Addendum to Water Quality Assessment Report

South Coast HOV Lanes

In Santa Barbara County between 0.22 miles south of the Bailard Avenue overcrossing in the City of Carpinteria and Sycamore Creek in the City of Santa Barbara

05-SB-101-PM 1.4/12.3

05-0N7000

Prepared by the

State of California Department of Transportation

April, 2014

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April, 2014

Amended By: _____ **Date:** April, 2014,

Rajeev L. Dwivedi, Engineering Geologist

Phone Number: 559-445-6218

Office Name: Central Region Environmental Engineering Branch

District/Region: District 6, Central Region

Approved By: _____ **Date:** April, 2014

Ken J. Romero, P.E., Branch Chief

Phone Number: 559-445-6307

Office Name: Central Region Environmental Engineering Branch

District/Region: District 6, Central Region

The environmental review, certification and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327

REGULATORY SETTING

The California Department of Fish and Game (CDFG) Code Section 1602 requires that the Project team notify the CDFG before beginning any of the following activities:

- substantially divert or obstruct the natural flow or any river, stream, or lake
- substantially change or use any material from the bed, channel, or bank or any river, stream or lake
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream or lake

Federal Laws and Requirements

Clean Water Act

In 1972 Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source unlawful unless the discharge is in compliance with a NPDES permit. Known today as the Clean Water Act (CWA), Congress has amended it several times. In the 1987 amendments, Congress directed dischargers of stormwater from municipal and industrial/construction point sources to comply with the NPDES permit. Important CWA sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.

- Section 401 requires an applicant for a federal license or permit to conduct any activity, which may result in a discharge to waters of the U.S., to obtain certification from the State that the discharge will comply with other provisions of the act. (Most frequently required in tandem with a Section 404 permit request. See below).

- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and Municipal Separate Storm Sewer Systems (MS4s).

- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” USACE issues two types of 404 permits: Standard and General permits. For General permits there are two types: Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effects. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects. There are also two types of Standard permits: Individual permits and

Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE's Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's (EPA) Section 404 (b)(1) Guidelines (U.S. EPA CFR 40 Part 230), and whether permit approval is in the public interest. The 404(b)(1) Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative that would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have fewer effects on waters of the U.S., and not have any other significant adverse environmental consequences. Per the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from the USACE, even if not subject to the 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4.

State Laws and Requirements

Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the State. It predates the CWA and regulates discharges to waters of the State. Waters of the State include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and regulating discharges to ensure compliance with the water quality standards. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants, which are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-source point controls (NPDES permits or Waste Discharge Requirements),

the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB adjudicates water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

- National Pollution Discharge Elimination System (NPDES) Program

  Municipal Separate Storm Sewer Systems (MS4)

  Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water dischargers, including MS4s. The U.S. EPA defines an MS4 as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that are designed or used for collecting or conveying storm water." The SWRCB has identified the California Department of Transportation (Caltrans) as an owner/operator of an MS4 pursuant to federal regulations. Caltrans' MS4 permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

- The Caltrans Municipal Separate Storm Sewer Systems permit (Order No. 2012-0011-DWQ) was adopted on September 19, 2012 and became effective on July 1, 2013. However, this project falls under and will adhere to the requirements found in the previous Municipal Separate Storm Sewer Systems permit (Order No. 99-DWQ-06) as the updated permit applies to projects that have not yet completed the Project Initiation Document (PID). The MS4 permit contains three basic requirements:
- Caltrans must comply with the requirements of the Construction General Permit (see below).
- Caltrans must use a year-round program in all parts of the state to effectively control storm water and non-storm water discharges.
- Caltrans storm water discharges must meet water quality standards through the use of permanent and temporary (construction) best management practices, to the maximum extent practicable, and other measures as the State Water Resources Control Board determines necessary to meet water quality standards.

To comply with the permit, Caltrans developed the Statewide Stormwater Management Plan (SWMP) to address stormwater pollution controls related to highway planning,

design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing stormwater management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed Project will be programmed to follow the guidelines and procedures outlined in the current SWMP to address storm water runoff.

Construction General Permit

Construction General Permit (Order No. 2009-009-DWQ, as amended by 2010-0014-DWG), adopted on November 16, 2010, became effective on February 14, 2011. The permit regulates storm water discharges from construction sites that result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. For all projects subject to the CGP, applicants are required to develop and implement an effective Stormwater Pollution Prevention Plan (SWPPP). In accordance with Caltrans' Standard Specifications, a Water Pollution Control Plan (WPCP) is necessary for projects with DSA less than one acre. A SWPP is anticipated for this Project because it would disturb more than one acre of soil.

The CGP separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases and are based on potential erosion and receiving water risk. Requirements apply according to the Risk Level determined. Beneficial use designations are part of the preliminary project risk level assessment that is done at each project phase. Any receiving water with the beneficial use of COLD, SPWN, and MIGR will give the project a high receiving water risk. Franklin and Carpinteria Creeks are the only receiving waters within the project limits to have all three of these beneficial uses.

Preliminary Risk assessment has indicated this project is a risk level 3 for Franklin and Carpinteria Creek, and the other parts would be at the most a risk level 2.

Coastal Development Permit

The California Coastal Commission retains coastal permit jurisdiction over development proposed on the immediate shoreline (i.e., tidelands, submerged lands, and public trust lands). The Commission also hears appeals of certain local governments' coastal permit decisions, and must review and approve any amendments to previously certified local Coastal Programs. Santa Barbara County and the Cities of Carpinteria and Santa Barbara are authorized to implement the California Coastal Act of 1974 (CCA) via their Local Coastal Plan. Santa Barbara County will issue a Coastal Development Permit (CDP) for the proposed project to ensure compliance with the CCA. This CDP may address water quality issues including:

- Protecting, restoring, or enhancing the existing coastal wetlands base, or creating new coastal wetlands,

- Protecting sensitive biological, cultural and visual resources, and
- Protecting water quality from non-point sources.
-

Streambed Alteration Agreement

The California Department of Fish and Wildlife (CDFW) is empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may be adversely affected. Streams and rivers are defined by the presence of a channel bed and banks and at least an intermittent flow of water. CDFW typically extends the limits of its jurisdiction laterally beyond the channel banks for streams that support riparian vegetation. In these situations, the outer edge of the riparian vegetation is generally used as the lateral extent of CDFW jurisdiction.

CDFW Code Section 1602 requires any person, state or local governmental agency, or public utility to notify the CDFG before beginning any activity that will result in one or more of the following: (1) substantial obstruction or diversion of the natural flow of a river, stream, or lake, (2) substantial change in or use of any material from the bed channel, or bank of a river, stream, or lake, or (3) deposit or disposal of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state.

Section 303(d)

Section 303(d) of the CWA requires that the State adopt water quality objectives for surface waters. The Central Coast Regional Water Quality Control Board (CCRWQCB) Basin Plan contains quality objectives that are considered necessary to protect the specific beneficial uses water the Basin Plan identifies. In addition, because California had not established a complete list of acceptable water quality criteria for toxic pollutants, the US Environmental Protection Agency (USEPA) Region IX established numeric water quality criteria for toxic constituents in the form of the California Toxics Rule. Section 303(d) also specifically requires the State to develop a list of impaired water bodies and subsequent numeric Total Maximum Daily Loads (TMDL).

These constituents include inorganic and organic chemical compounds, metals, sediment, and biological agents. As of 2010, there are approximately five water bodies that are 303(d) listed for various impairments within the project corridor (some waterbodies have multiple listings).

The proposed 2008 303(d) list was approved by the CCRWQCB on July 10, 2009. On November 12, 2010, EPA approved California's 2008-2010 Section 303(d) list of impaired waters and disapproved the omission of several water bodies and associated pollutants that meet federal listing requirements. EPA identified additional water bodies and pollutants for inclusion on the State's 303(d) list. EPA provided public notice and the opportunity for public comment on our proposed additions which ended December 23, 2010. On October 11, 2011, EPA issued its final decision regarding the waters EPA added to the State's 303(d) list.

Tables 1, 2 and 3 show the list of impaired water bodies considering the EPA's final decision regarding 303(d) list. No additional water bodies for this project were added on to the 303(d) list.

Table 1: 303(d) Listed Waterbodies HSA 315.32 (2010 List)

Name	Pollutant
Pacific Ocean at East Beach (mouth of Sycamore Creek, Santa Barbara County)	Total Coliform

Table 2: 303(d) Listed Waterbodies HSA 315.33 (2010 List)

Name	Pollutant
Pacific Ocean at Hammonds Beach (Santa Barbara County)	Total Coliform

Table 3: 303(d) Listed Waterbodies HSA 315.34 (2010 List)

Name	Pollutant
Sycamore Creek	Chloride, Fecal Coliform, Sodium
Pacific Ocean at East Beach(Mouth of Sycamore Creek)	Enterococcus
Pacific Ocean at Hammonds Beach (Mouth of Montecito Creek)	Fecal Coliform, Total Coliform
Romero Creek	pH
Toro Canyon Creek	Fecal Coliform
Arroyo Paredon	Boron, Chloride, Diazanon, Fecal Coliform, Nitrate, Sodium, Unknown Toxicity
Santa Monica Creek	Fecal Coliform, pH
El Estero (Carpinteria) Marsh	Nutrients, Organic Enrichment (Low Dissolved Oxygen), Priority Organics
Franklin Creek	Chlorpyrifos, E. Coli, Fecal Coliform, Nitrate, Sodium, pH
Carpinteria Creek	Chlorpyrifos, E. Coli, Fecal Coliform, Low Dissolved Oxygen, Sodium
Pacific Ocean at Carpinteria State Beach (Carpinteria Creek mouth, Santa Barbara County)	Fecal Coliform

Environmental Consequences/Project Impacts

Water quality impact analysis was conducted for impacts resulting from the project construction. The analysis included assessing short term and long term water quality impacts resulting from the project activities. The impacts were assessed by looking at the beneficial uses, 303(d) impairments, water quality monitoring data for highway facilities, and increases in the impervious surfaces. The analysis also included impacts from hydromodification of the stream channels.

Geomorphology/Hydromodification
Hydromodification is generally defined as changes in channel form associated with alterations in flow and sediment due to past or proposed future land-use alteration. Although most stream channels naturally change over time, activities such as road building, land development, and farming can directly (e.g. bank stabilization) or indirectly (change in storm water discharge velocities, volumes, and location) alter stream channels. The study of stream channel changes over time is referred to as "fluvial geomorphology." The geomorphology of streams in or near the project area was investigated by reviewing historic aerial photos, hydrology information, past land development projects, agricultural practices, and past highway project records. When stream channels are altered by human activity, there is potential for water quality impacts and associated degradation of identified beneficial uses. In theory, it should be one of the projects' goals to not change the geomorphologic processes of the stream and to keep the project as hydraulically invisible as possible. When a highway interferes with a meandering stream, inhibits the flow of floodwaters, and/or changes the hydrograph of the stream, the project is not invisible to the watershed. Therefore, bridges that fully span the active stream channel are preferred over culverts where substantial flows are anticipated because full-span structures will minimally influence stream meandering and flood flows.

Although this is generally the case, it is not entirely true for many of the creeks in the project area, which are constricted and lined to a large extent upstream and downstream of bridge structures near Highway 101. When a creek has a fairly consistent size and roughness within a reach, regardless of whether it's the ideal size and roughness that nature might intend, it could turn out to be detrimental geomorphologically to change the conditions at one spot location such as the highway.

The efforts of the Santa Barbara County Flood Control and Water Conservation District are closely associated with conditions of runoff and sedimentation within the project area. As the result of urbanization, flood control work is vital to the protection of lives and property. However, it is urbanization, especially in the areas of the creeks, which causes many of the problems faced by the Flood Control District. The natural creek beds have been altered and narrowed to allow for development. Instead of rainwater percolating down to recharge aquifers, it runs off impervious surfaces into the creeks. During unusually heavy rains, floods can damage buildings and walls located too close to the creek banks. A major task in recent years has been the dredging of sediment and debris, and extensive vegetation clearing from several creeks in the project area. Without the removal of these materials, the potential for flooding increases.

For geomorphological purposes Waters of the U.S. delineated in this project fall into three general categories: partially altered creek channels, highly altered creek channels, and manmade drainage features.

Manmade drainage features

These include roadside drainage ditches and associated culverts. More than half of the constructed drainage features that would be impacted are concrete-lined. These lined channels provide stormwater control benefits but do not provide significant groundwater recharge or wildlife services.

Highly Altered Channels

Within the state right of way, Franklin and Santa Monica Creeks consist of open concrete box channels and Garrapata Creek is completely culverted. These altered channels provide stormwater control benefits but do not provide significant biological diversity, groundwater recharge, or wildlife habitat.

Franklin Creek

Franklin Creek is confined to a concrete box channel with the Channel lining extending for approximately 1000 feet downstream of the highway bridge. No permanent structures would be placed in the channel. Therefore, no permanent impacts on the creek channel shape or substrate would occur.

Santa Monica Creek

Santa Monica Creek is confined to a concrete box channel within and adjacent to the project limits. Approximately 1000 feet downstream of Highway Bridge, Santa Monica Creek crosses under the UPRR bridge and drains into the Carpinteria Salt Marsh. No permanent structures would be placed in the channel. Therefore, no permanent impacts on the creek channel shape or substrate would occur.

Garrapata Creek

Garrapata creek enters the highway culvert to the north of Via Real on the north side of the highway and daylights directly south of the highway. Majority of the drainage consists of a culvert beneath U.S. 101. The build alternative will avoid Garrapata Creek. No impacts are anticipated.

Partially Altered Channels

These creeks that cross the route, contain areas of natural substrates. Channel banks typically consist of concrete walls, and in most cases there are county or railroad bridge structures and modified channel conditions immediately up and/or downstream. These natural-bottom creek channel sections provide stormwater control, groundwater recharge, biological diversity, and wildlife habitat.

Carpinteria Creek

No work is planned in the bed or banks of Carpinteria Creek. No impacts are anticipated.

Arroyo Paredon Creek

Arroyo Paredon consists of a natural bottom channel that conveys water beneath the highway and drains to the Pacific Ocean during periods of high flow. Beneath and adjacent to Highway 101, the channel is relatively flat and the bed material consists of

natural sediments (sand and mud with some cobble). The banks are vertical concrete walls from the Via Real bridge inlet through the southbound Route 101 bridge outlet.

The existing bridges for the northbound and southbound lanes of U.S.101 at Arroyo Paredon Creek will be replaced with one bridge that carries the creek under the highway. The bridge will have two spans (bays) which will be separated by a concrete pier. Each span will be approximately 25 feet wide. The bridge will have the ability to convey 25-year flood flow requirements agreed to by Santa Barbara County Flood Control; however, the full capacity of the bridge cannot be utilized until constraints upstream and downstream of the Caltrans right of way are upgraded by Santa Barbara County and the Union Pacific Railroad. Until these future improvements are made, one of the two bridge spans will be temporarily blocked to maintain the existing hydraulic capacity. Blocking one of the bridge spans represents a change from conditions proposed in January 2012. The open bridge span will follow the existing channel.

The new span will be three feet wider than the current conditions, so the proposed project would result in a minor widening of the channel. Vertical concrete walls (abutments) currently line the channel banks, and the creek bed consists of cobble and silt. The new bridge will also have vertical concrete walls and the streambed will continue to consist of cobble and silt substrate. The wider channel will result in a gain of approximately 0.012 acre of natural creek bed.

Toro Canyon Creek

Toro Canyon Creek consists primarily of a concrete-lined channel that conveys water beneath Highway 101. The natural bottom channel transitions to a concrete-lined channel between southbound and northbound U.S. 101 and remains concrete-lined for the remainder of the state right of way downstream. The channel bed and banks consists of natural cobbles and soil to the north of the NB highway bridge. The NB and SB bridges at Toro Canyon Creek would be replaced with a single structure. The new structure would enclose the open channel between the two bridges. Up to 0.105 acre of concrete bed lining will be removed within the state right of way to allow the restoration of the creek bottom.

Greenwell Creek

Greenwell Creek currently flows under the U.S. 101 in a corrugated pipe culvert. The culvert invert would be repaired, possibly resulting in temporary impacts along 20 linear feet of creek bed at the north end. Adjacent to the southbound lanes of Highway 101, the culvert outlets approximately 12 feet above a plunge pool, and flows travel along a disturbed open channel before draining into the Pacific Ocean. The channel consists of a natural earthen bottom, although remains of concrete-sack check-dams occur at varying intervals downstream of the pool. Rock slope protection (RSP) would be used to line the basin and side slopes immediately downstream of the culvert outlet to help prevent further erosion and dissipate flow. Bioengineering techniques such as brush-layering with willows would be used to stabilize the banks further downstream.

