SAN DIEGUITO RIVER WMA
BACTERIA TMDL COMPLIANCE MONITORING PLAN

Submitted to:

City of Escondido

City of Del Mar

City of Poway

City of San Diego

San Diego County

City of Solana Beach

Submitted by:

Amec Foster Wheeler Environment & Infrastructure, Inc.

San Diego, California

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Amec Foster Wheeler Project No. 5025131044

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ACRONYMS AND ABBREVIATIONS

%	percent
*.pdf	Portable Document Format
°C	degree Celsius
≥	greater than or equal to
µS/cm	micro-Siemens per centimeter
303(d) List	Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments
AB 411	Assembly Bill 411, the Beach Safety Act
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
Bacteria TMDL	San Diego Regional Water Quality Control Board Resolution Number R9-2010-0001, *Revised TMDL for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*
CEDEN	California Environmental Data Exchange Network
CFU	colony forming units
COC	chain of custody
CWA	Clean Water Act
E.coli	*Escherichia coli*
EDD	Electronic Data Deliverable
ELAP	Environmental Laboratory Accreditation Program
FIB	fecal indicator bacteria
GIS	Geographic Information System
ID	identification
mL	milliliter
MM/DD/YY	month/day/year
MPN	most probable number
MPN/100mL	most probable number per 100 milliliters
MS4	Municipal Separate Storm Sewer System
MS4 Permit	Order Number R9 2013-0001, National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System Draining the Watersheds Within the San Diego Region
NA	not applicable
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System

ACRONYMS AND ABBREVIATIONS (CONTINUED)

NTU	nephelometric turbidity unit
NWS	National Weather Service
OAL	Office of Administrative Law
QA	Quality Assurance
QA/QC	Quality Assurance and Quality Control
QC	Quality Control
REC-1	water contact recreation
Responsible Agency	Phase I MS4 Copermittee
RL	Reporting Limit
RPD	relative percent difference
RWL	receiving water limitation
SANDAG	San Diego Association of Governments
SCCWRP	Southern California Coastal Water Research Project
SDRWQCB	San Diego Regional Water Quality Control Board
SOP	Standard Operating Procedure
SM	Standard Method
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TBD	to be determined
TMDL	total maximum daily load
USEPA	United States Environmental Protection Agency
WLA	waste load allocation
WMA	Watershed Management Area
WQBEL	water-quality-based effluent limit
WQO	water quality objective

1.0 PROJECT DESCRIPTION

1.1 Introduction

The San Diego Regional Water Quality Control Board (SDRWQCB) issued Resolution No. R9-2010-0001, A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Revised Total Maximum Daily Loads (TMDL) for Indicator Bacteria Project I-Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek), hereafter referred to as the Bacteria TMDL (SDRWQCB, 2011). The Bacteria TMDL has identified the Municipal (Phase I and Phase II) Separate Storm Sewer Systems (MS4s) within the County of San Diego as the primary point sources that have been assigned a Waste Load Allocation (WLA) requiring a reduction. Owners and operators of small MS4s (Phase II MS4s) and controllable nonpoint sources, identified by the San Diego Water Board as significant sources of bacteria discharging to the receiving waters and/or Phase I MS4s, are subject to the Bacteria TMDL; however, they are not included in this Monitoring Program. The recently adopted *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges From the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds Within the San Diego Region*, Order No. R9-2013-0001, hereafter referred to as the MS4 Permit, incorporates the Bacteria TMDL and outlines monitoring requirements for Responsible Agencies (SDRWQCB, 2013). The Phase I MS4s (hereafter called the Responsible Agencies) have developed this Monitoring Plan for the San Dieguito River Watershed Management Area (WMA) to meet the requirements of the MS4 Permit. The ultimate goal of the Bacteria TMDL is to achieve the necessary pollutant load reductions to restore and protect the designated beneficial use of water contact recreation (REC-1).

1.2 Purpose

The following four principal types of monitoring will be conducted to address the goals of the San Dieguito River Bacteria TMDL compliance monitoring program.

- Compliance Monitoring is required by the Bacteria TMDL to demonstrate progress toward meeting TMDL requirements including numeric targets and WLAs. This plan reflects the compliance monitoring approach.
- Optional Monitoring is not required by the Bacteria TMDL; however, if sufficient funds are available, it may be implemented by Responsible Agencies to better understand water quality conditions in the receiving water and support the goals of compliance monitoring. Optional Monitoring may be added to (and removed from) the compliance monitoring effort as deemed appropriate by the Responsible Agencies. This plan reflects option monitoring components as described in Section 2.
- Follow-up Monitoring may be implemented after the Dry Weather Exceedance Reduction Milestone in 2016 to characterize the source, magnitude, and duration of exceedances of bacteria water quality objectives (WQOs) in the receiving water based on the results of compliance monitoring. Follow-up Monitoring is not included in this plan and may be incorporated in a future revision.

- Special Studies are not a requirement of Attachment E of the MS4 Permit; however, Special Studies may be implemented on the basis of the available data and resources to address compliance strategies described in the Water Quality Improvement Plans. Special Studies may require the development of separate agreements and funding opportunities among the Responsible Agencies. The Responsible Agencies are participating in two bacteria-related special studies to fulfill the requirements of the San Dieguito River WMA Water Quality Improvement Plan. The monitoring approach for these studies are provided separately in project specific plans and therefore, are not included in this plan.

This Monitoring Plan describes and outlines the San Dieguito River Bacteria TMDL compliance monitoring program. It is designed to fulfill the compliance monitoring requirements of the Bacteria TMDL as incorporated in Attachment E of the MS4 Permit. The goals of the San Dieguito River Bacteria TMDL compliance monitoring program include the following:

- Assess progress toward meeting the Bacteria TMDL numeric targets
- Characterize existing fecal indicator bacteria concentrations in receiving waters

1.3 Watershed Background

The San Dieguito River WMA drains an area of 346 square miles in west-central San Diego County. The San Dieguito River WMA includes portions of the cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach, and unincorporated San Diego County. Much of the watershed is composed of vacant or undeveloped land (39 percent), open space parks and recreation (24 percent), and residential (18 percent) land uses. Most of the development is concentrated in the lower or western portions of the watershed (San Diego Association of Governments [SANDAG], 2009).

The Pacific Ocean Shoreline at the San Dieguito Lagoon Mouth was placed on the Clean Water Act (CWA) Section 303(d) List (303(d) list) of impaired waters in 2002 for indicator bacteria. As a result, this segment was included in the Bacteria TMDL. The Pacific Ocean Shoreline at the San Dieguito Lagoon Mouth was then removed from the 303(d) list in 2010 (United States Environmental Protection Agency [USEPA], 2003 and 2011).

