

Technical Memorandum

PROPOSED WATER QUALITY MONITORING PLAN

Foothill Transportation Corridor South

December 12, 2007

Prepared By:

**By
Transportation Corridor Agencies**

Introduction

The purpose of this technical memorandum is to summarize the proposed monitoring plan for constituents of concern at San Mateo Creek and San Juan Creek. Monitoring activities shall be used to evaluate the baseline concentrations of constituents present in the creeks during wet weather conditions. The constituents chosen for sample collection are often present in storm water runoff from roadways. The monitoring at San Mateo Creek is proposed to be conducted near its mouth, just upstream of where the Creek crosses under Interstate Highway 5. The monitoring at San Juan Creek is proposed to be conducted just south of the location where the proposed FTC South would cross over the creek.

The TCA shall be responsible for monitoring and reporting as further discussed. The objective of the monitoring plan is to ensure an understanding of the concentrations of various storm water associated constituents during pre-project (FTC) conditions. To obtain a statistically representative sample size, the goal is to capture at least eight storms per year, with four storms per year as a minimum.

Description of Sampling Sites

San Mateo Creek

The San Mateo Creek watershed has a drainage area of 132 square miles originating from within the Cleveland National Forest and flowing southwesterly through Camp Pendleton. Samples will be collected at two locations from San Mateo Creek near the mouth of the creek and just upstream of Interstate 5 where the creek is easily accessible.

The first sampling station will be located just upstream of the northbound side of the Interstate Highway 5 San Mateo Creek bridge. Figure 1 shows an aerial photo of the entire San Mateo Creek watershed and the approximate location of the sample collection station. The map also shows the locations of the corridor and proposed Rancho Mission Viejo Development. Figure 2 shows a photograph taken of the lower San Mateo Creek channel facing upstream of Interstate Highway 5. The proposed sampling site can be accessed from this highway.

The second sampling location will be taken at the mouth of the creek downstream of the old highway 101 bridge prior to the creek entering the ocean. The general vicinity of this sampling location is shown in Figure 3.