Romero Creek

Romero Creek channel consists of a natural bottom drainage that conveys water beneath Highway 101. Channel substrate consists of cobble and boulders. Banks are vertical gabion and concrete walls from the county bridge inlet to the Railroad bridge outlet downstream of the highway. Romero is channelized in its lower reaches as it flows through the urban areas of Montecito.

The proposed Romero Creek Bridge would have a longer span than the existing. The longer bridge span will accommodate a wider channel, resulting in a gain of approximately 0.13 acre of unlined creek bed. The creek bed will continue to be a natural bottom and banks will continue to consist of concrete walls that support the bridge deck. The longer span at Romero Creek will be partially blocked to maintain its current capacity until constraints upstream and downstream of Route 101 are improved.

SanYsidro Creek

San Ysidro Creek is a moderately-sized drainage consisting of vertical concrete banks and a natural bottom (primarily cobble) that conveys water beneath Highway 101 and drains to the Pacific west of Fernald Point. Upstream the creek is highly channelized with concrete-sack walls. Downstream of the highway bridge, unlined channel banks extend for approximately 300 feet to the Union Pacific Railroad bridge. The proposed San Ysidro Creek Bridge would have a longer span than the existing. The longer bridge span will accommodate a wider channel, resulting in a gain of approximately 0.11 acre of unlined creek bed. The creek bed will continue to consist of a natural bottom and banks will continue to consist of concrete walls that support the bridge deck. The longer span at San Ysidro Creek will be partially blocked to maintain its current capacity until constraints upstream and downstream of U.S. 101 are improved.

Oak Creek

Oak Creek is a small drainage that crosses under Route 101 at PM 9.66. The channel consists of vertical concrete banks and a natural bottom (primarily cobble) that conveys water beneath Highway 101 and drains to the Pacific Ocean. The proposed Oak Creek Bridge would have a longer span than the existing. The longer bridge span will accommodate a wider channel, resulting in a gain of approximately 0.03 acre of unlined creek bed. The creek bed will continue to consist of a natural bottom and banks will continue to consist of concrete walls that support the bridge deck. The longer span at Oak Creek will be partially blocked to maintain its current capacity until constraints upstream and downstream of U.S. 101 are improved.

Montecito Creek

No work is planned in the bed or banks of Montecito Creek.

Project Impacts

Table 4 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 4 Impacts to Other Waters of the U.S. at Creeks (acres) for Preferred Alternative

Creek	Temporary Impacts	Permanent Impacts
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

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

Removal of the concrete channel lining in Toro Canyon Creek will allow the restoration of up to 0.105 acres of creek bottom. The longer bridge spans at Arroyo Paredon, Romero, San Ysidro and Oak creeks will result in wider natural channels at these four creeks (Arroyo Paredon immediately (+0.160 acre); Romero (+0.13 acre), San Ysidro (+0.110 acre) and Oak Creek (+0.030 acre) once downstream conditions allow). Wider channels will result in a net gain of an additional 0.430 acres of natural creek bed. Expanded channels would increase filtration capacity and groundwater recharge in these creek reaches.

At Greenwell Creek, impacts to other waters of the U.S would be offset by enhancement of 0.145 acres of the creek located south of U.S. 101. Concrete sack revetment and other fill-material would be removed from the channel bed. Bioengineering techniques incorporating arroyo willows and other native plants will be applied in and above RSP along creek banks, to reduce erosion and enhance riparian habitat available for wildlife.

With elimination of the three Cabrillo Boulevard/Hot Springs Road interchange configurations that would have raised the elevation of the Union Pacific Railroad tracks, there is no longer work proposed in the Sycamore Creek watershed.

While four of the bridges (at Toro, Romero, San Ysidro and Oak creeks) would be able to pass the 100-year flood flows, the proposed U.S. 101 bridge at Arroyo Paredon Creek would pass the 25-year flow. The North Jameson Lane bridges at Romero, San Ysidro, and Oak creeks, immediately upstream of U.S. 101, were rebuilt in 2007 by the County of Santa

Barbara. The bridges are designed to pass the 100-year flow and have much larger spans than the original County bridges or the highway bridges downstream. Gabions (earth-and-rock-filled cages) have been installed under these bridges to maintain their original capacity. The proposed U.S. 101 bridges at Romero (Picay), San Ysidro, and Oak creeks would match the ultimate capacity of the North Jameson Lane bridges. Following construction, however, the U.S. 101 bridges would temporarily be partially blocked to maintain their current flow capacity. One of the spans for the proposed Arroyo Paredon Bridge would also be blocked to maintain its current capacity. The bridges would be opened up to their full span when the stream channel and bridge capacities have been improved downstream.

By encouraging the storage of storm water within the footprint of the project and encouraging sheet flow of storm water runoff, hydromodification may be minimized or prevented. Again the goal for Design will be to infiltrate 100% of the Water Quality Flow/Water Quality Volume (which is based on a 85th percentile, 24 hour storm event). This should help with reducing the hydromodification impacts to less than significant.

Existing water quality within the project limits was discussed in detail in the January 30, 2012 Amended Water Quality Assessment Report. The following is additional information which has been included in this report:

For Romero Creek, data collected by the Central Coast Ambient Monitoring Program located at North Jameson Lane shows that elevated pH and sodium levels are persistent in the lower watershed.

For Greenwell Creek . To help prevent further erosion and dissipate flow, the remains of concrete-sack check-dams occur at varying intervals downstream of the pool.

The following information was added as a clarification to address comments regarding the discussion of shade canopy in the Amended Water Quality Assessment Report dated January 30, 2012.

- Riparian vegetation within and adjacent to creeks in the project limits is routinely cleared as part of the Santa Barbara County Flood Control District Annual Maintenance Plan. Maintenance, in combination with channel modifications such as concrete and/or sack-crete lined walls, results in limited opportunity for riparian communities to become established within the state ROW. At most creek crossings in the project area, riparian shade canopy at the Highway 101 bridge sites is minimal. An exception is San Ysidro Creek, which supports mature riparian canopy downstream of the Highway 101 bridge. At San Ysidro Creek, the large sycamore trees to the south of the bridge will be retained, preserving the major portion of riparian shade canopy within the state ROW.

- Temporarily impacted portions of creeks are anticipated to recover to pre-project conditions or better with implementation of replanting and other measures included in the EIR. 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 Highway 101 bridge sites is limited (with the exception of San Ysidro Creek where much of the shade canopy will be retained), it is not anticipated that the proposed project will have any substantial or long-term effects to creek habitat or water temperature within the project area.

Possible Highway Pollutants Affecting Water Quality

Caltrans has conducted many studies to monitor and characterize highway storm water runoff throughout the State. The monitoring has various objectives, such as complying with the National Pollutant Discharge Elimination System permit requirements; producing representative and scientifically credible runoff data from Caltrans facilities; and providing useful information to facilitate Caltrans' storm water management strategies. In considering potential impacts of highway runoff on surface water and groundwater quality, these data are assumed to reflect water quality similar to the quality of runoff from the proposed project.

As part of their runoff and characterization monitoring studies, the Department identified pollutants that were discharged from Department facilities with a load or concentration that commonly exceeded allowable standards and were still considered treatable by currently available Caltrans-approved Treatment Best Management Practices. These pollutants, designated as Targeted Design Constituents (TDC), include sediment; metals (i.e., total and dissolved fractions of zinc, lead, and copper); nitrogen, phosphorus; and general metals. Although ammonia exceeds the water quality objective, this chemical is considered a targeted design constituent and treatable by Caltrans-approved Treatment Best Management Practices; therefore, highway runoff conveyed to Caltrans' approved Treatment Best Management Practices would be treated to the maximum extent practicable and not create any surface water or groundwater quality impacts.

None of the receiving water bodies for this project are impaired by TDC constituents. And that the TBMP consideration methodology will focus on general pollutant removal and infiltration of the water quality flows. The goal will be to treat and infiltrate 100% of the water quality flows, though in some locations that will not be feasible due to the available rights of way, soil infiltration rates, steep slopes, and high ground water in some locations

Tables 5 and 6 show typical pollutants generated from transportation infrastructure projects.

Permanent Impacts

Table 5 Transportation Infrastructure Operation Pollutant Sources and Pollutants

Pollutant Source	Pollutant
Motor Vehicles	Oil
	Grease
	Petroleum
	Coolants
	Nitrite
	Metals
Highway Maintenance	Asphalt
	Sediment
	Mineralized Organic Matter
	Thermoplastics
	Treated Wood
	Tree/Shrub Clippings
Landscaping	Aluminum Sulfate
	Sulfur-Elemental
	Fertilizers-Inorganic
	Fertilizers-Organic
	Natural Earth (Sand Gravel and Topsoil)
	Herbicide
	Pesticide
	Lime
Illegal Dumping	Trash
	Oil/Grease
Spills	Includes Hazardous and Non-Hazardous Chemicals

Source: Caltrans 2003a.

Temporary Impacts

Table 6 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)

Table 6 Construction Site Activities, Materials, and Associated Pollutants

Construction Site Activity	Construction Site Materials	Pollutant
		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.

CUMULATIVE IMPACTS

Cumulative impacts include the impacts of future State, Federal, tribal, local, or private actions that are reasonably certain to affect "other waters" in the project area. Development of the Project, in combination with all other development that would occur in the hydrologic sub-areas, would involve construction activities, increases in storm water runoff from new impervious surface area, and possibly reduction in groundwater recharge areas. Construction of new development throughout the hydrologic sub-area could result in the erosion of soil, thereby cumulatively degrading water quality within the hydrologic sub-area.

Several projects with independent utility are being developed along this same corridor that will make improvements to the freeway: Linden Casitas Interchanges, Santa Barbara Curb Ramps, Butterfly Pedestrian Undercrossing ADA Improvements, Santa Barbara Rehabilitation, and Ventura HOV. The Linden Casitas Project would impact approximately 0.166 acres of other waters of the U.S. which will be fully mitigated as part of that project. Increase in the impervious area from the Santa Barbara Rehab project would be very small and will not affect or add to the water quality impacts from this project. Other than the projects mentioned above, and the updated list of local projects (i.e. City of Santa Barbara, City of Carpinteria, and County of Santa Barbara), Caltrans is unaware of any other federal or non-federal actions that are reasonably certain to occur in the project area. Impacts to "other waters" with this project would be

fully mitigated. Therefore, the project does not have the potential to contribute to a cumulative effect.

The potential short-term and long-term impacts are discussed in this Addendum to the Water Quality Assessment Report. The goal of the Project would be to minimize impacts to the maximum extent practicable.

Short Term (Construction-Related) Impacts

The 303d list documents degraded water quality in many of the watersheds in the project area. These waters are arguably in declining health, and are at risk, even without the contribution of project impacts. The current 2010 303 (d) list states that the impairment of the water bodies in the watershed for this project are total coliform, fecal coliform, indicator bacteria, boron, Nitrate as Nitrite (NO3) pathogens, nutrients, priority organics organic enrichment, and low dissolved oxygen. The sources of these impairments have been identified to be 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 of these are typically found in storm water runoff from construction activities associated with a highway facility. These are fecal coliform, Nitrate, and pH. None of these constituents have been found to exceed the water quality objectives as listed in Table 6: South Coast Hydrologic Unit Surface Water Quality Objectives. In addition the 303(d) listing does not identify highway runoff as a source for the impairments.

This project will increase impervious areas and therefore potentially increase the volume and velocity of storm water flow to downstream receiving water bodies. In addition, pollutant loading can also be increased. The added impervious area is directly related to the potential permanent long-term water quality impacts. Table 7 shows the total increase and percent increase in net new impervious area by watershed, as a result of the proposed project and the existing U.S. 101 for Alternative 1. Storm water runoff volumes and velocities from the project area are expected to increase with the implementation of the HOV Lane project due to the increase in impervious surfaces. However, in comparison with the overall area of the watershed of the creeks, the increase in flow due to the proposed widening of the highway for the High Occupancy Vehicle Lane would be less than significant. The project's design goal is to maintain pre-construction storm water discharge flows by promoting infiltration and metering or detaining flows to pre-construction rates prior to discharge to a receiving water body or to a Municipal Separate Storm Sewer System. By meeting this design goal, permanent water quality impacts are expected to be less than significant.

The increase in impervious surface area resulting from future off highway development may adversely affect long-term water quality by increasing the amount of storm water runoff, transportation-related pollutants, and associated targeted design constituents entering the storm drain system; however, new development would have to comply with existing regulations regarding construction practices that minimize risks of erosion and runoff. Among the various regulations are the applicable provisions of the Department's

Statewide National Pollutant Discharge Elimination System Permit; County and municipal codes related to control of storm water quality for new development and significant redevelopment, roads and highways, and public works projects; municipal grading permits; and other National Pollutant Discharge Elimination System permits (local Small MS4 Permits). This would minimize degradation of water quality at individual project construction sites. Consequently, cumulative water quality impacts would be minimized during the construction and operational phases. Compliance with applicable State Water Resources Control Board and Regional Water Quality Control Board regulations would ensure that water quality is maintained to the maximum extent practicable for potential development projects within the hydrologic sub-area; therefore, there would be less than significant water quality impacts associated with implementation of this Project, and the proposed project would not have a cumulatively considerable contribution to the cumulative effects related to water quality.

Table 7 shows watershed where Caltrans proposes to treat an equivalent amount (100%) of the net new impervious surfaces (NNI), that this project is proposed to create, although treatment will not be balanced by watershed. In the remaining watersheds listed in Table 7 where treatment is not feasible, the impacts will be less than significant based on beneficial uses, Basin Plan water quality standards, and typical highway run-off quality.

Impervious Surface (pavement): Alternative 1 (the preferred alternative) would add 42 acres of impervious surface to the project area. Combined with the existing impervious surface area of 95 acres, there would be a post construction total of 137 acres of impervious surface. The additional impervious surface coverage would potentially increase the volume and velocity of storm water flow to downstream water bodies. The project would be designed to meet post-construction runoff requirements in the Construction General Permit, or the Caltrans National Pollutant Discharge Elimination System Permit if applicable. (Note: The project adds an overall total of 42 acres of impervious surface. This total amount is different than what is indicated in Table 7 (Cumulative Impacts) because the 42 acres applies to the entire project while Table 7 was created to compare existing and added impervious surface for large watersheds only).

Watersheds where treatment will be applied should not have any hydromodification impacts since the treatment BMPs will be designed to infiltrate the water quality flow (WQF). In other watersheds where TBMPs are not feasible, we still may have opportunities for enhanced infiltration; however those details will not be available until the final project design is completed. In those areas where treatment BMPs are not feasible, a risk analysis for the potential for hydromodification in the receiving waters would be conducted. Watersheds in the project are fairly developed and the receiving waters already degraded (303d list). The project would not have the potential for further degradation of the watersheds due to a minor increase in run-off from this project.

- Permanent Storm Water Treatment Best Management Practices—Because this project proposes to add more than 1 acre of new impervious surfaces permanent storm water treatment best management practices will be incorporated into this project to the maximum extent practicable. Treatment best management practice

techniques would concentrate on the use of biofiltration swales (stable grass-lined ditches) to convey surface runoff, and biofiltration strips to intercept overland flow. Currently, infiltration devices are not proposed as part of the project due to high groundwater levels in most locations. If site specific locations indicate low groundwater and soils are determined to be appropriate for infiltration, infiltration devices would then be evaluated for installation.

- All existing vegetated locations to remain along the project limits would be evaluated for viability as biostrips and documented to quantify effectiveness of reductions of particulate runoff. In addition, the following locations would be used for constructing new biostrips and bioswales to intercept runoff. If subsurface conditions are appropriate, these same locations would be used additionally for infiltration purposes. Preliminary locations are shown in Table 8.

