WATER QUALITY REPORT

for

STATE ROUTE 11 AND THE OTAY MESA EAST PORT OF ENTRY

SAN DIEGO COUNTY, CALIFORNIA
DISTRICT 11–SD –ROUTE 11
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TIER II ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL IMPACT STATEMENT

November 2010

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STATE ROUTE 11, COMMERCIAL VEHICLE ENFORCEMENT FACILITY & OTAY MESA EAST PORT OF ENTRY

WATER QUALITY REPORT

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The purpose of this water quality report is to address the Best Management Practices (BMPs) associated with the potential storm water impacts for the proposed Project. This water quality report is intended to inform the public about the existing water quality conditions, the potential impacts associated with Project construction and operation and the avoidance/minimization measures that would be implemented.

The California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) are proposing to construct the following facilities in southern San Diego County: State Route 11 (SR-11), a Commercial Vehicle Enforcement Facility (CVEF) and the Otay Mesa East Port of Entry (OME POE). SR-11 would extend generally east and south for approximately 2.1 miles from the east side of the approved future SR-905/SR-125 Interchange (near Harvest Road) terminating at the proposed OME POE/CVEF, a new international border crossing with Mexico. With implementation of SR-11, certain modifications to the approved SR-905 design would be required, and are included as part of the proposed Project. These include SR-11/SR-905 Interchange connector ramps, the extension of an auxiliary lane between La Media Road and SR-11 connector on eastbound SR-905, and median widening between SR-905/SR-125/SR-11 Interchange and the La Media Road Interchange to accommodate SR-11 connecting lanes.

The proposed OME POE would service passenger and commercial vehicle traffic into and out of the United States (U.S.). All commercial vehicles must be inspected by the California Highway Patrol (CHP) for vehicle weight and safety considerations, operator credentialing, and other services unique to international commercial traffic at the proposed new CVEF. These facilities would ultimately be owned, maintained, and operated by different agencies, with Caltrans/FHWA responsible for SR-11; The POE would be owned and maintained by the U.S. General Services Administration (GSA) and operated by the U.S. Customs and Border Protection (CBP); and the CVEF would be owned and maintained by the State of California Department of General Services and operated by the CHP.

The new POE is needed because the capacities of the existing Ports of Entry in the region are currently being exceeded, causing excessive border wait times for those engaged in commercial and personal vehicle trips. Trade and travel in this area are forecasted to continue to grow, and border delays are expected to increase correspondingly.

The purpose of the Project is to:

- Increase inspection processing capacities for commercial and personal vehicles and pedestrians in the San Diego/Tijuana region;
- Reduce northbound vehicle and pedestrian queues and wait times to cross the border at other POEs in the region;
- Accommodate projected increases in international trade and personal cross-border travel in the region in a safe and secure manner;
- Contribute to reductions in congestion at existing POEs and along regional transportation infrastructure; and

- Accommodate commercial goods movement and cross-border travel to and from the OME POE.

Water quality standards within the Project limits are set by the State Water Resources Control Board (SWRCB), specifically the San Diego Regional Water Quality Control Board (SDRWQCB). Existing surface water quality varies depending on the pollutant loading to the various streams within the area, which lie in the Tijuana Valley Hydrologic Unit, originating mainly from rainfall and irrigation. The receiving waters are unnamed intermittent streams that ultimately drain to the Tijuana River in Mexico, before the river re-enters the United States west of the Project area.

The proposed Project would have potential short-term impacts to storm water runoff quality (during construction) due to the type of construction activities that have the potential to contribute pollutants and the type of construction materials that would be used. Examples of construction activities include clearing and grubbing, major grading, utility excavations, sandblasting and landscaping operations. Vehicle fluids, such as oil, grease, petroleum, concrete curing compounds, asphaltic emulsions associated with asphalt concrete paving operations, paints, solvents and thinners, and base and subbase materials are examples of construction materials that have the potential to contribute pollutants to storm water discharges, if not contained properly. The drainage design criteria that will be applied to all Build alternatives is that all on-site flows generated from the Project will be captured, treated, retained and/or detained prior to being released back into the original watercourse, so that there is no increase in pre-project flows downstream (to Mexico) of the Project.

There are four alternatives under consideration, three Build Alternatives and one No-Build. The Build Alternatives also include construction of the OME POE and the CVEF. Under the Build Alternatives, SR-11 would be constructed as a four-lane toll highway, with two lanes in each direction, and connectors, as follows:

No Interchange Alternative

With this alternative, no interchanges would be constructed along the proposed SR-11 corridor. An undercrossing structure (allowing the local road to pass under SR-11) would be provided at Sanyo Avenue, and overcrossings (allowing the local road to pass over SR-11) would be built at Enrico Fermi Drive and Alta Road. In addition, SR-11 at Siempre Viva Road would be constructed as an overcrossing with no direct access provided between SR-11 and Siempre Viva Road.

One Interchange Alternative

The SR-11 corridor would be constructed with a single interchange at Alta Road, approximately 1.4 miles east of the SR-905/SR-125/SR-11 Interchange. SR-11 would have an undercrossing at Sanyo Avenue and overcrossings at Enrico Fermi Drive and Siempre Viva Road. No direct access would be provided between SR-11 and Siempre Viva Road.

Two Interchange Alternative

An undercrossing structure would be built at Sanyo Avenue; and overcrossings would be provided at Alta Road; and local interchanges (allowing the interchange of traffic between SR-11 and local roads) would be constructed at Siempre Viva Road (half interchange) and Enrico Fermi Drive.

A number of design or operational variations are being evaluated for one or more of the described build alternatives, as outlined below:

No Toll Variation

The No Toll Variation could apply to any of the three build alternatives, and would involve the SR-11 corridor operating as a freeway instead of a toll highway. The principal design difference under this variation would be the lack of toll-related structures such as toll administration and FasTrak facilities.

46-foot Median Variation

Under this variation, the SR-11 median would not narrow to 22 feet in the vicinity of Sanyo Avenue, but would narrow from a 62-foot width to a 46-foot width through this area. This variation could apply to any of the three build alternatives and due to the transition lengths, increases the overall Project footprint in this area.

SR-905/SR-125/SR-11 Interchange Design Variations

Two variations are being considered for the SR-905/SR-125/SR-11 Interchange, referred to as the SR-125 Connector Variation and the Full Interchange Variation. These variations could apply to any of the three build alternatives.

SR-125 Connector Variation

Under the SR-125 Connector Variation, the southbound SR-125 to eastbound SR-11 connector would be added to the interchange. A local connector ramp from Enrico Fermi Drive to northbound SR-125 was approved under the SR-905 Project; all of the proposed Project build alternatives assume a similar direct connector from westbound SR-11 to northbound SR-125.

SR-905/SR-125/SR-11 Full Interchange Variation

Under the Full Interchange Variation, the SR-125 Connector Variation described above would be constructed, along with connectors connecting westbound SR-11 to eastbound SR-905 and westbound SR-905 to eastbound SR-11. To construct this variation completely within existing Caltrans R/W, a retaining wall of approximately 15 to 26 feet in height and 150 feet in length would be required.

Siempre Viva Road Full Interchange Variation

This variation would only apply to the Two Interchange Alternative, and would involve constructing a full interchange at Siempre Viva Road. This variation would include separate ramps for commercial-only traffic and for passenger-only traffic to provide access from

Siempre Viva Road to the POE; and a ramp for northbound passenger-only traffic from the POE to access Siempre Viva Road. Direct access would be provided for commercial-only traffic to Siempre Viva Road from the CVEF.

The potential impacts of the Build alternatives and design variations are described in Table ES.1 below.

Table ES.1 Project Build Alternatives and Design Variations Potential Impacts

Description	DSA* (Acres)	Additional Impervious Area (Acres)
SR-11 (from Britannia Blvd. to OME POE)	222.7	48.5
CVEF	23.3	18.9
OME POE	106.3	52.0
No Interchange Alternative	**352.3**	**119.4**
SR-11 (from Britannia Blvd. to OME POE)	240.1	55.1
CVEF	23.3	18.9
OME POE	106.3	52.0
One Interchange Alternative	**369.7**	**126.0**
SR-11 (from Britannia Blvd. to OME POE)	241.0	55.6
CVEF	23.3	18.9
OME POE	106.3	52.0
Two Interchange Alternative	**370.6**	**126.5**
No Toll	0	0
46-Foot Median Variation	+0.5	+1.3
No Interchange Alternative	352.8	120.7
One Interchange Alternative	370.2	127.3
Two Interchange Alternative	371.1	127.8
SR-125 Connector Variation	+4.1	+2.7
No Interchange Alternative	356.4	122.1
One Interchange Alternative	373.8	128.7
Two Interchange Alternative	374.7	129.2
SR-905/SR-125/SR-11 Full Interchange Variation	+7.3	+4.8
No Interchange Alternative	359.6	124.2
One Interchange Alternative	377.0	130.8
Two Interchange Alternative	377.9	131.3
Siempre Viva Full Interchange Variation (Two IC only)	+23.3	+7.2
Two Interchange Alternative	393.9	133.7

*DSA = Disturbed Soil Area

Evaluating the impacts of any of the alternatives on water quality requires an assessment of temporary and permanent impacts. The temporary impacts of the Two Interchange Alternative are higher than the other two alternatives. However, the difference in Disturbed Soil Area (DSA) between the Build Alternatives is low in comparison to the total DSA, between 0.2% for the lowest and 5% for the largest difference.

The assessment on permanent impacts is preliminary and will change as the Project progresses. The permanent impacts are assessed based on the additional impervious area added by each alternative. The Two Interchange Alternative adds the largest amount of pavement area (126.5 acres), compared to the One Interchange Alternative (126.0 acres) and the No Interchange Alternative (119.4 acres). Nevertheless, the additional impervious area is comparable for all alternatives since the Two Interchange Alternative adds only 0.5 acres more than the One Interchange Alternative and 7.1 acres more than the No Interchange Alternative. All additional impervious areas are proposed to be treated to the Maximum Extent Practicable (MEP).

Impervious surface is directly proportional to higher runoff volume and higher velocities and less opportunities for infiltration or for vegetation to slow down flows. On-site flows generated from the Project will be captured, treated, retained and/or detained to the MEP. A major consideration affecting the selection of Treatment Best Management Practices (BMPs) is the International Boundary and Water Commission (IBWC) requirement that, “disposal of excess water should not go into Mexico” and with poor infiltration rates due to the soil type found in the area, retention basins will be required to eliminate excess runoff. These basins will need to be specifically designed to address the volume retention requirement. For the purposes of this Water Quality Report, it is assumed that the volume required for retention will percolate and be disposed of via infiltration in engineered basins, or by other subsurface engineering methods, to accomplish the goal of no increased flows to Mexico.

The short-term potential impacts would be avoided/minimized during the construction phase by deploying temporary BMPs, while implementing permanent BMPs (Design Pollution Prevention and Treatment BMPs) to the MEP to minimize the long-term potential impacts. Maintenance BMPs would also be implemented by Caltrans maintenance forces during their operations. Once these measures (temporary and permanent BMPs) are adequately implemented, this Project would not have significant impacts to water quality.

The permits required for the Project would be the same for all of the alternatives. They include United States Army Corps of Engineers, Section 404 permit; California Department of Fish and Game, Section 1602 Streambed Alteration Agreement; SDRWQCB, Section 401 Water Quality Certification; and SWRCB, coverage under the Caltrans NPDES Permit and the California General Construction permit. Approval of the grading/drainage plans within the International Boundary and Water Commission, U.S. Section (IBWC) jurisdiction will be necessary.

All three Build alternatives and Design Variations will be evaluated in detail to ensure that all opportunities to reduce flows and velocities are accounted for through drainage modifications

and the incorporation of treatment BMPs. Caltrans requires a very detailed storm water analysis to ensure every opportunity to treat and/or reduce storm water runoff to the MEP before leaving the Project site.

1.1 PROJECT DESCRIPTION

The California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) are proposing to construct the following facilities in San Diego County: the Otay Mesa East port of entry (OME POE); a highway, State Route 11 (SR-11), with connectors to SR-905 and associated modifications to SR-905; and a Commercial Vehicle Enforcement Facility (CVEF). The Project analyzed in this document (referred to herein as the "proposed Project" or "Project") includes all of these facilities.

SR-11 would extend east from the vicinity of Harvest Road (at the future SR-905/SR-125 Interchange) for approximately 1.5 miles before curving to the southeast near Alta Road and continuing for approximately 0.6 mile to connect with the proposed OME POE/CVEF at the United States (U.S.) - Mexico border. It is located in the east Otay Mesa area of the City of San Diego (City) in southeastern San Diego County (County). The CVEF facility would be directly north of the OME POE, as shown in Figure 1. With implementation of SR-11, certain modifications to the approved SR-905 design would be required, and are included as part of the proposed Project. These include SR-905/SR-11 Interchange connector ramps, the extension of an auxiliary lane between La Media Road and SR-11 connector on eastbound SR-905, and median widening between SR-905/SR-125/SR-11 Interchange and the La Media Road Interchange to accommodate SR-11 connecting lanes (shown in green).

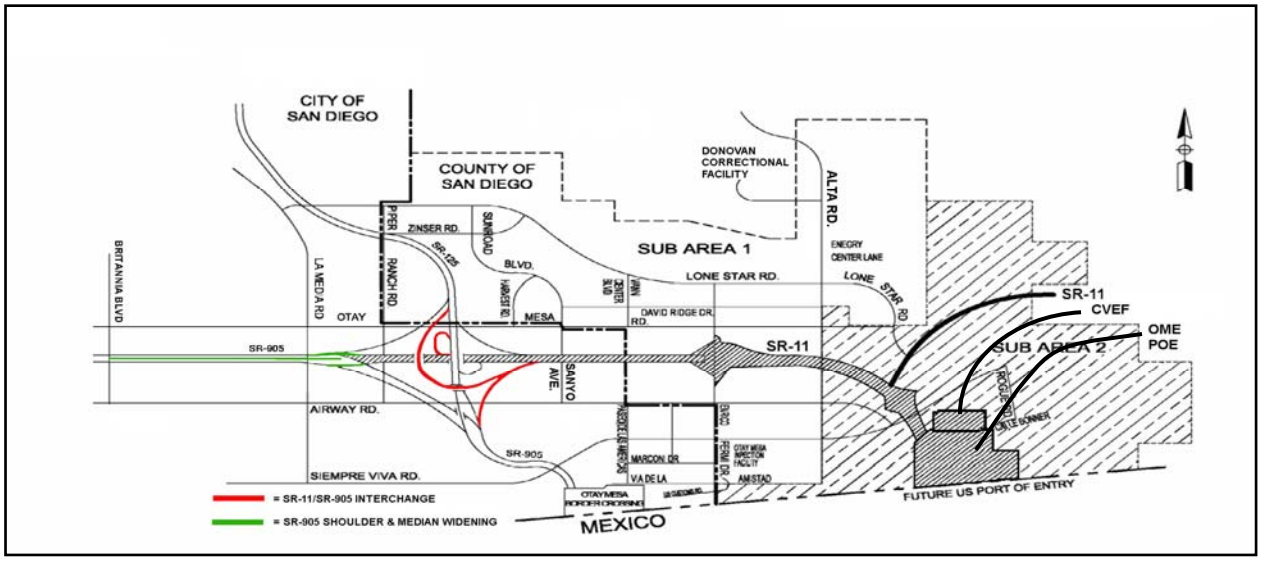

Figure 1 – Project Location Map

SR-11, the OME POE and CVEF facilities are interdependent Projects, in that their locations and designs must be compatible, and none of the three can proceed independently of the others. These Projects ultimately would be owned, maintained, and operated by different agencies, with Caltrans/FHWA responsible for SR-11; The POE would be owned and maintained by the U.S. General Services Administration (GSA) and operated by the U.S. Customs and Border Protection (CBP); and the CVEF would be owned and maintained by the State of California Department of General Services and operated by the CHP.

The OME POE is needed because the capacities of the existing Ports of Entry in the region are currently being exceeded, causing excessive border wait times for those engaged in commercial and personal vehicle trips. Trade and travel in this area are forecasted to continue to grow and border delays are expected to increase correspondingly. Transportation and land use planning agencies on both sides of the border have identified the longer-term need for a third border crossing and associated transportation facilities in the San Diego/Tijuana area. Local, regional and bi-national land use studies have identified the eastern side of Otay Mesa as the preferred general location for a new POE, and a corresponding POE site has been identified on the Mexico side of the border. With implementation of the POE, SR-11 becomes a critical facility to connect the POE with the regional highway system north of the border via SR-905 and SR-125. Similarly, the proposed POE necessitates access to an existing or new CVEF for the California Highway Patrol (CHP) to conduct safety inspections on incoming trucks.

SR-11 is planned as a four-lane toll highway that would connect with State Route 905 (SR-905) in a freeway-to-freeway interchange at its west end and with the proposed OME POE international border crossing on its east end. Eastbound-to-eastbound and westbound-to-westbound connectors would be provided between SR-11 and SR-905, currently under construction and shown as "Approved" in Figure 2.