In May 2013, SDRWQCB issued the MS4 Permit; Attachment E.6 of the MS4 Permit clarifies the requirements for the Bacteria TMDL (SDRWQCB, 2013). The Bacteria TMDL was considered a receiving water condition to develop goals and strategies as part of the Water Quality Improvement Plan process to continue compliance with the Bacteria TMDL requirements and to meet water-quality-based effluent limits (WQBELs) as required by the MS4 Permit. Monitoring data collected at the Pacific Ocean Shoreline at the San Dieguito Lagoon Mouth will be used to demonstrate compliance with the water quality standards.

1.4 Project Organization and Responsibilities

Attachment E of the MS4 Permit identifies the Responsible Agencies of the Phase I MS4s as point sources that have been assigned WLAs requiring a reduction. The Phase I MS4s (hereafter collectively called the Responsible Agencies) have developed this Monitoring Plan in

accordance with Attachment E of the MS4 Permit as the Bacteria TMDL compliance monitoring program for the San Dieguito River WMA.[1] Responsible Agencies include the following entities:

- City of Del Mar
- City of Escondido
- City of Poway
- City of San Diego
- City of Solana Beach
- County of San Diego

Since the Bacteria TMDL was adopted in 2011, the Responsible Agencies have been developing strategies and programs to address indicator bacteria and to maintain REC-1 uses throughout the Los Peñasquitos Watershed. The City of San Diego will be the lead implementation efforts and act as the liaison between the Responsible Agencies and the monitoring team for the Bacteria TMDL Monitoring Program. The monitoring team and laboratory staff will have the following roles and responsibilities:

- **Monitoring Manager:** The Monitoring Manager is responsible for implementing the Monitoring Program and will act as the liaison between the Responsible Agencies and the monitoring team. The Monitoring Manager will oversee monitoring activities and act as Quality Assurance (QA) Officer.

- **Wet Weather Sampling Lead:** The Wet Weather Sampling Lead is responsible for implementing the wet weather program in accordance with the MS4 Permit requirements and for overseeing the day-to-day activities.

- **Dry Weather Sampling Lead:** The Dry Weather Sampling Lead is responsible for implementing the dry weather program in accordance with the MS4 Permit requirements and for overseeing the day-to-day activities.

- **Participating Laboratory QA Officer/Project Manager:** Each participating laboratory must identify a QA Officer or Project Manager for this monitoring program. The Laboratory Project Manager is responsible for performing sample analyses and implementing quality control procedures in accordance with this plan.

1.5 Implementation Schedule

The Bacteria TMDL provides a compliance timeline outlining the interim reduction milestones over the 20-year compliance period (2011–2031), which began in April 2011, after approval of the Bacteria TMDL by the State Water Resources Control Board's Office of Administrative Law (OAL). Attachment E of the MS4 Permit provides clarification for segments that have been removed from the 303(d) list, stating that Responsible Agencies may propose alternative methods to demonstrate that these water bodies continue to remain in compliance with water quality standards under wet and dry weather conditions. Data collected at the historical

[1] *Owners and operators of small MS4s (Phase II MS4s) and controllable nonpoint sources, identified by the SDWQCB as significant sources of bacteria discharging to the receiving waters and/or Phase I MS4s, are subject to the Bacteria TMDL; however, they are not included in this Monitoring Program.*

Assembly Bill (AB) 411 (Beach Safety Act) monitoring location at the San Dieguito Lagoon Mouth will be used to demonstrate compliance with the water quality standards.

After the Dry Weather Exceedance Reduction Milestone in 2016, follow-up monitoring may be implemented on the basis of annual exceedances of receiving water limitations (RWLs) in the San Dieguito River WMA to investigate potential sources. The San Dieguito River WMA Responsible Agencies have developed the Water Quality Improvement Plan to address bacteria (as well as other pollutants) in the watershed. Currently, the Responsible Agencies are participating in a regional special study to evaluate natural sources of bacteria in reference streams (SCCWRP, 2013). Additionally, the Responsible Agencies plan to implement a bacteria source identification study specific to the San Dieguito River WMA.

The approved Water Quality Improvement Plan for the San Dieguito River WMA may include modifications to the compliance timeline to reflect additional water quality goals. Table 1-1 provides for the project schedule for the Bacteria TMDL compliance monitoring program.

Table 1-1.
Project Schedule

Activity **TMDL Compliance Monitoring**	**Date**	**Deliverable**
TMDL Compliance Monitoring Plan	Submitted herein	Monitoring Plan
Dry Weather Compliance Monitoring	30 days following approval of Water Quality Improvement Plan	Annual Bacteria Monitoring Summary to be included in the Water Quality Improvement Plan Annual Reports
Wet Weather Compliance Monitoring	1st wet season following approval of Water Quality Improvement Plan	
Dry Weather 50% Reduction Milestone	April 2016	
100% Dry Weather Reduction 50% Wet Weather Reduction	April 2021	
100% Wet Weather Reduction	April 2031	
Special Studies		
San Diego Regional Reference Stream Study[(a)]	11/01/11 through 2016	Anticipated date of completion fiscal year 2016. Report to be provided by Southern California Coastal Water Research Project

Table 1-1.
Project Schedule (Continued)

Activity TMDL Compliance Monitoring	Date	Deliverable
Bacteria Source Identification Study (Desktop, Data Gap GIS Analysis)	First wet season following approval of Water Quality Improvement Plan	Annual Bacteria Monitoring Summary to be included in the Water Quality Improvement Plan Annual Report

Notes:
GIS = geographic information system
NA = Not Applicable
TBD = to be determined
(a) This study began in Fiscal Year 2012 with the goal of being completed by Fiscal Year 2014. However, because of below-average rainfall during the past several years, project deadlines have been extended until sufficient amounts of data have been collected.

1.6 TMDL Numeric Targets and Compliance Pathways

The MS4 Permit defines the Bacteria TMDL numeric targets and compliance pathways for the Responsible Agencies. Data collected during the San Dieguito River WMA Bacteria TMDL compliance monitoring program will be used to evaluate progress and attainment of Bacteria TMDL targets. Compliance pathways have been integrated into the San Dieguito River WMA Water Quality Improvement Plan.

Attainment of the TMDLs in the receiving water is based on the exceedance frequency of the respective numeric objective in a given year. For dry weather, the Bacteria TMDL numeric target is based on the geometric mean water quality objective and a 0 percent allowable exceedance frequency, as presented in Table 1-2. For wet weather, the TMDL numeric target is based on the single-sample maximum and an allowable exceedance frequency of 22 percent as well as the geometric mean, as presented in Table 1-2.

Table 1-2.
Final Receiving Water Limitations for Beaches
(Bacteria Densities and Allowable Exceedance Frequencies)

Constituent	Dry Weather Days[a]		Wet Weather Days[b]	
	30-Day Geometric Mean[c] (MPN/100mL)	30-Day Geometric Mean Allowable Exceedance Frequency	Single-Sample Maximum[d] (MPN/100mL)	Single-Sample Maximum[e] Allowable Exceedance Frequency
Total Coliform	1,000 [d]	0%	1,000 [d]	22%
Fecal Coliform	200	0%	200	22%
Enterococcus	35	0%	35	22%

Table 1-2.
Final Receiving Water Limitations for Beaches
(Bacteria Densities and Allowable Exceedance Frequencies) (Continued)

Constituent	Dry Weather Days[a]		Wet Weather Days[b]	
	30-Day Geometric Mean[c] (MPN/100mL)	30-Day Geometric Mean Allowable Exceedance Frequency	Single-Sample Maximum[d] (MPN/100mL)	Single-Sample Maximum[e] Allowable Exceedance Frequency

Notes:
MPN = Most Probable Number;
mL = milliliter
Source: SDWQCB. Resolution No. R9-2010-0001.