Table 7 Comparison of the Net New Impervious Existing Impervious Area for Large Watersheds (South Coast 101 HOV Lanes and 101 Rehabilitation Project)

Waterbody	Watershed Area	Watershed Impervious Area	U.S. 101 Existing Impervious Area	HOV Project Preferred Alt Increased Impervious Area		U.S. 101 Existing + HOV Post-Development Impervious Area		Rehab Project Increased Impervious Area		HOV + Rehab Cumulative Post-Development Impervious Area		Preliminary TBMP Tributary Areas	Notes
	Acres	acres	acres	acres	% Increase	acres	% Watershed	acres	% Increase	acres	% Watershed		
Carpenteria Creek	9820	72.2	15.1	0	0	15.1	0.15	0	0	15.1	0.15	18.1 ac	Offsite at Bailard Ave OC
Franklin Creek	2530	282.9	12.7	5.4	0.21	18.1	0.72	0.3	0.01	18.4	0.73	2.8 ac	
Santa Monica Creek	2450	45.3	0.2	0.1	0	0.3	0.01	0	0	0.3	0.01	11.3 ac	
Arroyo Paredon	2810	55.9	7.2	3.8	0.14	11	0.39	0.3	0.01	11.3	0.4		
Garrapata Creek	370	11.3	5	2.6	0.7	7.6	2.05	0.1	0.03	7.7	2.09		
Toro Creek	2380	38.3	3.7	1.9	0.08	5.6	0.24	0.1	0.01	5.7	0.24	4.5 ac	
Greenwell Creek	280	12.9	3.4	1.8	0.64	5.2	1.86	0.3	0.09	5.5	1.95	1.5 ac	
Romero Creek	3820	117.3	4.4	2.3	0.06	6.7	0.18	0.5	0.01	7.2	0.19		
San Ysidro Creek	2490	39.3	1.3	0.7	0.03	2	0.08	0.1	0	2.1	0.08		
Oak Creek	980	77.9	2.8	1.5	0.15	4.3	0.44	0.1	0.01	4.4	0.44		
Montecito Creek	4330	125.9	1.8	0.9	0.02	2.7	0.06	0.3	0.01	3.0	0.07		
All Other (Small) Locations (South Coast HOV)			37.4	21.0								6.5 ac	
Total for HOV			95.0	42.0								44.70	

Table 8 Preliminary Locations for Biostrips and Bioswales

Biostrip	Bioswale	Treatment Begin (post mile)	Treatment End (post mile)	Treatment Location	Impervious Tributary Area (Acres)	Tributary Watershed	Water Quality Flow from Impervious Area (cfs)	Tributary Begin	Tributary End	Tributary Shed
	X	1.60	1.70	Southbound	8.19	Carpinteria Creek	2.023	1.27	1.74	NB & SB
	X	2.30	2.40	Northbound	9.94	Carpinteria Creek	2.455	1.74	2.44	NB & SB
X		3.31	3.48	Southbound	1.07	Franklin Creek	0.264	3.31	3.48	SB
X		3.31	3.53	Northbound	1.39	Franklin Creek	0.343	3.31	3.53	NB
X		3.55	3.60	Southbound	0.32	Franklin Creek	0.079	3.55	3.60	SB
X		3.66	3.76	Southbound	0.63	Santa Monica Creek	0.156	3.66	3.76	SB
X		3.68	3.92	Northbound	1.63	Santa Monica Creek	0.403	3.68	3.92	NB
X		3.77	3.94	Southbound	1.07	Salt Marsh	0.264	3.77	3.94	SB
X		3.95	4.28	Northbound	2.24	Salt Marsh	0.553	3.95	4.28	NB
X		4.32	4.62	Northbound	2.04	Salt Marsh	0.504	4.32	4.62	NB
X		4.18	4.33	Southbound	0.95	Salt Marsh	0.235	4.18	4.33	SB
X		4.70	5.10	Northbound	2.72	Salt Marsh	0.561	4.70	5.10	NB
X		5.71	6.24	Southbound	3.34	Pacific Ocean	0.825	5.71	6.24	SB
X		5.96	6.24	Northbound	1.90	Pacific Ocean	0.469	5.96	6.24	NB
	X	6.70	6.80	Northbound	2.27	Toro Creek	0.561	6.9	7.26	NB
X		6.91	7.10	Southbound	1.20	Toro Creek	0.296	6.91	7.10	SB
X		7.05	7.22	Southbound	1.07	Toro Creek	0.264	7.05	7.22	SB
X		7.26	7.46	Southbound	1.26	Pacific Ocean	0.311	7.26	7.46	SB

X		7.50	7.73	Southbound	1.45	Greenwell Creek	0.358	7.50	7.73	SB
					Total 44.68 acres					

Amended Water Quality Assessment Report

South Coast HOV Lanes

In Santa Barbara County between 0.22 miles south of the Bailard Avenue overcrossing in the City of Carpinteria and Sycamore Creek in the City of Santa Barbara

05-SB-101-PM 1.4/12.3

05-0N7000

Prepared by the

State of California Department of Transportation

January 31, 2012

For individuals with sensory disabilities, this document is available in Braille, large print, on audiocassette, or computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Valerie Levulett, Central Coast Technical Studies Branch, (805) 549-3193 Voice.

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05-0N7000

January 30, 2012

Amended By: _____ **Date:** January 30, 2012,

Rajeev L. Dwivedi, Engineering Geologist

Phone Number: 559-445-6218

Office Name: Central Region Environmental Engineering Branch

District/Region: District 6, Central Region

Approved By: _____ **Date:** January 30, 2012

Ken J. Romero, P.E., Branch Chief

Phone Number: 559-445-6307

Office Name: Central Region Environmental Engineering Branch

District/Region: District 6, Central Region

The environmental review, certification and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327

Executive Summary

The water quality assessment report provides a discussion of the proposed project, the physical setting of the project area, and the regulatory framework with respect to water quality. The report provides data on surface water and groundwater resources within the project area and their water quality health, describes water quality impairments and beneficial uses, identifies potential water quality impacts/benefits associated with the proposed project, and identifies avoidance and or minimization measures recommended for potentially adverse impacts.

The proposed project would add one high occupancy vehicle (HOV) lane in each direction to Highway 101 in Santa Barbara County between one-half mile south of Carpinteria Creek in Carpinteria, and Sycamore Creek in the City of Santa Barbara. The proposed widening would occur within the existing right-of-way, the new highway lanes would be added either to the inside or outside of the existing edge of travel way, or potentially a combination of inside and outside widening to preserve existing landscaping where possible. The purpose of the proposed new lanes is to relieve existing and projected future congestion on the highway in the project area.

The current Annual Average Daily Traffic (AADT) in the project limits from post-mile 1.3 to 7.1 ranges between 66,000 and 74,000 and is forecasted to exceed 94,000 by 2035. The current AADT in the project limits from post-mile 7.1 to 12.3 averages approximately 105,000 and is forecasted to exceed 132,000 by 2035.

The existing capacity of Highway 101 within the project limits, and throughout much of the Santa Barbara south coast, is severely congested during peak periods and weekends. During these times, the facility operates at Level of Service (LOS) F congested flow conditions for two to four hours daily in each direction (SBCAG *Congestion Management Program,* 2007). Without capacity improvements, LOS F conditions on Highway 101 within the project limits are forecast to exceed nine hours a day in each direction by 2040 (SBCAG's *101 in Motion* July 2006).

The forecasted rise in congestion and delay is a result of several factors, including increased long distance commuting from Ventura County, internal population growth, which is forecast to expand by ten percent by 2020 in Santa Barbara County (SBCAG *Regional Growth Forecast,* 2007), and interregional traffic growth, including goods movement. This project represents one component of a larger Highway 101 corridor improvement strategy in northern Ventura County and southern Santa Barbara County.

The information contained in this document may be used to support environmental documentation that will be prepared for the project in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the state lead agency for CEQA compliance. The Federal Highway Administration (FHWA), with Caltrans serving as its representative, is the federal lead agency for NEPA compliance.

The WQA determines if project induced effects would have a potential an adverse impact on water quality. Impacts are based on whether discharges to receiving waters would cause exceedences of water quality objectives or have an adverse effect to the beneficial uses identified by the Regional Water Quality Control Board (RWQCB).

For the purpose of this WQA, an impact is considered adverse if the proposed project would:

- Violate any water quality standards or waste discharge requirements;
- Substantially alter the existing drainage pattern of the site or area, including alteration of a stream or river in a manner that would result in substantial erosion or siltation on or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems, or cause substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place structures within 100-year flood hazard areas, which would impede or redirect flood flows.

This report describes the environmental and regulatory setting, the environmental impacts of the project, and measures to minimize adverse impacts on hydrology and water quality.

Table of Contents

Executive Summary ..... **i**
Table of Contents ..... **iii**
List of Figures ..... **iv**
List of Tables ..... **iv**
1. Purpose of Water Quality Assessment Report **5**
2. Project Location, Description, and Alternatives **5**
Alternatives 7
3. Federal, State, and Local Regulations **9**
Federal Regulations – Clean Water Act 9
Section 404 and 401 9
Section 402 10
Section 303(d) 10
Executive Order 13112: Prevention and Control of Invasive Species 13
State Regulations 13
Stormwater 13
Coastal Development Permit 14
Streambed Alteration Agreement 15
Potential Permits Required 15
4. Regional Climate, Geology, and Topography **15**
Topography 16
Soil Types 16
Meteorology 16
5. Water Quality Objectives and Beneficial Uses **17**
Beneficial Use Definitions 17
Beneficial Uses of Surface and Groundwater 19
Surface Water Quality Objectives 20
Ground Water Quality Objectives 21
6. Existing Water Quality Within The South Coast Hydrologic Unit **21**
Existing Water Quality Within the Project Limits 22
Carpinteria Hydrologic Sub-area (HSA 315.33) 23
Montecito Hydrologic Sub-area (HSA 315.34) 28
Santa Barbara Hydrologic Sub-area (HSA 315.32) 32
Possible Highway Pollutants Affecting Water Quality 32
7. Environmental Consequences / Project Impacts **33**
Geomorphology 33
Standard Practices and Procedures 34
Permanent Impacts 35
Temporary Impacts 37
8. Avoidance and Minimization Measures **39**
Temporary Construction Measures 39
Permanent Design Measures 40
9. References **43**

List of Figures

Figure 1 Project Location/Vicinity Map 6
Figure 2: Hydrologic Sub-Area 315.32 11
Figure 3: Hydrologic Sub-Area 315.33 11
Figure 4: Hydrologic Sub-Area 315.34 12
Figure 5: South Coast Hydrologic Unit 24
Figure 6: County Flood Control Debris Locations 25

List of Tables

Table 1: TMDLs & 303(d) Listed Waterbodies HSA 315.32 (2006 List)..... 11
Table 2: 303(d) Listed Waterbodies HSA 315.33 (2006 List)..... 12
Table 3: 303(d) Listed Waterbodies HSA 315.34 (2006 List)..... 13
Table 4: Required Permits 15
Table 5: South Coast Hydrologic Unit Beneficial Use Designations 19
Table 6: South Coast Hydrologic Unit Surface Water Quality Objectives 20
Table 7: South Coast Hydrologic Unit Ground Water Quality Objectives 21

1. Purpose of Water Quality Assessment Report

The purpose of this project is to reduce congestion and improve travel time on Highway 101 within the project limits. To achieve this purpose, Caltrans proposes to construct an additional lane on Highway 101 in both the northbound and southbound directions to be used as High Occupancy Vehicle (HOV) lanes. Adding capacity to the corridor will reduce peak hour congestion and improve freeway operations within the project limits.

In relation to the proposed project, the purpose of this water quality assessment (WQA) is to identify potential impacts of the proposed project on water quality and associated beneficial uses. The WQA identifies impacts on surface water and groundwater resources resulting from this project, and describes avoidance and minimization measures to address any adverse impacts. This technical report will be incorporated into a joint environmental document, to be prepared under the guidelines of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

For the purpose of this WQA, an impact is considered adverse if the proposed project would:

- Violate any water quality standards or waste discharge requirements;
- Substantially alter the existing drainage pattern of the site or area, including alteration of a stream or river in a manner that would result in substantial erosion or siltation on or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems, or cause substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place structures within 100-year flood hazard areas, which would impede or redirect flood flows.

2. Project Location, Description, and Alternatives

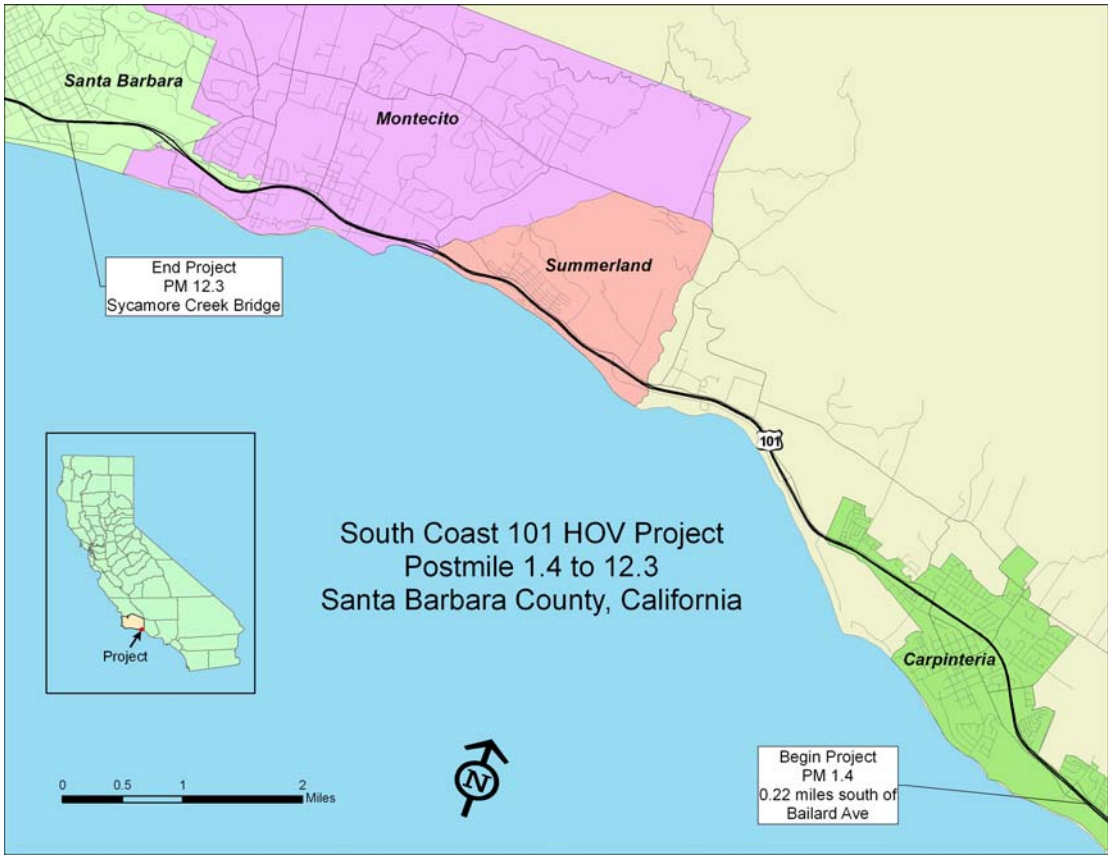
The proposed project would add one high occupancy vehicle (HOV) lane in each direction to Highway 101 in Santa Barbara County between one-half mile south of Carpinteria Creek in Carpinteria, and Sycamore Creek in the City of Santa Barbara. The proposed widening would occur within the existing right-of-way, the new highway lanes would be added either to the inside or outside of the existing edge of travel way, or potentially a combination of inside and outside widening to preserve landscaping where possible. The purpose of the proposed new lanes is to relieve existing and projected future congestion on the highway in the project area (refer to Figure 1).

The current Annual Average Daily Traffic (AADT) in the project limits from post-mile 1.3 to 7.1 ranges between 66,000 and 74,000 and is forecasted to exceed 94,000 by 2035. The current Annual Average Daily Traffic (AADT) in the project limits from post-mile 7.1 to 12.3 averages approximately 105,000 and is forecasted to

exceed 132,000 by 2035. The existing capacity of Highway 101 within the project limits, and throughout much of the Santa Barbara south coast, is congested during peak periods and weekends. During these times, the facility operates at Level of Service (LOS) F congested flow conditions for two to four hours daily in each direction (SBCAG *Congestion Management Program*, 2007).

Without capacity improvements, LOS F conditions on Highway 101 within the project limits are forecast to exceed nine hours a day in each direction by 2040 (SBCAG's *101 in Motion* July 2006). The forecasted rise in congestion and delay is a result of several factors, including increased long distance commuting from Ventura County, internal population growth, which is forecast to expand by ten percent by 2020 in Santa Barbara County (SBCAG *Regional Growth Forecast*, 2007), and interregional traffic growth, including goods movement. This project represents one component of a larger Highway 101 corridor improvement strategy in northern Ventura County and southern Santa Barbara County.