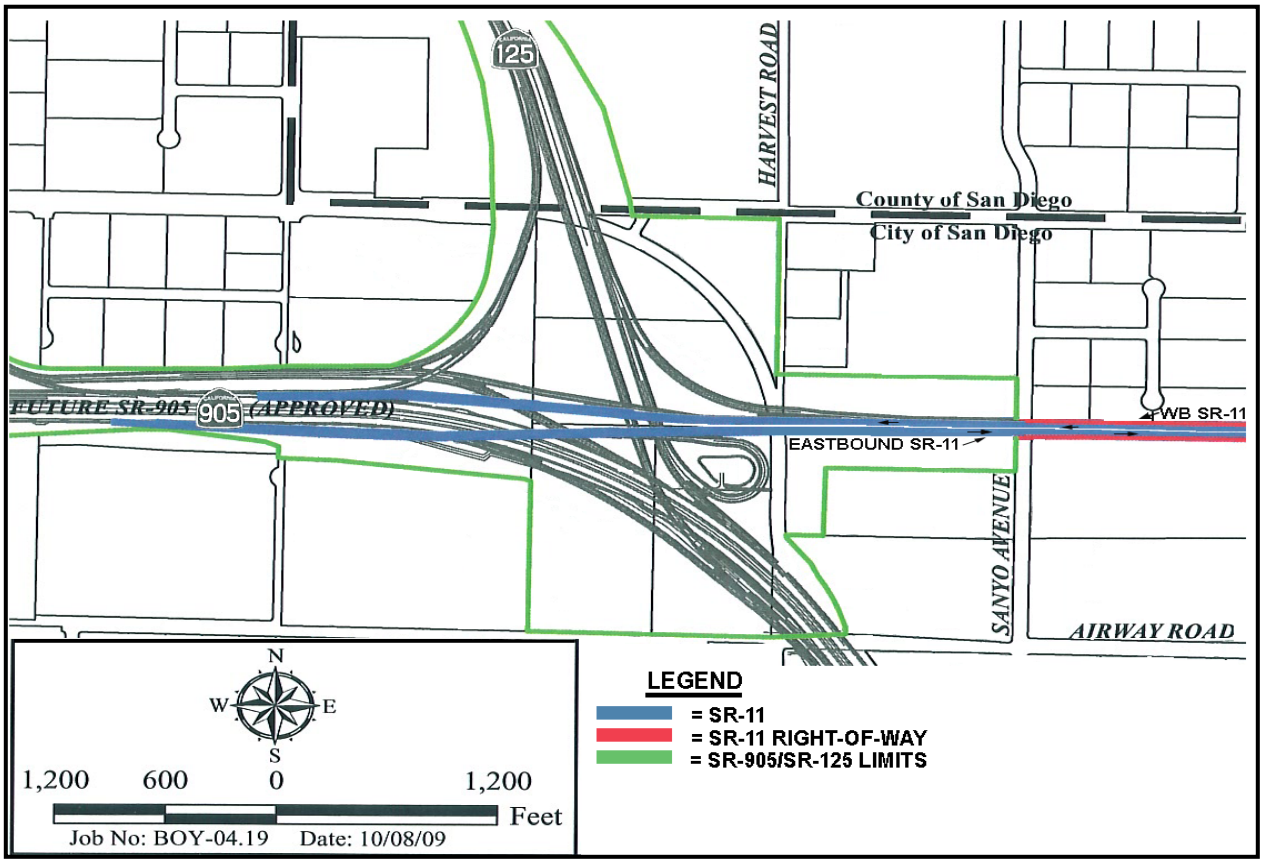

Figure 2 – SR-11/SR-905 Connectors

The OME POE would accommodate commercial and passenger traffic, as well as pedestrians and bicycles. It would be accessed from SR-11 by two eastbound connectors, one for passenger traffic and one for commercial traffic. Westbound traffic from the POE site would also be via two connectors, one for passenger traffic and one for commercial traffic which would be routed into the proposed CVEF site and exit the CVEF site to westbound SR-11 (see Figure 3).

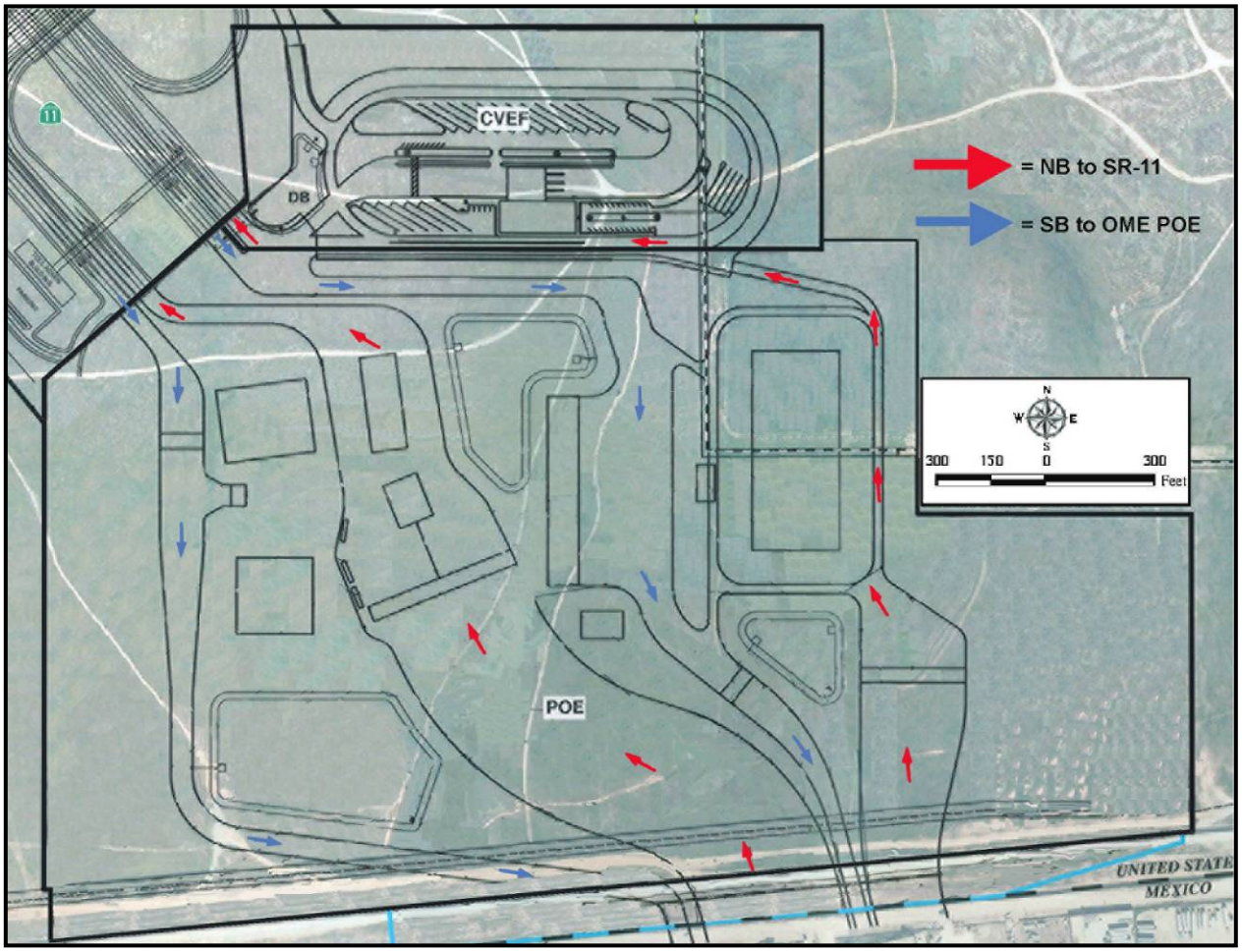

Figure 3 – SR-11/OME POE Connectors

SR-11 would cross four existing local roadways: Sanyo Avenue, Enrico Fermi Drive, Alta Road, and the proposed extension of Siempre Viva Road. There are four alternatives under consideration, three Build Alternatives and one No-Build Alternative. The alternatives are described below.

Identical Engineering Features of the Build Alternatives

SR-11

SR-11 would be constructed as a four-lane toll highway, with two lanes in each direction, and connectors. It would extend east from the vicinity of Harvest Road (at the future SR-125/SR-905 interchange) for approximately 1.5 miles, before curving to the southeast near Alta Road and

continuing for approximately 0.6 mile to connect with the POE/Commercial Vehicle Enforcement Facility (CVEF) site. SR-11 would cross four local surface streets: Sanyo Avenue, Enrico Fermi Drive, Alta Road, and Siempre Viva Road.

The median in the vicinity of Sanyo Avenue would narrow from 46 feet wide west of Sanyo Avenue to a width of 22 feet for a distance of approximately 1,600 feet to minimize impacts to nearby buildings, before widening out again over a distance of approximately 630 feet to a 62-foot median width for the remaining eastern portion of SR-11. To avoid impacts to the adjacent buildings along the proposed SR-11, retaining walls will be constructed east of Sanyo Ave UC for approximately 1,250 feet.

To link SR-11 to SR-905, it would be necessary to modify the western portion of SR-905 that is currently under construction, to accommodate the SR-905/SR-11 connectors. These modifications include replacing the previously approved ramps from SR-905 to Enrico Fermi Drive with the western portion of SR-11 (east of Harvest Road), as well as two lane connectors in each direction linking SR-11 and SR-905, additional auxiliary lanes along eastbound SR-905 between La Media Road and SR-11 connector, and slight widening of westbound SR-905 between the SR-905/SR-125/ SR-11 Interchange and La Media Road Interchange in the median to accommodate the two SR-11 connector lanes merge with the approved SR-905 three westbound lanes.

OME POE

The proposed OME POE would accommodate northbound and southbound commercial and passenger traffic, as well as pedestrians and bicycles. The OME POE site would be accessed from the north by SR-11. From the south, entry would be through the proposed Otay II POE on the Mexican side of the border.

The currently proposed site is approximately 106.3 acres located 150 feet north of the international border and across from the associated POE site in Mexico. Between the two Ports of Entry is a 150-foot wide strip of federal land patrolled by the U.S. Border Patrol. Approximately 7.4 acres within this strip of land would be impacted by the proposed Project to provide northbound and southbound connections between the two Ports of Entry, as well as drainage outlet structures from the OME POE.

Facilities would include inspection lanes, booths and canopies, a commercial vehicle and cargo inspection system, commercial import inspection building and docks, bulk storage inspection bins, bird quarantine building, a commercial truck impound lot and a seizure vault. Other noncommercial facilities would include the main building, pedestrian and bicycle facilities, and a general parking lot.

The proposed overall OME POE footprint would include a space to accommodate a potential future transit center (to be designed and constructed by others) adjacent to the POE. The intent of reserving space for a potential future transit center is to ensure that opportunities to implement

transit service to the OME POE, such as Bus Rapid Transit (BRT), would not be precluded by future development in the Project site vicinity. It is currently anticipated that a future transit center would encompass an approximately two-acre site near the western POE boundary.

CVEF

The proposed site for the new CVEF would include approximately 23.3 acres and would be located east of SR-11 along the northern POE boundary. After receiving clearance to enter the U.S. at the OME POE, northbound commercial vehicles would be routed into the CVEF facility for a safety/weight inspection by the CHP prior to being released onto the regional roadway system. The CVEF design is expected to be similar to the CVEF at the existing Otay Mesa POE, with anticipated facilities to include an approximately 8,000-square foot (sf) main building.

CONCEPTUAL DRAINAGE DESIGN

Hydrology and hydraulics of the proposed Project facilities were analyzed to determine if any additional right-of-way would be needed and if there were any environmental impacts caused by drainage infrastructure needs. Drainage design criteria included Caltrans, IBWC, County of San Diego, City of San Diego, and the East Otay Mesa Specific Plan Comprehensive Flood Control Master Plan 1994. The IBWC requires that due to the project's proximity to the Border, any increase in volume from the new impervious surfaces will be retained within the highway and OME POE right-of-way. The basic drainage design premise is that all on-site flows generated from the Project will be captured, treated, retained and/or detained prior to being released back into the original watercourse, so that there is no increase in pre-project flows downstream of the Project.

The conceptual design for the Project alternatives includes draining roadway generated flows directly into biofiltration swales (bioswales) running parallel to the road, where possible. These bioswales will capture, convey and treat highway runoff. Inlets with concrete aprons will be placed at the downstream end of the swales, as needed, to extract flows from the surface. In many cases, these flows will be routed to detention facilities to comply with retention and/or peak flow attenuation criteria. Basins were sized based on the following preliminary design criteria: retention volume, soil infiltration rates, water quality volume, silt accumulation volume, detention volume, freeboard and basin outlet structure. The basin sizes provided during this Project Approval/Environmental Document (PA/ED) phase assumed that all jurisdictional criteria could be met, and that the final basin designs prepared during the final design (PS&E) phase of the Project would be based on the feasibility and reasonability of meeting the different jurisdictional criteria.[1]

Since infiltration rates were found to be poor due to the soil type found in the area, the ultimate detention/retention basin designs may incorporate some or all of the following features to address the needed for stormwater volume retention: subsurface soil treatments, concrete floors, retention vaults, and/or pump systems.

Build Alternatives

1.1.1 No Interchange Alternative

SR-11 would be constructed as a four-lane toll highway, with two lanes in each direction, and connectors.

No interchanges would be constructed along the proposed SR-11 corridor. An undercrossing structure would be provided at Sanyo Avenue, and overcrossings would be built at Enrico Fermi Drive and Alta Road. In addition, SR-11 at Siempre Viva Road would be constructed as an overcrossing with no direct access provided between SR-11 and Siempre Viva Road.

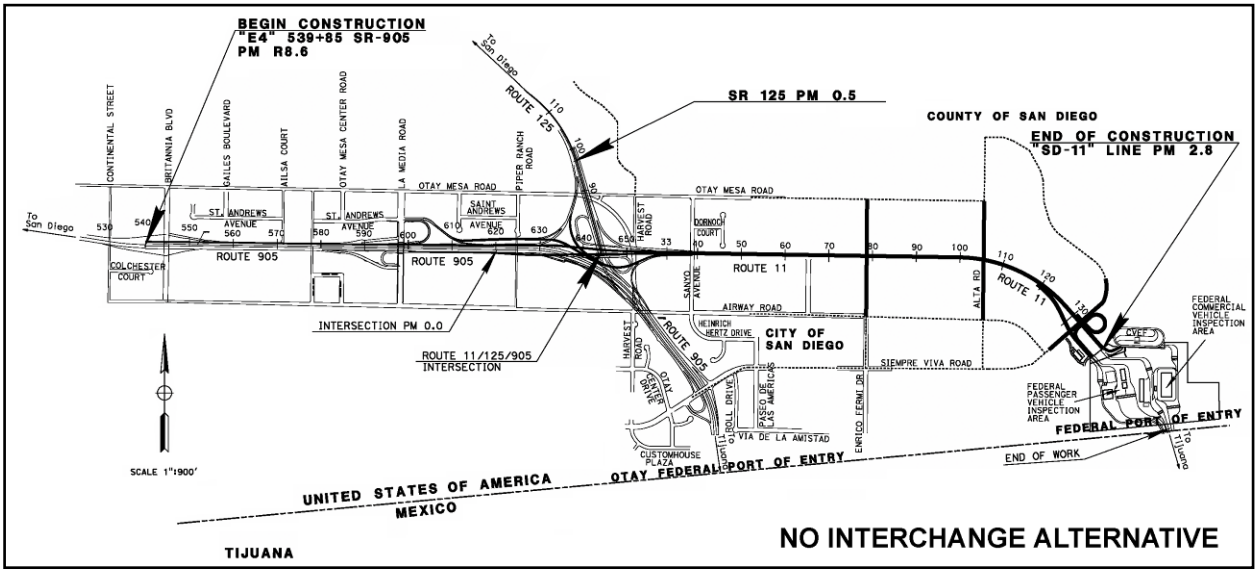

Figure 4 –No Interchange Alternative

1.1.2 One Interchange Alternative

SR-11 would be constructed as a four-lane toll highway, with two lanes in each direction, plus auxiliary lanes and connectors.

SR-11 corridor would be constructed with a single interchange at Alta Road, approximately 1.4 miles east of the SR-905/SR-125/SR-11 Interchange. SR-11 would have an undercrossing at Sanyo Avenue and overcrossings at Enrico Fermi Drive and Siempre Viva Road. No direct access would be provided between SR-11 and Siempre Viva Road.

