

# Memorandum



To: **Lara Bertaina**, Generalist  
Central Coast Environmental Analysis Branch

Date: July 31, 2008  
(revised 8/14/08, 9/8/08 and 9/12/08)  
File: 05-SB-101-PM 2.2/3.4  
EA: 05-4482U0

From: **Department of Transportation/District 5**  
Central Coast Technical Studies Branch  
Environmental Engineering Section  
William Arkfeld, PE

Subject: Highway 101 – Linden Avenue and Casitas Pass Road Interchanges Project - Water Quality Assessment

## A. Background

The purpose of this report is to review the potential long and short-term water quality impacts from a proposed project that would improve two interchanges and make other improvements on Route 101 and in the City of Carpinteria in southern Santa Barbara County. The project is needed to reduce existing and projected congestion in this area.

### Project Location and Description

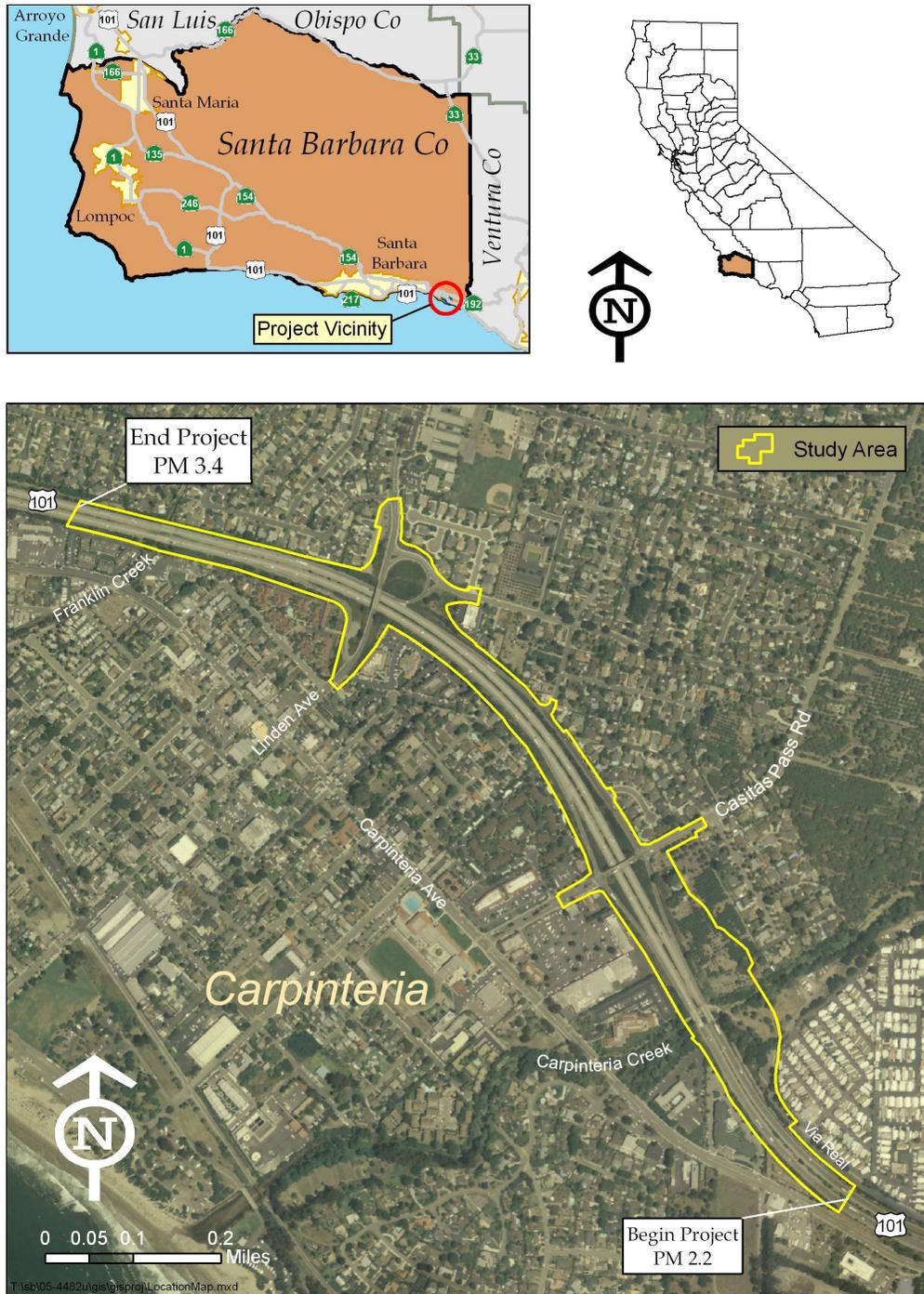
The California Department of Transportation (Caltrans) proposes to make operational improvements to Route 101 within the City of Carpinteria. The proposed action includes reconstructing the Linden Avenue and Casitas Pass Road interchanges, reconfiguring on- and off-ramps, replacing Route 101 bridges over Carpinteria Creek, extending Via Real frontage road from Bailard Avenue through to Casitas Pass Road, adding a new bridge over Carpinteria Creek at Via Real, and reconstructing bike paths. The proposed action will take place on Route 101 and adjacent streets from west of Franklin Creek to just east of Carpinteria Creek. The project area is approximately one mile in length and located within the City of Carpinteria in Santa Barbara County.

