarchaeological model was developed to identify and test the most likely areas for any buried archaeological deposits. These comprehensive studies suggest that the National Register-eligible portion of the site is not only located below the level of proposed U.S. 101 construction but is also located outside the state right-of-way—and therefore outside the Area of Direct Impact. Although Caltrans does not anticipate impacts to the redeposited midden, we nevertheless deem it prudent to consider the remote possibility of discoveries during construction.

- Avoidance, minimization and mitigation measures for cultural resources will be carried out through the implementation of the June 20, 2013 *Programmatic*

Agreement Between the California Department of Transportation and the California State Historic Preservation Officer Regarding the South Coast 101 HOV Lanes Project, U.S. Route 101, Santa Barbara County, California and the appended *Treatment and Data Recovery Plan for the South Coast 101 High Occupancy Vehicle Lanes Project, Santa Barbara County, California (See Appendix D, State Historic Preservation Officer Correspondence).*

- The eligible portion of the Via Real Redeposited Midden, located outside the Area of Direct Impact, will be protected during construction by the establishment and enforcement of an Environmentally Sensitive Area with exclusionary fencing. The Environmentally Sensitive Area will be depicted on construction plans, with no access allowed during construction. Additionally, the Caltrans Environmental Construction Liaison will have a copy of the plan on file and maintain contact with the Resident Engineer, construction contractor, and archaeologist on Environmentally Sensitive Area compliance.

- Caltrans will prepare a technical report documenting the results of the implementation of the Data Recovery Plan. Copies of the report will be distributed by Caltrans to the State Historic Preservation Officer, the Central Coast Information Center of the California Historical Resources Information System, and to the Coastal Band of the Chumash Nation, the Santa Ynez Band of Chumash Indians, and Chumash individuals and groups participating in the consultation process.

- If Caltrans determines, during the implementation of the Data Recovery Plan, that the plan or project will affect a previously unidentified property that is categorically different from that covered in the plan, Caltrans shall address the discovery in accordance with Code of Federal Regulations Section 800.13(b).

- If human remains are discovered, State Health and Safety Code Section 7050.5(b) states that further disturbances and activities must cease in any area or nearby area suspected to overlie remains, and the county coroner would be contacted. Pursuant to State Health and Safety Code 7050.5(c), if the county coroner/medical examiner determines that the human remains are or may be of Native American origin, the Native American Heritage Commission will be contacted and the discovery will be treated in accordance with the provisions of California Public Resources Code 5097.98(a)-(d). The Native American Heritage Commission will notify the Most Likely Descendent. The Caltrans staff or construction personnel who discovered the remains will contact the cultural resource specialist who will then work with

the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code 5097.98 are to be followed as applicable.

Water Quality

Standard Caltrans temporary construction site and permanent design pollution prevention and permanent storm water treatment best management practices would be used during and after construction of the project to control potential discharges of pollutants to surface water. Best management practices would be designed with the goal of controlling general gross pollutants or sedimentation and siltation, depending on location. The required Storm Water Pollution Prevention Plan would address all the best management plans necessary to prevent water quality impacts during construction of the project. In addition, buffers from sensitive resources such as wetlands and riparian corridors would be established throughout the project area.

Rain-event action plans and the sampling and analysis requirements would require adequate best management plans prior to any predicted rain event, along with sampling every storm water discharge location three times a day to meet specific sediment and pH-level requirements. The following measures include several that overlap with discussions in Sections 2.3.1, 2.3.2, and 2.3.4.

- Approved work windows—Work in creek channels would occur between May 1 and October 31, unless creek channels dry up earlier than May 1. At Arroyo Paredon, Romero (Picay) and San Ysidro creeks, work would be limited to June 1 through October 31 to avoid impacts to migrating steelhead trout or tidewater goby. Refer to Section 2.3.4 for more detailed information.
- Stream diversions—Diversions may be necessary in some creeks. De-watering and diversion plans would be developed and submitted to appropriate regulatory agencies for review.
- Wetland disturbance—Temporary disturbances to existing wetlands during construction would be avoided to the maximum extent feasible. Where temporary disturbances to wetlands are unavoidable, reasonable measures to maintain the original grade and soil characteristics should be used to prevent permanent wetland loss.
- Construction and waterways—Construction equipment, parking areas and stockpiles would be located in upland locations that are at least 100 feet from all waterways, wetlands, and riparian areas.