Figure 1 Project Location/Vicinity Map



Alternatives

Caltrans proposes to widen U.S. 101 to three lanes in each direction, from 0.22 mile south of the Bailard Avenue overcrossing (post mile 1.4) in the city of Carpinteria to the southern portion of the city of Santa Barbara (post mile 12.3) near Sycamore Creek.

Three build alternatives and the No-Build Alternative are being considered for this project. Each build alternative would add a part-time single high-occupancy-vehicle lane in both the northbound and southbound directions and rebuild interchanges at Sheffield Drive and Cabrillo Boulevard/Hot Springs where existing off-ramps at both locations are currently located in the median. Five configurations—F, F Modified, J, M, and M Modified—are being considered for the Cabrillo Boulevard interchange.

Alternative 1 proposes selective inside and outside widening within available right-of-way. This alternative was developed to maximize opportunities to retain and refine high value resources including scenic views, wetlands and median/outside landscaping.

Alternative 2 proposes to widen lanes to the outside where right-of-way is available, which would maximize landscaping in the median.

Alternative 3 proposes to build all new paved lanes within the existing available median, which would maximize the retention of outside planting.

The No-Build Alternative would not add HOV lanes to the highway and would not reduce congestion or encourage carpooling and transit. The interchanges and structures that are part of the proposed project would not be changed. No planting from the shoulders or median would be removed, and there would be no noise-attenuating pavement installed or noise barriers added. The No-Build Alternative would not provide HOV continuity in the Southern Santa Barbara region as planned for in the 2008 Regional Transportation Plan.

Five configurations being considered for the Cabrillo Boulevard/Hot Springs Interchange:

F—Existing Northbound Mainlines/Southbound Half Diamond

This configuration would do the following:

- Close both median off-ramps at Cabrillo Boulevard and the Los Patos Way off-ramp.
- Improve the northbound Hermosillo Drive off-ramp and the northbound Cabrillo Boulevard on-ramp.
- Acquire access control for 50’ beyond the end of the southeast return of the reconstructed Hermosillo Road northbound off-ramp. Install access control fencing along the frontage of the existing gas station up to the first gas station driveway.
- Build new southbound on- and off- ramps to intersect at Cabrillo Boulevard immediately adjacent and to the right of the southbound freeway lanes.

- Install traffic signals at Hermosillo Road at Coast Village Road and at the Cabrillo Boulevard southbound ramps.

Modified F—Northbound Half Diamond with Hermosillo Drive Off-Ramp and Southbound Half Diamond

This configuration would do the following:

- Close both median off-ramps at Cabrillo Boulevard and the Los Patos Way off-ramp.
- Add a northbound right side off-ramp at Cabrillo Boulevard.
- Improve the northbound Cabrillo Boulevard on-ramp.
- Retain the northbound Hermosillo Drive off-ramp.
- Construct new southbound on- and off-ramps to intersect at Cabrillo Boulevard immediately adjacent and to the right of the southbound freeway lanes.

J—Existing Northbound Mainlines and Improve Los Patos Way

This configuration would do the following:

- Close both median off-ramps at Cabrillo Boulevard.
- Improve the northbound Hermosillo Drive off-ramp and the northbound Cabrillo Boulevard on-ramp.
- Improve the southbound Los Patos Way off-ramp and add a new southbound Los Patos Way on-ramp.
- Install a traffic signal at the Hermosillo Road at Coast Village Road.
- Raise the existing railroad profile by about 4 feet for 0.67 of a mile to allow southbound ramps at Los Patos Way to have standard vertical clearance.
- The Hermosillo Drive off-ramp would require the placement of access control fencing up to the first gas station driveway. The Los Patos Way ramp would also require the placement of access control fencing for a distance of 170 feet (just before the maintenance gate at the Andree Clark Bird Refuge).

M—Northbound Half Diamond/Improve Los Patos Way

This configuration would do the following:

- Close both median off-ramps at Cabrillo Boulevard and the northbound Hermosillo Drive off-ramp.
- Add a northbound Cabrillo Boulevard off-ramp and improve the northbound Cabrillo Boulevard on-ramp.
- Improve the southbound Los Patos Way off-ramp and add a new southbound Los Patos Way on-ramp. The Los Patos Way ramp would require the placement of access control fencing for a distance of 170 feet (just before the maintenance gate at the Andree Clark Bird Refuge).
- Raise the existing railroad profile by about 4 feet for 0.67 of a mile to allow southbound ramps at Los Patos Way to have standard vertical clearance.
- Install a traffic signal at the Cabrillo Boulevard northbound ramps.

Modified M—Northbound Half Diamond with Hermosillo Drive Off-Ramp and Southbound Los Patos

This configuration would do the following:

- Close both median off-ramps at Cabrillo Boulevard.
- Add a northbound right side off-ramp at Cabrillo Boulevard and improve the northbound Cabrillo Boulevard on-ramp.
- Retain the northbound Hermosillo Drive off-ramp.
- Improve the southbound Los Patos Way off-ramp and add a new southbound Los Patos Way on-ramp.
- Raise the existing railroad profile by about 4 feet for 0.67 of a mile to allow southbound ramps at Los Patos Way to have standard vertical clearance.

Each build alternative would also do the following:

- Replace bridge structures at Arroyo Paredon (Parida), Toro Canyon, Romero (Picay), Oak, and San Ysidro creeks
- Widen bridge structures at Franklin and Santa Monica creeks
- Widen traffic undercrossing structures at South Padaro Lane and Evans Avenue
- Build a southbound auxiliary lane between the Sheffield Drive on-ramp and the Evans Avenue off-ramp
- Provide median landscaping from 0.4 of a mile south of Carpinteria Creek to 0.3 of a mile south of Carpinteria Creek (this is the only spot where median planting is common to all build alternatives)
- Install replacement planting
- Build new retaining walls (the total number varies by alternative and Cabrillo Boulevard interchange configuration).
- Build soundwalls (about 27) for noise abatement where appropriate
- Provide noise attenuating pavement surface on all travel lanes on U.S. 101 within the project limits
- Relocate utilities as needed
- Lengthen cross culverts to accommodate additional pavement width
- Build maintenance vehicle pullout areas (Alternative 1—11 pullouts; Alternative 2—21 pullouts; Alternative 3—1 pullout)
- Build storm water treatment facilities, at the following locations, that would typically have graded, flat-bottom swale(s): adjacent to the Bailard Avenue interchange; post mile 2.5; post mile 4.2; post mile 4.9; and post mile 6.8
-

3. Federal, State, and Local Regulations

Federal Regulations – Clean Water Act

Section 404 and 401

The primary federal law regulating water quality is the Clean Water Act (CWA). The U.S. Army Corps of Engineers (Corps) regulates dredge or fill of waters of the United

States under Section 404 of the CWA via the Nationwide Permit (NWP) or Individual Permit program. A Pre-Construction Notification (PCN) to the Corps district engineer is required for most activities that result in the loss of greater than 0.1 acres of waters of the United States. The Corps reviews PCN on a case-by-case basis to determine whether the adverse effects (on the aquatic environment) of proposed work are minimal. The Corps will also determine whether a particular drainage is considered Waters of the United States and whether it is subject to regulation under Section 404.
Section 401 of the CWA requires a water quality certification from the Regional Water Quality Control Board when a project:

- Requires a federal license or permit under Section 404 (a Section 404 permit is the most common federal permit for Caltrans projects), and
- Will result in a discharge to waters of the United States.

The proposed project is expected to need an individual 404 Permit and a 401 Certification because of unavoidable dredge or fill of wetlands and waters of the United States.

Section 402

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit system for the discharge of any pollutant (except dredge or fill material) into waters of the United States. The major purpose of the NPDES program is to protect human health and the environment. The proposed project will comply with Section 402 via an NPDES Statewide Storm Water Permit issued by the State Water Resources Control Board (SWRCB) (see State Requirements).

Section 303(d)

Section 303(d) of the CWA requires that the State adopt water quality objectives for surface waters. The Central Coast Regional Water Quality Control Board (CCRWQCB) Basin Plan contains water quality objectives that are considered necessary to protect the specific beneficial uses the Basin Plan identifies. In addition, because California had not established a complete list of acceptable water quality criteria for toxic pollutants, the US Environmental Protection Agency (USEPA) Region IX established numeric water quality criteria for toxic constituents in the form of the California Toxics Rule. Section 303(d) also specifically requires the State to develop a list of impaired water bodies and subsequent numeric Total Maximum Daily Loads (TMDL)[1].

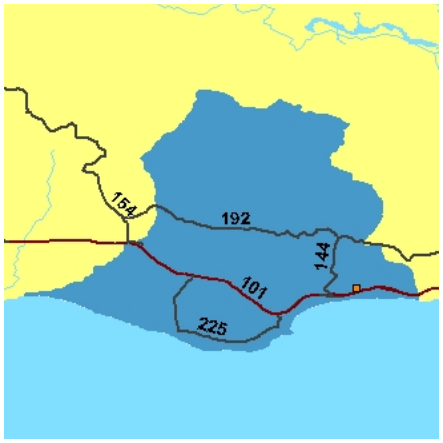
These constituents include inorganic and organic chemical compounds, metals, sediment, and biological agents. As of 2006, there are approximately five water bodies that are 303(d) listed for various impairments within the project corridor (some waterbodies have multiple listings).

[1] The TMDL is the total amount of a constituent that can be discharged while meeting water quality objectives and protecting beneficial uses. It is the sum of the individual load allocations.

The proposed 2008 303(d) list was approved by the CCRWQCB on July 10, 2009. On November 12, 2010, EPA approved California's 2008-2010 Section 303(d) list of impaired waters and disapproved the omission of several water bodies and associated pollutants that meet federal listing requirements. EPA identified additional water bodies and pollutants for inclusion on the State's 303(d) list. EPA provided public notice and the opportunity for public comment on our proposed additions which ended December 23, 2010. On October 11, 2011, EPA issued its final decision regarding the waters EPA added to the State's 303(d) list.

Tables 1, 2 and 3 show the list of impaired water bodies considering the EPA's final decision regarding 303(d) list. No additional water bodies for this project were added on to the 303(d) list.

Figure 2: Hydrologic Sub-Area 315.32



Hydrologic Unit	SOUTH COAST
Hydrologic Area	South Coast
Hydrologic Sub-Area	Santa Barbara
Watershed Area (acres)	22348
Average Annual Rainfall (inches)	21.5

Table 1: TMDLs & 303(d) Listed Waterbodies HSA 315.32 (2006 List)

Name	Pollutant	Source	Size	Status
Pacific Ocean at East Beach (mouth of Sycamore Creek, Santa Barbara County)	Total Coliform	Source Unknown	0.06 Miles	TMDL Required
Pacific Ocean at Hope Ranch Beach (Santa Barbara County)	Fecal Coliform	Source Unknown	0.06 Miles	TMDL Required
Pacific Ocean at Leadbetter Beach (Santa Barbara County)	Indicator bacteria	Source Unknown	0.06 Miles	TMDL Required

Figure 3: Hydrologic Sub-Area 315.33

Hydrologic Unit	SOUTH COAST
Hydrologic Area	South Coast
Hydrologic Sub-Area	Montecito
Watershed Area (acres)	12421
Average Annual Rainfall (inches)	24.5

Table 2: 303(d) Listed Waterbodies HSA 315.33 (2006 List)

Name	Pollutant	Source	Size	Status
Pacific Ocean at Hammonds Beach (Santa Barbara County)	Fecal Coliform	Source Unknown	0.06 Miles	TMDL Required

Figure 4: Hydrologic Sub-Area 315.34

Hydrologic Unit	SOUTH COAST
Hydrologic Area	South Coast
Hydrologic Sub-Area	Carpinteria
Watershed Area (acres)	32624
Average Annual Rainfall (inches)	24.6

Table 3: 303(d) Listed Waterbodies HSA 315.34 (2006 List)

Name	Pollutant	Source	Size	Status
Arroyo Paredon	Boron	Source Unknown	5.2 Miles	TMDL Required
Arroyo Paredon	Nitrate as Nitrate (NO3)	Source Unknown	5.2 Miles	TMDL Required
Arroyo Paredon	Toxicity	Source Unknown	5.2 Miles	TMDL Required
Carpinteria Creek	Pathogens	Agriculture	5.8 Miles	TMDL Required
Carpinteria Creek	Pathogens	Land Disposal	5.8 Miles	TMDL Required
Carpinteria Creek	Pathogens	Septage Disposal	5.8 Miles	TMDL Required
Carpinteria Marsh (El Estero Marsh)	Nutrients	Agriculture	188 Acres	TMDL Required
Carpinteria Marsh (El Estero Marsh)	Organic Enrichment/Low Dissolved Oxygen	Agriculture	188 Acres	TMDL Required
Carpinteria Marsh (El Estero Marsh)	Priority Organics	Urban Runoff/Storm Sewers	188 Acres	TMDL Required
Franklin Creek	Nitrate as Nitrate (NO3)	Source Unknown	2.8 Miles	TMDL Required
Pacific Ocean at Carpinteria State Beach (Carpinteria Creek mouth, Santa Barbara County)	Fecal Coliform	Source Unknown	0.06 Miles	TMDL Required
Pacific Ocean at Carpinteria State Beach (Carpinteria Creek mouth, Santa Barbara County)	Total Coliform	Source Unknown	0.06 Miles	TMDL Required

Executive Order 13112: Prevention and Control of Invasive Species

Executive Order (EO) 13112 (signed February 3, 1999) directs all federal agencies to prevent and control introductions of invasive species in a cost-effective and environmentally sound manner. The EO and directives from the Federal Highway Administration require consideration of invasive species in NEPA analyses, including their identification and distribution, their potential impacts, and measures to prevent or eradicate them. For this water quality assessment, only invasive species that spread in riparian areas or waterways are evaluated in the context of beneficial uses of water quality. The eradication of most invasive species is a water quality concern because eradication commonly requires soil disturbances and/or the use of herbicides.

State Regulations

Stormwater

To ensure compliance with Section 402 of the CWA, the State Water Resources Control Board (SWRCB) has issued an NPDES Statewide Stormwater Permit to regulate storm water and non storm water discharges (per project design procedures and guidance) from Caltrans properties, facilities and activities including construction. The permit regulates storm water discharges from the Caltrans right-of-way during and after construction, as well as from existing facilities and operations. To comply with the Permit, Caltrans has developed and implements the May 2003 Statewide Stormwater Management Plan (SWMP). The SWMP was updated during 2007, but has not yet been approved by the SWRCB. Caltrans has updated our stormwater project design guidance, the Project Planning and Design Guide, PPDG,

in July 2010. The PPDG outlines how the Caltrans NPDES Permit is implemented into our project design process.

In addition, the SWRCB has issued a Statewide Construction General Permit (Order 2009-0009 DWQ) for construction activities that would disturb one acre or more of soil, or that are part of a Common Plan of Development that would disturb one acre or more of soil. The Caltran's Statewide Storm Water Permit incorporates the requirements of the State Construction General Permit by reference. Some construction activities may require an individual construction permit. All Caltrans projects that are subject to the requirements of the Construction General Permit require a Stormwater Pollution Prevention Plan (SWPPP), while all other projects require a Water Pollution Control Program (WPCP). There is also a low rainfall erosivity waiver, where a project with between 1 to 5 acres of DSA can have a WPCP, in the EPA if the "R" factor calculation is less than 5.

Subject to the Caltran's review and approval, the contractor prepares either a SWPPP or a WPCP. The WPCP and the SWPPP identify construction activities that may have an adverse effect on receiving waters or storm drain systems and measures to control these pollutants. Since neither the WPCP nor the SWPPP are prepared at this time, the following discussion focuses on anticipated pollution controls. There are a lot of new changes in how a SWPPP is implemented on projects due to the new CGP. The new CGP applies a technique on how to determine a project's "risk level" and implements assessment procedures. Projects fall into either risk level 1, 2, or 3 projects. Beneficial use designations are part of the preliminary project risk level assessment that is done at each project phase. Any receiving water with the beneficial use of COLD, SPWN, and MIGR will give the project a high receiving water risk. Franklin and Carpinteria Creeks are the only receiving waters within the project limits to have all three of these beneficial uses.