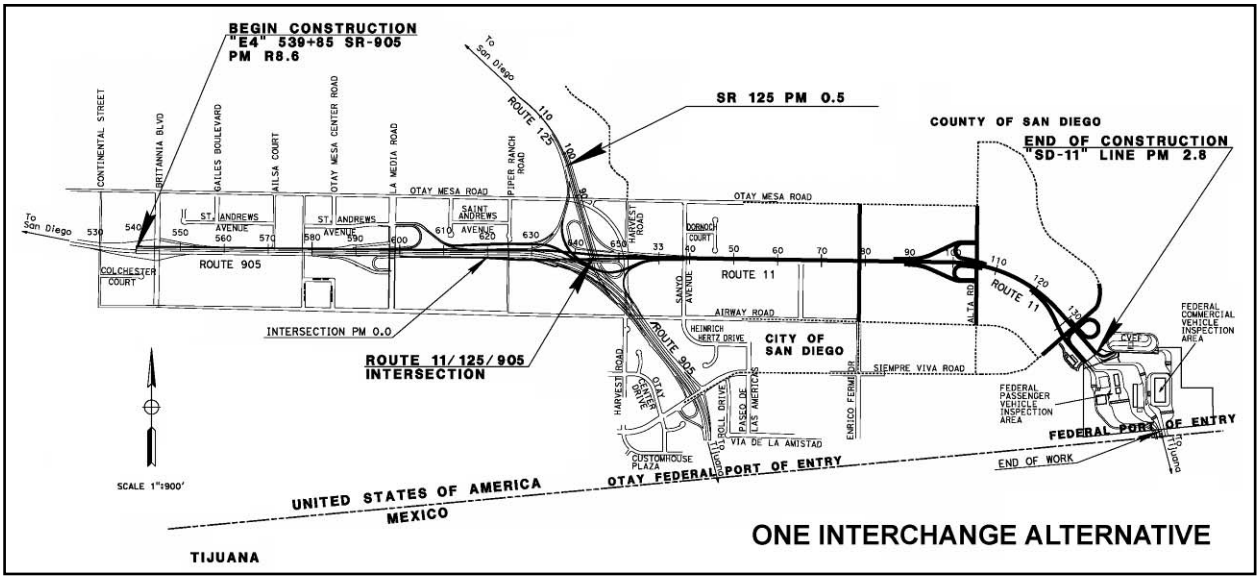

Figure 5 –One Interchange Alternative

1.1.3 Two Interchange Alternative

SR-11 would be constructed as a four-lane toll highway, with two lanes in each direction, plus auxiliary lanes and connectors.

An undercrossing structure would be built at Sanyo Avenue (allowing the local road to pass under SR-11); an overcrossing would be provided at Alta Road (allowing the local road to pass over SR-11); and local interchanges (allowing the interchange of traffic between SR-11 and local roads) would be constructed at Siempre Viva Road (half interchange) and Enrico Fermi Drive.

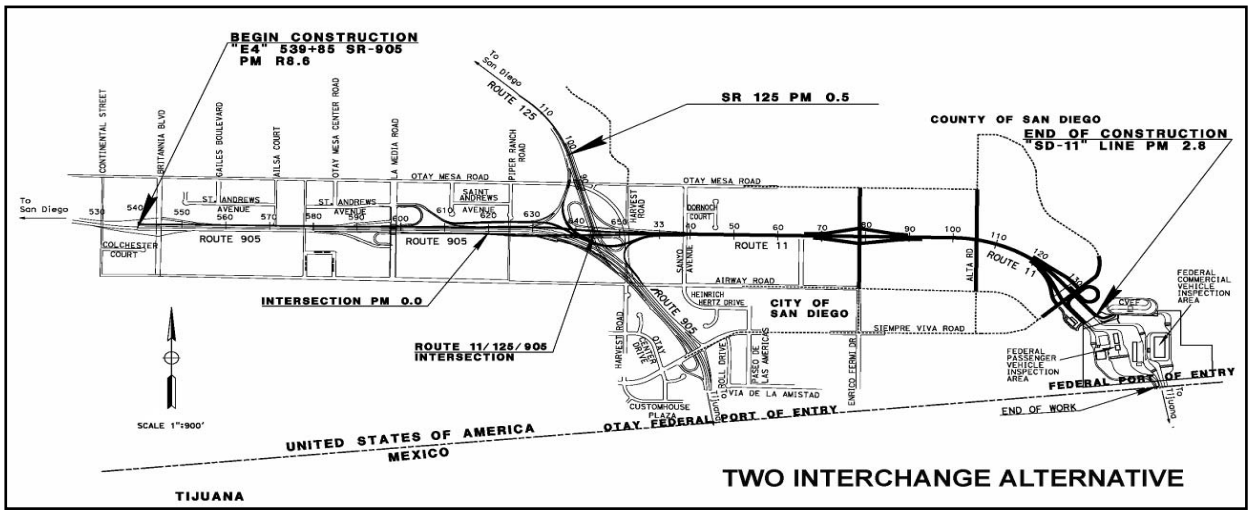

Figure 6 –Two Interchange Alternative

1.1.3 No Build

This alternative assumes that no part of the proposed Project would be constructed.

Variations on the Build Alternatives

A number of design or operational variations are being evaluated for one or more of the described build alternatives, as outlined below.

No Toll Variation
The No Toll Variation could apply to any of the three build alternatives, and would involve the SR-11 corridor operating as a freeway instead of a toll highway. The principal design difference under this variation would be the lack of toll-related structures such as toll administration and FasTrak facilities.

46-foot Median Variation
Under this variation, the SR-11 median would not narrow to 22 feet in the vicinity of Sanyo Avenue, but would narrow from a 62-foot width to a 46-foot width through this area. This variation could apply to any of the three build alternatives and due to the transition lengths, reduces the overall Project footprint in this area.

SR-905/SR-125/SR-11 Interchange Design Variations
Two variations are being considered for the SR-905/SR-125/SR-11 Interchange, referred to as the SR-125 Connector Variation and the Full Interchange Variation. These variations could apply to any of the three build alternatives.

SR-125 Connector Variation
Under the SR-125 Connector Variation, the southbound SR-125 to eastbound SR-11 connector would be added to the interchange. A local connector ramp from Enrico Fermi Drive to northbound SR-125 was approved under the SR-905 Project; all of the proposed Project build alternatives assume a similar direct connector from westbound SR-11 to northbound SR-125.

The addition of the southbound SR-125 to eastbound SR-11connector under this variation would complete the direct link between the two highways.

Full Interchange Variation
Under the Full Interchange Variation, in addition to the SR-125 Connector Variation described above, the following connectors would also be added to the interchange to link SR-11 more directly to SR-905:

- Westbound SR-11 to eastbound SR-905.
- Westbound SR-905 to eastbound SR-11.

The addition of these connectors would complete the planned SR-905/SR-125/SR-11 interchange, to provide full connectivity among the three highways. To construct this variation completely within existing Caltrans R/W, a retaining wall of approximately 15 to 26 feet in height and 150 feet in length would be required.

Siempre Viva Road Full Interchange Variation

This variation would only apply to the Two Interchange Alternative, and would involve constructing a full interchange at Siempre Viva Road. This variation would include separate ramps for commercial-only traffic and for passenger-only traffic to provide access from Siempre Viva Road to the POE; and a ramp for northbound passenger-only traffic from the POE to access Siempre Viva Road. Direct access would be provided for commercial-only traffic to Siempre Viva Road from the CVEF.

1.2 WATER QUALITY ASSESSMENT APPROACH

This report is organized as follows.

Section One describes the major Project features and the various Build and No Build alternatives and the proposed design variations. It also describes how this report is divided.

Section Two describes the Project area including general land use, topography, and regional, local and groundwater hydrology including floodplains, wetlands and surface waters.

Section Three describes the Federal, State and regional regulations and the required permits from the resource agencies.

Section Four describes the affected watersheds, the receiving water body's characteristics and the monitoring runoff data within the Project limits.

Section Five addresses the potential pollutant sources for the no-build and build alternatives during construction, as well as during operation.

Section Six addresses Caltrans' commitment under the National Pollutant Discharge Elimination System (NPDES) permit Order 99-06-DWQ issued by the California State Water Resource Control Board (SWRCB) during the planning, design, construction and maintenance of the Project to avoid/minimize potential water quality impacts to the receiving water body.

Section Seven lists the references used in preparing this report.

2.1 GENERAL SETTINGS

Within the limits of the Project, there are existing environmental resources anticipated to be impacted and/or issues to be considered. This section focuses on the resources that relate to water quality only.

2.1.1 Land Use

The majority of the proposed Project area is located within the East Otay Mesa Specific Plan (EOMSP) area within the County of San Diego. This area extends north to Johnson and O'Neill canyons and east to the base of the San Ysidro Mountains. The western portion of the proposed SR-11 corridor is located within the City of San Diego's Otay Mesa Community Plan (OMCP) area.

Although, the majority of the Project area is currently undeveloped, a number of private industrial and commercial development proposals near the Project are being processed for development permits by the County. The County is including the following provision on land development Projects in the area, "north-south boundaries of adjacent land uses are intended to conform with the final alignment of future SR-11." On August 1, 2007, the County Board of Supervisors approved amendments to the EOMSP that would accommodate the current alternatives for SR-11.

2.1.2 Topography

Topography in the Project area consists of gently undulating hills and mesas, and several drainages that convey water south into Mexico. On-site elevations range from approximately 640 feet above mean sea level (MSL) along the northeastern boundary of the project area, to 490 feet above MSL near the southern boundary of the OME POE site [2]

The eastern portion of the SR-11 Corridor footprint consists primarily of undeveloped natural rolling terrain. Slopes are generally flat (<10%) and the surface is covered with short grasses. The west side of the proposed alignment crosses three existing roads (from east to west): Enrico Fermi Drive, Sanyo Avenue, and SR-905 and passes over an existing concrete-lined detention basin. The undeveloped area by the SR-905/SR-125 Interchange is bound to the west by the existing SR-905 roadway and bound to the east by Sanyo Avenue. This area is very flat (<2%) with no well-defined flow line. The developed area east and west of Sanyo Avenue consists primarily of the existing concrete-lined detention basin. Developed land lies west of Enrico Fermi Drive and the undeveloped land to the east and north is relatively flat (5% to 10%) natural terrain, primarily covered with short grass that extends north to Otay Mesa Road.[1]

<u>Existing Features</u>

The site is bordered to the north by Otay Mesa Road, followed by graded land currently under construction, scattered residential properties and an agricultural field. The San Ysidro Mountains lie east of the site. The site is bordered to the south by the U.S.-Mexico international border, marked by a series of security fences. The Otay Mesa CVEF and multiple light industrial facilities border the site to the west. The majority of the site consists of undeveloped land.

2.1.3 Regional Geology

The Project site is situated in the Peninsular Ranges Geomorphic Province of California. This geomorphic province extends approximately 900 miles from the Transverse Ranges and the Los Angeles Basin, south to the southern tip of Baja California. The province generally consists of rugged mountains, underlain by Jurassic metavolcanic and meta-sedimentary rocks and Cretaceous igneous rocks of the southern California batholith. The Peninsular Ranges Province is characterized by northwest trending ridges and valleys, and several similarly trending faults in the region (Preliminary Geotechnical Study, Ninyo and More, 2007).[3]

Subsurface investigations conducted by Caltrans found that soils consisted of a relatively thin (about one to two feet thick) layer of top soil composed of' silty and clayey sands and lean clays with sand and traces of organics. The top soil layer was found to be underlain by the Otay Formation consisting of clayey and silty sands that with depth graded to siltstone and/or sandstone. The relative density of soils within this formation, based on SPT sampling (blow counts), was found to range from medium dense to very dense. The Otay Formation was found to be underlain by the Santiago Peak Volcanics bedrock consisting of breccia composed of andesitic gravels and cobbles within silty sand matrix.[4]

Native soils within the three build alternative corridors are associated primarily with the Diablo, Huerhuero, Salinas and Stockpen soil series, as mapped by the SCS (1973[5]). Specifically, the OME POE and the easternmost portion of the SR-11 corridor (approximately east of Siempre Viva Road) encompass Huerhuero Soils, while the SR-11 alignment between Siempre Viva Road and Sanyo Avenue includes mostly Diablo Soils. West of Sanyo Avenue, mapped soils are mainly associated with the Salinas and Stockpen Soil Series, although most of this area has been previously graded and/or developed (e.g., in association with SR-905), with native topsoils likely mixed with and/or replaced by engineered fill.

Identified erosion potential for the on-site Huerhuero Soils (Huerhuero Loam, 2 to 9, 5 to 9, and 9 to 15 percent slopes) is given as slight to moderate, based on generally shallow slopes and relatively high clay content. Similarly, identified erosion potential for Diablo Soils (Diablo Clay 2 to 9 percent slopes, and 9 to 15 percent slopes) is listed as slight to moderate (SCS 1973). Erosion potential is identified as slight for both the on-site Salinas (Salinas Clay Loam, 0 to 2 percent slopes) and Stockpen soils (Stockpen Gravelly Clay Loam, 2 to 5 percent slopes). Since most or all of the Salinas and Stockpen soils have been altered or replaced as noted, however, the erosion potential in areas west of Sanyo Avenue (as well as other previously graded/developed sites) is likely moderate in association with sandy fill deposits.

2.1.4 Regional Hydrology & Climate

The Project is located within the SDRWQCB Basin Planning Area. This basin encompasses most of the County and parts of southwestern Riverside County and southwestern Orange County (Water Quality Control Plan for the San Diego Basin (referred to thereafter as Basin Plan), 1994, including amendments through April 2007).[6] According to the Basin Plan, the region is comprised of coastal plains, central mountain valley area and an eastern mountain valley area. The coastal climate is

generally mild. The average temperature is about 65 Degrees Fahrenheit (ºF) and annual precipitation averages between 10 to 13 inches. As elevation increases toward the inland areas, the average temperature decreases to 57ºF in the Laguna Mountain area with precipitation up to 45 inches in the Palomar Mountain area. Drainage within the basin generally flows in a southwesterly direction, from the mountains to the coast, predominantly in well-defined watercourses.

According to the County Rainfall 30-Year Annual Average Period of Record July 1971 to June 2001 map, the annual precipitation along the Project corridor averages from 12 to 13 inches.[7] The vast majority of rainfall occurs between November and March with most of the annual precipitation falling during a few storms in close proximity to each other.

2.1.5 Local Hydrology & Surface Streams

2.1.5.1 Tijuana HU

The Project is located within the San Diego Basin in the Tijuana Hydrologic Unit (HU), within the Tijuana Valley Hydrologic Area (HA) (911.1), shown in Figure 7. Within the HA 911.1, the Project lies within the Water Tanks Hydrologic Subarea (HSA) (911.12), as shown in Figure 8.

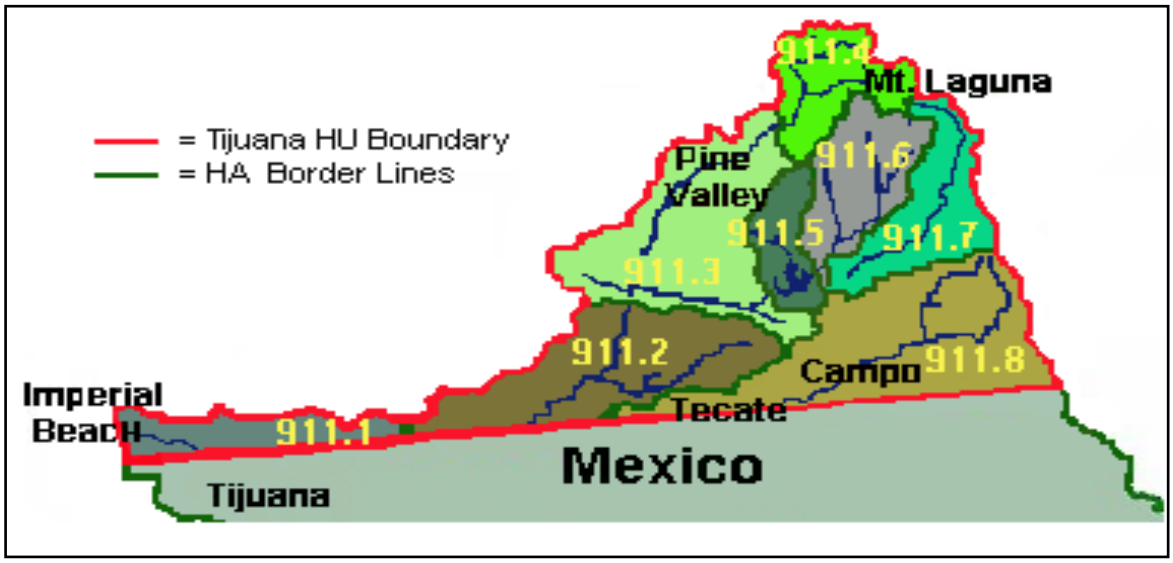

Figure 7 – Tijuana Hydrologic Unit

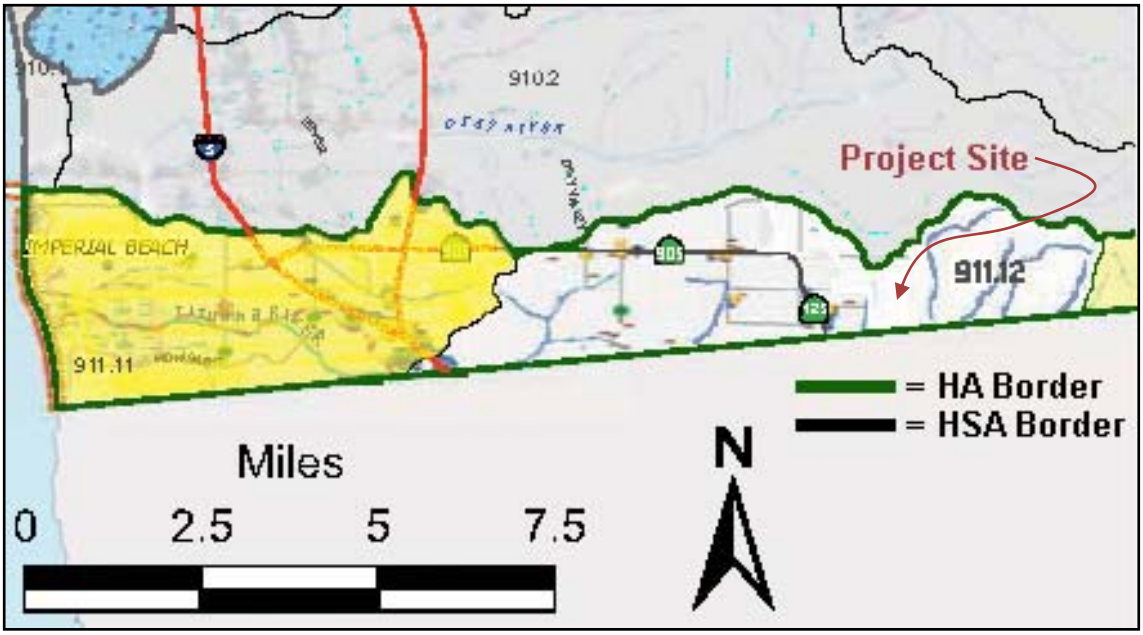

Figure 8 - Water Tanks HSA (911.12) w/in HA 911.1

The proposed Project crosses five unnamed ephemeral and intermittent streams flowing from storm events and irrigation. Based on limited historic data, surface water quality within the Water Tanks HSA was generally good in 1985. The Tijuana HU is comprised of the eight Hydrologic Areas (HA): the Tijuana Valley (911.1), Potrero (911.2), Barrett Lake (911.3), Monument (911.4), Morena (911.5), Cottonwood (911.6), Cameron (911.7) and Campo (911.8). The Tijuana Valley Hydrologic Area (HA) is arbitrarily divided by the United States - Mexico boundary. Surface water quality has been adversely affected by runoff coming across the border from Mexico. Ground water quality has been affected by seawater intrusion and waste discharges in both the United States and Mexico (Water Quality Control Plan for the San Diego Basin, 1994).[6]

The Tijuana HU is a triangular-shaped area drained primarily by Cottonwood and Campo creeks, which are tributaries to the Tijuana River. Figure 9 shows the waterways located within the 470 square mile HU that lie mainly in the mountain-valley section. The unit's only coastal lagoon is the Tijuana Estuary, which occupies approximately 2,000 acres and is generally open to the ocean. Most of the estuary's area can be classified as a saltwater marsh with a number of tributaries. Water quality is generally the same as that of the seawater, except during periods of runoff when a variety of wastes, which originate in Mexico, are carried into the lagoon from the surface flow in the Tijuana River.