Paleontology

The build alternatives are all constrained by the existing right-of-way and the laterally extensive geologic formations. Mitigation measures, specifically monitoring, salvage of fossil specimens, and data recovery during construction excavation for this project would result in the reduction of the potential adverse impact.

Paleontological mitigation for the project during construction would require the following:

- Review of design plans prior to their being ready to submit for the Coastal Development Permit process, must occur by a retained qualified Principal Paleontologist (holding a M.S. or Ph.D. in paleontology or geology, and is familiar with paleontological procedures and techniques). The Principal Paleontologist or an assigned project paleontologist would review the construction plans with proposed excavation sites and the prepared Paleontological Evaluation Report to determine which, if any, project component would involve earth-moving activities at depths sufficient to warrant monitoring and the corresponding development of a Paleontological Monitoring Plan. If monitoring is deemed necessary, the Principal Paleontologist would review the construction schedule to develop a monitoring schedule and compile accompanying costs. This information would be used to prepare a site-specific Paleontological Monitoring Plan, if one is determined necessary for reducing adverse environmental impacts on paleontological resources to an insignificant level. Prior to Coastal Development Permit application.
- A nonstandard special provision for paleontology mitigation must be included in the construction contract special provisions if monitoring has been determined to be necessary based on the final project design. The provision would advise the construction contractor of the requirement to cooperate with the paleontological salvage.
- The Paleontological Mitigation Plan would include monitoring locations and procedures for data collection as indicated below:
    - Recording pertinent geographic and stratigraphic information
    - Recovery methods for both macrofossil and microfossil remains
    - Stabilization (preservation) methods for the specimens

  - Provisions for the remains to be accessioned into the collections of an appropriate repository such as the Los Angeles County Museum or University of California Museum of Paleontology
  - Preparation of a final report detailing the results of the mitigation program

- The qualified Principal Paleontologist would be present at pre-grading meetings to consult with grading and excavation contractors.
- Before the start of excavation, the Principal Paleontologist would conduct an employee environmental awareness training session for all persons involved in earth-moving for the project.
- A paleontological monitor, under the direction of the qualified Principal Paleontologist, would be onsite to inspect cuts for fossils at all times during original disturbance of sensitive geologic formations. Once excavation is under way, the intensity of monitoring may be reduced in areas that are not producing fossils.
- When fossils are discovered, the paleontologist (or paleontological monitor) would recover them. Construction work in these areas may be halted or diverted to allow recovery of fossil remains in a timely manner.
- Bulk sediment samples would be recovered from fossiliferous horizons and processed for micro vertebrate remains as determined necessary by the Principal Paleontologist.
- Fossil remains collected during the monitoring and salvage portion of the mitigation program would be cleaned and prepared to the point of identification (not exhibition), sorted and cataloged.
- Prepared fossils, along with copies of all pertinent field notes, photos, and maps, would then be deposited in an appropriate and Caltrans-approved scientific institution with paleontological collections.
- A final report would be completed that outlines the results of the mitigation program and would be signed by the Principal Paleontologist and Professional Geologist.

Air Quality

Caltrans Standard Specification sections pertaining to dust control and dust palliative applications are required for all construction contracts and would effectively reduce and

control construction-emission impacts. The provisions of Caltrans Standard Specifications, Section 14 "Air Pollution Control" and Section 10 "Dust Control," require the contractor to comply with all California Air Resources Board and Santa Barbara County Air Pollution Control District rules, ordinances, and regulations.

Santa Barbara County Air Pollution Control District requires certain measures for all projects involving earth-moving activities. The first measure listed in the bullets below is required for all projects involving earth-moving activities regardless of the project size or duration. The measures are based on policies adopted in the 1979 Air Quality Action Plan for Santa Barbara County. Proper implementation of all of these measures, as necessary, is assumed to reduce fugitive dust emissions to an acceptable level and is strongly recommended for all projects involving earth-moving.