(a) Dry weather days are defined as days with less than 0.1 inch of rainfall and each of the previous 3 days as allowed by Attachment E of the MS4 Permit. The Bacteria TMDL defined dry weather days as days with less than 0.2 inch of rainfall observed on each of the previous 3 days.

(b) Wet weather days are defined as days with greater than 0.2 inch of rainfall and the following 72 hours as allowed by Attachment E of the MS4 Permit. The Bacteria TMDL defined wet weather days are defined as days with rainfall events of 0.2 inch or greater and the following 72 hours.

(c) Dry weather numeric objectives are based on the 30-day geometric mean water quality objectives in the California Ocean Plan (SWRCB, 2012). Compliance with the dry weather TMDLs in the receiving water is based the frequency of exceedances of the dry weather numeric objective. The Bacteria TMDL set a 0% allowable exceedance frequency of the REC-1 geometric mean water quality objectives (WQOs).

(d) Wet weather numeric objectives are based on the single-sample maximum water quality objectives in the California Ocean Plan (SWRCB, 2012). Compliance with the wet weather TMDLs in the receiving water is based on the frequency of exceedances of the wet weather numeric objective, but the 30-day geometric mean must also be met.

(e) The wet weather allowable exceedance frequency is set at 22%. In the calculation of the wet weather TMDLs, the SDRWQCB chose to apply the 22% allowable exceedance frequency as determined for Leo Carillo Beach in Los Angeles County. At the time the wet weather watershed model was developed, the 22% exceedance frequency from Los Angeles County was the only reference beach exceedance frequency available.

The Responsible Agencies must achieve a 50 percent reduction in “existing” dry and wet weather exceedance frequencies by the 2016 and 2021 interim compliance dates, respectively (Table 1-3). The “existing” dry weather exceedance frequencies were calculated using the available historical data collected between years 1996 to 2002 at the historical AB 411 monitoring location (EH-380) per the Bacteria TMDL. As a clarification to the Bacteria TMDL, the MS4 Permit provides interim wet weather reduction milestones, expressed as a percentage, for each compliance constituent. Responsible Agencies will compare the “existing” dry and wet weather exceedance frequencies with the mandated frequency reductions to evaluate progress toward attaining the TMDL targets.

Table 1-3.
Interim TMDL Reduction Goals

Segment	Interim Dry Weather Allowable Exceedance Frequencies[(a)]			Interim Wet Weather Allowable Exceedance Frequencies[(b)]		
	Total Coliform	Fecal Coliform	*Enterococcus*	Total Coliform	Fecal Coliform	*Enterococcus*
San Dieguito Lagoon Mouth	3%	5.5%	8.5%	33%	33%	36%

Notes:
(a) Interim dry weather goals are the 50% reduction of existing dry weather exceedance frequencies, based on available historical data from the years 1996 to 2002.
(b) Interim wet weather goals provided in Attachment E of the MS4 Permit.

In addition to Bacteria TMDL numeric targets, this Monitoring Program will be used to evaluate the Water Quality Improvement Plan dry weather goals and wet weather goals for the San Dieguito River WMA and shoreline as presented in Section 4 for the Water Quality Improvement Plan.

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2.0 MONITORING APPROACH

This section describes the purpose, scope, and type of sampling conducted for the Bacteria TMDL Compliance Monitoring Program.

2.1 Compliance Monitoring

Compliance monitoring is designed to meet the receiving water monitoring requirements of the Bacteria TMDL as it is incorporated by Attachment E of the MS4 Permit. Compliance monitoring, including wet and dry weather sampling, will be conducted each year at the compliance monitoring locations. The data generated will be used to address the following questions:

- Are TMDL numeric targets for bacteria indicators being met at the compliance monitoring location?
- What are the fecal indicator bacteria levels at the compliance monitoring location?

The scope of compliance monitoring accounts for the frequency and type of sampling activities required to meet the MS4 Permit requirements. Monitoring will be conducted at the historical AB 411 monitoring location to maintain continuity with the TMDL numeric goals that are based on historical wet and dry weather data collected at this site. Table 2-1 provides the general scope of the Bacteria TMDL compliance monitoring program.

Table 2-1.
Scope of Bacteria TMDL Compliance Monitoring

Date Range	Number of Monitoring Locations	Event Type	Grab Samples Per Site Per Event	Event Frequency in Ocean	Estimated Number of Samples[(a)]
April 1 through October 31	1	Dry	1	Weekly (minimum 5 events per month)	35
November 1 through March 31	1	Dry	1	Minimum monthly	5
October 1 through April 30	1	Wet	1	1 up to 3 storm events. One sample within the first 72 hours of the end of the storm event	3[(b)]

Notes:
(a) Not including QA samples
(b) Number of wet samples represents maximum possible. Not including QA samples.

2.1.1 Compliance Monitoring Locations

Attachment E of the MS4 Permit identifies the Pacific Ocean Shoreline at the San Dieguito River Mouth as the impaired segment. Attachment E of the MS4 Permit requires the receiving water monitoring to occur at the same location monitored under the historical AB 411 Program. The historical AB 411 monitoring location (Site EH-380) is considered to be representative of the segment of Pacific Ocean Shoreline listed in the Bacteria TMDL. The Responsible Agencies will continue to monitor the historical AB 411 monitoring location to maintain consistency with the historical dataset and to support a more appropriate evaluation of the effectiveness of TMDL implementation. Figure 2-1 presents a map of the compliance monitoring location within the watershed. Table 2-2 provides the location name and coordinates for the compliance monitoring location.