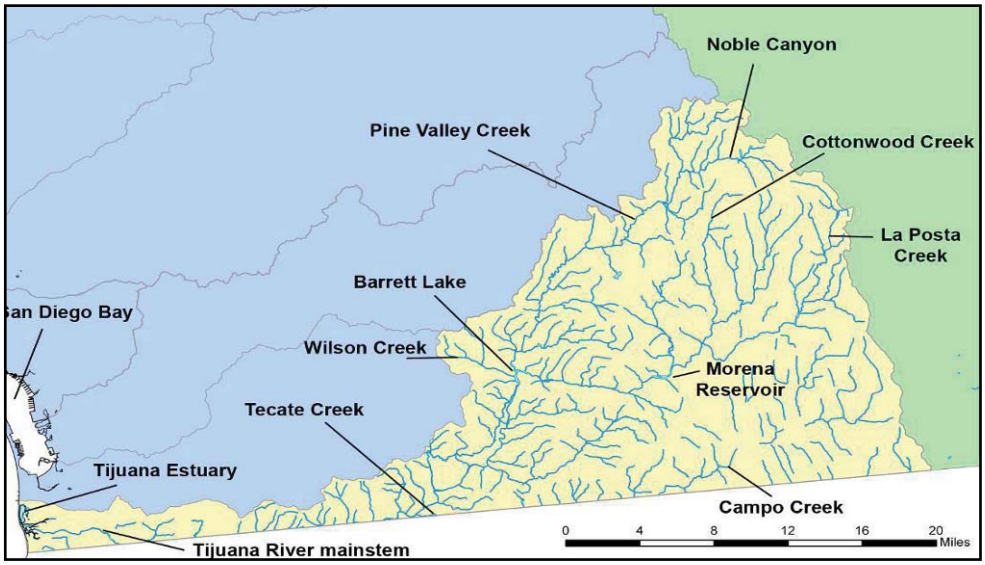

Figure 9 - Tijuana HU Waterways Source: SWAMP, January 2008[8]

Numeric water quality objectives have not been established for surface waters in the Tijuana Valley HA or the Water Tanks HSA, with these areas subject to identified narrative objectives. Specifically, these include quantitative requirements for constituents such as ammonia, coliform and chloride, as well as qualitative standards for additional constituents, degradation of waters and associated biological communities.

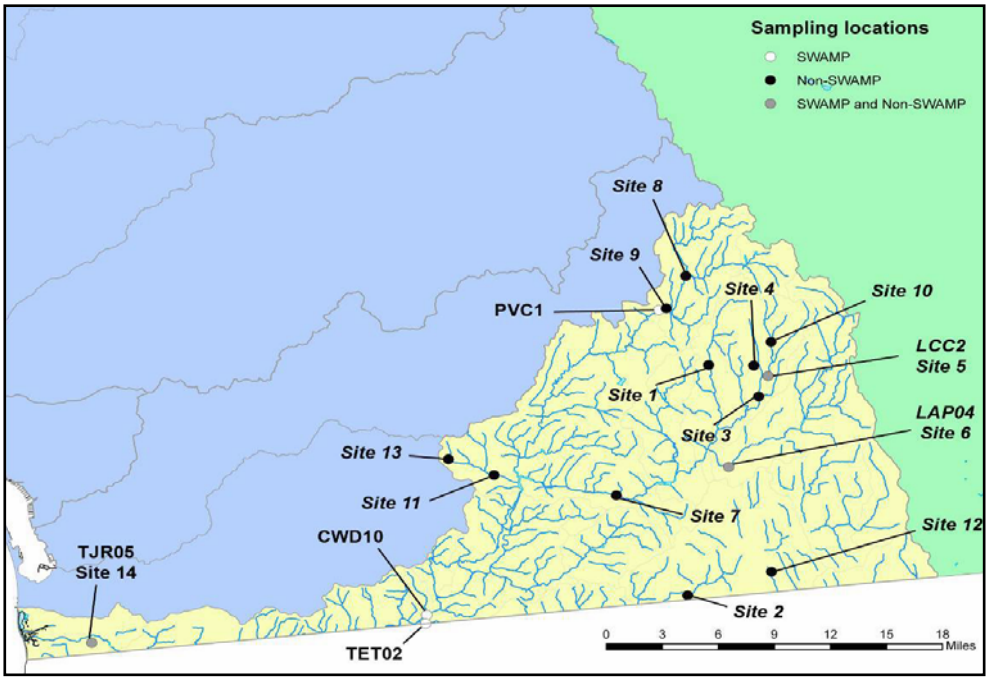

Figure 10 – Water Quality Sampling Locations in the Tijuana HU[8]

2.1.5.2 Surface Waters within the Project Limits

Surface waters within the proposed Project limits consist of three unnamed ephemeral streams (A, B and C) shown in Figure 11 below.[2] These are ephemeral in nature and convey flows only

following storm events. They originate north in the San Ysidro Mountains and convey flows south to the U.S. – Mexico border and drain to Mexico via culverts along the border fence. Streams D and E were created and are fed by manmade drainage facilities.

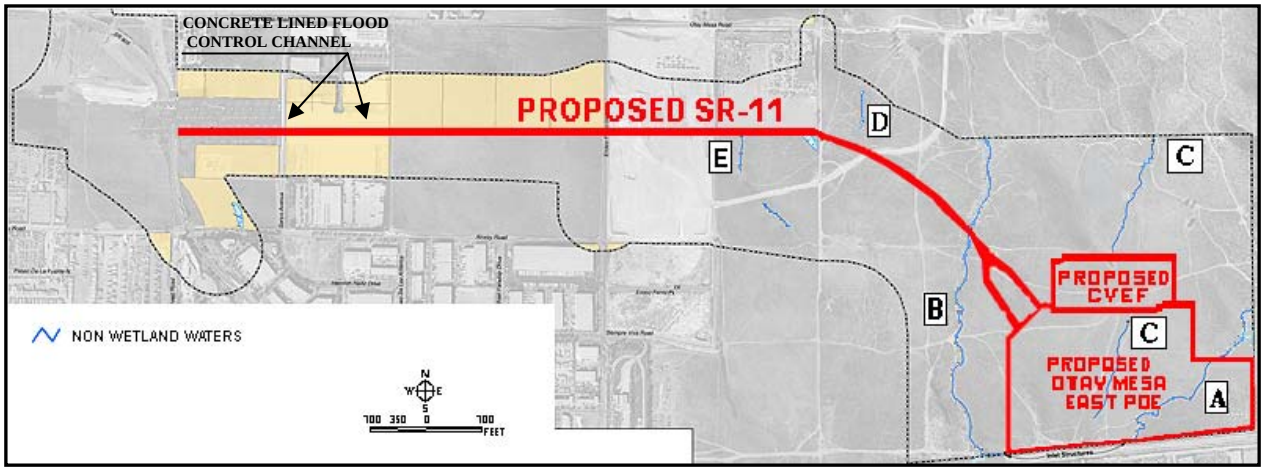

Figure 11 - Existing Surface Waters

2.1.5.3 Existing Drainage Facilities

Storm water runoff flows from east to west towards the future SR-905/SR-125/SR-11 Interchange from the developments east of Sanyo Avenue via a 66" reinforced concrete pipe (RCP) under Sanyo Avenue and flow westerly overland to an existing double-barreled culvert under SR-905. East of Sanyo Avenue, the SR-11 alignment consists primarily of an existing concrete-lined detention basin. This basin collects flow from San Diego Business Park (SDBP) developments located to the north and south and conveys it west to the 66" RCP under Sanyo Avenue. Runoff from the area immediately east of the SDBP flows west into the existing concrete-lined detention basin (see Figure 11). Runoff from the undeveloped area west of Enrico Fermi Drive flows towards the south and is collected and conveyed into a storm drain system that discharges just north of the Border. For the remainder of the SR-11 alignment east of Enrico Fermi Drive to the OME POE, runoff flows overland to the south via ephemeral streams and drainage courses (Figure 11) to existing culverts at the Border. All of the flow within the project limits eventually flow south and across the U.S. - Mexico International Border and ultimately drain into the Tijuana River.[1]

2.1.6 Wetland Habitats and Non-Vegetated Waters of the U.S.

Wetland habitats and non-wetland waters of the U.S. are regulated by the U.S. Army Corps of Engineers (USACE), California Department of Fish and Game (CDFG) and SDRWQCB. Within the Project footprint, there are five aquatic habitat types under the jurisdiction of the USACE and/or CDFG that have not been previously permitted for development by the SR-905 project: mule fat scrub-disturbed, freshwater marsh, tamarisk scrub, disturbed wetland, and non-wetland waters of the U.S/CDFG streambed.[2]

Areas under USACE jurisdiction consist of freshwater marsh, disturbed wetlands and ephemeral streams A, B and C (shown in Figure 11 above) that are non-wetland waters of the United States.[2]

Areas under CDFG jurisdiction consist of disturbed mule fat scrub, freshwater marsh, and tamarisk scrub wetlands, disturbed wetlands and streambeds A through E (shown in Figure 11 above).[2]

Impacts to USACE and CDFG jurisdictional areas for each of the three build alternatives are summarized in Table 2.1 below. None of the proposed Project variations would result in changes to the identified impacts to aquatic resources from any of the three build alternatives. The variations would all occur within developed areas or within approved/developed highway interchange right-of-way. The No Build Alternative would not result in any of the impacts described herein.

The proposed Project area is planned for development under the EOMSP, and local transportation facilities would likely be constructed by the County to serve future development. Such cumulative development would be likely to ultimately impact many of the aquatic resources in the proposed Project area and would provide appropriate mitigation. These impacts would require permitting and mitigation. Mitigation could include a creation component, as well as enhancement, restoration or a combination thereof. Mitigation requirements would be determined in cooperation with the USACE and CDFG permitting processes.[2]

Table 2.1
IMPACT SUMMARY FOR JURISDICTIONAL FEATURES[a]

Resource	Impacted Acreage by Alternative[b]		
	Two Interchange	One Interchange	No Interchange
CDFG Jurisdictional Areas (Acres)			
Mule Fat Scrub-Disturbed	0.42	0.42	0.42
Streambed	0.26[c]	0.27	0.25
Total Acreage	**0.68**	**0.69**	**0.67**
USACE Jurisdictional Areas (Acres)			
Stream A – WUS	0.11	0.11	0.11
Stream B – WUS	0.07[c]	0.06	0.06
Stream C – WUS	0.03	0.03	0.03
Total Acreage	**0.21**	**0.20**	**0.20**
USACE Jurisdictional Watercourses (Linear Feet)			
Stream A – WUS	1,804	1,804	1,804
Stream B – WUS	1,377[c]	1,263	1,247
Stream C – WUS	1,340	1,340	1,340
Total Linear Feet	**4,521**	**4,407**	**4,391**

Note: Impacts do not include previously permitted impacts associated with the SR-905 Project. All reported impact numbers include 0.01 acres and 165 linear feet of impact to Stream B, associated with a proposed easement outside of project R/W. Impacts associated with the easement would be considered permanent. Therefore, all project impacts would be permanent.

[a] USACE jurisdictional areas impacted overlap completely with CDFG jurisdictional areas impacted, so the total acreage of CDFG jurisdiction represents the total area of CDFG and USACE jurisdiction impacted.

[b] Wetland habitats are rounded to the nearest 0.01 acre. Implementation of any of the proposed project variations would not change the impacts presented in this table.

[c] An additional 1,500 square feet (0.03 acres) of CDFG Streambed and USACE jurisdictional area, representing an additional 641 linear feet of USACE jurisdictional waters within Stream B, would be impacted with implementation of the Siempre Viva Road Full Interchange Variation of the Two Interchange Alternative.

The total impact to USACE and CDFG jurisdictional areas for the Two Interchange Alternative would be 0.68 acre, including 0.01 acre associated with a permanent off-site easement (since the USACE jurisdiction completely overlaps with the larger area of CDFG jurisdiction). The Siempre Viva Road Full Interchange Variation of the Two Interchange Alternative would impact an additional 0.03 acres of USACE and CDFG jurisdictional area.

The total impact to USACE and CDFG jurisdictional areas for the One Interchange Alternative would be 0.69 acre, including 0.01 acre associated with permanent off-site easement (since the USACE jurisdiction completely overlaps with the larger area of CDFG jurisdiction).

The total impact to USACE and CDFG jurisdictional areas for the No Interchange Alternative would be 0.67 acre, including 0.01 acre associated with a permanent off-site easement (since the USACE jurisdiction completely overlaps with the larger area of CDFG jurisdiction).[2]

2.1.7 Groundwater Characterization

No groundwater was encountered during subsurface investigations and percolation tests conducted by Caltrans, and subsequent readings of piezometers installed during the investigation indicated that no significant groundwater is likely to exist within the Otay Formation. Percolation testing revealed that the percolation rates at the Project site are generally low, corresponding with the clayey (bentonite) and silty composition of the surficial soils and the dense, underlying sedimentary formation.[3]

3.1 FEDERAL REQUIREMENTS

3.1.1 Federal Water Pollution Control Act (Clean Water Act)

The Federal Water Pollution Control Act of 1948 was the first major law that addresses water pollution. As public awareness and concerns for protecting water quality grew, the law was amended in 1972. In 1977, the law was again amended and was referred to as the Clean Water Act (CWA). The CWA is the primary federal law that protects our nation's waters, including lakes, rivers, aquifers and coastal areas. The CWA's primary objective is to restore and maintain the integrity of the nation's waters. This objective translates into two fundamental national goals:

- Eliminate the discharge of pollutants into the nation's waters, and
- Achieve water quality levels that are fishable and swimmable.

The CWA focuses on improving the quality of the nation's waters. It provides a comprehensive framework of standards, technical tools and financial assistance to address the many causes of pollution and poor water quality, including municipal and industrial wastewater discharges, polluted runoff from urban and rural areas, and habitat destruction.

In recent years, federal and state environmental regulations have evolved to require the control of pollutants from municipal separate storm sewer systems, construction sites, and industrial activities. Discharges from such sources were brought under the NPDES permit process by the 1987 amendments to the CWA and subsequent 1990 promulgation of federal storm water regulations by the U.S. Environmental Protection Agency (EPA). In California, the EPA has delegated administration of federal NPDES program to the SWRCB and the nine RWQCBs. The SWRCB has issued statewide general NPDES storm water permits for designated types of construction and industrial activities. The SWRCB also developed and issued the statewide NPDES Storm Water Permit, adopted July 15, 1999, that applies to Caltrans. Although Sections 401 & 402 are requirements under the Federal Clean Water Act, they are enforced by the SDRWQCB.

3.1.1.1 <u>Section 401 – Water Quality Certification</u>

Section 401 of the CWA requires that any applicant for a federal permit conducting any activity, including the construction or operation of a facility which may result in the discharge of any pollutant, obtain certification from the State. For the purposes of this Project, the SDRWQCB administers Section 401.

Caltrans has determined that the proposed Project would require a water quality certification. This process would be initiated and would progress as required.

3.1.1.2 <u>Section 402 – NPDES Regulations</u>

Section 402 of the CWA established the NPDES permit (Permit) to regulate the discharge of pollutants from point sources. Caltrans is currently regulated by Order No. 99-06–DWQ, No. CAS000003 NPDES Permit Statewide Storm Water Permit and Waste

Discharge Requirements (WDRs) for Caltrans properties, facilities and activities adopted on July 15, 1999 by SWRCB, herein referred to as Caltrans NPDES Permit.[10]

The NPDES permit in District 11 is administered and enforced by the SDRWQCB. Currently, the storm water runoff issues are covered under the aforementioned Caltrans NPDES Permit.