PM_{10} Measures

- During construction, use water trucks or sprinkler systems to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the late morning and after work is completed for the day. Increased watering frequency would be required whenever the wind speed exceeds 15 miles per hour. Reclaimed water would be used whenever possible. However, reclaimed water should not be used in or around crops for human consumption.
- Onsite vehicle speeds shall be reduced to 15 miles per hour or less, and disturbed areas would be minimized.
- Equipment and materials storage sites would be located as far away as possible from residential and public park areas, schools, and other possible sensitive receptors.
- Gravel pads shall be installed at all access points to prevent tracking mud onto public roads. Wheels and undercarriages of construction equipment should be washed off before leaving individual project sites. Placement of automatic wheel washing equipment at all site exit points is recommended.
- If importation, exportation and stockpiling of fill material are involved, soil stockpiled for more than two days shall be covered, kept moist, or treated with soil binders to prevent dust generation. Trucks transporting fill material to and from the site would be tarped from the point of origin.

- After clearing, grading, earth moving or excavation is completed, treat the disturbed area by watering, revegetation, or spreading soil binders until the area is paved or otherwise developed so that dust generation does not occur.
- In areas where the application of water may be impractical or not feasible, the use of chemical-based dust suppressants would be considered. Recommended areas include unpaved roads used for construction purposes, project parking areas, and equipment staging areas. The use of dust suppressants also should be considered for areas that may be susceptible to wind erosion after working hours, on weekends, or during holidays.
- Any dust, mud, or other debris tracked out from project sites onto public roads shall be cleaned up immediately, with total site cleanup (including public access roads) occurring no less than daily. The use of wet vacuum street sweepers is recommended.
- The contractor or builder would designate a person to monitor the dust control program and to order increased watering, as necessary, to prevent transporting dust offsite. The designated person's duties would include holiday and weekend periods when work may not be in progress. The name and telephone number of such persons would be provided to the Santa Barbara County Air Pollution Control District prior to land-use clearance for map recordation and finish-grading for the structure.
- Caltrans and its contractors shall provide notification of demolitions to the Santa Barbara County Air Pollution Control District to ensure compliance with federal and local asbestos removal requirements. Notifications of demolitions must be made regardless of asbestos content and must be made prior to the start date of demolition activities.

Ozone Precursor (nitrous oxides and reactive organic compounds) Measures

As of June 15, 2008, fleet owners are subject to sections 2449, 2449.1, 2449.2, and 2449.3 in Title 13, Article 4.8, Chapter 9, of the California Code of Regulations to reduce diesel particulate matter and criteria pollutant emissions from in-use off-road diesel-fueled vehicles. The following would be adhered to during project grading and construction to reduce nitrous oxides and small particulate matter ($PM_{2.5)}$ emissions from construction equipment:

- All portable construction equipment shall be registered with the state's portable equipment registration program or permitted by the Santa Barbara County Air Pollution Control District by September 18, 2008.

- Diesel construction equipment meeting the California Air Resources Board's Tier 1 emission standards for off-road heavy-duty diesel engines should be used. Equipment meeting Tier 2 or higher emission standards would be used to the maximum extent feasible.
- The engine size of construction equipment shall be the minimum practical size.
- The number of construction equipment vehicles operating simultaneously shall be minimized through efficient management practices to ensure that the smallest practical number is operating at any one time.
- Construction equipment shall be maintained in tune per the manufacturer's specifications.
- Construction equipment operating onsite shall be equipped with two to four degree engine timing retard or pre-combustion chamber engines.
- Catalytic converters shall be installed on gasoline-powered equipment, if feasible.
- Diesel catalytic converters, diesel oxidation catalysts, and diesel particulate filters as certified and/or verified by the Environmental Protection Agency or California Air Resources Board should be installed on onsite equipment.
- Diesel-powered equipment would be replaced by electric equipment whenever feasible.
- Idling of heavy-duty diesel trucks during loading and unloading shall be limited to 5 minutes; auxiliary power units would be used whenever possible.
- To the extent possible, construction traffic would be routed and scheduled to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- Gasoline-dispensing equipment shall have local air district permits, be certified by the Air Board, and operated in accordance with local air district rules and the Air Board certification requirements. Periodic maintenance and testing are specified under the Air Board executive order that was issued for the certification and by many local air district rules. Equipment repairs and testing must be performed by trained personnel with proper certifications by the manufacturers and, depending on the air pollution control district, by the International Code Council. In addition, local air pollution control districts generally require records of all repair and testing activities to be maintained onsite.