Since this project would be located within 303d listed water bodies that include spawning/migration designations and would disturb more than 30 acres of new soil, it would be considered a risk-level 3 project, which as included in the new construction general permit requirements, would include regulatory bio-assessment requirements. This project is a risk level 3 (mainly due to the beneficial uses of Franklin and Carpinteria Creek, however, if the project were broken up into parts, only the part(s) discharging to those water bodies would be risk level 3. The other parts would be at the most a risk level 2.

Coastal Development Permit

The California Coastal Commission retains coastal permit jurisdiction over development proposed on the immediate shoreline (i.e., tidelands, submerged lands, and public trust lands). The Commission also hears appeals of certain local governments' coastal permit decisions, and must review and approve any amendments to previously certified local Coastal Programs. Santa Barbara County and the Cities of Carpinteria and Santa Barbara are authorized to implement the California Coastal Act of 1974 (CCA) via their Local Coastal Plan. Santa Barbara County will issue a Coastal Development Permit (CDP) for the proposed project to

ensure compliance with the CCA. This CDP may address water quality issues including:

- Protecting, restoring, or enhancing the existing coastal wetlands base, or creating new coastal wetlands,
- Protecting sensitive biological, cultural and visual resources, and
- Protecting water quality from non-point sources.

Streambed Alteration Agreement

The California Department of Fish and Game (CDFG) are empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may be adversely affected. Streams and rivers are defined by the presence of a channel bed and banks and at least an intermittent flow of water. CDFG typically extends the limits of its jurisdiction laterally beyond the channel banks for streams that support riparian vegetation. In these situations, the outer edge of the riparian vegetation is generally used as the lateral extent of CDFG jurisdiction.

CDFG Code Section 1602 requires any person, state or local governmental agency, or public utility to notify the CDFG before beginning any activity that will result in one or more of the following: (1) substantial obstruction or diversion of the natural flow of a river, stream, or lake, (2) substantial change in or use of any material from the bed channel, or bank of a river, stream, or lake, or (3) deposit or disposal of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state.[2]

Potential Permits Required

The following is a list of jurisdictional permits likely to be required for the project.

Table 4: Required Permits

Name of Permit	Issuing/Authorizing Agency
401 Certification	Regional Water Quality Control Board
Coverage under the Construction General Permit: Order DWQ 2009-0009	State Water Resources Control Board
404 Permit	US Army Corps of Engineers
1602 Streambed Alteration Agreement	CA Department of Fish and Game
Coastal Development Permit	Santa Barbara County and the City of Carpinteria

4. Regional Climate, Geology, and Topography

The quality of water in an area depends upon several factors, including climate, precipitation, topography, geology, soils, surface and groundwater hydrology, land

[2] California Department of Fish and Game Web site: www.dfg.gov/1600/qa.html

use, and traffic. The following is a brief description of these general characteristics in the project corridor and surrounding areas.

Topography

The project is located on a coastal terrace on the south-facing coast of southern Santa Barbara County. The area is bound to the west and south by the Pacific Ocean, and to the north by the Santa Ynez Mountains with elevations up to 4,600 feet. County coastal watersheds in the area originate in the Santa Ynez Mountain range, which run east-to-west from Ventura to San Luis Obispo County (NOAA 2006). The distance from the highway to the crest of the Santa Ynez Mountains Range to the north is approximately 5 miles. Further to the north are the San Rafael Mountains with elevations up to 6800 feet.

The South Coast Hydrologic Unit is made up of small coastal watersheds originating in the southern Los Padres National Forest and draining to the Santa Barbara coast. All watersheds in this Unit are completely within Santa Barbara County. Most of these creeks originate in steep chaparral, southern coastal scrub and woodland habitat, flow through mid-elevations which often support estate homes and other rural residential uses, and then through flat coastal terraces to the ocean. From Santa Barbara through Carpinteria, the terrace is largely urbanized. The lowest reaches of several of these creeks flow through County and State Park campgrounds including the Carpinteria State Parks.

Soil Types

The soil throughout much of the project corridor consists of sands, silts, loams, and clays, which is typical for flood plain valleys filled with alluvium deposits. Review of the Soil Survey for Santa Barbara County indicates that according to the hydrologic soil groups found throughout the corridor, the project areas soil is classified primarily as belonging to groups C and D. Group C soils are sandy clay loam. They have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure. Group D soils are clay loam, silty clay loam, sandy clay, silty clay or clay. This group has the highest runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface and shallow soils over nearly impervious material. More information about soils and erosion hazard ratings can be found at this website: (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx)

Meteorology

The climate of Santa Barbara County is Mediterranean, with about 85% of the annual rainfall occurring between October and May (NOAA 2006). Semi-permanent high pressure that lies off the Pacific Coast leads to limited rainfall with warm, dry summers and relatively damp winters. Average annual rainfall for the upper mountainous portions of the watershed can be as high as 30 inches while the lower portions average approximately 17 inches (NOAA 2006). The new construction

general permit does not contain references to rainy seasons, and requires any applicable temporary construction site Best Management Practices (BMP's) to be implemented year round or prior to a rain event.

Maximum summer temperatures average about 70 degrees Fahrenheit near the coast and in the high 80s to 90s inland. During winter, average minimum temperatures range from the 40s along the coast to the 30s inland. Additionally, cool, humid, marine air causes frequent fog and low clouds along the coast, generally during the night and morning hours in the late spring and early summer. The fog and low clouds can persist for several days until broken up by a change in the weather pattern.

5. Water Quality Objectives and Beneficial Uses

The SWRCB is the designated lead agency for all federal Clean Water Act (CWA) powers delegated to the state by the US EPA. The RWQCB adopts Water Quality Control Plans (Basin Plans) and issues NPDES permits for their respective regions. As required by the Porter-Cologne Act, the RWQCB has developed water quality objectives for the waters within its jurisdiction to protect the beneficial uses of those waters and has published them in the Basin Plan. The Basin Plan also establishes implementation programs to achieve these water quality objectives and requires monitoring to evaluate the effectiveness of these programs. Water quality objectives must comply with the State Anti-Degradation Policy (State Board Resolution No. 68-16), which is designed to maintain high-quality waters while allowing some flexibility if beneficial uses are not unreasonably affected. The proposed project is located within the jurisdiction of the Central Coast RWQCB, Region 3.

Beneficial Use Definitions

Municipal and Domestic Supply (MUN) - Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply. According to State Board Resolution No. 88-63, "Sources of Drinking Water Policy" all surface waters are considered suitable, or potentially suitable, for municipal or domestic water supply except where:

- TDS exceeds 3000 mg/l (5000 uS/cm electrical conductivity);
- Contamination exists, that cannot reasonably be treated for domestic use;
- The source is not sufficient to supply an average sustained yield of 200 gpd;
- The water is in collection or treatment systems of municipal or industrial wastewaters, process waters, mining wastewaters, or storm water runoff; and;
- The water is in systems for conveying or holding agricultural drainage waters.

Agricultural Supply (AGR) - Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Ground Water Recharge (GWR) - Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or

halting of saltwater intrusion into freshwater aquifers. Ground water recharge includes recharge of surface water underflow.

Water Contact Recreation (REC-1) - Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

Non-Contact Water Recreation (REC-2) - Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Wildlife Habitat (WILD) - Uses of water that supports terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Cold Fresh Water Habitat (COLD) - Uses of water that support cold-water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.

Warm Fresh Water Habitat (WARM) - Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Migration of Aquatic Organisms (MIGR) - Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.

Spawning, Reproduction, and/or Early Development (SPWN) - Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Preservation of Biological Habitats of Special Significance (BIOL) - Uses of water that support designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves, or Areas of Special Biological Significance (ASBS), where the preservation or enhancement of natural resources requires special protection.

Rare, Threatened, or Endangered Species (RARE) - Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

Estuarine Habitat (EST) - Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds). An estuary is generally described as a semi-enclosed body of water having a free connection with the open sea, at least part of the year and within which

the seawater is diluted at least seasonally with fresh water drained from the land. Included are water bodies that would naturally fit the definition if not controlled by tide gates or other such devices.

Freshwater Replenishment (FRESH) - Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity) which includes a water body that supplies water to a different type of water body, such as, streams that supply reservoirs and lakes, or estuaries; or reservoirs and lakes that supply streams. This includes only immediate upstream water bodies and not their tributaries.

Commercial and Sport Fishing (COMM) - Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Shellfish Harvesting (SHELL) - Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sport purposes. This includes waters that have in the past, or may in the future, contain significant shell fisheries.

Beneficial Uses of Surface and Groundwater

The Basin Plan identifies beneficial uses for water bodies within or adjacent to the proposed project. For surface water bodies that are not listed in the Basin Plan, they are automatically assigned the following designations according to the Basin Plan:

- Municipal and Domestic Water Supply, and
- Protection of both recreation and aquatic life.

Municipal and Domestic Water Supply is designated in accordance with the provisions of SWRCB Resolution No. 88-63. The Municipal and Domestic Water Supply designation in no way affects the presence or absence of other beneficial use designations in these water bodies. Table 5 denotes the beneficial use designations of receiving water bodies within the project corridor.

Table 5: South Coast Hydrologic Unit Beneficial Use Designations

Waterbody Name	MUN	AGR	GWR	REC1	REC2	WILD	COLD	WARM	MIGR	SPWN	BIOL	RARE	EST	FRESH	COMM	SHELL
Sycamore Creek	x	x	x	x	x	x	x	x	x	x		x	x	x	x	
Andree Clark Bird Refuge				x	x	x		x			x	x			x	x
San Ysidro Creek	x		x	x	x	x		x					x	x	x	
Romero Creek	x		x	x	x	x		x					x	x	x	
Toro Canyon Creek	x		x	x	x	x		x					x	x	x	
Arroyo Paredon	x	x	x	x	x	x		x	x	x		x	x	x	x	
Carpinteria Marsh (El Estero Marsh)				x	x	x		x	x	x	x	x	x		x	
Santa Monica Creek	x	x	x	x	x	x	x	x		x	x			x	x	
Franklin Creek	x	x	x	x	x	x	x	x	x	x		x		x	x	

Waterbody Name	MUN	AGR	GWR	REC1	REC2	WILD	COLD	WARM	MIGR	SPWN	BIOL	RARE	EST	FRESH	COMM	SHELL
Carpinteria Creek	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Gobernador Creek	X		X	X	X	X	X	X		X					X	
Steer Creek	X			X	X	X	X	X	X	X					X	
Rincon Creek	X	X	X	X	X	X	X	X	X	X		X	X	X	X	

Surface Water Quality Objectives

There are no specific water quality objectives listed for the water bodies and groundwater in the project area. A summary of the most stringent water quality objectives for water bodies within the sub-basin are included in Table 6. The Basin Plan should be referenced for more information about specific Water Quality Objectives. Additional information regarding water quality objectives can be found at: http://www.swrcb.ca.gov/rwqcb3/BasinPlan/BP_text/chapter_3/Chapter3.htm

Table 6: South Coast Hydrologic Unit Surface Water Quality Objectives

Constituent	Concentration
Color	Shall not cause nuisance or adversely affect beneficial uses.
Tastes and Odor	Shall not cause nuisance or adversely affect beneficial uses or cause undesirable tastes or odors to edible organisms.
Floating Material	Shall not cause nuisance or adversely affect beneficial uses.
Suspended Material	Shall not cause nuisance or adversely affect beneficial uses.
Settleable Material	Shall not cause nuisance or adversely affect beneficial uses.
Oil and Grease	Shall not cause nuisance or adversely affect beneficial uses or visible film on water surface.
Biostimulatory Substances	Shall not cause nuisance or adversely affect beneficial uses.
Sediment	Shall not cause nuisance or adversely affect beneficial uses.
Turbidity	Where natural turbidity is between 0 and 50 Jackson turbidity Units (JTU), increases shall not exceed 20 percent. Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 percent. Where natural turbidity is greater than 100 JTU, increases shall not exceed 10 percent.
Dissolved Oxygen	Shall not be less than 7.0 mg/L
Toxicity	Shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in, human, plant, animal, or aquatic life.
Pesticides	Shall not reach concentrations that adversely affect beneficial uses. Shall not increase concentrations in bottom sediments or aquatic life.
Bacteria (fecal coliform)	Five samples in a 30-day period shall not exceed a log mean of 2000/100 ml. Ten percent of samples in a 30-day period shall not exceed 4000/ml. At all areas where shellfish may be harvested for human consumption, the median total coliform concentration throughout the water column for any 30-day period shall not exceed 70/100 ml, nor shall more than ten percent of the samples collected during any 30-day period exceed 230/100 ml for a five-tube decimal dilution test or 330/100 ml when a three-tube decimal dilution test is used.
pH	Shall not be depressed below 6.5 nor raised above 8.3. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters.
Radioactivity	Shall not be present in concentrations that are deleterious to life forms. Waters shall not contain concentrations of radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Chapter 15, Article 5, Sections 64441 and 64443, Table 4.
Temperature	Natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses.
	Not to be exceeded levels
Methyl Blue Activated	0.2 mg/l

Constituent	Concentration
Substances	
Phenols	1.0ug/l
PCBs	0.3 ug/l
Phthalate Esters	0.002 ug/l
Cadmium	Shall not exceed .003 mg/l in hard water or .0004 mg/l in soft water at any time. (Hard water is defined as water exceeding 100 mg/l $CaCO_3$.)
Chromium	The maximum permissible value for waters designated SHELL shall be 0.01 mg/l.
Other Chemical Constituents	Refer to Tables 3.1, 3.2, 3.3, 3.4 and 3.5 of the Basin Plan

Ground Water Quality Objectives

Groundwater throughout the Central Coastal Basin, except for that found in the Soda Lake Sub-basin, is suitable for agricultural water supply, municipal and domestic water supply, and industrial use. The Basin Plan should be referenced for more information about specific Ground Water Quality Objectives. Additional information regardingground water quality objectives can be found at:
http://www.swrcb.ca.gov/rwqcb3/BasinPlan/BP_text/chapter_3/Chapter3.htm

The following objectives apply to all ground waters of the basin.

Table 7: South Coast Hydrologic Unit Ground Water Quality Objectives

Constituent	Concentration
Tastes and Odors	Ground waters shall not contain taste or odor producing substances in concentrations that adversely affect beneficial uses.
Radioactivity	Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life; or result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal, or aquatic life.
Municipal And Domestic Supply (Mun)	
Bacteria	The median concentration of coliform organisms over any seven-day period shall be less than 2.2/100 ml.
Organic Chemicals	Ground waters shall not contain concentrations of organic chemicals in excess of the limiti concentrations set forth in California Code of Regulations, Title 22, Chapter 15, Article 5.5 Section 64444.5, Table 5 and listed in
Chemical Constituents	Ground waters shall not contain concentrations of chemical constituents in excess of the limits specified in California Code of Regulations, Title 22, Chapter 15, Article 4, Section 64435, Tables 2 and 3.
Radioactivity	Ground waters shall not contain concentrations of radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Chapter 15, Article 5, Section 64443, Table 4.
Agricultural Supply (Agr)	Ground waters shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use. Interpretation of adverse effect shall be as derived from the University of California Agricultural Extension Service guidelines provided in Table 3-3 of the Basin Plan In addition, water used for irrigation and livestock watering shall not exceed the concentrations for those chemicals listed in Table 3-4 of the Basin Plan. No controllable water quality factor shall degrade the quality of any ground water resource or adversely affect long-term soil productivity. The salinity control aspects of ground water management will account for effects from all sources.

6. Existing Water Quality Within The South Coast Hydrologic Unit

The existing state of water quality within the project corridor was studied as follows:

- Site inspections of waterways, wetlands and proposed highway alignments.
- Review of past project files in the vicinity.
- Interviews of Caltrans staff knowledgeable about the project site.
- Review of the Preliminary Site Investigation Report, June 2010.
- Review of Aerial Photos.
- Review of Central Coast Ambient Monitoring Program Hydrologic Unit Report for the 2001-02 South Coast Watershed Rotation Area.
- Review of the Water Quality Planning Tool (http://www.stormwater.water-programs.com/wqpt.htm)
- Review of the RWQCB's Central Coast Ambient Monitoring Program web page (http://www.ccamp.org/)
- Review of the RWQCB's 303(d) listing of Impaired Waterways, (http://www.waterboards.ca.gov/tmdl/docs/2002reg3303dlist.pdf)
- Review of the Soil Survey for Santa Barbara County: (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx)

Existing Water Quality Within the Project Limits

Channelization is common to watersheds in the area (e.g. concrete-lined bed and or banks), as many creeks in the project area flow through urbanized flood plains. In the Carpinteria and Santa Barbara area, channelized watersheds within the project limits include Sycamore, San Ysidro, Romero, Toro, Arroyo Paredon, Santa Monica and Franklin creeks. Franklin and Santa Monica creeks are contained in concrete box channels as they flow through intensive multi-use agriculture in the form of greenhouses and nurseries, as well as residential and light commercial development. Several of the nurseries and greenhouses in these watersheds have direct discharge points to the creek channels.