### Build Alternatives

The proposed project has four build alternatives. Alternatives 1 and 4 are similar, and Alternatives 2 and 3 are similar. Alternatives 1 and 4 would extend the northbound on-ramp from Linden Avenue across Franklin Creek, requiring the replacement (widening) of the 74.5-foot long northbound bridge to bring it up to current design standards. All alternatives would replace the Carpinteria Creek bridges, and construct a new bridge for Via Real across Carpinteria Creek. All alternatives would share the same alignment southeast of Vallecito Road. Table 1 compares the four alternatives.

The total disturbed soil area (DSA) will be approximately **37 acres**. DSA was calculated by accounting for areas of all cut and fill, along with areas of construction for activities. Alternative 1 yielded a net increase in impervious surface area of 5.48 acres.

Figure 1—Project Location Map



### **Alternatives 1 and 4**

The major feature of Alternatives 1 and 4 is that they would extend the northbound on-ramp across Franklin Creek Bridge. The northbound bridge will be replaced with a wider bridge of the same length to accommodate the northbound on-ramp. The new on-ramp would not loop under the Linden Avenue structure as does the existing on-ramp, and as would Alternatives 2 and 3. The difference between Alternative 1 and 4 is that Alternative 1 affects slightly more of the Verizon Property located just east of the Via Real and the Linden Avenue Interchange.

### **Alternatives 2 and 3**

Alternates 2 and 3 do not cross or replace the northbound Franklin Creek Bridge. Both Alternatives 2 and 3 would mimic the existing loop northbound on-ramp. Alternative 2 would have a standard intersection with Via Real slightly off-set from the intersection of Ogan Road, while Alternative 3 would create a roundabout intersection with Via Real, Ogan Road and the northbound (loop) on-ramp meeting about 300-feet east of the junction of Via Real and Linden Avenue.

### **No-Build Alternative**

The no-build alternative would not upgrade the Linden Avenue and Casitas Pass Road Interchanges; would not reconstruct either the Carpinteria Creek or Franklin Creek bridges, and would not connect Via Real between Bailard Avenue and Linden Avenue. The grade of the highway would also be unaffected.