Noise

No adverse noise impacts from construction are anticipated because construction noise would be minimized by the following measures;

- Caltrans will consider constructing the permanent noise barriers before begining project construction so that the barriers can reduce construction noise transmission to adjacent residents and other land uses. When it would not interfere with other construction activities, recommended permanent soundwalls would be built during the first phase of construction to protect sensitive receptors from subsequent construction noise, dust, light, and glare.
- Advanced Notice: The resident engineer shall notify the District 5 Public Information officer to place notice of the proposed project in local news media in advance of construction. The notice will give estimated dates of construction and mention potential noise impacts.
- Public Relations: A telephone shall be installed in the Public Information Officer's office to receive noise complaints. The telephone number shall be publicized in local newspapers and by letter to residences near the construction area.
- Construction activities would be minimized near any residential areas during evening, nighttime, weekend, and holiday periods. Noise impacts are typically minimized when construction activities are performed during daytime hours. When possible, noisier construction tasks exceeding 87dBA within 50 feet of residential areas would be limited to weekdays from 7:00 a.m. to 5:00 p.m. It should be noted, however, that some nighttime construction is necessary to avoid major traffic disruption.
- In the case of construction noise complaints by the public, the construction manager would be notified and the specific noise-producing activity may be changed, altered, or temporarily suspended. District noise staff would be consulted if specific noise-producing activities cannot be adequately reduced in the field.
- All equipment would have sound-control devices no less effective than those provided on the original equipment. All equipment shall operate with muffled exhaust.

- When feasible, the use of loud sound signals such as back-up warning buzzers or alarms would be avoided in favor of light warnings. The exception would be those cases required by safety laws for the protection of personnel.

- As directed by the Caltrans resident engineer, the contractor will implement appropriate additional noise mitigation measures such as notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources.

- Temporary barriers would be used, if needed, to protect residential areas from excessive construction noise generated by such items as compressors, generators, pneumatic tools, and jackhammers. Noise barriers can be made of heavy plywood, moveable insulated sound blankets, or other best available control techniques.

Vibration

- Avoiding the adverse vibration effects caused by planned construction activities and subsequent highway operations involves informing the public of the potential for these effects and using physical methods to reduce vibration impacts. Information disseminated to the public about the kinds of equipment and expected noise levels and durations would help to forewarn potentially affected neighbors about the temporary inconvenience. In these cases, a general description of the variation of noise levels during a typical construction day would be included.

- All of the structures that fall within the established buffer zones would have site-specific low-vibration construction methods employed to ensure there are no structural impacts caused by construction-induced vibration. Mobile homes, however, do not have rigid foundations and are built to withstand the type of vibration typical of soundwall construction. There is little potential for vibration-related impacts to these structures.

- A Vibration Reduction Plan would be prepared to address potential effects of construction vibration. In all cases where properties fall within the established buffer zones, impacts from vibration would be avoided by using alternative construction methods near susceptible structures. Elsewhere, minimization measures to reduce the effects would be developed and included in the plan.

- Every attempt should be made to reduce the adverse vibration effects from construction activities through the use of modern techniques, procedures, and

products. The following steps would be taken in development of the location-specific Vibration Reduction Plan:

- Identify potential problem areas surrounding the localized project work area.
- Determine existing conditions before construction begins.
- Notify nearby residents and property owners that a vibration-generating activity is imminent.
- Inform the public about the project and potential vibration-related consequences.
- Schedule work to reduce adverse effects.
- Design construction activities to reduce vibration.
- Monitor and record vibration from the activity if necessary.
- Respond to and investigate complaints.