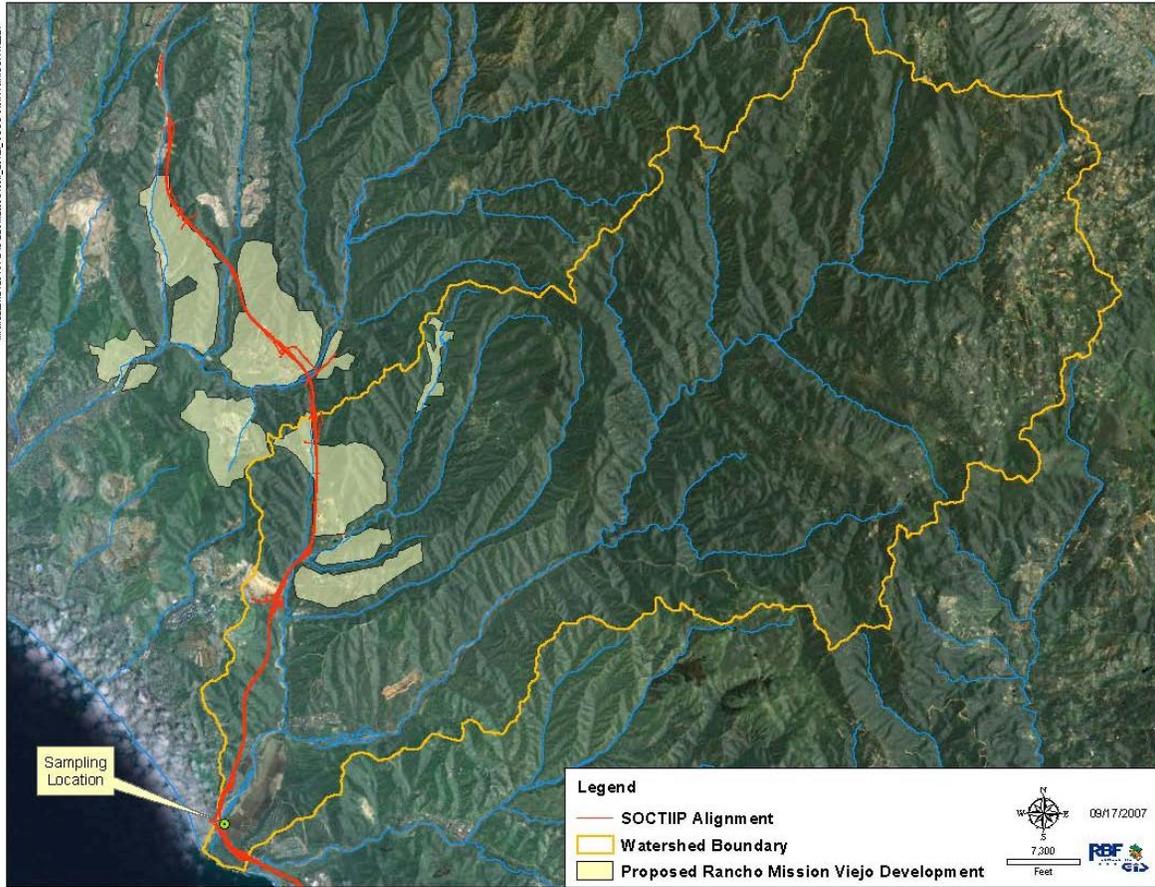
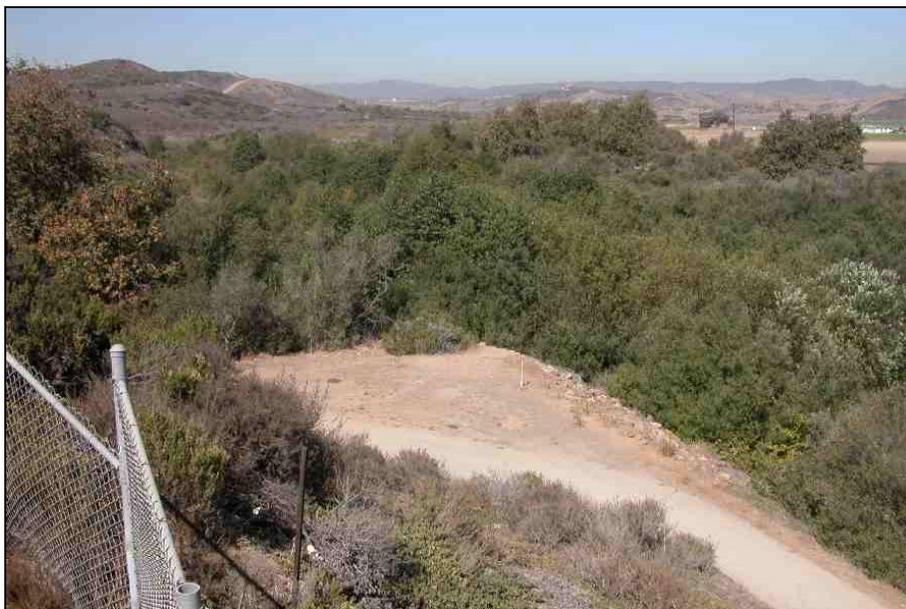


Figure 1: San Mateo Creek



**Figure 2: San Mateo Lower Channel Reach (Upstream of Interstate Highway 5)
Sampling Location No. 1**



**Figure 3: San Mateo Creek Downstream of Old Highway 101 Bridge
Sampling Location No. 2**

San Juan Creek

The San Juan Creek Watershed has a drainage area of 134 square miles. The San Juan Creek is perennial and originates in the Santa Ana Mountains district of the Cleveland National Forest in eastern Orange County. Samples are proposed to be collected from San Juan Creek just upstream and downstream of the location where the proposed FTC South will cross over San Juan Creek.

The first sampling station will be located just downstream of the proposed intersection of the proposed FTC South with San Juan Creek. Figure 4 shows an aerial photo of the entire San Juan Creek watershed and the approximate location of the sample collection station. The map also shows the location of the corridor. Figure 5 contains a photograph taken of the San Juan Creek channel facing east (upstream). The photo was taken approximately 900 feet downstream of the intersection of San Juan Creek and the proposed FTC. The proposed sampling site can be accessed from the Highway 74 (the Ortega Highway).

The second sampling location is upstream of the future Corridor crossing of San Juan Creek. This sampling location will not be needed until after the Corridor is constructed and in operation. The specific sampling location may be refined at that time.