**Table 1—Comparison Of Proposed Build Alternatives**

DESCRIPTION	ALT. 1	ALT. 2	ALT. 3	ALT. 4
Replace existing 2-lane Casitas Pass Road over-crossing with 5-lane over-crossing, including bike lanes and 5-foot sidewalks	X	X	X	X
Upgrade southbound on and off-ramps at Casitas Pass Road OC	X	X	X	X
Construct new northbound on and off-ramps at Via Real south of Casitas Pass Road OC	X	X	X	X
Extend Via Real as a frontage road between mobile home park across Carpinteria Creek to Linden Avenue	X	X	X	X
Replace and widen northbound and southbound Route 101 bridges over Carpinteria Creek	X	X	X	X
Construct new 2-lane bridge over Carpinteria Creek on Via Real	X	X	X	X
Remove northbound cloverleaf on-ramp at Linden Ave	X	X	X	X
Remove northbound on ramp at Vallecito Avenue	X	X	X	X
Replace existing 2-lane Linden Avenue over-crossing with 4-lane over-crossing including bike lanes and 5-foot sidewalks		X	X	
Replace existing 2-lane Linden Avenue over-crossing with 5-lane over-crossing including bike lanes and 5-foot sidewalks. Signalize intersections at Linden Avenue northbound on-ramp.	X			X
Replace northbound on-ramp and southbound off-ramp at Linden Ave.	X	X	X	X
Replace northbound Franklin Creek Bridge	X			X
Signalize intersections at: 1) Casitas Pass southbound on-ramp and off-ramp, 2) Casitas Pass northbound on and off-ramps at Via Real, 3) Casitas Pass Road/Via Real, 4) Linden Avenue/Via Real, and 5) Linden Avenue southbound off-ramp.	X	X	X	X
Repave and raise the profile of Route 101 from the south project limit to just north of Casitas Pass Road over-crossing	X	X	X	X
Median planting: oleander, <i>photinia</i> , <i>raphipolepsis</i> , <i>plumbago</i> , <i>palms</i>	X	X	X	X

## **B. Environmental Setting**

### **Topography**

The topography of the project site is generally flat to rolling. The project is located on a coastal terrace on the southwest-facing coast of southern Santa Barbara County. The area is bounded to the west and south by the Pacific Ocean, and to the north by the Santa Ynez Mountains with elevations up to 4,600 feet. The distance from the highway to the crest of the Santa Ynez Mountains located to the north is about 4.5 miles.

### **Climate**

Semi-permanent high pressure that lies off the Pacific Coast leads to limited rainfall (around 18 inches per year), with warm, dry summers and relatively damp winters.

### **Land Use**

The proposed project is located within the Carpinteria and Franklin Creek watersheds. Intensive agriculture operations, urban and suburban land development and roads are the primary land uses in the watersheds. Significant alteration of the hydrology has already occurred due to drainage of farm lands, addition of impervious surface, concrete lining of Franklin Creek, modifications to Carpinteria Marsh, and installations of debris basins in the upper watershed areas.

### **Soils**

The soil in this area consists of sands, silts, and clays, which is typical for flood plain valleys filled with alluvium deposits.

### **Ground Water**

Groundwater is very shallow and of unknown quality. Within the project limits, groundwater is between about two and eighteen feet below the ground surface and may contain agricultural chemicals (fertilizers, herbicides and pesticides) and other pollutants. If dewatering is necessary, appropriate permits and regulatory agency consultation are required.

### **Watershed Conditions - Franklin Creek**

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

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

The concrete lining of the Creek is considered a fish passage barrier. Tidewater gobies are present in Carpinteria Marsh. Small fish were observed in Franklin Creek adjacent to the southbound US 101 Bridge on August 4, 2008. The species of these small fish has not been resolved. Mosquito fish were observed in a channel located adjacent to the south side of Highway 101 and east of Franklin Creek. The “Carpinteria Creek Preservation Program” (CCP Program) includes a proposed restoration project that will remove the concrete lining from the creek and restore a limited riparian corridor. The CCP Program is discussed later in this memo.

Franklin Creek is known to have elevated nitrate and temperature levels. The water quality of Franklin Creek and the Carpinteria Marsh is degraded. Franklin Creek is considered impaired (303(d) Listed) for nitrate, and the Carpinteria Marsh is considered impaired for nutrients, organic enrichment/low dissolved oxygen, and priority organics (see Table 2 below).