Groundwater throughout the project area is generally shallow and does not meet drinking water standards in many cases, showing elevated levels of pollutants near known areas of contamination. This will most likely require testing for dewatering operations and may possibly include disposal/treatment costs. Within the project limits, groundwater is between approximately two and eighteen feet below the ground surface and may contain agricultural chemicals (fertilizers, herbicides and pesticides) and other pollutants. If dewatering is necessary at any of the bridge structure stream crossings, appropriate permits and regulatory agency consultation will be required. Arroyo Paredon Creek is located just north of the city of Carpinteria and flows primarily through rural residential and greenhouse areas. The groundwater in this watershed is known to have extremely elevated levels of nitrates. As part of the permanent storm water treatment BMP consideration, any location where there is a dry weather discharge, we should seek to discharge these to a sanitary sewer, or document why they cannot be diverted to a sanitary sewer.

For the purposes of this discussion, the South Coast Hydrologic Unit is further divided into Hydrologic Sub areas of Carpinteria, Montecito, and Santa Barbara (Refer to Figure 5).Santa Barbara County Flood Control District does regular

maintenance in most if not all of the creeks within the project limits. Flood Control also has a number of debris basins in addition to those listed (Refer to Figure 6).

Flood Control's Creek Maintenance Plan can be found here:

http://www.countyofsb.org/pwd/pwwater.aspx?id=3592
http://www.countyofsb.org/uploadedFiles/pwd/Water/AnnualPlan2010-2011.pdf

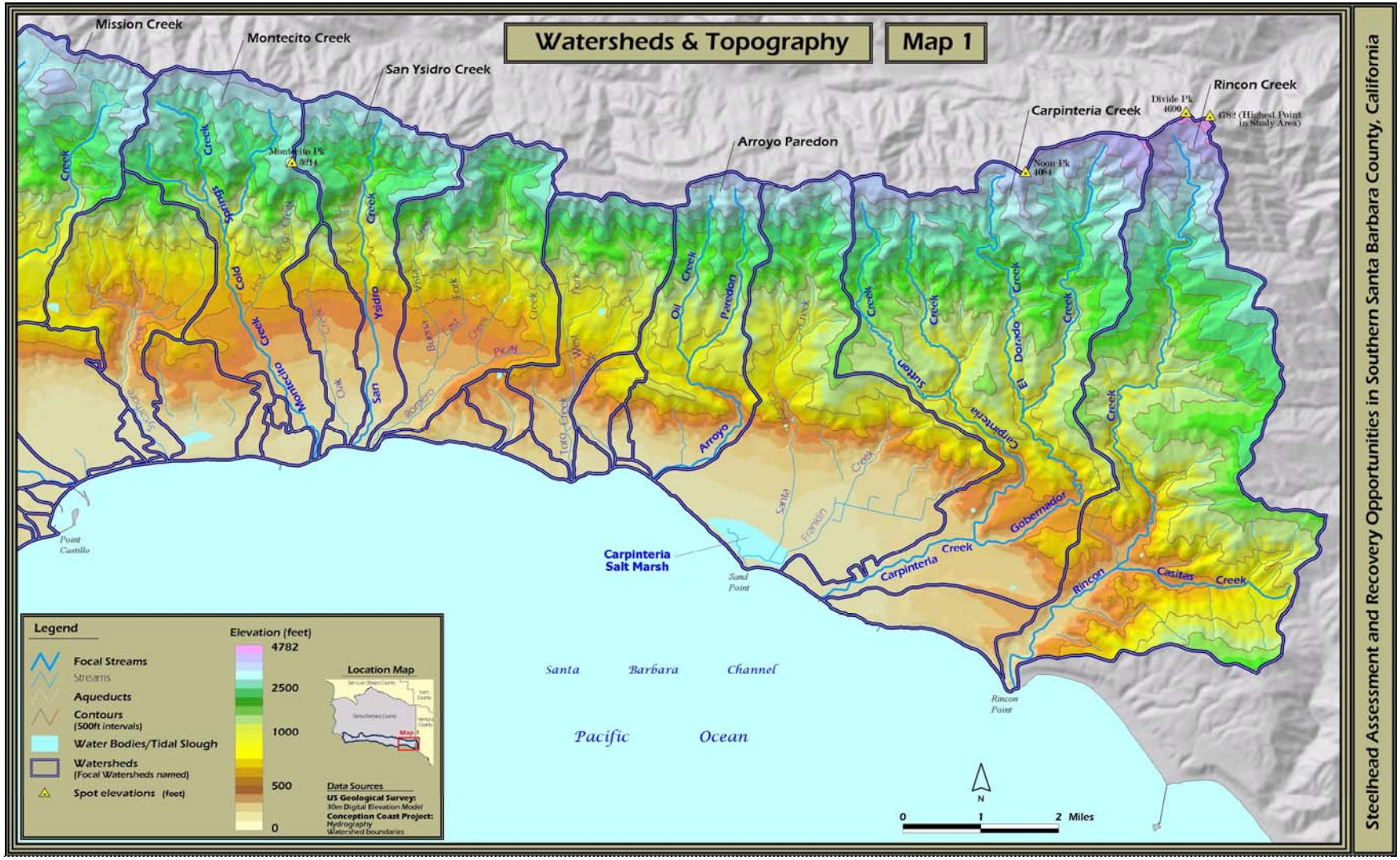
Carpinteria Hydrologic Sub-area (HSA 315.33)

In the Carpinteria Hydrologic Sub-area, most beneficial uses are impacted to some degree at all sites monitored by the Central Coast Ambient Monitoring Program (CCAMP). In this area, CCAMP monitors sites on Carpinteria, Franklin and Santa Monica creeks, mostly located at the lower ends of the watershed with one additional upper watershed site on Carpinteria Creek. Significant alteration of the hydrology has already occurred in this area due to drainage of farm lands, addition of impervious surface, concrete lining of Franklin and Santa Monica creeks, modifications to Carpinteria Marsh, and installations of debris basins in the upper watershed areas. Carpinteria and Franklin Creeks are included within the City of Carpinteria's urban MS4 area.

Carpinteria Creek – Carpinteria Creek drains a watershed of approximately 15 square miles and has two major tributaries: upper Carpinteria Creek and Gobernador Creek. The peak elevation in the watershed is 4,690 feet. Land uses in the upper watershed are primarily rural residential and orchards. Below Highway 192, Carpinteria Creek passes through agricultural and urban areas before it empties into the ocean at Carpinteria State Beach. During flood events, floodwaters have flowed down Highway 101 to Franklin Creek

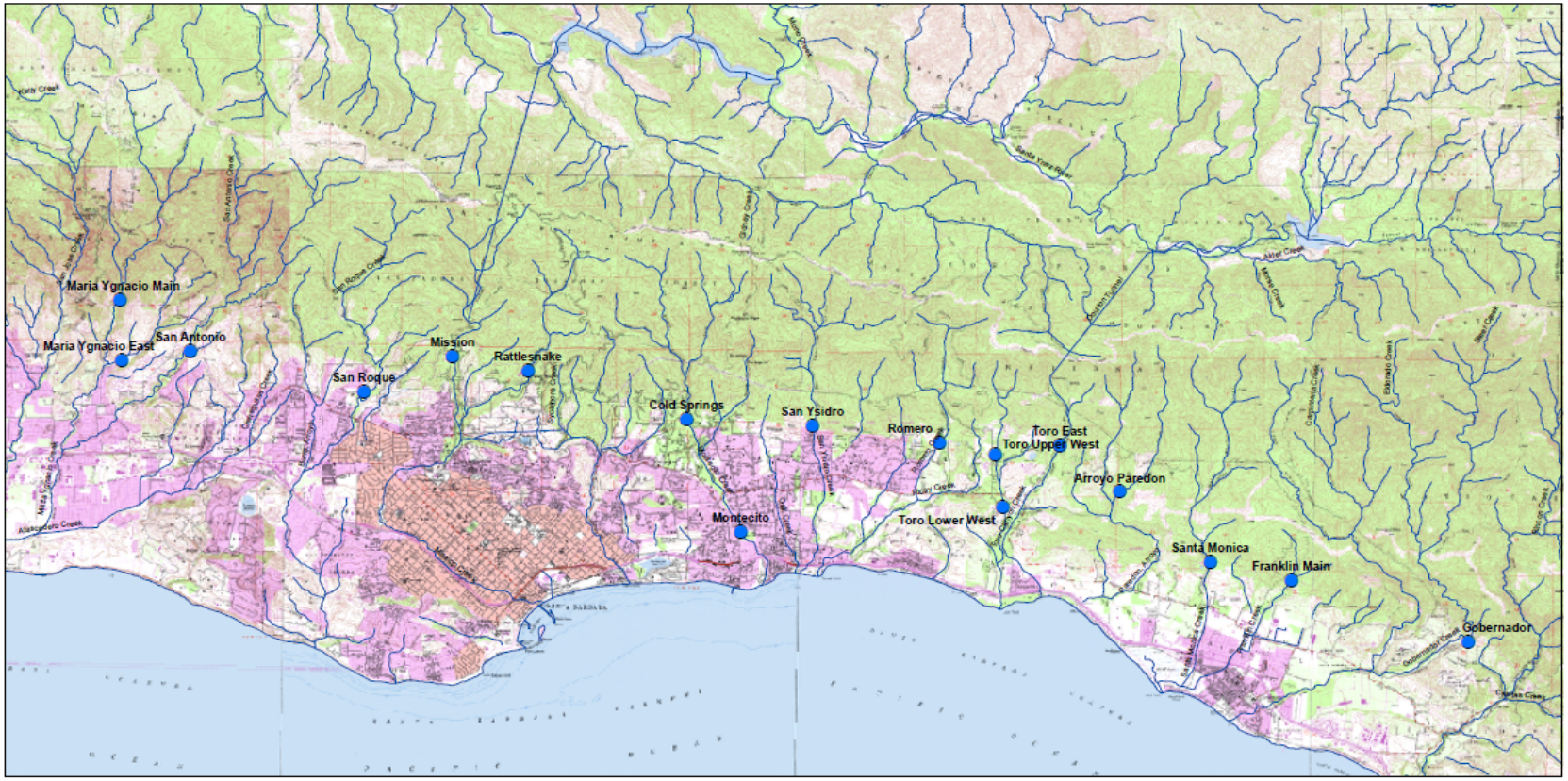
Water quality appears to be degraded by urban and agricultural runoff. Elevated pH and fecal coliform have been measured routinely in the past. As the creek seasonally dries out, algal growth is a concern for aquatic life and aesthetic uses. Monitoring conducted by CCAMP in the lower watershed shows that fecal coliform has been elevated on multiple occasions, nitrate concentrations exceeded criteria thresholds on occasion, and salts (sodium and chloride) were elevated above levels which are harmful to irrigated plants. In addition, non-contact recreation uses in the lower watershed were impaired by algal growth, and on occasion fecal coliform levels exceeded 4000 MPN/100mL. Carpinteria Creek is currently on the 303(d) list of impaired waters for pathogens. Note that the 2008 303(d) list, yet to be approved by the EPA which will make it final, adds the following pollutant/stressors for Carpinteria Creek: chlorpyrifos, Escherichia coli (E. coli), fecal coliform, low dissolved oxygen, and sodium. It removes pathogens from the new list.

Figure 5: South Coast Hydrologic Unit



Stoecker, M.W. and Conception Coast Project (2002). Conception Coast Project, Santa Barbara, California.

Figure 6: County Flood Control Debris Locations



Santa Barbara County
Flood Control District
South Coast Debris Basins

Carpinteria Creek is considered critical habitat for southern steelhead trout. Conditions for steelhead spawning are very good in the upper watershed. Carpinteria Creek is still mostly in its natural condition, except for the following:

***Upper Watershed*:** Debris basins have been installed as a flood control measure in the upper watershed. These debris basins may be a barrier to fish passage and prevent a significant amount of sediment from migrating downstream.
Mid Watershed: Most existing farms and urban developments adjacent to the creek have significantly encroached on the riparian corridor of the creek.
Lower Watershed: The mouth of Carpinteria Creek previously was located in Carpinteria Marsh. The Creek was diverted to its current outlet location to allow housing development north of the existing creek alignment.

The Linden Avenue to Casitas Pass project includes the following three improvements to Carpinteria Creek:

- a new bridge that will improve the flood capacity of the channel,
- the Linden and Casitas Pass project will be relocating the bike path to the north side of the creek. Only the on-grade low water bike/pedestrian crossing, in the stream, will be removed as part of this project;
- removal of Arundo (giant reed grass), which may inhibit flood water flow.

These improvements should enhance the water quality and geomorphologic function of Carpinteria Creek. The Linden and Casitas Pass project is planning to construct several permanent storm water treatment BMPs in this water shed at Carpinteria Creek and the Bailard interchange This WQA includes a discussion of the permanent storm water treatment BMPs being considered for this HOV project.

Franklin Creek - The watershed is approximately 5 square miles in size and has a peak elevation of 1,746 feet. Major tributaries to the main channel of Franklin Creek include the East Branch, West Branch and High School Creek. The upper watershed is primarily National Forest Land. The creek is flanked by urban and agricultural land uses in the lower watershed. Franklin Creek empties into the 230-acre Carpinteria Salt Marsh, an important coastal wetland. There is usually year-round low flow in the concrete channel sections of the creek due to shallow groundwater and return flows from adjacent urban and agricultural areas.

Because of severe flooding in the 1960s, Franklin Creek was channelized and concrete lined during the late 1960s to mid 1970s designed by the US Soil Conservation Service, and built by the Santa Barbara Soil Conservation District, Santa Barbara Co. Flood Control District, and the City of Carpinteria. The concrete lined channel under Highway 101 is designed to pass the 100-year flood event. Since the channel is concrete lined, changes in the hydrograph (i.e., storm water discharge rates and volumes) should have little effect in the lower half of the watershed. Scouring of the Franklin Creek channel just downstream of the concrete lining is visible on aerial photos.

The concrete lining of the Creek is considered a fish passage barrier. Tidewater gobies are present in Carpinteria Marsh. Mosquito fish were observed in a channel located adjacent to the south side of Highway 101 and east of Franklin Creek. The "Carpinteria Creek Preservation Program" (CCP Program) includes a proposed restoration project that will remove the concrete lining from the creek and restore a limited riparian corridor.

A relatively new law, SB 857, amends Article 3.5 of the Streets and Highways Code, detailing requirements for assessing and remediating barriers to fish passage at stream crossings along the State Highway System. More information can be found at:

http://pd.dot.ca.gov/env/bio/html/fish_passage_index.htm

Franklin Creek is known to have elevated nitrate and temperature levels. The water quality of Franklin Creek and the Carpinteria Marsh is degraded. Franklin Creek is considered impaired, 303(d) listed for nitrate. The 2008 303(d) list proposes adding chlorpyrifos, Escherichia coli (E-coli), fecal coliform, pH, and sodium to the pollutant/stressors for Franklin Creek. The Carpinteria Marsh is considered impaired for nutrients, organic enrichment/low dissolved oxygen, and priority organics. There are no new 303d list proposals for the Carpinteria Marsh.

Santa Monica - Santa Monica Creek drains a larger watershed than Franklin Creek and is less impacted by groundwater and nursery discharges. This drainage originates in the steep slopes of the Santa Ynez Mountains before it is channelized to flow through the urban areas of Carpinteria. This creek was also lined in the 1970's by the same group that did Franklin Creek. This watershed empties into the aforementioned Carpinteria Marsh, which is one of the few remaining estuaries and coastal wetland habitats in the southern part of the State. This watershed is heavily influenced by agricultural (primarily greenhouses and nurseries) as well as groundwater discharges.

This creek does not have annual year-round flows in the lower watershed, although in wetter years the lower watershed does maintain a small low flow channel. The elevated coliform and pH levels are problematic for multiple beneficial uses in this watershed. Santa Monica Creek is not currently on the 303(d) list of impaired waters but has been proposed for addition to the 2008 list (was proposed for adoption in the spring of 2010 but has not yet adopted) due to elevated fecal coliform and pH levels.