Constituents

Various constituents were selected for sample collection. These constituents, as shown in Table 1, are often present in storm water runoff from highways and are commonly monitored to evaluate the impact of development to a region. These constituents were also monitored by the California Department of Transportation (Caltrans) during the Discharge Characterization Study (CTSW-RT-03-065.51.42). The characterization study provides a database against which the results of this monitoring program can be compared.

Obtaining baseline concentrations will allow the TCA to understand the load of potential contaminants from natural background and other existing sources. The constituents of interest include nutrients, metals, total petroleum hydrocarbons (TPH), fecal pathogen indicators, and other constituents commonly evaluated to understand the composition of storm water runoff. The constituents to be monitored are presented in Table 1.

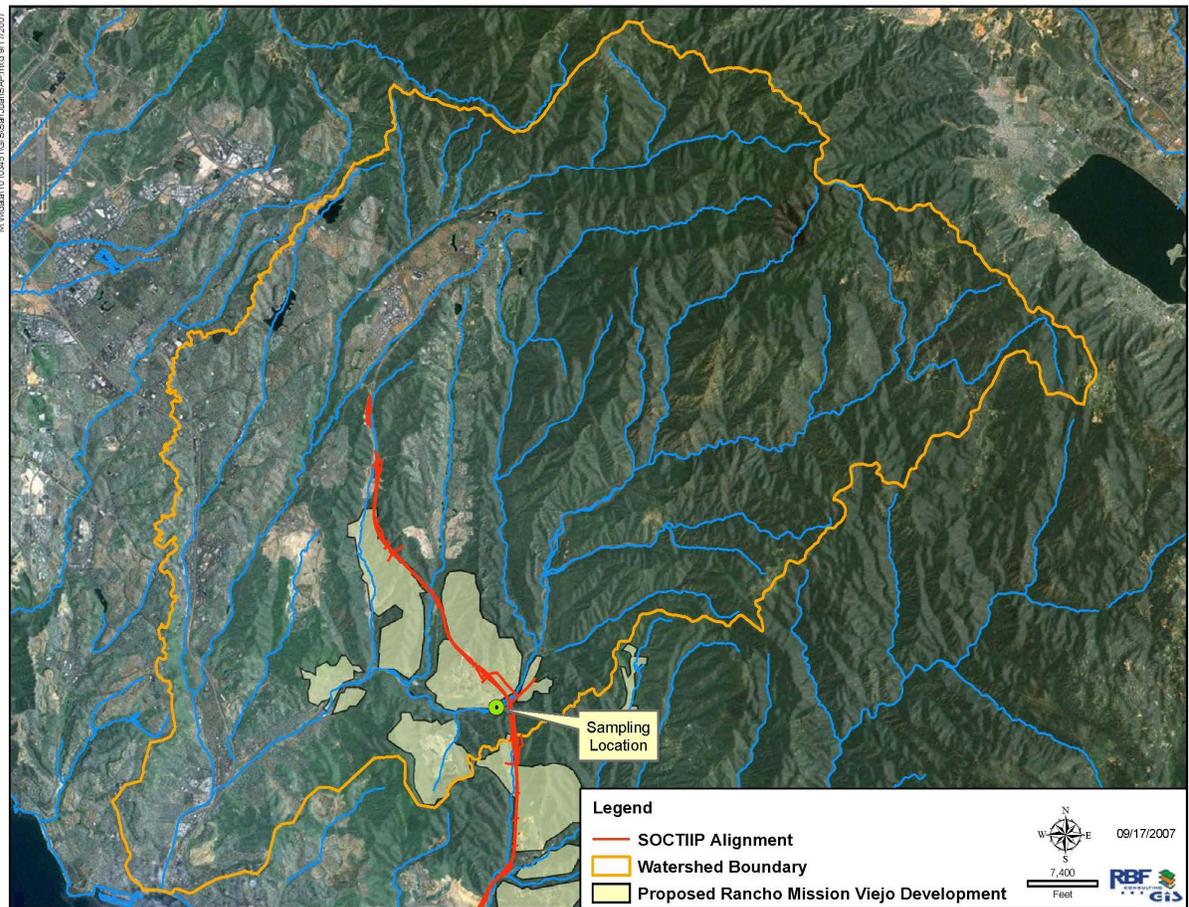


Figure 4: Sample Location for San Juan Creek

**Figure 5: San Juan Creek, 900 Feet Downstream of Proposed Crossing, Facing East
(Toward Proposed Sample Collection Location) (Saddleback 2007)**