The Central Coast Ambient Monitoring Program indicates on their Waterbody Assessment webpage that following water quality parameters could be adversely impacting beneficial uses of this creek:

**Boron, dissolved**

**Coliform, Fecal and Total**

**Nitrite as N**

**Nitrate as NO<sub>3</sub>**

**Oxygen, Dissolve**

**Oxygen, Saturation**

**pH**

Additional Franklin Creek water quality concerns are discussed in the Carpinteria Creeks Preservation Plan (pages 2-40 and 2-41). In addition to the water quality concerns discussed above, the CCP Program indicates possible concerns with the following parameters and constituents:

**Water Temperature – elevated due to the highly altered condition of the creek and could be influencing the low dissolved oxygen impairment of Carpinteria Marsh.**

**Conductivity – likely due to agriculture in the watershed**

**Suspended Sediment – likely due to agriculture in the watershed**

**Nutrients – heavily impacted by agriculture and urban uses**

**Phosphate – likely due to agriculture in the watershed**

**Heavy Metals – standards exceeded for zinc, lead and copper**

**Diazinon – commonly from agriculture and urban areas**

### **Watershed Condition - Carpinteria Creek**

Carpinteria Creek drains a watershed of approximately 15 square miles and has two major tributaries: upper Carpinteria Creek and Gobernador Creek. The peak elevation in the watershed is 4,690 feet. Carpinteria Creek passes through agricultural and urban areas before it empties into the ocean at Carpinteria State Beach. During flood events, floodwaters have flowed down Highway 101 to Franklin Creek. Water quality appears to be degraded by urban and agricultural runoff. Carpinteria Creek is considered critical habitat for steelhead. Conditions for steelhead spawning are very good in the upper watershed. Carpinteria Creek is still mostly in its natural condition, except for the following:

- *Upper Watershed:* Debris basins have been installed as a flood control measure in the upper watershed. These debris basins may be a barrier to fish passage and prevent a significant amount of sediment from migrating downstream.

- *Mid Watershed*: Most existing farms and urban developments adjacent to the creek have significantly encroached on the riparian corridor of the creek.
- *Lower Watershed*: The mouth of Carpinteria Creek previously was located in Carpinteria Marsh. The Creek was diverted to its current outlet location to allow housing development north of the existing creek alignment.

The proposed project includes the following three improvements to Carpinteria Creek:

- a new bridge that will improve the flood capacity of the channel,
- removal of a bicycle path that encroaches into the low flow channel of the Creek, and
- removal of Arundo (giant reed grass), which may inhibit flood water flow.

These improvements should enhance the water quality and geomorphological function of Carpinteria Creek.

The water quality of Carpinteria Creek is considered impaired (303(d) listed) for Pathogens (See **Table 3** below). The Central Coast Ambient Monitoring Program indicates on their Waterbody Assessment webpage that following water quality parameters could be adversely impacting beneficial uses of this creek:

**Boron, dissolved**

**Coliform, Fecal and Total**

**Oxygen, Dissolve**

**Oxygen, Saturation**

**pH**

Additional Carpinteria Creek water quality concerns are discussed in the Carpinteria Creeks Preservation Plan (pages 2-34 through 2-38). In addition to the water quality concerns discussed above, the CCP Program indicates possible concerns with the following parameters and constituents:

**Conductivity – caused by salts, metals, nutrients and other dissolvable ions and solids from agriculture and urban areas**

**Suspended Sediment – likely due to agriculture in the watershed**

**Nutrients – heavily impacted by agriculture**

**Phosphate – likely due to agriculture in the watershed**

**Heavy Metals – standards exceeded for zinc, lead, copper and chromium were exceeded during peak flow sampling**

**Diazinon – commonly from agriculture and urban areas**

### **Possible Highway Pollutants Affecting Water Quality**

Based on the highway storm water runoff data collected by the Caltrans Storm Water Research and Monitoring Program, typical pollutants from California highways include heavy metals, sediment, and litter. More information about the 2003 State-Wide Storm Water Characterization Study can be found at:

<http://www.dot.ca.gov/hq/env/stormwater/pdf/CTSW-RT-03-065.pdf>

All constituents and parameters in nearby surface water bodies found to be elevated (compared to background) or exceeding published water quality standards are potential concerns for the proposed project. If the highway is considered a significant source of a constituent that is causing degradation of water quality and associated beneficial uses of water, then Caltrans will consider storm water best management practices that can minimize the discharge of these constituents from the highway to

nearby surface water bodies. The final selection of storm water best management practices occurs during the design phase of the project.