Table 2-2.
TMDL Compliance Monitoring Location

Site ID	Site Name	Site Type	Latitude	Longitude
EH-380[(a)]	San Dieguito Lagoon Mouth	Pacific Ocean Shoreline	32.975	-117.271

Notes:

[(a)] Historical AB 411 location is approximately 25 meters down current of the river outlet

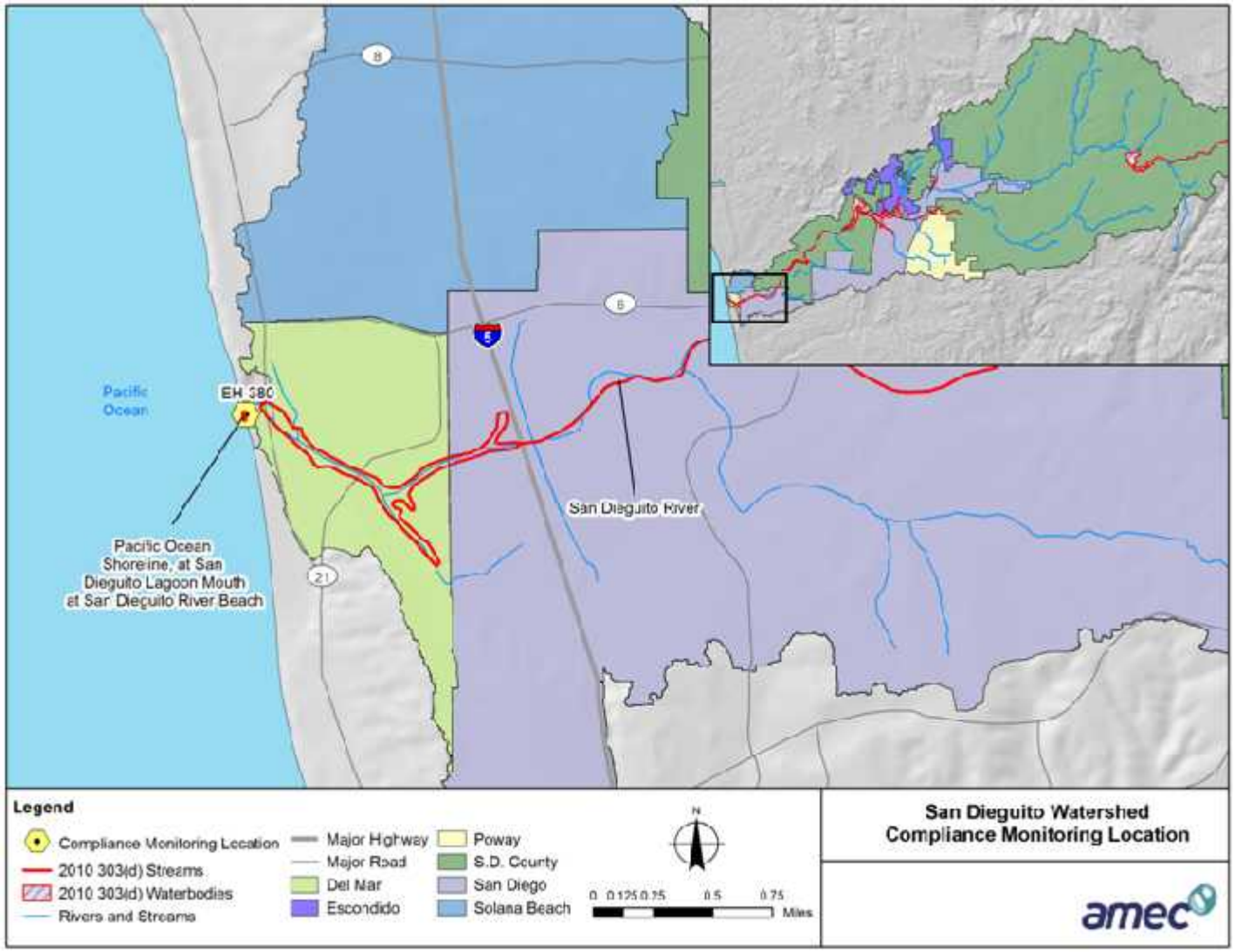

Figure 2-1. Map of Compliance Monitoring Location

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2.1.2 Constituents

Fecal indicator bacteria (FIB) are the target constituents for the Pacific Ocean Shoreline at the San Dieguito River Mouth, as indicated in Attachment E of the MS4 Permit. Grab samples will be collected in a manner consistent with the requirements of the AB 411 Program. Samples collected during wet and dry weather monitoring will be analyzed for FIB in accordance with Surface Water Ambient Monitoring Program (SWAMP) requirements. Samples will be submitted to an Environmental Laboratory Accreditation Program (ELAP)-certified laboratory for analysis. The laboratory will conduct the appropriate dilutions to generate results and avoid greater-than values. In anticipation of future requirements, the Responsible Agencies may choose to monitor *Escherichia coli (E.coli)* concentrations to begin to develop a comprehensive dataset. However, *E. coli* is not currently a compliance constituent of the Bacteria TMDL. Table 2-3 presents the compliance constituents, reporting limits, and analytical methods.

Table 2-3.
Compliance Analyses for Bacteria TMDL

Parameter	Project Reporting Limit[(a)] (per 100mL)	Analytical Method[(b)]
Enterococcus	10 CFU	EPA 1600
Fecal coliform	20 MPN/CFU	SM 9221D (3 or 5 dilutions) or SM 9222D (3 or 5 dilutions)
Total coliform	20 MPN/CFU	SM 9221B (3 or 5 dilutions) or SM 9222B (3 or 5 dilutions)

Notes:
CFU = colony forming units
mL = milliliter
EPA = U.S. Environmental Protection Agency
MPN = most probable number
SM = Standard Method
(a) The reporting limits are consistent with those of existing AB 411 Program to facilitate overlap with that program. However, reporting limits may be lower depending on the laboratory used to conduct the analysis.
(b) Membrane filtration is the preferred method. However, methods may vary depending on the laboratory used to conduct the analysis.

2.1.3 Dry Weather Monitoring

Dry weather monitoring will be conducted on dry weather days, after an antecedent dry period of 72 hours with less than 0.1 inch of rainfall, in accordance with the MS4 Permit. Consistent with historical AB 411 Program requirements, dry weather sampling will be conducted weekly between April 1 and October 31, when recreational activities are more likely to occur. Weekly dry weather samples will be collected so that at least five samples are collected in each calendar month (30 days). Between November 1 and March 31, when recreational activities are less likely to occur, dry weather samples will be collected at least once per month, consistent with the requirements of the MS4 Permit. During each dry weather monitoring event, field

observations and optional water quality measurements will be recorded and a grab water sample will be collected at the compliance monitoring location.

2.1.4 Wet Weather Monitoring

Wet weather monitoring will be conducted at the compliance monitoring location during a minimum of one and up to three storm events each wet season (October 1 to April 30). A wet weather day is defined as the day(s) of active precipitation and the 72 hours after the end of rainfall. Wet weather samples will be collected within 72 hours after end of rainfall. Storms resulting in greater than 0.2 inch of precipitation will be targeted for sample collection. The storm events will be spread throughout the wet season to the maximum extent practicable as follows:

- Storm Event 1 (October to November)
- Storm Event 2 (December to January)
- Storm Event 3 (February to April)

During each wet weather monitoring event, field observations and optional water quality measurements will be recorded and a grab water sample will be collected at the compliance monitoring location. Grab samples will be collected using a sample technique that is the same as that used during a dry weather monitoring event, taking additional safety precautions as needed.