Table 1: Selected Constituents of Concern

Analyte	Target Detection		EPA Method Number
	Limit	Units	
Hardness as CaCO ₃	2.0	std. units	EPA 130.2; 130.1; SM 2340B
Total Dissolved Solids (TDS)	1.0	mg/L	EPA 160.1
Total Suspended Solids (TSS)	1.0	mg/L	EPA 160.1
Conductivity	1.0	µmhos/cm	EPA 120.1
Temperature	0.1	°C	EPA 170.1
pH	0.1	mg/L	EPA 150.1
Total Organic Carbon (TOC)	1.0	mg/L	EPA 415.1
Dissolved Organic Carbon (DOC)	1.0	mg/L	EPA 415.1
Total Petroleum Hydrocarbons (TPH)	50	µg/L	8015b
Nitrate as Nitrogen (NO ₃ -N)	0.1	mg/L	EPA 300.0
Total Kjeldahl Nitrogen (TKN)	0.1	mg/L	EPA 351.3
Total Phosphorus	0.03	mg/L	EPA 365.2
Dissolved Ortho-Phosphate	0.03	mg/L	EPA 365.2
Arsenic	0.5	µg/L	EPA 206.3; 1632 ^a
Cadmium	0.2	µg/L	EPA 213.2; 200.8 ^b
Chromium	1.0	µg/L	218.2; 200.8 ^b
Copper	1.0	µg/L	220.2; 200.8 ^b
Lead	1.0	µg/L	239.2; 200.8 ^b
Nickel	2.0	µg/L	249.2; 200.8 ^b
Zinc	5.0	µg/L	289.2; 200.8 ^b
Total Coliform	Min: 2 Max: 2E6	MPN/100 mL	SM 9221B
Fecal Coliform	Min: 2 Max: 2E6	MPN/100 mL	SM 9221E

^a EPA method 1632 is an additional available “clean-technique” GH-AA method that can be used for this constituent. EPA method approval is in progress.

^b EPA method 1638 is an additional available “clean-technique” ICP-MS method that can be used for this constituent. EPA method approval is in progress.

Sample Collection Design

Samples will be collected during wet weather conditions using grab techniques following Surface Water Ambient Monitoring Program (SWAMP) protocols over a proposed six-year period. This time period will build a database that will most likely allow characterization of the conditions on San Mateo Creek and San Juan Creek at the sampling locations during both pre- and post-construction conditions.

It is anticipated that a sampling program will also be required during the construction phase of the project through the General Construction Permit or other regulatory requirements.

Figures 6 and 7 show the sample collection areas at San Mateo Creek and San Juan Creek and the adjacent roadways that can be used to access the site. These are preliminary recommendations of site location. The exact location will have to be determined after reconnaissance of the regions to identify a site that will provide safe access and stable support for the equipment during wet weather conditions.

Reporting

The TCA shall be responsible for monitoring and reporting. The results of the monitoring will be published in a technical memorandum on an annual basis by August 1st of each year monitoring is in progress. A final report, discussing the pre-construction baseline-monitoring period, and comparing the data to the post-construction monitoring period will be completed by August 1st of the final year of monitoring. Copies of each report shall be submitted to the Regional Board upon completion.