### **Traffic - Current and Forecasted Traffic**

The current and forecasted traffic volumes (i.e., average annual daily trips or AADT and average daily traffic or ADT) are as follows in Table 2:

**Table 2: Route 101 Traffic Volume Summary**

Location	Current (2005)		No Build (2030)	Forecast (2016)		Forecast (2036)	
	ADT	AADT	ADT	ADT	AADT	ADT	AADT
NB Route 101	30,150	30,327	45,417	33,932	48,686	42,064	58,166
SB Route 101	36,850	33,202	48,020	41,472	42,495	51,411	63,392

As traffic increases the amount of pollutant originating from cars and trucks (i.e., tire and brake lining wear, litter, and spills during vehicle accidents) is also expected to increase. Because the proposed project will incorporate permanent design best management practices (BMPs) to minimize the direct discharge of highway storm water to adjacent waterways, the amount of pollutant discharged to surface waters from the proposed project area will be significantly lower than the existing highway.

## **C. Regulatory Setting**

### **Permits**

Because the proposed project will require dredge or fill in a water of the United States, a 404 permit (Army Corp), 401 Water Quality Certification (RWQCB) and 1601 Streambed Alteration Agreement (Fish and Game) will be required. The proposed project is also in the Coastal Zone, so a Coastal Development Permit will be required.

### **Carpinteria Creek Preservation Program (CCP Program)**

The City of Carpinteria administers the local coastal plan (LCP) on behalf of the Coastal Commission for this project. A component of the Carpinteria LCP is the “Carpinteria Creeks Preservation Program” (CCP Program). The CCP Program was completed in September 2005. The CCP Program is located at:

[http://www.carpinteria.ca.us/PDFs/cd\\_creeks%20report.pdf](http://www.carpinteria.ca.us/PDFs/cd_creeks%20report.pdf)

The CCP Program includes a wide range of enhancements and protective measures for the creeks in the Carpinteria area, including Carpinteria and Franklin creeks. Following are the goals of the Program:

- Goal 1:** Preserve, restore and enhance local creek and riparian ecosystems, including geomorphology, hydrology, water quality and biological communities. This will ensure the preservation and enhancement of beneficial uses of local creeks, including biological habitat, surface water conveyance, sediment and nutrient transport, floodplain and beach nourishment, water filtration, water supply, recreational and aesthetic enjoyment, educational and interpretive opportunities and scientific research.
- Goal 2:** Establish regulations to guide the City towards compliance with federal, state, and local regulations that pertain to local creeks, including Phase II NPDES storm water requirements.
- Goal 3:** To the greatest degree feasible, balance competing interests between beneficial uses of local creeks.

**Goal 4:** To provide background information and mitigation measures for use in the environmental clearance document required by the guidelines established under the California Environmental Quality Act (CEQA).

The CCP establishes a goal of limited restoration of Franklin Creek. This goal would require the removal of the concrete channel lining, the widening of the creek channel to create a naturalized condition as well as provide for current flood control requirements, and the establishment of 50-foot setback buffers beyond the limits of the creek bank. Although the CCP Program recommends an engineering study to determine whether the restoration of Franklin Creek is feasible, the study has not been initiated and no funding has been identified. Since there is no information available regarding the future configuration of the creek channel, the project development team proposes to replace the existing structure with a 74.5 foot long northbound bridge, that would span the existing 31.5 feet wide concrete lined channel (Alternatives 1 and 4). Any future restoration efforts on Franklin Creek may necessitate bridge modification or replacement.