2.1.5 Storm Selection Criteria

The monitoring team will target continuous rain events and avoid events predicted to be episodic and/or scattered in nature. The following criteria will be used to determine if mobilization will occur for an impending storm event:

- Storm events must be preceded by at least 72 hours of dry conditions (less than 0.10 inch of precipitation).
- Storms must be forecast to produce at least 0.20 inch of rainfall.
- The probability of precipitation occurring must be greater than 60 percent.
- Final mobilization will be based on the recorded precipitation of at least 0.2 inch. The main rain gauge used to determine mobilization will be the National Weather Service (NWS) Del Mar (DMRC1) gauge; however, additional gauges throughout the WMA may be utilized at the monitoring team's discretion.

Field teams will not be mobilized during or near certain holidays if the mobilization or laboratory analyses should continue through that holiday. This includes the following holidays:

- Independence Day
- Labor Day
- Thanksgiving
- Christmas Eve
- Christmas Day
- New Year's Eve
- New Year's Day
- Memorial Day

2.1.6 Weather Tracking

The National Oceanic and Atmospheric Administration (NOAA) website will be used to track the forecast and initiate mobilization on the basis of recorded rainfall amounts at the NWS Del Mar rain gauge.

Weather will be tracked by the Wet Weather Sampling Lead for monitoring purposes for the duration of the wet season (October 1 through April 30). Throughout the wet season, the forecast and recorded precipitation at Del Mar as reported by the NWS will be the main data source. However, several sources for weather information will be monitored continuously, including other related rain gages within the San Dieguito River WMA as reported by the NWS and local ALERT systems.

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3.0 SAMPLE METHODOLOGY

This section describes the data collection methods used to support compliance monitoring and reporting in accordance with Attachment E of the MS4 Permit.

3.1 Wet and Dry Weather Grab Sampling

Dry and wet weather sampling may be conducted on any day of the week as long as event criteria are met. For each sampling event, one grab sample will be collected and analyzed for FIB. Laboratories will be notified prior to each event and will be ready to receive, preserve, and analyze bacteria samples as they are delivered during dry weather and wet weather sampling events, and field staff will have samples delivered to the laboratory within the 6-hour holding time. Grab samples will be representative of the environmental conditions of the site. The field staff sampler will wade into the surf carefully in a manner that does not disturb the sediment until he or she reaches approximately 1 foot in water column height, or a level that reaches the middle of the sampler's shinbone. During an incoming wave, not outgoing wave, the sampling staff will extend the bottle and/or sampling pole a far as practicable. The sample container will be submersed into the water column, facing downward, to mid-depth (approximately 4 to 8 inches) and turned slightly upward while moving the bottle horizontally through the water until full to eliminate cross-contamination from the sampling equipment. Sampling will occur below the water surface to avoid floating debris. If surface residue, sediment, or debris enters the sample bottle, the sample will be discarded and re-sampled with a new, sterile bottle.

3.2 Optional Field Measurements and Observations

In-situ water quality and field observations are beyond the requirements of the MS4 Permit. However, these optional data parameters may be referenced to support key findings or patterns indicated by the compliance analytical data. For example, conductivity readings may be used to estimate relative freshwater contribution at the compliance monitoring location, and turbidity trends may be paired with bacteria concentrations to examine potential associations between bacteria and turbidity. Optional field measurements and notable field observations (e.g., potential FIB sources) will be conducted with each collected wet and dry weather sample. Table 3-1 provides the range of accuracy of field meter *in-situ* measurements.

Table 3-1.
Optional In-Situ Field Measurement Detection Ranges

Parameter	Method	Range	Units
Conductivity	Field Meter	0 to 200,000	µS/cm
pH	Field Meter	0 to 14	pH units
Temperature	Field Meter	-5 to +75	°C
Turbidity	Field Meter	0 to 1,000	NTU

Notes:
µS/cm = micro-Siemens per centimeter; °C = degree Celsius; NTU = nephelometric turbidity units

General observations may include site conditions and actions taken during sampling. Potential sources of bacteria in the vicinity of the site may also be identified, including human-related sources, activities, and natural sources. An example field data sheet is provided as Appendix A. The following general information may be recorded on a field data sheet during each site visit:

- Site identification (ID), location and description (deposits, stains, vegetation, biology)
- Monitoring project name
- Grab sample ID, date, and time
- Field team personnel
- Water quality observations including but not limited to:
    - Flow status (flowing, trickle flow, ponded) and estimated flow rate
    - Floatables, surface scum, sheens, odor, color
- Potential bacteria sources including presence and approximate count of trash, wildlife, etc.
- Weather conditions (cloud cover, precipitation)
- Berm and tide status
- Runoff characteristics
- Miscellaneous comments

3.3 Precipitation Data

Per the MS4 Permit, rainfall data are not a required to be recorded onsite for Bacteria TMDL compliance monitoring. Precipitation data from the NWS Del Mar rain gauge will be used to track the total number of wet weather days as defined in the MS4 Permit. Historical daily rainfall amounts generated by the NWS at the Del Mar rain gauge will be used to assess the annual rainfall and historical average for San Diego County. The NWS Del Mar rain gauge was selected because of its historical records and therefore, will be used as the main source of precipitation data. However, other rain gauges may be used to verify applicability for the San Dieguito River WMA.

3.3.1 Sample Handling and Chain of Custody

This section describes sample handling and chain of custody procedures employed when collecting samples and delivering samples to the laboratory to minimize the possibility of contamination.

The following procedures apply when collecting samples and delivering them to the laboratory:

- Unused (new), clean, powder-free nitrile gloves will be worn while collecting samples and will be replaced with new, clean gloves between samples and sites.
- Field personnel will be thoroughly trained in the proper use of sample collection gear.

- FIB samples will be collected directly into a sterilized polyethylene or polypropylene containers provided by the analyzing laboratory. Sample bottles will remain sealed and protected from dust or other contaminants during storage and bottle handling.
- Field personnel will make an effort, within reason, to prevent large gravel and uncharacteristic floating debris from entering the sample containers.
- The insides of the sampling containers and lids will not be touched during preparation and sampling activities.
- New bags of previously unopened ice will be used to cool samples following collection.

Once sample containers are filled, they will be promptly placed on ice, in a clean cooler (maximum temperature of 10 degrees Celsius), in the dark, and transported to the laboratory for processing to meet holding times. After sampling is complete, all waste (gloves, ice bags, etc.) will be placed in the trash. Extra sample water volume will be disposed of according to laboratory protocols. New, sterile containers provided by the laboratories will be used during each event.

Grab samples will be marked with a unique sample ID that will be used to track the sample throughout its analyses. These sample IDs will also be entered directly on to field and laboratory data sheets. All field observations and processed sample information will be recorded and transcribed to Microsoft Excel spreadsheets. Hard copies of these field and laboratory data sheets will be maintained by the Sampling Lead.

All bottles will be pre-labeled with the following information:

- Project name
- Date
- Time
- Sampling location name and number
- Sample matrix
- Collector's initials
- Sample ID number
- Analysis name

The Chain of Custody (COC) form provided in Appendix B will accompany the collected water samples. The member of the field staff delivering the samples as well as the receiving member of the laboratory staff will sign the COC when samples are delivered. Sampled water will be kept in the dark and below 10 degrees Celsius and transferred to an analytical laboratory within holding times. COC forms for the samples will be completed and transported with the samples to the analytical laboratory. Transportation will be coordinated to ensure that all samples are handled and analyzed within the proper holding time requirements. Sample holding times are listed in Table 3-2. Custody of all samples will be transferred from the field personnel to laboratories.