Arroyo Paredon - Arroyo Paredon flows from the steep southern face of the Santa Ynez Mountains to the ocean just northwest of Carpinteria, draining an approximate 4.7 square mile watershed. The upper watershed is mostly in National Forest land, and also has some rural residential areas in the foothills. After crossing Highway 192, adjacent land use is predominantly agriculture, nurseries, urban areas, and greenhouses with several access roads and trails along the banks. During the summer months, the creek generally dries up except for flow supported by the spring that keeps the creek wet from the coastline up to a seasonal lagoon approximately 300 feet upstream of the Via Real crossing. The bridge on Arroyo Paredon Creek at Via Real

is susceptible to plugging causing significant flooding of the adjacent agricultural areas as well as Via Real and Highway 101.

This waterway has a natural stream bottom and is known to support steelhead and tidewater gobies. The creek features an intact riparian canopy (though not within the Caltrans right of way at Highway 101 where there are concrete lined vertical banks), while the creek channel is covered in fine sediment deposits overlying cobbles and boulders. Recent high flood flows have left debris entangled in the upstream access road bridge railing. FEMA maps also indicate that floodwaters backup against US 101 and flood across the north and southbound lanes.

The lower watershed is also influenced by groundwater discharges from irrigation blow-off valves and leaking conveyance systems. CCAMP data monitoring at Via Real shows evidence of impairment to all beneficial uses. Fecal coliform levels in this creek sometimes exceed 4000 MPN/100mL, ten times the Basin Plan objective. Nitrate frequently exceeds both the drinking water and agriculture supply objectives. In addition, toxicity data and high scores on the Bio-stimulatory Risk Index indicate that the habitat is impaired for aquatic life. Groundwater in the lower watershed is known to contain high levels of nitrate and is frequently discharged to the surface water. Arroyo Paredon is currently listed on the 303(d) list of impaired waters for boron, nitrate and toxicity. Fecal coliform. Chloride, diazinon, and sodium are proposed to be added to the new 2010 303(d) listings of pollutants / stressors in Arroyo Paredon.

Montecito Hydrologic Sub-area (HSA 315.34)

In the Montecito Hydrologic Sub-area, there is evidence indicating all beneficial uses are impaired in various watersheds. Garrapata, Toro, Romero, San Ysidro, and Montecito Creeks are located in the lower watersheds near Highway 101.

Garrapata Creek - This Creek flows along the edge of the Polo Fields before entering a culvert under Highway 101. During flood events, Garrapata overtops its small banks and floods to Toro Creek well upstream of Highway 101. This is a relatively small creek with no fish present**.** Within the study limits, Garrapata Creek provides very little riparian or intact natural wildlife habitat.

Toro Creek – Toro Creek flows from the Santa Ynez Mountains to the ocean at Loon Point. Toro Creek after its confluence with Garrapata Creek, drains an approximate 2.9 square mile area. The upper watershed is mostly within forested areas of the Los Padres National Forest. The lower reaches of this watershed are channelized, and the creek flows through rural residential and some urban (pretty minimally so, not a significant component of the watershed) areas on the outskirts of Montecito. The hydrology of Toro and Garrapata creeks is very complex - if one looks at maps from different sources, FEMA vs. USGS, they show the creeks interacting differently. This assessment uses the FEMA assumptions and hydrology because that is the regulatory standard we need to address.

Toro Creek flows under five parallel bridges within County, State and UPRR rights-of-way. The oldest bridge (possibly historic) was an arch with rock climbing gear mounted on its surface. In the vicinity of the arch bridge the creek channel was concrete lined in a manner that would likely be considered a fish passage barrier. The channel bed and bank are lined from downstream of UPRR to upstream of SB 101 and there is a 4 foot drop structure between them. However, according to the NES, no fish are reportedly present (i.e., this Creek is also not listed in the Basin Plan for "fish spawning"). The undersides of some of the bridges were mud smeared and had trapped debris from recent flood flows. There is also debris on top of the Via Real bridge. The creek overtopped Via Real and Highway 101 in 1971 (see following picture).

CCAMP monitoring data collected in lower Toro Creek (at Via Real) show that water quality is impacted by fecal coliform, algal growth and salts. In the summer months, dissolved oxygen is typically depressed as the creek begins to dry up. Toro Creek is not currently on the 303(d) list of impaired waters. However, Toro Canyon Creek, near the Polo Fields, is in on the proposed 2008 303(d) list with fecal coliform as a pollutant/stressor.

Greenwell Creek - Greenwell Creek currently flows under Highway 101 at approximately Post Mile 7.7 through a 72" corrugated metal pipe culvert that daylights adjacent to the southbound travel lanes. A scour pool has formed at the culvert outlet which currently measures approximately12 feet in depth.

All four of the following creeks in Montecito proper have concrete lined banks and/or beds in some areas within their lower reaches. All but San Ysidro are fully lined rectangular concrete flumes for several hundred feet near their outlets at the beach. All but Oak appear to have undergone significant channel realignments. Montecito has a number of drop structures upstream of Highway 101 (no indication that we built them, even though some are within the channel change, but the as-built creek profile doesn't show them). All but Montecito have multiple parallel (or at least closely spaced) crossings within the transportation corridor comprised of county roads, Highway 101 and the UPRR.

Romero Creek - Headwaters for Romero Creek are also in the National Forest areas of the Los Padres and flow to the ocean west of Summerland at Fernald Point. Romero creek drains an approximate 5.2 square mile watershed. Like other creeks in this area, Romero Creek is channelized in the lower reaches as it flows through the urbanized areas of Montecito and the Birnam Wood Golf Club. However, natural substrate is still present. Data collected by CCAMP at Via Real shows that elevated pH and sodium levels are persistent in the lower watershed. Fecal coliform and some high levels of in stream algal conditions indicate that additional problems may exist at this site. Romero Creek is not currently on the 303(d) list of impaired waters but is proposed to be included on the 2008 303(d) list for pH. Romero Creek is considered critical habitat for southern steelhead trout as listed in the RWQCB Basin Plan.

San Ysidro Creek - San Ysidro Creek also originates in the National Forest areas of the Los Padres and flows through the urban areas of Montecito to the ocean west of Fernald Point. The lower reaches of this creek flow through the urbanized areas of Montecito and some orchard properties. Although past monitoring data did not show that any beneficial use was clearly impaired, there is evidence that all beneficial uses may be somewhat impaired. For example, fecal coliform in one sample from this site measured 4,900 MPN/100mL. However, limited data is available for this site, as the stream bed typically dries up in April or May, and remains dry until the winter rains in November. San Ysidro Creek is not currently on the 303(d) list of impaired waters and there are no new proposed listings for the 2008 list. San Ysidro Creek is considered critical habitat for southern steelhead trout as listed in the RWQCB Basin Plan.

Oak Creek – Oak Creek consists of approximately 2.7 stream miles that originate in its upper reaches from the steep southern face of the Santa Ynez Mountains. Oak Creek flows south from the Los Padres National Forest entering the Pacific Ocean near the community of Montecito. Past surveys of the creek have found that it routinely goes dry in the late spring to early summer months indicating an absence of steelhead from the system. The channel of this creek consists of a cobble and sandy bottom with concrete lined vertical banks in the lower reaches near Highway 101. Near the study area, wetlands and native vegetation are not present, the little vegetation that is present is found adjacent to the creek and is limited to exotic species (e.g. castor bean and *Myoporum*). There are no existing or proposed 303 (d) listings for this waterbody.

Montecito Creek - Montecito Creek originates in the Los Padres National Forest areas and flows through the urban areas of Montecito to the ocean. Montecito Creek drains an approximate 6.1 square mile area and is channelized in the lower reaches but maintains its boulder and cobble substrate at the observed site located at Jameson Lane. In the summer months this creek is typically dry. Like many of the creeks throughout this corridor, there is a debris basin located off of Mountain Drive, upstream of the culverts at Highway 101. At this point, the creek enters a concrete lined channel. Montecito Creek through this region is relatively steep, with large boulders and step-pools. Surrounding land uses are large residential, trails, and

landscapes areas. The riparian corridor is mostly intact, with large specimen sycamores, bays, alder, willow, and ash trees.

Available data shows that water quality was generally good. However, high pH levels are of concern for several beneficial uses and there have been occurrences of elevated coliform levels during rain events. As this creek goes dry, algae create large mats, which may be a concern for aquatic life and aesthetic uses. Montecito Creek is not currently on the 303(d) list of impaired waters and there are no new proposed listings for the 2008 list. Montecito Creek is considered critical habitat for southern steelhead trout as listed in the RWQCB Basin Plan.

Santa Barbara Hydrologic Sub-area (HSA 315.32)

Sycamore Creek -Sycamore Creek originates in the steep southern slopes of the Santa Ynez Mountains, within the Los Padres National Forest boundaries. This watershed is channelized as it flows through the City of Santa Barbara to the ocean. Sycamore Creek is the smallest of three Santa Barbara City watersheds. CCAMP conducted monitoring at one site, located at Punta Gorda St. near Highway 101 in Santa Barbara. At this location water quality is impaired by fecal coliform levels, having more than 50% of samples exceed 400 MPN/100mL and two samples exceed 4000 MPN/100mL. CCAMP staff observed human feces on the banks of this urban channel on multiple occasions, also it was noted that furniture, appliances, and litter were frequently dumped into the channel at this location. High pH levels contribute to partial impairment of several beneficial uses in this creek. In addition low dissolved oxygen, algal growth in summer months and high levels of sodium and chloride are problematic for aquatic life and agricultural uses. Sycamore Creek is not currently on the 303(d) list of impaired waters but will be proposed for addition to the 2008 list for impairment due to fecal coliform, sodium, and chloride. Sycamore Creek is considered critical habitat for southern steelhead trout as listed in the RWQCB Basin Plan.

Possible Highway Pollutants Affecting Water Quality

Based on the highway storm water runoff data collected by the Caltrans Storm Water Research and Monitoring Program, typical pollutants from California highways include heavy metals, sediment, and litter. More information about the State-Wide Storm Water Characterization Study can be found at:

http://www.dot.ca.gov/hq/env/stormwater/special/newsetup/index.htm#monitoring

As traffic increases the amount of pollutant originating from cars and trucks (i.e., tire and brake lining wear, litter, and spills during vehicle accidents) is also expected to increase. The final selection of permanent storm water treatment best management practices occurs during the design phase of the project. The preliminary permanent storm water treatment BMP consideration strategy can be found in the July 2010 Project Planning and Design Guide (PPDG). That being, bio-filtration strips/swales will be considered above all other TBMP's. If those TBMP's can be incorporated to treat and infiltrate 100% of the Water Quality Flow from all new impervious areas, no

further TBMP's need be considered. If 100% of the WQF cannot be infiltrated, other non-TBMP ways will be investigated to infiltrate the WQF. If that can be accomplished no further TBMP consideration is required. If that cannot be done, permanent TBMPs will be considered for each location based upon the receiving water quality/impairment.

All constituents and parameters in nearby surface water bodies found to be elevated (compared to background) or exceeding published water quality standards are potential concerns for the proposed project. Since the proposed project will incorporate permanent design best management practices and treatment BMP's to minimize the direct discharge of highway storm water to adjacent waterways, the amount of pollutant discharged to surface waters from the proposed project area should be lower in certain areas than the existing highway where there are currently no treatment BMP's in place.

At this time, the project is planning treatment BMPs for the net new impervious surfaces, so if 100% of the water quality flow can be treated the pollutant loading from the Highway will remain will be reduced. Additionally, not all treatment is planned to be incorporated where new impervious areas are being created. It may be that the project will have more treatment BMPs in one watershed than another. At the Bailard location there is no widening work being done for this project, yet we can take credit for water treated at that location (which flows to Carpinteria Creek). It may be that Carpinteria Creek has much more volume of storm water, from the Highway treated, than say Franklin Creek.

7. Environmental Consequences / Project Impacts

This section discusses the potential environmental effects with implementation of the project, as well as the procedures and practices that will be applied to reduce those effects. By encouraging the storage of storm water within the footprint of the project and encouraging sheet flow of storm water runoff, hydromodification may be minimized or prevented. Again the goal for Design will be to infiltrate 100% of the WQF/WQV (which is based on a 2 year, 24 hour storm event). This should help with hydromodification impacts.

Geomorphology

Although most stream channels naturally change over time, activities such as road building, land development, and farming can directly (e.g. bank stabilization) or indirectly (change in storm water discharge velocities, volumes, and location) alter stream channels. The study of stream channel changes over time is referred to as "fluvial geomorphology." The geomorphology of streams in or near the project area was investigated by reviewing historic aerial photos, hydrology information, past land development projects, agricultural practices, and past highway project records. When stream channels are altered by human activity, there is potential for water quality impacts and associated degradation of identified beneficial uses. In theory, it should be one of the projects' goals to not change the geomorphologic processes of the

stream and to keep the project as hydraulically invisible as possible. When a highway interferes with a meandering stream, inhibits the flow of floodwaters, and/or changes the hydrograph of the stream, the project is not invisible to the watershed. Therefore, bridges that fully span the active stream channel are preferred over culverts where substantial flows are anticipated because full-span structures will minimally influence stream meandering and flood flows.

Although this is generally the case, it is not entirely true for many of the creeks in the project area, which are constricted and lined to a large extent upstream and downstream of bridge structures near Highway 101. When a creek has a fairly consistent size and roughness within a reach, regardless of whether it's the ideal size and roughness that nature might intend, it could turn out to be detrimental geomorphologically to change the conditions at one spot location such as the highway.

The efforts of the Santa Barbara County Flood Control and Water Conservation District are closely associated with conditions of runoff and sedimentation within the project area. As the result of urbanization, flood control work is vital to the protection of lives and property. However, it is urbanization, especially in the areas of the creeks, which causes many of the problems faced by the Flood Control District. The natural creek beds have been altered and narrowed to allow for development. Instead of rainwater percolating down to recharge aquifers, it runs off impervious surfaces into the creeks. During unusually heavy rains, floods can damage buildings and walls located too close to the creek banks. A major task in recent years has been the dredging of sediment and debris, and extensive vegetation clearing from several creeks in the project area. Without the removal of these materials, the potential for flooding increases.

Standard Practices and Procedures

Caltrans has a well-developed stormwater program that under most circumstances addresses all potentially significant impacts to water quality during storm events. This program is primarily intended to comply with Caltrans Statewide NPDES Stormwater Permit and ensures that all construction, design and treatment best management practices are implemented and comply with the RWQCB requirements. The following will be implemented to comply with the NPDES Permit:

- During construction, temporary erosion control practices will be utilized that are appropriate to site-specific conditions. Since portions of the project area have severe erosion hazard, stabilizing the ground surface before the start of the wet season will be carefully planned. Disturbance to wetlands and grasslands will be avoided to the maximum extent practical to minimize soil disturbance, soil compaction and alteration of wetland hydrology. Temporary construction site BMPs will be evaluated and selected during the Project Specifications and Estimates (PS&E) phase of this project.
- The project will incorporate permanent storm water treatment BMP's that preserve the existing hydrology to the maximum extent practical (note that

permanent storm water TBMP's only treat water from a two year storm event, they will bypass flows greater than that). Storm water will be encouraged to flow as sheet flow and design is looking into the feasibility of such conveyance mechanisms.

- Currently Caltrans does not have any permit requirement to match pre-construction hydrology. Opportunities to temporarily store and/or infiltrate and treat storm water within the right-of way will be considered to the maximum extent practicable.
- In the vicinity of creeks and significant slopes, storm water will be routed through grass swales and strips to the maximum extent practical to minimize direct connections between the highway and the waterways. Multiple bio-swales have been incorporated into the design.
- All highway operation and maintenance activities will be performed in a manner that minimizes impacts to water quality.

Permanent Impacts

Permanent impacts to water quality could occur over months or years following construction of the project. The primary causes of these impacts would be from increased storm water runoff rates and volumes, increased storm water pollutant loads, changes in riparian and wetland areas, and spreading of invasive plant species that could adversely affect riparian areas.