Features of the proposed project that are consistent with the CCP Program include:

- **The removal of Arundo in the Carpinteria Creek area,**
- **The installation of storm water best management practices throughout the project,**
- **The removal of a potential fish passage barrier in Carpinteria Creek,**
- **The planting of native vegetation in riparian areas, including along Franklin Creek to improve shade canopy over this waterway.**

### **Beneficial Uses and WQ Objectives**

Carpinteria Marsh, Franklin Creek and Carpinteria Creek are located in the Carpinteria Hydrologic Area of the South Coast Hydrologic Unit as listed in the Water Quality Plan-Central Coast Region (Basin Plan). The Central Coast Regional Water Quality Control Board (Water Board) published the Basin Plan to regulate water quality in the Central Coast Hydrologic Basin. Beneficial uses of water and associated water quality objectives are listed in Appendix A and B.

### **303(d) List and Impairment of Water Quality**

The Carpinteria Creek, Franklin Creek and the Carpinteria Marsh are on the 303(d) list of Impaired Water Bodies (See **Table 2** below). The RWQCB is expected to adopt total maximum daily loads (TMDLs) for all these watersheds.

**Table 2 - TMDLs & 303(d) Listed Waterbodies (2006 List)**

<b>Name</b>	<b>Pollutant</b>	<b>Source</b>	<b>Size</b>	<b>Status</b>
<a href="#">Carpinteria Creek</a>	Pathogens	Agriculture	5.8 Miles	TMDL Required
<a href="#">Carpinteria Creek</a>	Pathogens	Land Disposal	5.8 Miles	TMDL Required
<a href="#">Carpinteria Creek</a>	Pathogens	Septage Disposal	5.8 Miles	TMDL Required
<a href="#">Carpinteria Marsh (El Estero Marsh)</a>	Nutrients	Agriculture	188 Acres	TMDL Required
<a href="#">Carpinteria Marsh (El Estero Marsh)</a>	Organic Enrichment/ Low Dissolved Oxygen	Agriculture	188 Acres	TMDL Required
<a href="#">Carpinteria Marsh (El Estero Marsh)</a>	Priority Organics	Urban Runoff/ Storm Sewers	188 Acres	TMDL Required
<a href="#">Franklin Creek</a>	Nitrate as Nitrate (NO <sub>3</sub> )	Source Unknown	2.8 Miles	TMDL Required
<a href="#">Pacific Ocean at Carpinteria State Beach (Carpinteria Creek mouth)</a>	Fecal Coliform	Source Unknown	0.06 Miles	TMDL Required
<a href="#">Pacific Ocean at Carpinteria State Beach (Carpinteria Creek mouth)</a>	Total Coliform	Source Unknown	0.06 Miles	TMDL Required

## D. Conclusions and Recommendations

The potential impacts to water quality from the proposed project are at a level of less than significance due to the design, permitting and site-specific conditions of this project. Specifically:

- 1) **Construction Storm Water Pollutants:** Standard temporary construction site and permanent design pollution prevention storm water best management practices, BMPs, will be utilized during and after construction of the project to control potential discharges of pollutants to surface water. Work in the creek bed will be performed during the dry season. A stream diversion may be necessary if the creek is flowing during construction.
- 2) **Riparian Shade Canopy:** Riparian shade canopy is important to maintain cool water temperatures for “cold” beneficial uses of both Carpinteria and Franklin Creeks. Revegetation along both Carpinteria and Franklin creeks will be designed to optimize shade canopy.
- 3) **Treatment BMPs:** Consideration of treatment BMPs is required for this project. For the portion of the project that is within the Caltrans right-of-way, permanent storm water treatment BMPs shall be incorporated to the maximum extent practicable (MEP, Note: *The MEP analysis is the process of evaluating the selected BMPs based on legal and institutional constraints, technical feasibility, relative effectiveness, and cost/benefit ratio*) in compliance with the Caltrans Stormwater Management Plan (SWMP) and storm water guidance. For the portion of the project outside the Caltrans right-of-way, permanent storm water treatment BMPs and post construction runoff controls shall be incorporated to the MEP in compliance with the storm water requirements set forth in the City of Carpinteria Creeks Preservation Program, September 2005. The goals of the treatment BMPs within the Caltrans right-of-way will be nitrate removal for Franklin Creek, and general pollutant removal for Carpinteria Creek. If treatment BMPs are found to not be feasible within the Caltrans right-of-way, Caltrans will negotiate resolution of this matter with the Regional Water Quality Control Board. See **Appendix C** for a flow chart of Caltrans permanent treatment BMP consideration process.
- 4) **Monitoring:** The project area should be monitored (photo point monitoring) for three years following completion of construction. Photo points should include all streambed alterations, revegetated riparian areas, and creek channels up and downstream of the project site. The location and direction of each photo point should be documented to ensure photos could be compared over time.