A Notice of Construction would be filed with the SDRWQCB 30 days prior to the start of construction activities.

3.1.1.3 Section 404 – Dredge/Fill Permitting

Section 404 of the CWA established a permit program to regulate the discharge of dredged material into waters of the U.S. The program's scope also includes the regulation of discharges of dredge or fills material into wetlands adjacent to national waters. The permit program is administered by the Secretary of the Army through the USACE.

Caltrans has determined that the proposed Project would require a Section 404 permit. The process would be initiated and would progress as required.

3.1.1.4 International Boundary and Water Commission

The International Boundary and Water Commission (IBWC) is a bi-national organization that is responsible for applying the boundary and water treaties between the U.S. and Mexico. The U.S. section of the IBWC regulates new developments on the U.S. side of the international border. In general, their criteria for hydrology associated with new developments, is that the proposed Project in one country should not alter the existing surface drainage flow pattern in the other country in such a manner that the other country is adversely impacted. IBWC correspondence received on the Project stated that, "disposal of excess water should not go into Mexico."

Caltrans will forward Project hydrology studies to the IBWC for review and approval.

3.2 STATE LAWS AND REGULATIONS

3.2.1 Section 1602 of the Fish and Game Code (Streambed Alteration Agreement)

Under this section of the California Fish and Game Code, notification to the CDFG is required prior to any Project which would divert, obstruct, or change the natural flow or bed, channel or bank of any river, stream or lake. When an existing fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable Project changes to protect the resource. These modifications are formalized in a "streambed alteration agreement" which becomes part of the Project design and construction.

Caltrans has determined that the proposed Project would require a Streambed Alteration Agreement. The process would be initiated and would progress as required.

3.2.2 Porter-Cologne Water Quality Control Act

This Act, also referred to as the California Water Code §13000 et seq. provides for aesthetic values, fish and wildlife preservation, water reclamation, and comprehensive planning and regulation to attain the highest "reasonable" water quality in consideration of conflicting demands. The Act requires the RWQCB to establish water quality objectives and adopt water quality control plans (commonly referred to as Basin Plans).

California's Porter-Cologne Water Quality Control Act (1969), which became Division 7 ("Water Quality") of the State Water Code, establishes the responsibilities and authorities of the nine RWQCBs (previously called Water Pollution Control Boards) and the SWRCB. The Porter-Cologne Act names these Boards "...the principal State agencies with primary responsibility for the coordination and control of water quality" (Section 13001). Each Regional Board is directed to "...formulate and adopt water quality control plans for all areas within the region." A water quality control plan for the waters of an area is defined as having three components: beneficial uses, which are to be protected, water quality objectives that protect those uses, and an implementation plan that accomplishes those objectives (Section 13050).

The Porter-Cologne Water Quality Control Act also serves to ensure California's eligibility to implement the NPDES permit process required by the Federal CWA. The Act designates the SWRCB as the "State water pollution control agency" for the purposes of implementing the CWA and directs the SWRCB to take the actions required by that Act.

3.2.3 General Construction Permit

The State Water Resources Control Board adopted Order No. 2009-0009–DWQ, NPDES No. CAS000002 NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities on September 2, 2009 with an effective date of July 1, 2010.[11] The permit covers construction activities that result in land disturbance of equal or greater than one acre or construction activities that result in land surface disturbance of less than one acre if the construction activity is part of a common plan of development.

The permit requires the dischargers to implement a Storm Water Pollution Prevention Plan (SWPPP) that contains BMPs that will prevent construction pollutants from entering a receiving water body.

The SWPPP has the following objectives:

- All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled;
- Where not otherwise required to be under a Regional Water Board permit, all non-storm water discharges are identified and either eliminated, controlled, or treated;

- Site BMPs are effective and result in the reduction or elimination of pollutants in storm water discharges and authorized non-storm water discharges from construction activity to the BAT/BCT standard;
- Calculations and design details as well as BMP controls for site run-on are complete and correct, and
- Stabilization BMPs installed to reduce or eliminate pollutants after construction are completed.

The new Construction General Permit is a risk-based permit that establishes three levels of environmental risk possible for a construction site. The Risk Level (RL) is calculated in two parts: 1) Project Sediment Risk, and 2) Receiving Water Risk. The RL determination quantifies sediment and receiving water characteristics and uses these results to determine the project's overall RL. Highly erodible soils, in higher rainfall areas, on steep slopes increase the 'sediment risk'. Monitoring and reporting requirements increase as the RL goes from 1 to 3.

The Department's stormwater program complies with the substantive provisions of the Construction General Permit on projects. The permit requirements are implemented during the design phase through the water pollution control plans and project's specifications. During the construction phase, the requirements will be met through the implementation of the Stormwater Pollution Prevention Plans (SWPPPs) prepared for each project under the construction phase of the project and compliance with the project's specifications.

3.2.4 Caltrans NPDES Statewide Permit

The SWRCB adopted Order No. 99-06–DWQ, NPDES No. CAS000003 NPDES Permit Statewide Storm Water Permit and WDRs for Caltrans properties, facilities and activities herein referred to as the Permit.[10] The Permit requires Caltrans to implement a Storm Water Management Plan, SWMP; with the purpose of protecting and achieving water quality standards at all times. The minimum requirement is to ensure that pollutants in discharges from storm drain systems owned or operated by Caltrans are reduced to the Maximum Extent Possible (MEP) and that pollutants in discharges from construction activities covered by the Construction General Permit are reduced by employing Best Available Technology/Best Conventional Technology (BAT/BCT) performance standards. 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.

Caltrans continues to comply with CWA§402 by complying with the requirements of the statewide NPDES permit. The Permit and the approved SWMP consolidated Caltrans' storm water compliance activities under one permit and provided a framework for consistent and effective implementation of storm water management practices on a statewide basis.

This Project will implement any future additional requirements of the new permit during the design phase as it is anticipated the Statewide NPDES Permit will be re-issued during that time.

As mentioned earlier, the new General Construction Permit (2009-0009-DWQ) will be applicable to Caltrans at that time and thus will be implemented concurrently.

3.3 LOCAL LAWS AND REGULATIONS

3.3.1 Model Watershed Urban Runoff Management Strategy

The County, the City of San Diego and the City of Imperial Beach are co-permittees of the Tijuana River Watershed Urban Runoff Management Plan (WURMP) developed in response to requirements of the San Diego Municipal Stormwater Permit (Order No. R9-2007-0001) issued by the SDRWQCB. The WURMP is intended to address sources of urban runoff that are causing high priority water quality problems in the Tijuana River Watershed Management Area (Watershed Urban Runoff Management Program, Tijuana River Watershed, March 2008).[12] Under the municipal permit, annual assessment of receiving water quality in the watershed management area is required using data from the co-permittees' Receiving Waters Monitoring and Reporting Program (see Figure 12 below), as well as information from other public and private organizations. It also requires annual identification of the water quality problems within the watershed. The municipal permit also requires that a program be developed, implemented, and modified, as necessary, to encourage collaborative, watershed-based, land use planning. The Municipal Permit requirements will be evaluated for improvements on the local roads.

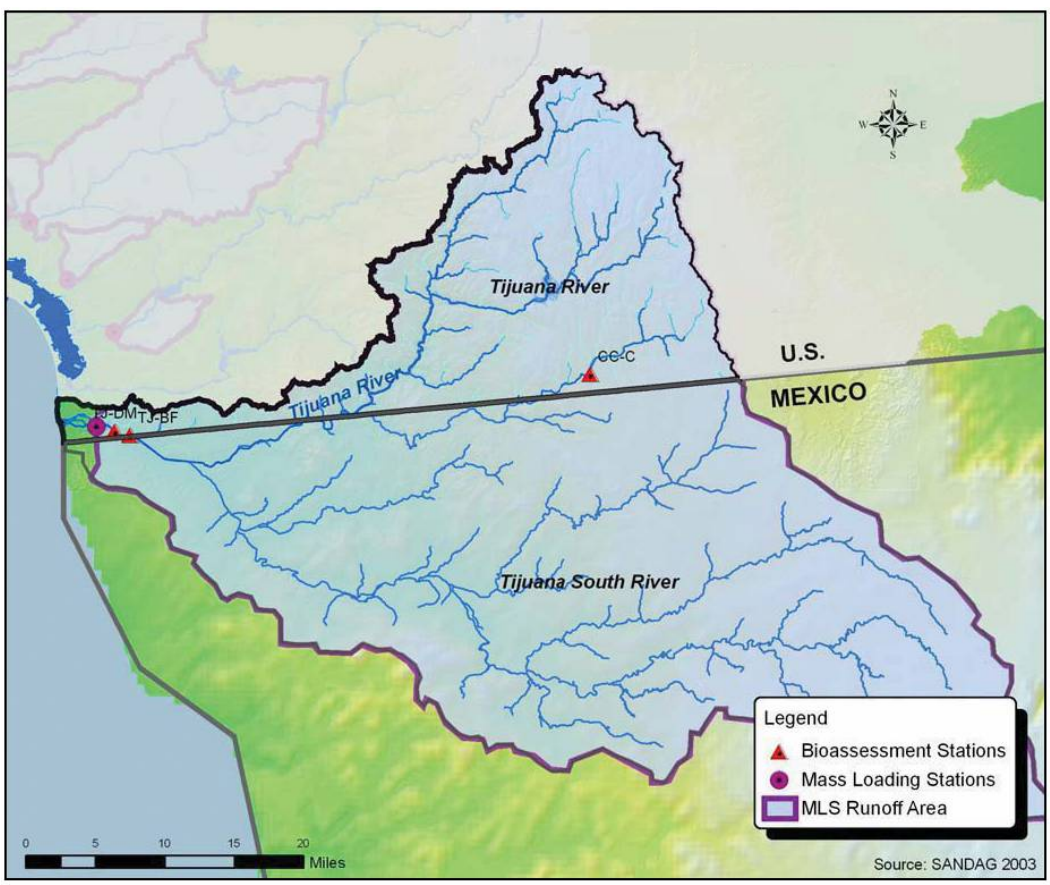

Figure 12 - Hydrology and Monitoring Stations Source: WURMP, March 2008[12]

4.1 AFFECTED WATERSHED

The SDRWQCB encompasses most of the County, parts of southwestern Riverside County and southwestern Orange County. The region is divided into 11 major hydrologic units, 54 hydrologic areas (HA) and 147 hydrologic sub areas (HSA). Hydrologic units are the entire watershed of one or more streams; hydrologic areas are major tributaries and/or major groundwater basins within the hydrologic unit; and hydrologic sub areas are major subdivisions of hydrologic areas include both water bearing and non-water bearing formation (San Diego Basin Plan, 1994, and amendments).[6]

Table 4.1 below lists the hydrologic area/subarea that is within the proposed Project area and compares the area of the hydrologic sub area versus the proposed Project's right of way. The table below shows that the maximum contribution of the Project tributary area to the hydrologic sub area is 6.69 percent (5.34+0.24+1.11=6.69).

Table 4.1 Project Contribution to the Watershed

Hydrologic Area/Sub Area Name	HSA Number	HSA (Acres)	Proposed Tributary Area (Acres)			Proposed Contribution to HSA (%)		
			SR-11	CVEF	OME POE	SR-11	CVEF	OME POE
Tijuana Valley HA/Water Tanks HSA (unnamed intermittent streams)	911.12	9582	0 = 464.0 1 = 485.6 2 = 490.3	23.3	106.3	0 = 4.84 1 = 5.07 2 = 5.12	0.24	1.11
Variations on the Build Alternatives: No Toll:			0	N/C	N/C	N/C	N/C	N/C
46-Foot Median:			0 = 459.6 1 = 481.2 2 = 485.9	N/C	N/C	0 = 4.80 1 = 5.02 2 = 5.07	N/C	N/C
SR-125 Connector:			N/C	N/C	N/C	N/C	N/C	N/C
SR-905/SR-125/SR-11 Full Interchange:			N/C	N/C	N/C	N/C	N/C	N/C
Siempre Viva Full Interchange:			2 = 511.4	N/C	N/C	2 = 5.34	N/C	N/C

(0 = No Interchange Alternative; 1 = One Interchange Alternative; 2 = Two Interchange Alternative; N/C = No Change)

4.2 RECEIVING WATER BODIES & BENEFICIAL USES

The Project ultimately discharges to the Tijuana River that is located outside of the Project limits. "Receiving Water" as defined in Caltrans "Storm Water Quality Handbooks Project Planning and Design Guide" (PPDG) (May 2007)[12] is a river, lake, ocean, stream or other watercourse into which wastewater or treated effluent is discharged as provided in the "Terms of Environment" (U.S. EPA Office of Communication, Education, and Public Affairs; December 1997).

As mandated by the Porter-Cologne Water Quality Control Act and Federal CWA, the RWQCB is mandated to designate Beneficial Uses for Waters of the State. As defined in the Basin Plan, "Beneficial Uses are the uses of water necessary for the survival or well being of man, plants and wildlife. These uses promote the tangible and intangible economic, social and environmental goals of

mankind". The existing and potential beneficial uses for the water bodies within the Project limits are included in Tables 4.3 and 4.4. These tables list the beneficial uses for Inland Surface Waters and Ground Waters.

According to the Basin Plan, to establish existing beneficial uses, one would have to demonstrate that fishing, swimming, or other uses have actually occurred since November 28, 1975, or the water quality and quantity is suitable to allow the uses to be attained.

"Potential" designation is established by a variety of reasons including plans that are proposed to put the water to a future use; potential exists to put the water to a future use; the public desires to put the water to future use; the water is potentially suitable for municipal or domestic water supply under the terms of the Sources of Drinking Water Policy (State Board Resolution No. 88-63); or the RWQCB has designated a beneficial use as a regional water quality goal.

Some water bodies have been exempted by the RWQCB from the municipal use designation under the terms and conditions of State Board Resolution No. 88-63, Sources of Drinking Water Policy.

The existing and potential beneficial uses that have the potential to be affected by the proposed Project are described below and are an excerpt from the Water Quality Control Plan for the San Diego Basin.

Table 4.2 Existing and Potential Beneficial Uses Description

Beneficial Designation		Description
MUN	**Municipal and Domestic Supply**	Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
AGR	**Agricultural Supply**	Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
PROC	**Industrial Process**	Includes uses of water for industrial activities that depend primarily on water quality.
IND	**Industrial Services Supply**	Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
GWR	**Ground Water Recharge**	Includes uses of water for natural or artificial recharge of ground water for purposes of future extractions, maintenance of water quality or halting of saltwater intrusions into freshwater aquifers.
FRSH	**Freshwater Replenishment**	Includes uses of water for natural or artificial maintenance of surface water quality or quantity (e.g., salinity).
NAV	**Navigation**	Includes uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.
POW	**Hydropower Generation**	Includes uses of water for hydropower generation.

Beneficial Designation		Description
REC1	**Contact Recreation**	Includes 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.
REC2	**Non-Contact Recreation**	Includes the uses of water for recreational 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, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
COMM	**Commercial and Sport Fishing**	Includes the 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.
AQUA	**Aquaculture**	Includes the uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.
WARM	**Warm Freshwater Habitat**	Includes 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.
COLD	**Cold Freshwater Habitat**	Includes 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.
SAL	**Inland Saline Water Habitat**	Includes uses of water that supports inland saline water ecosystems including, but not limited to, preservation or enhancement of aquatic saline habitats, vegetation, fish, or wildlife, including invertebrates.
EST	**Estuarine Habitat**	Includes 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).
MAR	**Marine Habitat**	Includes uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).
WILD	**Wildlife Habitat**	Includes uses of water that support 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.
BIOL	**Preservation of Biological Habitats of Special Significance**	Includes uses of water that support designated areas of 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	**Rare, Threatened and Endangered Species**	Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant and animal species established under state or federal law as rare, threatened, or endangered.
SPWN	**Spawning, Reproduction, and/or Early Development**	Includes any marine fish in water bodies with MAR and/or COLD beneficial uses. The cold freshwater fish used for the SPWN designation is the rainbow trout.

Table 4.3 Beneficial Uses for Inland Surface Waters

Water Body Name	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Tijuana River	911.21	+							●	●		●		●		
Tijuana River	911.11	+		O					O	●	●	●		●	●	
Unnamed intermittent streams	911.12	+	●	O					O	●		●		●		

● Existing Beneficial Use + Excepted from Municipal
O Potential Beneficial Use

Table 4.4 Beneficial Uses for Ground Waters

Water Body Name	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRSH	GWR
Water Tanks	911.12	O	O	O				

O Potential Beneficial Use

4.2.1 Section 303(d) of the CWA and the Targeted Design Constituents

The CWA requires States to identify and make a list of surface water bodies that do not meet water quality standards, also referred to as "water quality limited segments," even after discharges of wastes from point sources have been treated by the minimum required levels of pollution control technology. States are required to compile these water bodies into a list, referred to as the "Clean Water Act Section 303(d) List of Water Quality Limited Segments."

As part of Caltrans runoff characterization studies, they identified pollutants that are discharging with a load or a concentration that commonly exceeds allowable standards and which are considered treatable by Caltrans approved treatment BMPs. These pollutants are referred to as Targeted Design Constituents (TDCs), which include sediment, metals (total and dissolved zinc, lead and copper), nitrogen, phosphorus and general metals.