Table 3-2.
Sample Handling and Custody

Analysis	Container	Minimum Sample Volume[(a)]	Initial Preservation	Holding Time
Enterococcus	Factory-sealed and/or pre-sterilized, 500 or 1000 mL sterile plastic (high-density polyethylene or polypropylene) container	500 mL	< 10°C in the dark	6 hours
Fecal coliform				
Total coliform				

Notes:
mL = milliliter; °C = degree Celsius
(a) Minimum sample volume is representative of total volume needed to analyze all constituents.

If a failure to meet a sample handling requirement occurs, sampling teams will notify the Sampling Lead immediately to reschedule the event in coordination with the laboratory. The Project Manager will notify the Lead Agency immediately and complete a write up of the issue and corrective action. Failures may include samples not delivered within specified holding times, potential contamination of samples, or improper handling.

4.0 QUALITY CONTROL

This section addresses quality assurance and quality control (QA/QC) activities associated with both field sampling and laboratory analyses. The field quality control (QC) samples are used to evaluate potential contamination and sampling error introduced prior to submittal of samples to the analytical laboratory. Laboratory QA/QC activities provide information needed to assess laboratory contamination, analytical precision, and analytical accuracy. If any QA/QC standards are not met, the appropriate corrective actions will be taken in a timely manner to avoid continuation of the same issues. The Monitoring Manager, in collaboration with the Laboratory Manager, is responsible for making decisions on corrective actions pertaining to laboratory analysis. If issues are identified by the monitoring team, the Laboratory Project Manager or Contract Manager will be notified immediately and documentation of the issue and the corrective action will be made.

4.1 Quality Control Types

A set of QC samples will be submitted to the laboratory on the basis of the frequencies noted in Table 4-1. The analytical laboratory may also require more QC samples if one type of analysis is to be run in more than one batch. The main types of QC samples that will be utilized for this study include field blanks, field duplicates, laboratory replicates, and positive and negative controls. The field blanks, duplicate samples, and laboratory replicates may be collected from different sites during a particular sampling event.

4.2 Field Quality Control Samples

The number and frequency of field QC samples to be collected are presented in Table 4-1. Field QC samples will be submitted blind to the analytical laboratory. For laboratory replicates, additional sample volumes will be collected and it will be clearly identified on the COC form.

Field blanks are samples of reagent-grade, analyte-free, deionized water collected in the field to verify the field conditions and air deposition are non-contaminating during field sampling activities. Field blanks will be analyzed for the same suite of analyses as regular samples. The project frequency for field blanks is 5 percent of the total sample count. Concentrations of field blanks should be below the Reporting Limit (RL) for each analyte.

Duplicate samples consist of two distinct samples (an original and a duplicate) of the same matrix collected at the same time and location using the same sampling technique. Field duplicate samples will be collected by filling two grab sample containers at the same time, or in rapid sequence. The purpose of field duplicates is to measure the consistency of field sampling. The project frequency for field duplicates is 5 percent of samples. The result for each field duplicate will be compared to the sample result to estimate a relative percent difference (RPD) between the two sample results. The RPD between the two results will be calculated using the RPD equation presented in Table 4-1.

Table 4-1.
Field Quality Control

Field QC	Frequency	Acceptance Limits
Field Blank	≥5% of all project samples	Concentrations should be below the RL
Field Duplicate	≥5% of all project samples	$R_{log} \leq 3.27 \times \overline{R}$

Notes: RL = reporting limit; R_{log} = range of logarithms for each pair of duplicates; $\overline{R}$ = mean of R_{log} for duplicates analyzed

4.3 Laboratory Quality Control

Laboratory QC samples include laboratory duplicates, and positive and negative controls as described below. Laboratory QC sample results will be provided in a laboratory report and SWAMP compatible electronic data deliverable (EDD) with a batch ID number to correlate with the corresponding environmental sample data set. Table 4-2 describes the frequency and types of quality control samples for each constituent category.

- **Laboratory Replicate –** For a laboratory replicate, a sample is prepared and analyzed twice to assess the repeatability (precision). The results are evaluated by calculating the RPD between the two sets of results. This serves as a measure of the reproducibility, or precision, of the sample analysis. A minimum of one laboratory replicate will be analyzed per batch.
- **Positive and Negative Controls –** A negative control is created as a separate plate count after the buffered rinse water is filtered and incubated the same way as a sample. There should be no bacteria growth on the filter after incubation. It is used to detect laboratory bacterial contamination of the sample. A positive control is created as a separate plate count after a water sample known to contain bacteria (such as wastewater treatment plant influent) is filtered and incubated the same way as a sample. There should be bacteria growth on the filter after incubation. It is used to detect procedural errors or the presence of contaminants in the laboratory analysis that might inhibit bacteria growth (USEPA, 2012).

Table 4-2.
Laboratory Quality Control

Constituent Category	Method Blanks	
	Frequency	Acceptance Limits
Laboratory Replicate	One per 20 samples or analytical batch, whichever is more frequent	$R_{log} \leq 3.27 \times \overline{R}$
Positive and Negative Controls	Per new lot or batch	Positive Control = Growth on filter Negative Control = No growth on filter

Notes: R_{log} = range of logarithms for each pair of duplicates; $\overline{R}$ = mean of R_{log} for duplicates analyzed

5.0 DATA MANAGEMENT AND REPORTING PROCEDURES

This section describes the management of field and analytical data and reporting procedures for the San Dieguito River WMA Bacteria TMDL compliance monitoring program.

5.1 Data Management

Field Data Records and Analytical Data Reports will be sent to and kept by the designated Lead Agency Project Manager. Data will be submitted in a standardized SWAMP-compatible format. The Lead Agency will compile the monitoring data and provide an annual Bacteria TMDL Monitoring Summary to SDRWQCB as part of the Water Quality Improvement Plan Annual Report.

The monitoring team will review all Field Data Log Sheets for completeness, maintain the original hardcopies, and scan electronic copies (*.pdf) for storage in the project file. The monitoring team will provide data in electronic format: both *.pdf copies of the field data log sheets and a California Environmental Data Exchange Network (CEDEN)-compatible EDD. Additionally, photographs for each event will be submitted to the Lead Agency. The field crew will retain the original Field Data Log Sheets.

The laboratories will provide data in electronic format: both *.pdf copies of lab reports and a CEDEN-compatible EDD. Analytical results will be submitted to the Sampling or Lead Agency in *.pdf format and as a CEDEN-compatible EDD within three weeks of submittal of samples. A CEDEN-compatible template will generate data files that can be uploaded to the SWAMP regional database. The monitoring team or Lead Agency will review all lab reports and EDDs for accuracy, completeness, and compatibility with SWAMP. The laboratory shall retain original COC forms. The laboratory will retain copies of the preliminary and final data reports.