- To reduce the effects of construction vibration from pile driving, structure demolition, and pavement breaking for vibration sensitivity zones at 100-foot and 300-foot intervals, the following measures would be included in the Vibration Reduction Plan:
  - Through the local news media and by mail, notify residents within 300 feet of areas where construction activities and pavement breaking would take place at least two weeks in advance of the proposed activity. Residents may wish to secure fragile items that could be damaged by shaking.
  - Arrange for motel rooms for residents living adjacent to the proposed activity when protracted vibrations approaching 0.20 inch per second are expected at their residences at night.
  - Monitor and record peak particle velocities near identified sensitive receptors while the highest vibration-producing activities are taking place (see Appendix K of the Vibration Technical Report).
  - Use rubber-tired vehicles instead of tracked vehicles, when possible, near vibration-sensitive areas.
  - Assure that asphalt paving and bridge forms are smoothed to specified tolerances, especially where there is heavy truck traffic near residences.
  - Perform activities most likely to propagate objectionable vibrations during the day, or at least before most residents retire for the night.

- Restrict pavement breaking to daylight hours.
- Conduct pile driving, as much as possible, during daylight hours.
- Phase demolition, earth-moving, and ground-disturbing operations so as not to occur in the same time period. Unlike noise, the total vibration level produced could be substantially less when each vibration source operates separately.

- Use of Standard-Plan cast-in-drill-hole piles, trench footings, or spread footings are the preferred foundations for locations requiring low-intensity vibration construction (Peak Particle Velocity not to exceed).

Carpinteria

Northbound - Post Mile 3.31to 3.46 <0.25 in/sec at buildings
Northbound - Post Mile 3.66 to 3.73 <0.50 in/sec at buildings
Northbound - Post Mile 3.73 to 3.76 <0.25 in/sec at buildings
Northbound - Post Mile 3.76 to 3.79 <0.50 in/sec at buildings
Southbound - Post Mile 3.68 to 3.72 <0.25 in/sec at buildings
Southbound - Post Mile 3.72 to 3.74 <0.50 in/sec at buildings
Southbound - Post Mile 3.74 to 3.78 <0.25 in/sec at buildings
Southbound - Post Mile 3.90 to 3.95 <0.25 in/sec at buildings
Southbound - Post Mile 3.95 to 4.05 <0.50 in/sec at buildings

Summerland

Northbound - Post Mile 7.84 to 7.89 <0.25 in/sec at buildings
Northbound - Post Mile 7.89 to 7.94 <0.25 in/sec at buildings
Northbound - Post Mile 8.05 to 8.18 <0.25 in/sec at buildings
Northbound - Post Mile 8.20 to 8.24 <0.25 in/sec at buildings
Northbound - Post Mile 8.41 to 8.44 <0.50 in/sec at buildings
Northbound - Post Mile 8.47 to 8.53 <0.50 in/sec at buildings

Sheffield

Northbound - Post Mile 9.09 to 9.14 <0.25 in/sec at buildings
Northbound - Post Mile 9.19 to 9.23 <0.25 in/sec at buildings

Montecito/Santa Barbara

Southbound - Post Mile 9.56 to 9.59 <0.25 in/sec at buildings
Northbound - Post Mile 9.67 to 9.72 <0.25 in/sec at buildings

Northbound - Post Mile 10.18 to 10.20 <0.25 in/sec at buildings

Southbound - Post Mile 10.12 to 10.59 <0.25 in/sec at buildings

Southbound - Post Mile 10.59 to 10.64 <0.50 in/sec at buildings

2.5 Cumulative Impacts

Regulatory Setting

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

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

California Environmental Quality Act Guidelines Section 15130 describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under the California Environmental Quality Act, can be found in Section 15355 of the California Environmental Quality Act Guidelines. A definition of cumulative impacts, under the National Environmental Policy Act, can be found in 40 Code of Federal Regulations, Section 1508.7 of the Council on Environmental Quality Regulations.

Project-specific Resources Considered in the Cumulative Impact Analysis

A cumulative impact analysis is required whenever an environmental document is prepared. The purpose of a cumulative impact analysis is to analyze the potential incremental environmental impacts associated with a project in conjunction with past, present, and reasonably foreseeable future projects. As specified in Caltrans/Federal Highway Administration guidance (Guidance for Preparers of Cumulative Impact