Although discharges from the Project would not directly reach water quality sensitive areas (see Figure 13 below), the Project would ultimately discharge to the Tijuana River in Mexico. The Tijuana River is classified as a 303(d) listed water body where it re-enters the U.S., west of the Project limits. According to the 2006 303(d) list, pollutants of concern for the Tijuana River impaired segment (911.11) include eutrophic, indicator bacteria, low dissolved oxygen, sediment (TSS/Turbidity), pesticides, solids, trash, trace elements, and synthetic organics. There are no listed pollutants of concern for the unnamed intermittent streams located in HSA 911.12.

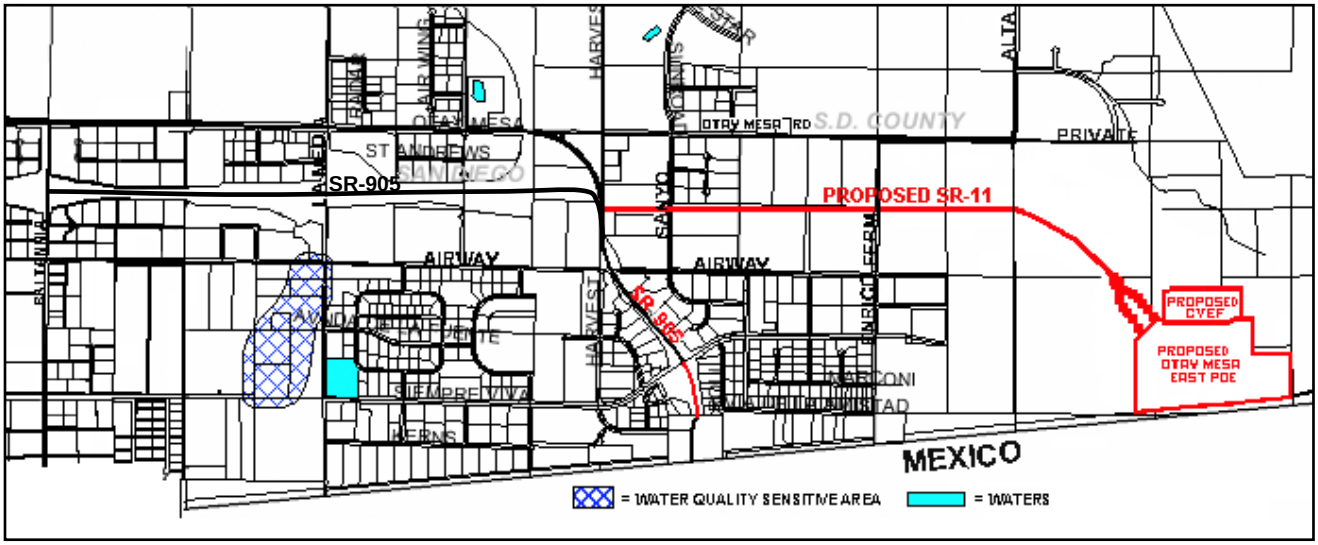

Figure 13 - Water Quality Sensitive Areas Source: SANDAG[13]

4.2.2 Total Maximum Daily Loads

Section 303(d) of the CWA requires states to develop total maximum daily loads (TMDLs) for 303(d) listed water bodies and establish the TMDL process to guide application of state standards to individual water bodies/watersheds. According to the RWQCB website, "A TMDL is a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect bodies of water. The TMDL approach does not replace existing water pollution control programs. It provides a framework for evaluating pollution control efforts and for coordination between federal, state and local efforts to meet water quality standards" (California Regional Water Quality Control Board, San Diego Region, TMDLs).[14] There are no TMDLs in effect for receiving waters located in HSA 911.12.

4.3 EXISTING WATER QUALITY

The Tijuana River watershed is classified as a Category I (impaired) watershed by the SWRCB due to a wide variety of water quality problems (County of San Diego, Project Clean Water).[15] These problems are largely a result of non-point agricultural sources on the U.S. side of the border and a large variety of point and non-point sources on the Mexican side. The Tijuana Estuary, a National Estuarine Sanctuary that supports a variety of threatened and endangered plants and animals, is threatened by inflows from the Tijuana River containing high concentrations of coliform bacteria, sediment, trace metals (copper, lead, zinc, chromium, nickel, and cadmium), PCBs, and other urban, agricultural, and industrial pollutants.

The Tijuana River Watershed WURMP co-permittees (County of San Diego and Cities of San Diego and Imperial) identified high priority water quality problems within the Tijuana River HA and identified the following problem areas for the Tijuana Valley HA (911.1): Bacteria/Pathogens, Sediment (TSS/Turbidity), Pesticides (Diazinon), Gross Pollutants, Total Metals, and Organics.

Caltrans has conducted runoff monitoring from various transportation facilities throughout the State of California. The monitoring has various objectives including ensuring compliance with the NPDES permit requirements, producing scientifically credible runoff data from the various Caltrans facilities and providing information that can assist in developing effective storm water management strategies. The results of the monitoring indicated that results could be significantly influenced by various factors such as:

- Traffic Volume. Pollutant concentrations in storm water runoff increase with higher traffic volumes.
- Cumulative Seasonal Precipitation (CSP). As CSP increases, pollutant concentration decreases, which is an evidence of pollutants washing off during the early wet season and tends to decrease thereafter.
- Antecedent Dry Periods. The longer the dry period, the higher the pollutant concentration in runoff.
- Total Event Rainfall. As total event rainfall increases, pollutant concentration decreases, which is due to dilution from large storms. Concentration of pollutants tends to be the highest in the initial portion of runoff and diluted as the storm continues.
- Maximum Rainfall Intensity. It has a similar affect to Total Event Rainfall because maximum rainfall intensity provides the highest volume and decreases pollutant concentrations.
- Drainage Areas. In larger drainage areas, a few pollutant concentrations tended to be lower for highways.
- Impervious Fraction of the Drainage Area. This factor did not have a consistent effect on pollutant concentrations. Higher impervious areas tended to increase concentration of some pollutants and decrease others, but it was the weakest effect of all the factors evaluated.

5.1 POTENTIAL POLLUTANT SOURCES

The Project has the potential to impact water quality during the construction phase, as well as during its operation. BMPs would be evaluated and implemented to address these impacts during the planning and design, construction, and operational phases.

Potential sources of pollutants from construction activities could be generated from construction materials, as well as construction activities. Examples of pollutants generated from construction materials include: vehicle fluids, asphaltic emulsions from paving activities, joint and curing compounds, concrete curing compounds, solvents and thinners, paint, sandblasting material, landscaping materials, treated lumber, concrete rubble and general litter. Examples of construction activities that have the potential to contribute pollutants include clearing and grubbing, grading operations, soil import operations, sandblasting, landscaping and utility excavation.

During operation, potential sources of pollutants found in highway runoff and runoff from the CVEF and POE sites include sediment from natural erosion; nutrients (nitrogen and phosphorus) from tree leaves, mineralized organic matter in soil, fertilizers in runoff, nitrite from automobile exhausts, atmospheric deposition, emulsifiers and surfactants; pesticides; metals (dissolved and particulate) from combustion products of fossil fuels, wearing of break pads and corrosion.

Treatment BMPs would be incorporated within the Project construction limits. Treatment BMPs, which are discussed in more detail in Section Six, *Avoidance/Minimization Measures*, are permanent measures to improve storm water quality during the operation of the highway after the completion of construction.

5.1.1 No Build Alternative

This alternative would not construct the proposed Project and thus, would not have potential water quality impacts.

5.1.2 Build Alternatives

Permanent Impacts

The Build Alternatives would construct SR-11 with interchange connector ramps to SR-905 and SR-125, extend the auxiliary lane between La Media Road and SR-11 connector on eastbound SR-905, and widen the median between SR-905/SR-125/SR-11 Interchange and the La Media Road Interchange to accommodate SR-11 connecting lanes and construct the CVEF and OME POE. Treatment BMPs would be included to the MEP. The Build Alternatives would require analyzing the entirety of the Project from a water quality perspective in relation to the receiving water bodies. It would provide for a more comprehensive approach to analyze the hydrology of the entire Project area for treatment BMP implementation and consequently assist Caltrans in meeting water quality standards set by the SDRWQCB. Table 5.1 below shows the difference of additional impervious areas between each of the alternatives. The existing

impervious area acres shown for the SR-11 Build Alternatives includes the removal of 6.09 acres of currently existing impervious area that will be removed with the SR-905 project. This area is the portion of pavement on the existing SR-905 alignment that curves south near Otay Mesa Road paralleling Harvest Road.

Table 5.1 Comparison of Existing & Proposed Pavement Areas for the Build Alternatives

Build Alternatives	Existing Impervious Area (Acres)	Proposed Additional Impervious Area (Acres)			Total Impervious Area (Acres)			Percentage of Total Add'l. Impervious Area (%)
		SR-11	CVEF	POE	SR-11	CVEF	POE	
No Interchange	48.1	48.5	18.9	52.0	96.6	18.9	52.0	248
		Total = 119.4			**Total = 167.5**			
One Interchange	48.1	55.1	18.9	52.0	103.2	18.9	52.0	262
		Total = 126.0			**Total = 174.1**			
Two Interchange	49.4	55.6	18.9	52.0	105.0	18.9	52.0	256
		Total = 126.5			**Total = 175.9**			
No Build Alternative	28.2	**0**			**28.2**			0
Variations on the Build Alternatives (add to SR-11 acres above for each alternative, N/C = No Change)								
No Toll Variation	N/C	**N/C**			**N/C**			
46-Foot Median Variation	N/C	**1.3**			**1.3**			
SR-125 Connector Variation	0.8	**2.7**			**3.5**			
SR-905/SR-125/SR-11 Full Interchange Variation	1.4	**4.8**			**6.2**			
Siempre Viva Full Interchange Variation (add to Two IC Alt. only)	N/C	**7.2**			**7.2**			

Temporary Impacts

To assess potential short term impacts of each of the build alternatives, Table 5.2 *Temporary Disturbed Soil Areas for the Build Alternatives* presented below shows the approximate temporary disturbed soil area for each of the build alternatives. Disturbed soil areas were calculated by measuring the size of the areas to be graded. This included graded areas that would be covered by pavement and graded areas for slopes. All construction activities/staging would take place within the existing and proposed limits of disturbance and/or right-of-way for SR-11, CVEF, OME POE, SR-905 and the SR-905/SR-125/SR-11 Interchange, or within adjacent developed areas such as existing parking lots.[1]

Table 5.2 Temporary Disturbed Soil Areas (DSAs) for the Build Alternatives

HU/HSA Name	HA/HSA		DISTURBED SOIL AREA (DSA)			
	Number	Area (in Acres)	SR-11 DSA (Ac)	CVEF DSA (Ac)	OME POE DSA (Ac)	TOTAL DSA (Ac)
Tijuana HU/Water Tanks HSA	911.12	9582				
No Interchange Alternative			222.7	23.3	106.3	**352.3**
One Interchange Alternative			240.1	23.3	106.3	**369.7**
Two Interchange Alternative			241.0	23.3	106.3	**370.6**
No Toll Variation (add to all Interchange [IC] Alternatives [Alts.])			N/C	N/C	N/C	**N/C**
46-Foot Median Variation (add to all IC Alts.)			0.5	N/C	N/C	**+0.5**
SR-125 Connector Variation (add to all IC Alts.)			4.1	N/C	N/C	**+4.1**
SR-905/SR-125/SR-11 Full Interchange Variation (add to all IC Alts.)			7.3	N/C	N/C	**+7.3**
Siempre Viva Full Interchange Design Variation (add to Two IC only)			23.3	N/C	N/C	**+23.3**

Sediment is a major and most common construction pollutant. Erosion during construction can contribute large amounts of sediment to storm water runoff, which can reach surface waters. Highly disturbed slope areas result in higher erosion potential, which consequently can result in higher polluted runoff leaving the construction site. All potential erosion impacts will be avoided or minimized during construction by the use of various avoidance/minimization measures as discussed in Section 6. Examples of such measures include stabilizing the slopes with temporary erosion control and temporary fiber rolls when an area is non-active for 14 days, or before the onset of rain.

All disturbed soil areas would be stabilized before the completion of construction with landscaping or permanent erosion control with permanent slope interrupter BMPs. Permanent fiber rolls will be installed along the slopes to capture sediment until vegetation is established.

Cumulative Impacts

Evaluating the impacts of any of the alternatives on water quality requires an assessment of temporary and permanent impacts. The temporary impacts of the Two Interchange Alternative are higher than the other two alternatives. However, the difference in DSA between the Build Alternatives is low in comparison to the total DSA, between 0.2% for the lowest and 5% for the largest difference.

The assessment on permanent impacts is preliminary and will be fully determined during final design. The permanent impacts are assessed based on the additional impervious area added by each alternative. The Two Interchange Alternative adds the largest amount of pavement area (126.5 acres), compared to the One Interchange Alternative (126.0 acres) and the No

Interchange Alternative (119.4 acres). Nevertheless, the additional impervious area is comparable for all alternatives, since the Two Interchange Alternative adds only 0.5 acres more than the One Interchange Alternative and 7.1 acres more than the No Interchange Alternative. The additional impervious surface added by the Two Interchange Alternative is negligible considering the 175.9 acres of total pavement for the Two Interchange Alternative and the 174.1 acres for the One Interchange Alternative and these numbers include the impervious areas created by the newly constructed or under construction SR-905.

While impervious surface is directly proportional to higher runoff volume and higher velocities and generally less opportunities for infiltration or for vegetation to slow down flows, drainage system preliminary design for the Build Alternatives are guided by the IBWC requirement of, "no increased flow to Mexico." Therefore, the criteria used in development of the Project's hydrology and hydraulics report was that all on-site flow generated from the project will be captured, treated, retained and/or detained prior to being released into the original watercourse. Storm water runoff from roadways and shoulders will drain directly into proposed biofiltration swales (bioswales) running parallel to the road, wherever possible, to capture, convey and treat highway runoff. Inlets with concrete aprons will be placed at the downstream end of the swales, as needed, to extract flows from the surface and route to detention facilities to comply with any retention and/or peak flow attenuation criteria. In a few cases, pavement flows will be captured within bioswales, then discharged to a separate offsite cross culvert, and not routed to a detention/retention facility. Water quality, detention and retention requirements will still be met within these watersheds.[1]

The drainage system design assumes that the increase in volume from the new impervious surfaces will be retained within highway and OME POE right-of-way (will not flow into Mexico) and there will be no increase in downstream stormwater runoff after the Project is constructed.[1]

The project will not impact beneficial uses because the Build Alternatives all include water pollution control treatment measures in conformance with jurisdictional requirements.

All three Build Alternatives will continue to be evaluated in detail to ensure that all opportunities to reduce flows and velocities are accounted for through drainage modifications and the incorporation of treatment BMPs, which is further discussed in Section Six "Avoidance/Minimization Measures." Caltrans requires a very detailed storm water analysis through each design phase to ensure every opportunity to treat and/or reduce runoff has been taken to the MEP before leaving the Project site.

6.1 INTRODUCTION

The Statewide SWMP describes how Caltrans would comply with the provisions of the NPDES Permit (Order 99-06-DWQ). The SWMP describes the program that Caltrans would implement to reduce the discharge of pollutants to the storm water drainage system that serve the highway and highway related properties, facilities and activities.

BMPs would need to be considered to address potential water quality impacts during the planning and design, construction, and operational and maintenance phases. The SWMP divides the BMPs into separate categories from the planning and design phase to the operational and maintenance phase.

Short term potential impacts to water quality during the construction phase are avoided and or minimized through the use of Construction Site BMPs, while the long term potential impacts due to operation and maintenance of the freeway or other Caltrans facilities are avoided/minimized through the use of Design Pollution Prevention BMPs, Treatment BMPs and Maintenance BMPs.

The general categories of BMPs have been identified for use in Caltrans' Project Planning and Design Guide (PPDG) Manual and are shown below in Table 6.1.

Table 6.1 BMP Descriptions

BMP	Description
Design Pollution Prevention BMPs	Preservation of existing vegetation, concentrated flow conveyance, slope/surface protection, etc.
Treatment BMPs	Treatment devices and facilities.
Construction Site BMPs	Temporary soil stabilization and sediment control, non-storm water management, and waste management. Refer to the Construction BMP Manual.
Maintenance BMPs	Litter pick up, waste management, street sweeping, etc.

Source: PPDG Manual, Table 2-3, July 2010

Once these measures (temporary and permanent BMPs) are adequately implemented, this project would not have a significant impact to water quality.

6.2 CALTRANS STANDARD PROCEDURES AND PRACTICES

6.2.1 Project Planning and Design

During the process of planning and design of all new facilities and reconstruction or expansion of existing facilities, the Project Engineer considers and, as appropriate, incorporates BMPs. Design Pollution Prevention BMPs are permanent measures to reduce pollution discharges after construction is completed; while Treatment BMPs are permanent measures to improve/maintain storm water quality after construction is completed.

Project-specific BMP consideration is an iterative process that begins with initial project planning and scoping activities. As the project moves into detailed design, Caltrans' design division revisits the BMP consideration process and goes through a detailed BMP selection methodology that works efficiently with the design of the highway and drainage facilities. This process is documented in the Storm Water Data Report (SWDR).