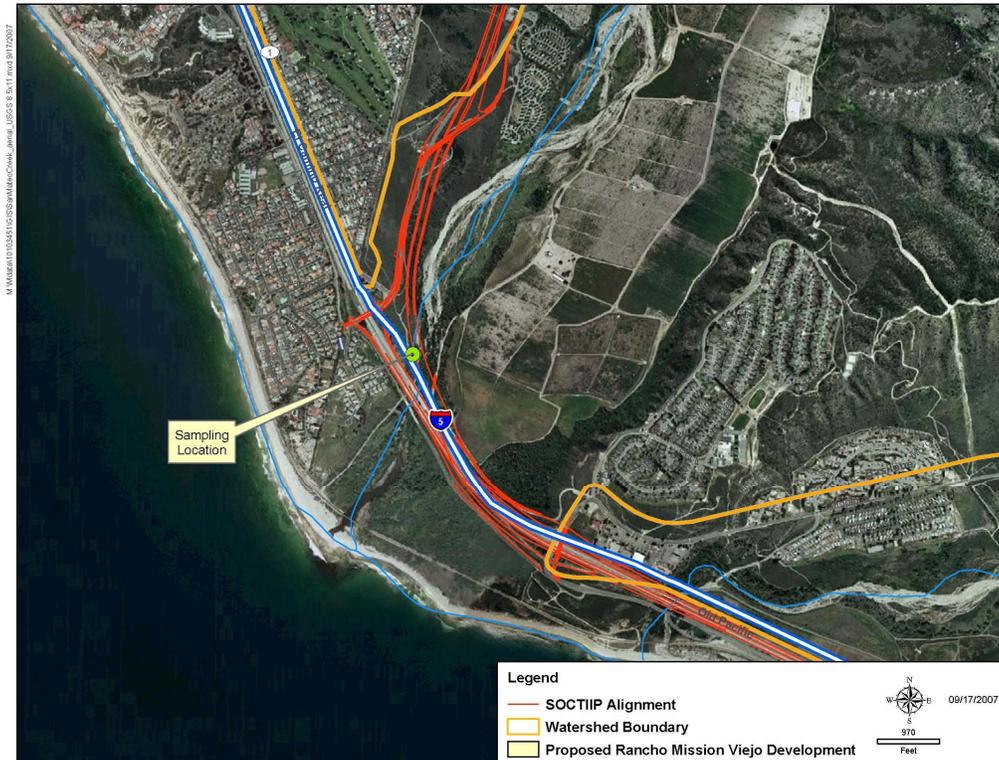


Figure 6: San Mateo Sample Collection Location and Adjacent Roadways

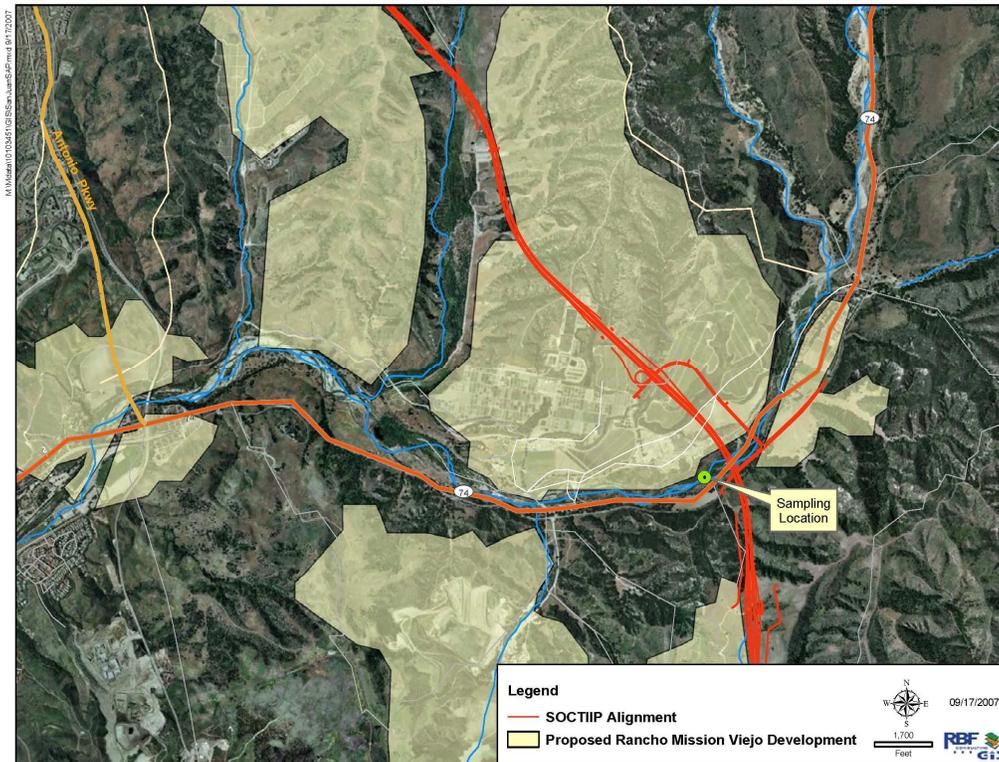


Figure 7: San Juan Sample Collection Location and Adjacent Roadways