The Responsible Agencies will be responsible for initiating any follow-up monitoring based on indicator bacteria results obtained at the compliance monitoring location. Detailed follow-up investigations are not required until the first interim milestone; however, Responsible Agencies may choose to voluntarily conduct follow-ups to identify and abate sources, where there is a preponderance of evidence to support the action.

5.2 Reporting Procedures

The monitoring team will provide sampling summaries to the Lead Agency as a status of monitoring activities. The update will include a brief summary of activities completed in the previous period and the field observations recorded. The Lead Agency will provide updates to the other participating Responsible Agencies during regularly scheduled Watershed Workgroup meetings.

The Lead Agency will generate an Annual Bacteria TMDL Monitoring Summary, which will be included in the Water Quality Improvement Plan Annual Report for San Dieguito River WMA. The Annual Bacteria TMDL Monitoring Summary will describe the sample collection methods, sampling events, and present key findings of the analytical results. “Existing” dry weather exceedance frequencies will be used to evaluate progress toward attaining the TMDL. Any

deviations from protocols listed in the Monitoring Plan and the implications of those deviations on the interpretation of the data will be included in the report.

5.2.1 Dry Season Geometric Mean and Exceedance Frequency

The MS4 Permit states that the geometric mean calculation should be consistent with the Ocean Plan (SDRWQCB, 2013). A rolling geometric mean calculation will be based on a minimum of five samples for any 30-day period.

Geometric means were calculated as follows:

$$\text{30 Day Geometric Mean} = \sqrt[n]{(X_1)(X_2)(X_3)(X_4)(X_5)}$$

Where: n is the number of individual results used in the calculation

x_n is week *n* result (e.g., x_1 = week 1 result)

The first geometric mean will be calculated after the fifth sample is collected in the dry season. With each subsequent sample collected, the first sample from the preceding five-sample geometric mean will be dropped. Samples collected between May 1 and September 30 will be used in this rolling geometric mean calculation.

A dry weather exceedance occurs when the geometric mean exceeds the dry weather numeric target. The first exceedance rate will be calculated after the first geometric mean calculation. The number of exceedances will be compared with the total number of calculated dry season geometric means to determine the overall dry season exceedance frequency.

5.2.2 Wet Season Geometric Mean and Exceedance Frequency

Per the MS4 Permit, the wet season exceedance frequency should be calculated using the combined wet and dry weather results for October 1 through April 30 of each year. Geometric means will be calculated using the last five samples as specified by the Ocean Plan.

An exceedance occurs when a geometric mean exceeds the dry weather numeric target. The first geometric mean will be calculated after the fifth sample is collected in October; and the total number of calculated wet season geometric means will be divided by the number of exceedances to determine the wet season exceedance frequency. Wet weather samples will be used in conjunction with dry weather samples to determine the overall wet season exceedance frequency. The number of exceedances will be compared with the total number of calculated wet season geometric means to determine the wet season exceedance frequency.

5.2.3 Wet Weather Single-Sample Maximum Exceedance Frequency

Wet weather exceedances are based on a comparison of the inferred number of exceedances with the allowable 22 percent exceedance frequency of single-sample results. It is assumed that the result from the monitoring event day represents water quality present during the storm event and the subsequent 72 hours. Therefore, each of the monitored storm event represents four days of the total number of wet weather days in the wet season. The average of the combined single-sample results of monitored wet weather events for each compliance constituent will be assigned to the remaining days in the wet season that meet wet weather day criteria (0.2 inch or more rainfall recorded and the following 72 hours). The wet weather exceedance frequency will be determined by comparing the number of wet weather days that exceeded the single-sample maximum numeric target with the total number of wet weather days.

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6.0 REFERENCES

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APPENDIX A

FIELD DATA SHEET FORM

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Bacteria TMDL Monitoring
FIELD DATA SHEET

Site ID: _____ **Date:** _____ **Time:** _____

Watershed: _____ [] Receiving Water [] Storm Drain

Field Crew: _____ **Photos Collected?** [] Yes [] No **Photo Count#:** _____

Observed Land Use: [] Residential [] Commercial [] Industrial [] Agricultural [] Parks [] Open

ATMOSPHERIC CONDITIONS

Weather	[] Partly Cloudy	[] Sunny	[] Overcast	[] Fog	[] Rain	[] Drizzle
Tide	[] N/A	[] Low	[] Incoming	[] High	[] Outgoing	Tide Height: _____ft.
Last Rain	[] > 72 hours	[] < 72 hours				
Rainfall	[] None	[] < 0 .1"	[] > 0 .1"			

BEACH CHARACTERISTICS

Biology	[] None	[] Insects	[] Algae	[] Mollusk	[] Snails	[] Crustacean [] Other _____
Deposits	[] None	[] Sediment/Gravel	[] Oily Deposits	[] Stains	[] Fine Particulates	[] Other _____
Vegetation	[] None	[] Limited	[] Excessive	[] Normal		[] Other _____

RUNOFF CHARACTERISTICS

Composition:	[] Sandy	[] Rocky	[] Grass			
Floatables	[] None	[] Trash	[] Bubbles/Foam	[] Sheen	[] Fecal Matter	[] Other _____
Beach Odor	[] None	[] Musty	[] Rotten Eggs	[] Chemical	[] Sewage	[] Other _____
Beach Color	[] None	[] Yellow	[] Brown	[] White	[] Gray	[] Other _____
Beach Clarity	[] Clear	[] Slightly Cloudy	[] Opaque			[] Other _____

ACTIVITIES/INDICATORS

[] Evidence Reclaimed Water Usage	[] Ag/Livestock Facility	[] Encampments # _____
[] Waste Water Discharge	[] Leaking Trashcan	[] Dom. Animals # _____
[] Sewer Overflow	[] Food Waste/scraps	[] Birds # _____
[] Trash Accumulation	[] Seaweed Accumulation	[] Wildlife # _____
[] Organic Matter	[] Children (Diapers) # _____	[] Other _____

FLOW CONDITIONS

Outfall Reaches Receiving Waters? [] Yes [] No [] N/A [] Dry [] Ponded [] Trickle [] Tidal

Flow Estimation:

Width | Diameter _____ ft. | in. **Depth** _____ ft. | in. **Velocity** _____ ft/sec. **Flow** _____ cfs | gpm

FIELD MEASUREMENTS

pH: _____ **Temp(°C):** _____ **Turbidity (NTU):** _____ **Sp Conductivity (µS/cm):** _____

SAMPLE COLLECTION

[] Visited, Not Sampled

Grab Sample Collected? [] Yes [] No **QAQC Sample Collected?** [] Yes [] No **QAQC Type:**