6.2.1.1 Design Pollution Prevention BMPs

During the project development process, the Project Engineer would incorporate specific Design Pollution Prevention (DPP) BMPs into a project to minimize potential impacts to water quality. The design objectives of the DPP BMPs are as follows:

- *Prevent Downstream Erosion.*
- *Stabilize Disturbed Soil Areas.*
- *Maximize Vegetated Surfaces Consistent with Existing Caltrans Policies.*

The table below lists the DPP BMPs to achieve the above design objectives.

Table 6.2 Design Pollution Prevention BMPs

Consideration of Downstream Effects Related to Potentially Increased Flow
Peak Flow Attenuation Basins
Reduction of Paved Surface (i.e., increase pervious area)
Soil Modification
Energy Dissipation Devices
Preservation of Existing Vegetation
Concentrated Flow Conveyance Systems
Ditches, Berms, Dikes and Swales
Oversize Drains, Downdrains, Paved Spillways
Channel Linings
Flared Culvert End Sections
Outlet Protection/Velocity Dissipation Devices
Slope/Surface Protection Systems
Vegetated Surfaces
Benching/Terracing, Slope Rounding, Reduce Gradients
Hard Surfaces

Source: PPDG Manual, Table 2-4, July 2010

- *Consideration of Downstream Effects Related to Potentially Increased Flow*

  Since the project would increase the volume and the velocity of runoff due to the increase in impervious areas, Caltrans would evaluate the effects on downstream channel stability and consider the following mitigation measures and incorporate them, as appropriate:

  - Modifications to channel (both natural and man-made) lining materials, including vegetation, geotextile mats, rock and rip-rap;
  - Energy dissipation devices at culvert outlets;

- Smoothing the transition between culvert outlets/headwalls/wing walls and channels to reduce turbulence and scour; and
- Incorporating peak flow attenuation facilities to reduce peak discharges.

- *Preservation of Existing Vegetation*
  The project would protect desirable vegetation that provides sediment and erosion control measures. Caltrans would preserve existing vegetation in areas where no construction activity is planned within project limits or would occur at a later date. The following mitigation measures would be considered and incorporated as appropriate:

  - Identify and delineate on contract documents all vegetation to be retained.
  - Delineate areas to be preserved in the field prior to the commencement of soil disturbing activities.
  - Minimize disturbed areas by locating temporary roadway to avoid impacting existing vegetation and follow existing contours to reduce cutting and filling.
  - Consider impacts to adjacent vegetation that needs to be preserved when removing vegetation.

- *Concentrated Flow Conveyance Systems*
  "Concentrated flow conveyance systems consist of permanent design measures that are used alone or in combination to intercept and divert surface flows, and convey and discharge concentrated flows with a minimum of soil erosion" (PPDG Manual, 2007). Caltrans would consider the following mitigation measures and incorporate them as appropriate:

  - All DPP BMPs under this category would be designed in accordance with the Caltrans Highway Design Manual (See Chapter 813, Chapter 830 (Topics 836 and 834.4), Chapter 860, and Chapter 820 (Topics 826 and 827), Chapter 870).
  - Consider outlet protection devices where localized scour is anticipated.
  - Evaluate the risk due to erosion, overtopping, flow backup or washouts when selecting design flows.
  - Consider run-on from off site sources.
  - Conveyances must be lined when velocities exceed the permissible limits.
  - Metal pipe down drains would be used on slopes 4:1 or steeper. For flatter than 4:1 slopes, paved spillways would be used. Corrugated metal flumes with tapered entrance to be used on 2:1 slopes or flatter for low flow rates.

- *Slope/Surface Protection System*
  "Surface Protection consists of permanent design measures that are used alone or in combination to minimize erosion from completed, disturbed surfaces" (PPDG Manual, 2007). A slope surface protection system could be either a vegetated surface

or hard surface. Vegetated surfaces have the advantage of lowering the runoff volume and velocities, which consequently would prevent erosion and other pollutants from entering the storm drain system. When site or slope conditions do not allow the adequate establishment of vegetation, hard surfaces are used. Examples of hard surfaces are rock slope protection, rock blankets, slope paving and gabions. Caltrans would consider the following mitigation measures and incorporate them as appropriate:

- The project site would be evaluated based on soil type, climate and topography for the selection of the appropriate vegetation and planting strategy. The vegetation cover would be selected to reduce concentrated flow depth and velocities and augment contact time between the runoff and the vegetation, which would improve infiltration and pollutant removal efficiency.
- Strip and stockpile topsoil (duff) and existing vegetation would be used when feasible and used on the completed slopes before applying seed.
- Slope rounding, roughening or stepping would be used where feasible to reduce concentrated flows and enhance the effectiveness of temporary and permanent hydroseeding.
- Implement hard surfaces in areas where it's difficult to maintain vegetation or when vegetation wouldn't provide adequate erosion control due to slope or soil conditions such as culvert outlets and gore areas.
- Pave below bridge decks at abutments where it is difficult for vegetation to be established.

6.2.1.2 Treatment BMPs

Table 6.3 below shows the proposed treatment percentages for the additional impervious areas proposed under the three Build Alternatives. The additional paved acres for each alternative includes proposed pavement for SR-11 (from the OME POE to Britannia Boulevard), the CVEF, and OME POE.

Table 6.3 also includes treatment percentages for the design variations to the three Build alternatives: No Toll; 46-Foot Median; SR-125 Connector; and SR-905/SR-125/SR-11 Full Interchange Connectors; and the Siempre Viva Full Interchange that would only modify the Two Interchange Alternative.

Table 6.3 Proposed Treatment Percentages

A	B	E	F
Description	**Total Additional Impervious (Ac.)**	**Pavement Area Treated (Ac.)**	**% Treated**
No Interchange	119.4	116.6	98
One Interchange	126.0	120.0	95
Two Interchange	126.5	125.0	99
Variations on Build Alternatives (add acreages to each Alt.)			
No Toll	0	0	0
46-Foot Median	1.3	1.3	100
SR-125 Connector	2.7	3.5	131
SR-905/SR-125/SR-11 Full Interchange	4.8	5.4	113
Siempre Viva Full Interchange (add to Two IC Alt. only)	7.2	5.9	82

Treatment BMPs considered for this Project are listed in Table 6.4. These BMPs have been approved for statewide consideration and implementation as appropriate. Treatment BMPs must be considered for this Project as required under the SWMP to avoid or minimize the potential long term impacts from any Caltrans facilities or activities. The approved treatment BMPs listed below are considered to be technically and fiscally feasible. Caltrans experience has found these BMPs to be constructible, maintainable, and effective at removing pollutants to the MEP.

Table 6.4 Approved Treatment BMPs

Biofiltration Systems
Infiltration Devices
Detention/Retention Devices
Traction Sand Traps
Dry Weather Flow Diversion
Gross Solid Removal Devices (GSRDs)
Media Filters
Multi Chamber Treatment Train
Wet Basins

Source: PPDG Manual, Table 2-5, July 2010

A preliminary review of the Project area has been completed and potential locations and types of treatment BMPs have been assessed for feasibility (based on such factors as climate, water volume, soil conditions, physical limitations, other environmental considerations, etc.). On-site flows generated from the Project will be captured, treated, retained and/or detained prior to being released into the original watercourses or the proposed drainage facilities under the POE. A major consideration affecting the selection of Treatment BMPs, is the IBWC requirement that, "disposal of excess water should not go into Mexico." This will require the use of retention basins to eliminate excess runoff. However, as previously mentioned, infiltration rates have been found to be poor due to the soil type found in the area. Therefore, to accommodate this lack of infiltration, during final design, the detention/retention basins will need to be designed to address the requirement for volume retention. This can be accomplished by incorporating some or all of the following features: subsurface soil treatments/engineered fill, retention vaults, and/or pump systems.[1]

For the purposes of this Water Quality Report, it is assumed that the volume required for retention will percolate and be disposed of via infiltration or by other subsurface engineering methods.

When the proposed Project proceeds to the design phase, the locations of these treatment BMPs would be further evaluated to determine feasibility in relation to right-of-way limitations, environmental constraints or hydraulic capacity. In addition, in areas where treatment BMPs cannot be incorporated due to above-mentioned reasons, vegetation would be maximized and every effort would be made to ensure the successful establishment of landscaping and erosion control throughout the Project limits. The Project would also consider any future treatment BMPs that might be approved by Caltrans from their ongoing research and monitoring program.

The Caltrans Erosion Control Specialist, in coordination with the Project Biologist and Landscape Architect would determine the appropriate planting/seeding mix to ensure that proposed vegetation is consistent with the vegetation within the corridor and any specific requirements by local entities such as the Multiple Species Conservation Program (MSCP) or others.

Below are descriptions of the treatment BMPs that would be potentially sited within the Project limits, their appropriate application and siting criteria, and factors affecting their preliminary design. A description of the other treatment BMPs is found in Appendix B of the PPDG Manual, (May, 2007).

- *Biofiltration: Strips and Swales*
  Biofiltration swales are vegetated channels that receive directed flow and convey storm water. Biofiltration strips are vegetated sections of land over which storm water flows as overland sheet flow. Pollutants are removed by filtration through the grass,

sedimentation, absorption to soil particles, and infiltration through the soil. Swales and strips are mainly effective at removing debris and solid particles, although some dissolved constituents are removed by absorption into the soil.

Application/Siting Criteria

- The climate and site conditions allow vegetation to be established (70% minimum vegetation cover is required for treatment to be effective).
- Flow velocities are low enough to prevent scour.
- Consider upstream of other treatment BMPs to provide pretreatment (such as detention basins and infiltration devices).
- If the proposed location is above hazardous soils or contaminated groundwater plumes, contact the SDRWQCB for clear direction.

Preliminary Caltrans Design Factors

- The Caltrans District Landscape Architect must provide vegetation mix appropriate for climate and location.
- The bioswale must be designed to handle the Water Quality Flow (WQF) as well as the peak drainage facility design event using the Rational Method.
- Hydraulic Residence Time (HRT) has to be a minimum of 5 minutes; maximum velocity is 1.0 foot per second and maximum depth of flow 0.5 feet.
- The slope in the direction of flow cannot be less that 0.25% and cannot exceed 6%, with 1 to 2 % preferred.
- The minimum width of the invert and the side slope ratio of the bioswale must receive concurrence from maintenance with 2 feet as the minimum and 10 feet is the maximum allowable invert width, and a side slope ratio of 4:1 or flatter.
- The biostrip should be sized to be as long as possible in the direction of flow and the maximum length should not exceed 100 feet and should be free of gullies and rills.

▪ *Infiltration Devices*

An infiltration basin is a treatment device designed to remove pollutants from surface discharges by capturing the Water Quality Volume (WQV), temporarily storing it and infiltrating it directly to the soil rather than discharging it to receiving waters.

Application/Siting Criteria

- The ability to treat a WQV greater or equal to 0.1 acre-foot.
- Runoff quality must meet or exceed standards for infiltration to local groundwater.
- The site is not located over a previously identified groundwater plume.
- Separation form the seasonally high water table must be a minimum of 10 feet. Otherwise the SDRWQCB must be consulted.

- Soil types restricted to Hydrologic Soil Group (HSG) A, B or C with an infiltration rate equal or greater than 0.5 inches per hour and less than 2.5 inches per hour. Higher infiltration rates must be approved by the SDRWQCB.
- Soil should have clay content of <30% and a combined silt/clay content of < 40%.
- Site should not be located in area containing fractured rock within 10 feet of invert.

Preliminary Caltrans Design Factors

- Infiltrate the WQV within 40-48 hours.
- Provide maintenance access road around the basin or at least to the overflow spillway and also a ramp to the basin invert.
- They should not be in service during a construction contract unless the area upstream has been stabilized or they shall be protected from sediment-laden runoff.
- They must have a downstream overflow outlet to pass the peak drainage facility design event that would enter the basin.
- Provide a 12 inch minimum water quality freeboard.
- Provide a scour protection on the inflow and overflow outlets.
- The basin invert slope should not be greater than 3%.
- A detailed investigation must be conducted including subsurface soil investigation, in-hole conductivity testing and groundwater elevation determination.
- A flood control spillway with scour protection and a maintenance access road must be provided.
- It must be designed with interior side slopes no steeper than 4:1, unless approved by Caltrans District Maintenance (3:1 maximum).
- The basins should have vegetation (typically grasses) at the invert and side slopes.

Additional siting and design criteria for infiltration basins are found in the Caltrans PPDG Manual, Appendix B, as well as a detailed pre-screening procedure. In addition, the Caltrans District 11 NPDES Unit has recently refined some of the procedures that are to be used when evaluating infiltration basins as part of the approved Treatment BMP toolbox as described in the PPDG. These revisions apply to the procedures to be followed after the preliminary determination has been made and the site is appropriate for further evaluation after completion of the Caltrans Project Initiation Document.

- *Detention Devices*

  A detention device is a permanent treatment BMP designed to reduce sediment and particulate loading in runoff by temporarily detaining the runoff to allow sediments and particles to settle out before the runoff is discharged to a receiving water.

Detention devices remove litter, total suspended solids and pollutants that are attached to the settled particulate matter.

Application/Siting Criteria

- The WQV has to be greater or equal to 0.1 acre-foot.
- Sufficient head to prevent objectionable backwater conditions in the upstream drainage systems.
- The basin invert must be at least 10 feet above seasonally high groundwater table unless approved by the SDRWQCB.
- Use a liner if the basin is located over a known groundwater plume unless approved by the SDRWQCB.
- If significant sediment is expected, consider increasing the volume of the detention basin an amount equivalent to the annual loading.
- Locate outside the clear recovery zone or consult with Caltrans Traffic Operations to determine if a guard rail is required.

Preliminary Caltrans Design Factors

- Should be sized to capture the WQV.
- Outlet designed to empty the basin within 24-72 hours (40 hours recommended when using the debris screen).
- Flow path to width ratio of 2:1 recommended.
- Maximum water level should not cause groundwater to occur under the roadway within 0.7 feet of the roadway subgrade.
- Sufficient access must be provided for maintenance including a road around the basin and a ramp to the basin invert.
- Downstream spillway or overflow riser sized to pass the design storms.
- Provide a water quality freeboard of 12 inches.
- Use scour protection on inflow, outflow and spillway of necessary.
- If a vegetated invert is used, consider adding a low flow channel between the influent pipe and the outlet device to reduce erosion caused by the initial flow into the basin.
- Use 4:1 side slopes unless approved by Caltrans Maintenance (not to exceed 3:1 slopes).
- Provide vegetation on invert and side slopes.
- Minimum orifice size is 0.5 inches.

6.2.1.3 Existing Treatment BMPs within the Project Area

Since the eastern end of Project area is undeveloped, there are no existing treatment BMPs in that area. The western end of the Project lies within the City and is surrounded by commercial/industrial developments. Some of these developments have installed detention basins to treat storm water run-off within their sites. An existing concrete lined detention basin currently serves commercial developments located east of Sanyo Avenue.

The SR-11 Project will relocate this basin and construct a separate drainage system to connect the existing developments to the relocated basin. The relocated basin will be similar in shape, depth and function and will not receive any flow from SR-11.

The SR-905 Project will construct a detention basin within the loop ramp connector from SR-125 to westbound SR-905. SR-11 will construct two additional basins within the loop ramp connectors that will receive the majority of the runoff from both SR-11 and SR-905. Although less flow will go to the basin constructed for SR-905 once the SR-11 Project is constructed, it will remain and no design modifications are required.[1]

6.2.2 Project Construction

The proposed Project would have potential short-term impacts to the storm water runoff quality during construction due to the type of construction activities that have the potential to contribute pollutants and the type of construction materials that would be used. Examples of construction activities include clearing and grubbing, major grading, utility excavations, sandblasting and landscaping operations. Materials used during construction that have the potential to contribute pollutants to storm water discharges if not properly contained, include vehicle fluids (oil, grease and petroleum), concrete curing compounds, asphaltic emulsions (associated with asphalt concrete paving operations), paints, solvents and thinners, and base and sub-base materials.

The selected BMPs are directed at reducing pollutants in storm water discharges and eliminating non-storm water discharges. The BMPs to be implemented would cover the categories shown in Table 6.5 below.

Table 6.5 Construction Site BMP Categories

Category
Temporary Soil Stabilization
Temporary Sediment Control
Wind Erosion Control
Tracking Control
Non-Storm Water Management
Waste Management and Materials Pollution Control

Since the Project would disturb more than one acre of soil, the potential of erosion, if not controlled by an effective combination of erosion and sediment control BMPs, is very likely. Construction site BMPs would be incorporated to address both storm water and non-storm water discharges during construction. Table 6.6 is a matrix of the construction site BMPs that Caltrans would implement, as appropriate, on construction sites to avoid or minimize the short term potential impacts. The temporary control practices are consistent with the BMPs and control practices required under the General Construction Permit and intended to achieve compliance with the requirements of the Permit. As mentioned in Section Three “Regulatory Settings”, this Project will comply with the new General Construction Permit provisions (effective on July 1,

2010) and any Construction BMPs will be implemented through Project plans and specifications and the Project's Storm Water Pollution Prevention Plan (SWPPP).