## **References**

- City of Carpinteria, "Carpinteria Creeks Preservation Program" (CCP Program), prepared by Padre Associates, Inc., September 2005. On the web at:  
[http://www.carpinteria.ca.us/PDFs/cd\\_creeks%20report.pdf](http://www.carpinteria.ca.us/PDFs/cd_creeks%20report.pdf)
- Ferren, Wayne R., "Carpinteria Salt Marsh: Environment, History, and Botanical Resources of a Southern California Estuary," 1985
- Derrick Coleman, Craig MacRae and Eric D. Stein - Effect of Increases in Peak Flows and Imperviousness on the Morphology of Southern California Streams - A report from the Stormwater Monitoring Coalition, Technical Report #450, [www.sccwrp.org](http://www.sccwrp.org), April 2005
- Shilling, F., S. Sommarstrom, R. Kattelman, B. Washburn, J. Florsheim, and R. Henly. California Watershed Assessment Guide. June, 2004. Prepared for the California Resources Agency.  
<http://cwam.ucdavis.edu>
- Storm Water Monitoring and BMP Development Status Report, March 2007, CTSW-RT-07-167.02.01 Final Report, California Department of Transportation, Division of Environmental Analysis, 1120 N Street Sacramento, California 95814
- Caltrans Storm Water Quality Handbooks - Project Planning and Design Guide, March 2007,  
[http://www.dot.ca.gov/hq/oppd/stormwtr/Final-PPDG\\_Master\\_Document-6-04-07.pdf](http://www.dot.ca.gov/hq/oppd/stormwtr/Final-PPDG_Master_Document-6-04-07.pdf)
- Lisa Schicker, Natural Environmental Study for the Linden Casita Project, July 2008  
<http://www.ccamp.org/> - Central Coast Ambient Monitoring Program (CCAMP).  
<http://geotracker.swrcb.ca.gov/> - developed by the State Water Resources Control Board to document sites with subsurface contamination in California.  
<http://www.dfg.ca.gov/biogeodata/imaps/> - maps of Steelhead habitat in and near the project site.  
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx> - Soil Survey  
<http://carpinteriacreek.org/documents.htm> - Watershed plan and other information for Carpinteria Creek  
<http://www.countyofsb.org/agcomm/wma/index.htm> - Info on the Arundo removal project for Carpinteria Creek  
[ftp://pwftp.countyofsb.org/Water/FTP/AP\\_2008\\_2009/South%20County%20Creeks%20Addenda/Carpinteria/](ftp://pwftp.countyofsb.org/Water/FTP/AP_2008_2009/South%20County%20Creeks%20Addenda/Carpinteria/) - information about Santa Barbara County's creek maintenance program for Carpinteria Creek  
<http://documents.coastal.ca.gov/reports/2006/1/F6c-1-2006.pdf> - January 13, 2006 appeal decision by the California Coastal Commission for the M. Timm Development Corporation

## Appendix A – Beneficial Uses for Specific Water Bodies

Waterbody Name	G W R	R E C 1	R E C 2	W I L D	C O L D	V A R M	M I G R	S P W N	B I O L	R A R E	E S T	M U N	F R E S H	C M	A G R
Franklin Creek	X	X	X	X	X	X	X	X		X		X	X	X	X
Carpinteria Marsh		X	X	X		X	X	X	X	X				X	
Carpinteria Creek	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

### Beneficial Use Definitions

**Groundwater Recharge (GWR)** – Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers. Ground water recharge includes recharge of surface water underflow.

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

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

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

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

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

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

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

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

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

**Estuarine Habitat (EST)** - Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds). An estuary is generally described as a semi-enclosed body of water having a free connection with the open sea, at least part of the year and within which the seawater is diluted at least seasonally with fresh water drained from the land. Included are water bodies that would naturally fit the definition if not controlled by tide gates or other such devices.