Sample ID: _____ **Sample ID:** _____ [] DUP

Date:_____ **Time:**_____ **Date:**_____ **Time:**_____ [] FB

SAMPLE CHARACTERISTICS

[] N/A

Floatables	[] None	[] Trash	[] Bubbles/Foam	[] Sheen	[] Fecal Matter	[] Other _____
Sample Odor	[] None	[] Musty	[] Rotten Eggs	[] Chemical	[] Sewage	[] Other _____
Sample Color	[] None	[] Yellow	[] Brown	[] White	[] Gray	[] Other _____
Sample Clarity	[] Clear	[] Slightly Cloudy	[] Opaque			[] Other _____

COMMENTS:

Trash Assessment on Reverse Side of this Field Sheet

Is trash readily visible to the public? *(Circle one)* **Yes** **No** **Photo Taken?** *(Circle one)* **Yes** **No**

TRASH ASSESSMENT CONDITIONS

Trash Assessment	Optimal	Suboptimal	Marginal	Poor	Very Poor
1. Overall Level of Trash	At first glance, no trash visible. Close inspection of survey area reveals little or no trash (<10 pieces).	At first glance, little or no trash visible. Close inspection of survey area reveals small quantity of trash (10-50 pieces).	Trash is evident in low to medium levels at first glance. Close inspection of survey area reveals significant quantity of trash (51-100 pieces).	Trash distracts the eye at first glance. Close inspection of survey area reveals substantial quantity of trash (101-400 pieces).	Trash is immediately obvious and visually dominant at first glance. Close inspection of area reveals excessive trash (>400 pieces).
SCORE	**1**	**2**	**3**	**4**	**5**
2. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: deposited biodegradable material like yard waste, food waste or leaf litter creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and nontoxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Any evidence of clumps of deposited yard waste, food waste or leaf litter. Medium prevalence (10-50 pieces) of settleable debris such as glass or metal.	Large amount (51-100 pieces) of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of deposited yard waste, food waste or leaf litter; or large amount (51-100 pieces) of settleable debris such as glass or metal.	Excessive amount (>100 pieces) of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of deposited yard waste, food waste or leaf litter; or excessive amount (>100 pieces) of settleable debris such as glass or metal.
SCORE	**1**	**2**	**3**	**4**	**5**
3. Threat to Human Health	No evidence of bacteria or virus hazards such as medical waste, diapers, animal or human waste. No toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. Presence of ponded water in trash items such as tires or containers for mosquito production, but no presence of mosquitoes.	Presence of any one of the following: mosquitoes, hypodermic needles or other medical waste; used diaper, animal waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs. Medium prevalence (10-50 pieces) of puncture or laceration hazards.	Presence of two of the items described in the marginal condition category. High prevalence (51-100 pieces) of puncture or laceration hazards.	Presence of more than two of the items described in the marginal condition category. Extremely high prevalence (>100 pieces) of puncture or laceration hazards.
SCORE	**1**	**2**	**3**	**4**	**5**
4. Dumping	No evidence of dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	Some evidence of dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	Presence of one of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	Evidence of chronic dumping, with more than one of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in- and-out dumping of materials to avoid landfill costs.	Evidence of excessive chronic dumping, with several of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in- and-out dumping of materials to avoid landfill costs.
SCORE	**1**	**2**	**3**	**4**	**5**
5. Littering	Tossed/dropped litter is incidental (< 5 pieces).	Evidence of some tossed/dropped litter (5-10 pieces).	Tossed/dropped litter is prevalent (10-50 pieces).	Large amount of tossed/dropped litter (51-100 pieces).	Excessive amount of tossed/dropped litter (>100 pieces).
SCORE	**1**	**2**	**3**	**4**	**5**
6. Trash Accumulation from Storm Drain	At first glance, no trash visible. Close inspection of survey area reveals little or no trash (<10 pieces).	At first glance, little or no trash visible. Close inspection of survey area reveals small quantity of trash (10-50 pieces).	Trash is evident in low to medium levels at first glance. Close inspection of survey area reveals significant quantity of trash (51-100 pieces).	Trash distracts the eye at first glance. Close inspection of survey area reveals substantial quantity of trash (101-400 pieces).	Trash is immediately obvious and visually dominant at first glance. Close inspection of area reveals excessive trash (>400 pieces).
SCORE	**1**	**2**	**3**	**4**	**5**
7. Trash Accumulation From Outside Transport	Trash, if any, appears to have been directly deposited at the survey area either via the storm drain or other direct deposition (Litter, dumping).	Some trash (<10 pieces) deposited at survey area by outside transport (means other than storm drain, littering, or dumping).	Significant amount of trash (10 to 50 pieces) deposited at survey area by outside transport (means other than storm drain, littering, or dumping).	Large amount of trash (51-100 pieces) deposited at survey area by outside transport (means other than storm drain, littering, or dumping).	Excessive amount of trash (>100 pieces) deposited at survey area by outside transport (means other than storm drain, littering, or dumping).
SCORE	**1**	**2**	**3**	**4**	**5**
COLUMN TOTALS					

OVERALL CONDITION

TOTAL OF ALL COLUMNS = OVERALL SCORE: ______________

Optimal = 7 SubOptimal = 8-14 Marginal = 15-21 Poor = 22-28 Very Poor = 29-

TRASH SOURCE

Trash	**% of Total**	**Source**				**Method of Disposal**		**Entry Route**			
Choose from	**Round to the nearest*	**General Public**	**Business Related**	**School**	**Homeless/ Transient**	**Littering**	**Dumping**	**Storm Drain**	**Dumping**	**Upstream**	**Other (specify)**
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Automotive	**Biohazard**	**Cigarette Butts**	**Construction**	**Fabrics/Clothing**	**Food Packaging**
Landscape	**Large Objects**	**Toxic Waste**	**Other Household**	**Plastic Grocery Bags**	**Other (specify)**

APPENDIX B

CHAIN OF CUSTODY FORM

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San Dieguito Watershed Copermittees: San Dieguito Bacteria TMDL Compliance Monitoring

Analysis Request and Chain of Custody

From: ***To:***

Sample ID	Date	Time	Analyses (Method)	Matrix	Vol	Preservative	Bottle Count
2015-W____-SDG-LM-RW-G-____	_____	_____	Enterococcus (EPA 1600) Fecal Coliform (SM 9222D) Total Coliform (SM 9222B)	Saltwater Grab	500 mL	None	_____

Relinquished	Print:_____	Date:_____	***Received By:***	Print:_____	Date:_____
Org: _____	Sign:_____	Time:_____	**Org:** _____	Sign:_____	Time:_____
Relinquished	Print:_____	Date:_____	***Received By:***	Print:_____	Date:_____
Org: _____	Sign:_____	Time:_____	**Org:** _____	Sign:_____	Time:_____
Relinquished	Print:_____	Date:_____	***Received By:***	Print:_____	Date:_____
Org: _____	Sign:_____	Time:_____	**Org:** _____	Sign:_____	Time:_____

Notes/Comments:

Membrane Filtration Methods are strongly preferred. Multiple Tube Fermentation (MTF) Methods can be used on highly turbid samples.

Sampler's Initials: _____