To the maximum extent practical, the proposed highway realignment will be constructed to be as hydraulically disconnected from the watersheds it crosses as possible. However, there are several potential ways a highway can permanently impact water quality if not designed to minimize and mitigate for these potential impacts. Potential permanent impacts include:

- **Highway Pollutants**: Increased pollutant discharges from the road surface during storm events including oil, trash, dust, brake linings, and hazardous materials spills during traffic accidents. The installation of permanent storm water treatment BMPs such as vegetated swales/strips and or other treatment mechanisms will minimize the discharge of highway pollutants to waterways.
- **Erosion/Sediment**: Wherever concentrated flow from the highway surface cannot be adequately controlled, erosion may occur. Erosion from concentrated flow can cause gullies, alter creek geomorphology, change the hydrology of wetlands, and discharge sediment above background levels to waterways. The project area, when disturbed, is expected to have a moderate to severe erosion hazard potential. The project will include both temporary and permanent erosion control techniques.

    a) Temporary soil stabilization / sediment control BMPs will be included in the contract and implemented during construction per the Construction General Permit. New requirements for stabilizing active vs. non-active

DSA and stockpiles would be incorporated during construction of the project.

b) The proposed project will be designed to permanently stabilize the soil with vegetation or other means, minimize concentrated storm water runoff, and minimize changes to runoff volume of the adjacent watersheds involved with this project.

- **Groundwater Hydrology**: During construction, there can be a short-term change in groundwater flow paths, lowering of the groundwater table (i.e., dewatering), change in surface water flow rates and volumes, and domestic water uses (i.e., stream diversions and wells). These all can significantly influence groundwater hydrology. Due to elevated levels of pollutants, ground water at certain locations will need to be tested, if dewatering is needed, to determine how it can be disposed of. For example, out of all of the samples taken so far 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.

- **Impervious Surface:** Proposed alternatives will add approximately 52 acres (12 miles x 18 feet x 2 lanes of widening) of impervious surface, to the project area. The proposed project will be designed to minimize increases in storm water discharge rates by installing appropriate permanent storm water treatment BMPs and other measures to encourage the storage and infiltration of storm water within the right-of-way.

- **Bridge Replacement and Culvert Extensions**: To accommodate the widened highway, certain culverts and bridges will require extensions or replacements. Culvert extensions can exacerbate scouring of creek beds at both the downstream and upstream ends. Localized scouring of the waterways may also be worsened by localized increases in impervious surfaces that result is greater water volume and flow rates. Installation of larger culverts, flared end sections and deep rooted vegetation are common ways of preventing scour. As a last resort, rip rap may be placed at the culvert inlets and outlets. Changes to a stream's geomorphology caused by scouring could cause significant sedimentation (bank and bed erosion) and damage riparian vegetation. Willow and riparian plantings are being incorporated as part of the revegetation plans.

  Bridge replacement could result in significant changes to a particular creeks geomorphology. In general, this project presents an opportunity to improve the geomorphology at each bridge to be replaced. Bridges will be designed to pass flood waters and allow unimpeded flow of the creek. Bridges will be designed to match upstream and downstream channel conditions per discussions with NOAA. However, financing for work outside of that which is eminently needed to meet the purpose and need statement may not be available.

- **Invasive Species**: The project may encourage the spreading of invasive plant species. Invasive species that spread along waterways and wetlands can impact the beneficial uses of these waterways by changing the water quantity or quality in the vicinity of the invasive species. Invasive species are also known to cause

ecological fragmentation along riparian corridors. There is an extensive variety of invasive species in the vicinity of the project including blue gum eucalyptus, vinca, English ivy (cape ivy), caster bean, ice plant, etc. Per Executive Order 13112: Prevention and Control of Invasive Species, these will be removed or controlled as determined necessary for any immediate disturbance within localized work areas.

Temporary Impacts

As of the date of this report, the project is expected to be phased by jurisdiction (e.g. Carpinteria, Summerland, Montecito, and Santa Barbara), and each sub-phase would have a unique amount of working days depending on the project features required within the specific jurisdiction. This report assumes that the project funding sources are not at issue and that the project would start at one end of the corridor, and progressively move to the other end of the project limits without lapses between phases. In total, the entire project is expected take between 5-6 years to complete, however this is only an estimate at this point due to a number of inherent uncertainties.

The exhaust from construction equipment contains hydrocarbons, oxides of nitrogen, carbon monoxide, suspended particulate matter, and odors. Leaky construction equipment has the potential to drip or spill fuels, petroleum products, and hydraulic fluids among other hazardous substances. The use of asphalt, concrete, and other harmful chemicals during construction activities would additionally add to the potential of these substances entering creek channels during activities in and near water bodies within the project limits.

However, it is estimated that 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. The impacts of these activities would vary each day as construction progresses. Due to uncertainties concerning the exact design, timing, equipment usage rates, etc. associated with specific project features and potential work required, the following analysis assumes a very conservative amount of soil disturbance, asphalt and concrete usage. The current estimate of total area that the project would disturb is approximately 97 acres depending on the alternative selected (although each alternative varies only slightly in the overall footprint).

A project risk level assessment has been completed to confirm that bio-assessment requirements are needed for construction of this project, to document impacts to aquatic biota. Because this project has been determined to be a risk level 3, Numeric Action Levels (NALs) – (used as a warning to evaluate if the BMPs are effective) will be employed. Active Treatment Systems. For a risk level 3 project we may decide to include Active Treatment Systems in the project as a bid item or if there are repeated violations of NEL's, the RWQCB can tell us to use them. They also have different effluent limits which are lower than NELs.

These include:

- pH NAL = 6.5 – 8.5
- Turbidity NAL = 250 NTU

For an NAL exceedance:
- Corrective actions are needed,
- Submit NAL exceedance report (within 10 days),
- Sampling results,
- Description of onsite BMPs,
- Corrective actions.

Additionally, Numeric Effluent Limitations (NELs) – used as a threshold to determine if a stormwater discharge is a violation of the new CGP requirements will be required. For Risk Level 3 sites, the following apply:

- pH NEL = 6.0 – 9.0
- Turbidity NEL = 500 NTU

For an NEL exceedance:

- Corrective actions are needed,
- Submit NEL Violation Report (within 24 hours after the NEL Exceedance has been identified),
- Sampling results,
- Description of onsite BMPs,
- Corrective actions,
- Submit all storm event sampling results no later than 5 days after the conclusion of the storm event.
- An exceedance of a NEL is a violation of the CGP.
- 3 exeedances will result in a $3,000 fine.
- Discharges of storm water from Risk Level 3 sites shall comply with applicable NELs (above) unless the storm event causing the discharges is determined after the fact to be equal to or larger than the Compliance Storm Event (expressed in inches of rainfall). The Compliance Storm Event for Risk Level 3 discharges is the 5 year, 24 hour storm (expressed in tenths of an inch of rainfall), as determined by using these maps:

  http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif
  http://www.wrcc.dri.edu/pcpnfreq/sca5y24.gif
  Compliance storm event verification shall be done by reporting on-site rain gauge readings as well as nearby governmental readings.

During construction a storm water sampling plan (new CGP requirement) will require all storm water discharges be sampled, three times a day, to ensure compliance with NELs and NALs. Also, the contractor will prepare Rain Event Action Plans, 48 hours in advance of any predicted storm event with >50% chance of rain.

Erosion

The project area is predominately NRCS Group C and D soils that have a moderate to high erosion risk. Compliance with the Caltrans Storm Water Management Plan will address most concerns with erosion. However, unusual situations such as unexpected rain and improper BMP implementation could result in temporary impacts to surface water quality. Again, rain event action plans and the sampling and analysis requirements will require adequate BMP implementation prior to any predicted rain even along with sampling every storm waer discharge location 3 times a day to meet specific sediment and pH level requirements. If the project is a risk level 3 and sampling shows storm water exceeding 500 NTUs the project will be in violation of the CGP and after 3 violations begin racking up fines.

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 BMPs will be implemented to minimize or eliminate chemical releases to ground and surface waters. Preliminary site investigations have indicated that the ground water at certain locations is contaminated.

Shade Canopy

Removal of trees that currently provide riparian shade may temporarily cause warming of surface waters. Removal of trees will also reduce available for wildlife that utilize nearby waterways. However, extension of bridge structures will add some shade to these same creek channels.

8. Avoidance and Minimization Measures

Due to the fairly degraded and urbanized nature of most drainage systems throughout the project corridor, many potential opportunities exist for upgrading deficiencies and or enhancing impaired beneficial uses within the project corridor. The potential impacts to water quality from the proposed project are considered to be not adverse due to the design, permitting and site-specific conditions of this project.

Temporary Construction Measures

Standard temporary construction site and permanent design pollution prevention and permanent storm water treatment best management practices will be utilized during and after construction of the project to control potential discharges of pollutants to surface water. BMPs shall be designed with the goal of controlling general gross pollutants and/or sedimentation/siltation, depending on location. The required storm water pollution prevention plan (SWPPP) will address all the BMPs necessary to

prevent water quality impacts during construction of the project. In addition, buffers from sensitive resources such as wetlands and riparian corridors will be established throughout the project area.

- **Approved Work Windows**. Work in creek beds will most likely only be performed during the dry season as a DFG permit condition. Various stream diversions will be necessary, and special consideration required if the creeks are flowing during construction.
- **Dewatering Plans** would be developed and submitted to the RWQCB for review and approval to minimize any potential ground-to surface water discharges.
- **Temporary Wetland Disturbances**: Avoid temporary disturbances to existing wetlands during construction, to the maximum extent feasible. Where temporary disturbances to wetlands are unavoidable, reasonable measures to maintain the original grade and soil characteristics shall be implemented to prevent permanent wetland loss.
- **Construction Staging Areas**: Stage construction equipment, stockpiles, etc., in upland locations that are at least 100 feet from all waterways, wetlands and riparian areas. A vegetated strip of at least 25 feet in width should be maintained between all staging areas and adjacent water ways or swales.
- **Monitoring**: A USFWS and NOAA Fisheries approved biologist will oversee listed species relocation activities, and will monitor dewatering operation and construction in areas that have potential to affect listed species and critical habitat.

Permanent Design Measures

- **Riparian Shade Canopy:** Riparian shade canopy is important to maintain cool water temperatures for "cold" beneficial uses of all drainages designated as such. Revegetation along affected creeks will be designed to optimize shade canopy where feasible and not in conflict with current flood control practices.
- **Permanent Storm Water Treatment BMPs:** Consideration of permanent storm water treatment BMPs is required for this project. For the portion of the project that is within the Caltrans right-of-way, permanent storm water treatment BMPs shall be incorporated to the maximum extent practicable (MEP, Note: *The MEP analysis is the process of evaluating the selected BMPs based on legal and institutional constraints, technical feasibility, relative effectiveness, and cost/benefit ratio*) in compliance with the Caltrans Stormwater Management Plan (SWMP) and storm water guidance. For the portion of the project inside the Caltrans right-of-way, permanent storm water treatment BMPs and post construction runoff controls shall be incorporated to the MEP in compliance with the storm water requirements set forth in the appropriate planning jurisdiction. The goals of the treatment BMPs within the Caltrans right-of-way will be general pollutant removal for most creeks listed as impaired. The preferred TBMP will be vegetated bio-filtration strip/swales. If these can be incorporated to treat 100% of the storm water from the new impervious areas, no further TBMP's need be

considered. If treatment BMPs are found to not be feasible within the Caltrans right-of-way, Caltrans will negotiate resolution of this matter with the Regional Water Quality Control Board for each receiving water evaluated for TBMPs.

a. All existing vegetated locations to remain along the project limits will be evaluated for viability as biostrips and documented to quantify effectiveness of reductions of particulate runoff. In addition, the following locations will be used for constructing new biostrips and bioswales to intercept runoff. If subsurface conditions are appropriate, these same locations will be utilized additionally for infiltration purposes.

Locations:
PM 1.4 to 1.8, southbound - Bailard Interchange between southbound ramps and frontage road,
PM 2.3 to 2.4, northbound - graded shoulder,
PM 4.2 to 4.3, southbound - graded shoulder,
PM 4.9 to 5.0, southbound - graded shoulder,
PM 6.8 to 6.9, northbound and southbound - graded shoulders.

- **Bridge(s)**: For all creeks requiring replacement or major renovation of existing bridges (replace bridge structures at: Arroyo Parida, Toro Canyon, Romero, Oak, and San Ysidro creeks, widen bridge structures at Franklin and Santa Monica creeks), new bridges should be designed to not accelerate the water velocity under the bridge compared to up and down stream water flow rates. This can be accomplished by providing enough space under the bridge to accommodate the creeks typical channel cross section and potential to meander. These three Bridges would also be designed to accommodate the 100 year flood event if possible. No fish passage barriers should remain or develop under the new bridges. The bridges should be designed to discharge stormwater to upland areas that are vegetated. Scuppers and down drains directly to the creek should be avoided if feasible.
- **Hydrology**: Storm water runoff from the highway will be managed to maintain sheet flow to adjacent grasslands and wetlands. Concentration of storm water flow will be minimized, if feasible. Eliminate unnecessary dikes and concrete lining of drainage swales if feasible after considering the necessary function of each.
- **Litter:** Litter on the highway will be removed periodically as a part of regular maintenance procedure.
- **Culverts:** For all areas requiring installation of culverts, the size and alignment of these culverts will be designed to minimize influencing the hydrology of the project site to the maximum extent practicable. Deep rooted vegetation will be planted near the inlets and outlets of all culverts to the extent feasible.
- **Riparian Corridors**: The project will be designed to minimize impacts to riparian areas, preserve channel length, and preserve shade canopy. Where impacts to riparian area are unavoidable, mitigation on site or off site will be proposed.
- **Wetlands:** Wetlands perform an important role in storing and treating storm water runoff. There should be no net loss of wetlands as a result of this project.

For wetlands that cannot be avoided, mitigation wetlands will be constructed on or off site to ensure there will be no net loss of wetlands. Opportunities exist to install or enhance existing wetlands at Carpinteria Marsh and at the Ballard Basins. Other sites will be evaluated on their own merit as the project design and other functional units progress with their work.

- **Design and Treatment BMPs:** Storm water best management practices will be selected and designed during the design phase of this project. BMPs will be selected to minimize pollutant discharges to surface waters, minimize storm water discharge rates and volumes), and recharge groundwater. The proposed project is required to consider installation of permanent storm water treatment BMPs to control the discharge of pollutants from the highway and to minimize changes to the hydrology of nearby waterways. If permanent storm water treatment BMPs are not feasible within the Caltrans right-of-way, water quality treatment off site should be considered. Mitigation for impacts to agricultural and biological resources may also provide water quality benefits equivalent to that provided by treatment BMPs. A formal stormwater drainage plan will be developed during the design process of this project.
- **Invasive Plants:** All invasive plants that could adversely affect water quality and associated beneficial uses will be removed from specific work areas within creek channels and prevented from spreading, to the extent feasible. Invasive vegetation may also be removed from restoration and mitigation areas. Eradication of invasive species may require the use of mechanical equipment and/or herbicides. The initial eradication of invasive plants and trees should be performed at the beginning of construction with follow-up eradication occurring for up to five years, as necessary.

9. References

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Web Pages

http://geotracker.swrcb.ca.gov/ - developed by the State Water Resources Control Board to document sites with subsurface contamination in California.

http://www.dfg.ca.gov/biogeodata/imaps/ - maps of Steelhead habitat in and near the project site.

http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx - Soil Survey

http://carpinteriacreek.org/documents.htm - Watershed plan and other information for Carpinteria Creek

http://www.countyofsb.org/agcomm/wma/index.htm - Info on the Arundo removal project for Carpinteria Creek

ftp://pwftp.countyofsb.org/Water/FTP/AP_2008_2009/South%20County%20Creeks%20Addenda/Carpinteria/ - information about Santa Barbara County's creek maintenance program for Carpinteria Creek

http://documents.coastal.ca.gov/reports/2006/1/F6c-1-2006.pdf - January 13, 2006 appeal decision by the California Coastal Commission for the M. Timm Development Corporation

http://www.ccamp.org/ - Central Coast Ambient Monitoring Program (CCAMP).

http://geotracker.swrcb.ca.gov/ - developed by the State Water Resources Control Board to document sites with subsurface contamination in California.

http://www.dfg.ca.gov/biogeodata/imaps/ - maps of Steelhead habitat in and near the project site.

http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.html - Caltrans Construction Storm Water Links

http://www.waterboards.ca.gov/ - RWQCB Homepage

http://www.waterboards.ca.gov/centralcoast/publications_forms/publications/basin_plan/

http://www.tcft.org/pages/steelheadrestoration_watershedgroups.html

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Caltrans Project Planning and Design Guide/SWDR/TBMP Guidance http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

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