A SWPPP is a document developed by the contractor before the commencement of construction and implemented throughout the duration of projects disturbing one acre or more of soil. The SWPPP describes and ensures effective implementation of BMPs that will reduce or eliminate sediment and other pollutants in storm water as well as non-storm water discharges. The SWPPP is a requirement per the General Construction Permit and it is a living document that is amended by the contractor as needed to reflect construction staging and the dynamic construction operations. The General Construction Permit lists the objectives the SWPPP is required to address as follows:

1. All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled;

2. Where not otherwise required to be under a Regional Water Board permit, all non-storm water discharges are identified and either eliminated, controlled, or treated;

3. Site BMPs are effective and result in the reduction or elimination of pollutants in storm water discharges and authorized non-storm water discharges from construction activity to the Best Available Technology Economically Achievable (BAT)/ Best Conventional Pollutant Control Technology (BCT) standard;

4. Calculations and design details as well as BMP controls for site run-on are complete and correct, and

5. Stabilization BMPs installed to reduce or eliminate pollutants after construction are completed.

Table 6.6: Construction Site BMPs for Typical Highway Construction Activities

BEST MANAGEMENT PRACTICE	Typical Highway Construction Activities																										
	Demolish Pavement/Structures	Clearing & Grubbing	Construct Access Roads	Grading (inc. cut and fill slopes)	Channel Excavation	Channel Paving	Trenching / Underground Drainage	Underground Drainage System Installation	Drainage Inlet Modification	Utility Trenching	Utility Installation	Subgrade Preparation	Base Paving	AC Paving	Concrete Paving	Saw Cutting	Joint Sealing	Grind/Groove	Structure Excavation	Erect False work	Bridge / Structure Construction	Remove False work	Striping	Miscellaneous Concrete Work	Sound Walls/Retaining Walls	Planting and Irrigation	Contractor Activities	Treatment BMP Construction
Temporary Soil Stabilization																											
Scheduling	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X	X
Preservation of Existing Vegetation		X	X	X			X	X		X									X	X		X			X			
Hydraulic Mulch	X	X		X	X																X					X		X
Hydroseeding	X	X		X	X																X					X		X
Soil Binders	X	X		X	X														X		X					X		X
Straw Mulch	X	X	X	X	X		X	X		X		X							X		X					X		X
Geotextiles, Mats / Plastic Covers and Erosion Control Blankets	X	X	X	X	X		X	X		X		X							X		X					X		X
Wood mulching																										X		

BEST MANAGEMENT PRACTICE	Typical Highway Construction Activities																										
	Demolish Pavement/Structures	Clearing & Grubbing	Construct Access Roads	Grading (inc. cut and fill slopes)	Channel Excavation	Channel Paving	Trenching / Underground Drainage	Underground Drainage System Installation	Drainage Inlet Modification	Utility Trenching	Utility Installation	Subgrade Preparation	Base Paving	AC Paving	Concrete Paving	Saw Cutting	Joint Sealing	Grind/Groove	Structure Excavation	Erect False work	Bridge / Structure Construction	Remove False work	Striping	Miscellaneous Concrete Work	Sound Walls/Retaining Walls	Planting and Irrigation	Contractor Activities	Treatment BMP Construction
Earth Dikes / Drainage Swales & Lined Ditches		X	X	X																	X							
Outlet Protection / Velocity Dissipation Devices		X	X	X																	X							
Slope Drains				X																	X							
Streambank stabilization		X		X	X	X			X	X	X								X	X	X	X					X	
Slope Roughening	X	X		X	X																X					X		X
Temporary Sediment Control																												
Silt Fence	X	X	X	X	X		X			X		X							X		X					X		X
Sediment / Desilting Basin	X	X	X	X	X																X					X		X
Sediment	X	X	X	X	X		X			X		X							X		X					X		X

BEST MANAGEMENT PRACTICE	Typical Highway Construction Activities																											
	Demolish Pavement/Structures	Clearing & Grubbing	Construct Access Roads	Grading (inc. cut and fill slopes)	Channel Excavation	Channel Paving	Trenching / Underground Drainage	Underground Drainage System Installation	Drainage Inlet Modification	Utility Trenching	Utility Installation	Subgrade Preparation	Base Paving	AC Paving	Concrete Paving	Saw Cutting	Joint Sealing	Grind/Groove	Structure Excavation	Erect False work	Bridge / Structure Construction	Remove False work	Striping	Miscellaneous Concrete Work	Sound Walls/Retaining Walls	Planting and Irrigation	Contractor Activities	Treatment BMP Construction
Trap																												
Check Dam	X	X		X	X		X																					X
Fiber Rolls	X	X	X	X	X		X			X											X					X		X
Gravel Bag Berm	X	X	X	X	X		X			X											X					X		X
Street Sweeping and Vacuuming	X	X	X	X	X		X	X		X	X	X	X	X	X	X		X	X		X				X	X	X	X
Sandbag Barrier	X	X	X	X	X		X			X		X							X		X					X		X
Straw Bale Barrier	X	X	X	X	X		X			X		X							X		X					X		X
Slope Drains	X	X	X	X	X		X	X	X	X		X	X			X	X	X	X								X	X
Drain Inlet Protection	X	X	X	X	X		X	X	X	X		X	X			X	X	X	X								X	X
Wind Erosion Control																												
Wind Erosion Control		X	X	X	X		X			X		X	X	X	X											X		X

BEST MANAGEMENT PRACTICE	Typical Highway Construction Activities																										
	Demolish Pavement/Structures	Clearing & Grubbing	Construct Access Roads	Grading (inc. cut and fill slopes)	Channel Excavation	Channel Paving	Trenching / Underground Drainage	Underground Drainage System Installation	Drainage Inlet Modification	Utility Trenching	Utility Installation	Subgrade Preparation	Base Paving	AC Paving	Concrete Paving	Saw Cutting	Joint Sealing	Grind/Groove	Structure Excavation	Erect False work	Bridge / Structure Construction	Remove False work	Striping	Miscellaneous Concrete Work	Sound Walls/Retaining Walls	Planting and Irrigation	Contractor Activities	Treatment BMP Construction
Tracking Control																											
Stabilized Construction Entrance / Exit		X	X	X																							
Stabilized Construction Roadway		X	X	X																							
Entrance / Exit Tire Wash		X	X	X																						X	X	
Waste Management and Materials Pollution Control																											
Material Delivery and Storage	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Material Use	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Stockpile Management	X		X					X		X	X		X	X	X			X										
Spill Prevention	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

BEST MANAGEMENT PRACTICE	Typical Highway Construction Activities																										
	Demolish Pavement/Structures	Clearing & Grubbing	Construct Access Roads	Grading (inc. cut and fill slopes)	Channel Excavation	Channel Paving	Trenching / Underground Drainage	Underground Drainage System Installation	Drainage Inlet Modification	Utility Trenching	Utility Installation	Subgrade Preparation	Base Paving	AC Paving	Concrete Paving	Saw Cutting	Joint Sealing	Grind/Groove	Structure Excavation	Erect False work	Bridge / Structure Construction	Remove False work	Striping	Miscellaneous Concrete Work	Sound Walls/Retaining Walls	Planting and Irrigation	Contractor Activities	Treatment BMP Construction
and Control																											
Solid Waste Management	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hazardous Waste Management	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Contaminated Soil Management	X	X		X			X	X		X	X									X								
Concrete Waste Management	X		X			X		X			X		X		X	X		X	X		X			X	X	X	X	X
Sanitary / Septic Waste Management	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Liquid Waste Management														X		X	X		X		X		X				X	X
Non-Stormwater Management																												
Water Conservation	X	X	X	X	X	X	X	X	X	X		X				X	X	X	X		X			X		X	X	X

BEST MANAGEMENT PRACTICE	Typical Highway Construction Activities																											
	Demolish Pavement/Structures	Clearing & Grubbing	Construct Access Roads	Grading (inc. cut and fill slopes)	Channel Excavation	Channel Paving	Trenching / Underground Drainage	Underground Drainage System Installation	Drainage Inlet Modification	Utility Trenching	Utility Installation	Subgrade Preparation	Base Paving	AC Paving	Concrete Paving	Saw Cutting	Joint Sealing	Grind/Groove	Structure Excavation	Erect False work	Bridge / Structure Construction	Remove False work	Striping	Miscellaneous Concrete Work	Sound Walls/Retaining Walls	Planting and Irrigation	Contractor Activities	Treatment BMP Construction
Practices																												
Dewatering Operations	X			X	X	X	X	X	X	X	X								X		X			X	X	X		X
Paving and Grinding Operations			X			X			X				X	X	X	X	X	X			X							
Temporary Stream Crossing							X	X		X	X									X	X	X		X				
Clear Water Diversion	X		X		X	X														X	X	X			X			X
Illicit Discharge / Illegal Connections Detection and Reporting	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Potable Water / Irrigation			X								X															X	X	
Vehicle and	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

BEST MANAGEMENT PRACTICE	Typical Highway Construction Activities																											
	Demolish Pavement/Structures	Clearing & Grubbing	Construct Access Roads	Grading (inc. cut and fill slopes)	Channel Excavation	Channel Paving	Trenching / Underground Drainage	Underground Drainage System Installation	Drainage Inlet Modification	Utility Trenching	Utility Installation	Subgrade Preparation	Base Paving	AC Paving	Concrete Paving	Saw Cutting	Joint Sealing	Grind/Groove	Structure Excavation	Erect False work	Bridge / Structure Construction	Remove False work	Striping	Miscellaneous Concrete Work	Sound Walls/Retaining Walls	Planting and Irrigation	Contractor Activities	Treatment BMP Construction
Equipment Cleaning																												
Vehicle and Equipment Fueling	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Vehicle and Equipment Maintenance	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Pile Driving Operations		X	X	X				X	X	X	X	X								X					X		X	X
Concrete Curing													X	X	X		X				X			X	X		X	X
Material and Equipment Use Over Water	X	X	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Concrete Finishing							X	X	X		X				X						X			X	X		X	X
Structure Demolition Over or	X	X	X	X	X		X	X	X	X		X				X		X	X	X	X	X			X		X	X

BEST MANAGEMENT PRACTICE	Typical Highway Construction Activities																											
	Demolish Pavement/Structures	Clearing & Grubbing	Construct Access Roads	Grading (inc. cut and fill slopes)	Channel Excavation	Channel Paving	Trenching / Underground Drainage	Underground Drainage System Installation	Drainage Inlet Modification	Utility Trenching	Utility Installation	Subgrade Preparation	Base Paving	AC Paving	Concrete Paving	Saw Cutting	Joint Sealing	Grind/Groove	Structure Excavation	Erect False work	Bridge / Structure Construction	Remove False work	Striping	Miscellaneous Concrete Work	Sound Walls/Retaining Walls	Planting and Irrigation	Contractor Activities	Treatment BMP Construction
Adjacent to Waters																												

X = BMP may be applicable to activity.

[1] BMP lists and categories are dynamic.

6.2.3 Project Operations and Maintenance

Caltrans' Division of Maintenance performs various activities on different facilities throughout the State to ensure safe and usable conditions for the public. Most of the activities are performed by small crews with minimal soil disturbance.

The objective of implementing maintenance BMPs is to provide preventative measures to ensure that maintenance activities are conducted in a manner that reduces the amount of pollutants discharged to surface waters via Caltrans' storm water drainage systems. Maintenance activities involve the use of a variety of products. Under normal, intended conditions of use, these materials are not considered "pollutants of concern." However, if these products are used, stored, spilled or disposed of in a way that may cause them to contact storm water or enter storm water drainage systems, they may become a concern for water quality. Maintenance activities are performed in dry weather to minimize impacts to water quality; however conditions may exist which require these activities be conducted in wet weather.

Potential pollutants of concern for maintenance activities include petroleum products, sediments, trash and debris, metals, acidic/basic materials, nutrients, solvents, waste paint, herbicides, pesticides, and others. Many of these potential pollutants can be prevented from being discharged via storm water drainage systems by selecting and implementing BMPs appropriate for the activity being conducted.

Guidance that addresses the implementation of storm water BMPs during highway maintenance activities and activities conducted at maintenance facilities are identified and discussed in more detail in the SWMP. BMPs to be implemented are technology-based controls to attain MEP pollutant control, as well as other BMPs are to be implemented as required depending on the highway maintenance activities and activities conducted at maintenance facilities.

Table 6.7 identifies the general maintenance activities as outlined in the Caltrans Maintenance Staff Guide Storm Water Quality Handbook.[16] General BMPs that apply to a majority of Caltrans activities are identified in Table 6.8. The BMPs are grouped into "families" based on crew assignments (e.g., if a roadway crew plans to conduct asphalt work, a Maintenance Supervisor would refer to BMPs under the "A Family" heading "Flexible Pavement"). Caltrans Maintenance Supervisors are responsible for ensuring that the personnel under their direct supervision are implementing the BMPs.

Table 6.7 General Caltrans Maintenance BMPs

Scheduling and Planning
Spill Prevention and Control
Sanitary/Septic Waste Management
Material Use
Safe Alternative Products
Vehicle/Equipment Cleaning, Fueling and Maintenance
Illicit Connection Detection, Reporting and Removal
Illegal Spill Discharge Control
Maintenance Facility Housekeeping Practices

Table 6.8 Maintenance Activities as Classified in the Caltrans Maintenance Staff Guide

A Family-Flexible Pavement
Family-A1 Asphalt Cement Crack Joint Grinding/Sealing
Family-A2 Asphalt Paving
Family-A3 Structural Pavement Failure (dig outs) Pavement Grinding and Paving
Family-A4 Emergency Pothole Repair
Family-A5 Sealing Operations
B Family-Rigid Pavement
Family-B1 Portland Cement Crack and Joint Sealing
Family-B2 Mudjacking and Drilling
Family-B3 Concrete Slab and Spall Repair
C Family-Slope/Drains/ Vegetation
Family-C1 Shoulder Grading
Family-C2a Non-Landscaped Chemical Vegetation Control
Family-C2b Non-Landscaped Mechanical Vegetation Control/Mowing
Family-C3 Non-Landscaped Tree and Shrub Pruning, Brush Chipping, Tree and Shrub Removal
Family-C5 Drainage Ditch and Channel Maintenance
Family-C6 Drain and Culvert Maintenance
Family-C9 Curb and Sidewalk Repair
D Family-Litter/Debris/Graffiti
Family-D3 Sweeping Operations
Family-D4 Litter and Debris Removal
Family-D5 Emergency Response and Clean Up Practices
Family-D6 Graffiti Removal
E Family-Landscaping
Family-E1a Chemical Vegetation Control
Family-E1b Manual Vegetation Control
Family-E1c Landscaped Mechanical Vegetation Control/Mowing
Family-E2b Landscaped Trees and Shrub Pruning
Family-E2c Brush Chipping
Family-E2d Tree and Shrub Removal
Family-E3a Irrigation Line Repairs
Family-E3b Irrigation (Watering), Potable and Non Potable

F Family-Environmental
Family-F2 Storm Drain Stenciling
Family F4 Roadside Slope Inspection
Family-F4b Roadside Stabilization
Family-F7a Storm Water Treatment Devices
Family-F7b Traction Sand Trap Devices

G Family-Public Facilities
Family-G1–3 Public Facilities

H Family Bridges
Family-H2 Welding and Grinding
Family-H7a Sandblasting, Wet Blast with Sand Injection and Hydroblasting
Family H7b Painting
Family-H9a Bridge Repairs
Family-H9b Draw Bridge Maintenance

J. Family-Other Structures
Family-J1 Pump Station Cleaning
Family-J2 Tube and Tunnel Maintenance and Repair

K. Family-Electrical
Family-K6 Sawcutting for Loop Installation

M Family-Traffic Guidance
Family-M1a and M2a Thermoplastic Striping and Marking
Family-M1b&M2b Paint Striping and Marking
Family-M3 Raised/Recessed Pavement Marker Application and Removal
Family-M4 Sign Repair and Maintenance
Family-M7 Median Barrier and Guardrail Repair
Family-M8 Emergency Vehicle Energy Attenuator Repair

R Family-Snow and Ice Control
Family-R1 Snow Removal
Family-R2 Ice Control

S Family Storm Maintenance
Family-S3 Minor Slides and Slipouts Cleanup/Repair

T Family Management and Support
Family-T5b Building and Ground Maintenance
Family-T7a Storage of Hazardous Materials (Working Stock)
Family-T7c Material Storage Control (Hazardous Waste)
Family-T7d Outdoor Storage of Raw Materials
Family-T9a Vehicle and Equipment Fueling
Family-T9b Vehicle and Equipment Cleaning
Family-T9c Vehicle and Equipment Maintenance and Repair
Family-T9d Aboveground and Underground Tank Leak and Spill Control

6.2.3.1 Maintenance of Treatment BMPs

The maintenance requirement for treatment BMPs are outlined in Appendix C (Section C23 Treatment System Maintenance) of Caltrans Storm Water Quality Handbook, Maintenance Staff Guide.

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8. Surface Water Ambient Monitoring Program (SWAMP), Report on the Tijuana Hydrologic Unit, First Technical Report, California Water Boards, January 2008.

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14. California Regional Water Quality Control Board, San Diego Region, TMDLS & the 303(d) listed water bodies (July 2003).
http://www.waterboards.ca.gov/sandiego/tmdls/tmdl%20fact%20sheet.html
http://www.swrcb.ca.gov/tmdl/docs/2002reg9303dlist.pdf

15. County of San Diego, Project Clean Water
http://www.projectcleanwater.org/html/ws-tijuana.html.

16. Caltrans Storm Water Quality Handbook, Maintenance Staff Guide (CTSW-RT-02-057), May 2003.