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

- a. TDS exceeds 3000 mg/l (5000 uS/cm electrical conductivity);

- b. Contamination exists, that cannot reasonably be treated for domestic use;
- c. The source is not sufficient to supply an average sustained yield of 200 gallons per day;
- d. The water is in collection or treatment systems of municipal or industrial wastewaters, process waters, mining wastewaters, or storm water runoff; and;
- e. The water is in systems for conveying or holding agricultural drainage waters.

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

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

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

## Appendix B - Water Quality Objectives

The following table is a compilation of the most stringent water quality objectives contained in Chapter 3 of the Central Coast RWQCB Basin Plan (ref: [http://www.waterboards.ca.gov/centralcoast/BasinPlan/BP\\_text/chapter\\_3/Chapter3.htm](http://www.waterboards.ca.gov/centralcoast/BasinPlan/BP_text/chapter_3/Chapter3.htm))

Constituent	Concentration
Color	Shall not cause nuisance or adversely affect beneficial uses.
Tastes and Odor	Shall not cause nuisance or adversely affect beneficial uses or cause undesirable tastes or odors to edible organisms.
Floating Material	Shall not cause nuisance or adversely affect beneficial uses.
Suspended Material	Shall not cause nuisance or adversely affect beneficial uses.
Settleable Material	Shall not cause nuisance or adversely affect beneficial uses.
Oil and Grease	Shall not cause nuisance or adversely affect beneficial uses or visible film on water surface.
Biostimulatory Substances	Shall not cause nuisance or adversely affect beneficial uses.
Sediment	Shall not cause nuisance or adversely affect beneficial uses.
Turbidity	<ol style="list-style-type: none"> <li>1. Where natural turbidity is between 0 and 50 Jackson turbidity Units (JTU), increases shall not exceed 20 percent.</li> <li>2. Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 percent.</li> <li>3. Where natural turbidity is greater than 100 JTU, increases shall not exceed 10 percent.</li> </ol>
Dissolved Oxygen	Shall not be less than 7.0 mg/L
Toxicity	Shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in, human, plant, animal, or aquatic life.
Pesticides	Shall not reach concentrations that adversely affect beneficial uses. Shall not increase concentrations in bottom sediments or aquatic life.
Bacteria (fecal coliform)	<p>Five samples in a 30-day period shall not exceed a log mean of 2000/100 ml. Ten percent of samples in a 30-day period shall not exceed 4000/ml.</p> <p>At all areas where shellfish may be harvested for human consumption, the median total coliform concentration throughout the water column for any 30-day period shall not exceed 70/100 ml, nor shall more than ten percent of the samples collected during any 30-day period exceed 230/100 ml for a five-tube decimal dilution test or 330/100 ml when a three-tube decimal dilution test is used.</p>
pH	Shall not be depressed below 6.5 nor raised above 8.3. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters.
Radioactivity	Shall not be present in concentrations that are deleterious to life forms. Waters shall not contain concentrations of radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Chapter 15, Article 5, Sections 64441 and 64443, Table 4.
Temperature	Natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses.
<b>Not to be exceeded levels</b>	
Methyl Blue Activated Substances	0.2 mg/l
Phenols	1.0ug/l
PCBs	0.3 ug/l
Phthalate Esters	0.002 ug/l
Cadmium	Shall not exceed .003 mg/l in hard water or .0004 mg/l in soft water at any time. (Hard water is defined as water exceeding 100 mg/l CaCO <sub>3</sub> .)
Chromium	The maximum permissible value for waters designated SHELL shall be 0.01 mg/l.
Other Chemical Constituents	Refer to Tables 3.1, 3.2, 3.3, 3.4 and 3.5 of the Basin Plan

# Appendix C – Permanent Treatment Consideration from the Caltrans Project Planning and Design Guide

## SECTION FOUR

### Permanent Treatment Consideration

Figure 4-1: Project Evaluation Process for Consideration of Permanent Treatment BMPs

