APRIL 2009

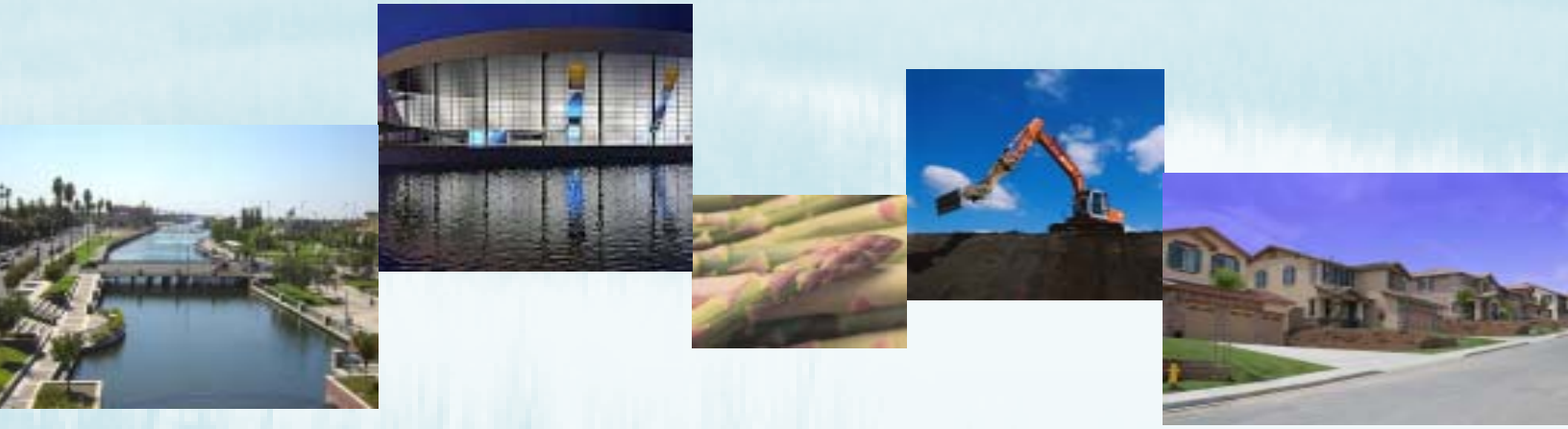
COUNTY OF SAN JOAQUIN

National Pollutant Discharge Elimination System Municipal Stormwater Program

Stormwater Management Plan

prepared by

LARRY WALKER ASSOCIATES



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April 13, 2009

Mr. Greg Vaughn
Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, No. 200
Rancho Cordova, California 95670

SUBJECT: SAN JOAQUIN COUNTY STORM WATER MANAGEMENT PLAN
NPDES PERMIT NO. CAS083470

Dear Mr. Vaughn:

San Joaquin County herewith submits the updated San Joaquin County Storm Water Management Plan for the period 2007-2012. The updated Plan addresses comments and requests for additional information as reflected in the Regional Water Board's letter dated November 7, 2008, and the County's response letter dated January 16, 2009.

Should you have any questions, please contact Leilani Chua, Management Analyst II, at (209) 468-3531.

Sincerely,

Thomas M. Gau

THOMAS M. GAU
Chief Deputy Director

TMG:LC:mk
WR-9D008-M1

Enclosure

c: Karen Ashby, Larry Walker Associates
Mel Lytle, Water Resource Coordinator

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility, of a fine and imprisonment for knowing violations.

Executed on the 10th day of April 2009, at the County of San Joaquin.

Thomas M. Gau

THOMAS M. GAU
Chief Deputy Director
San Joaquin County
Department of Public Works

SAN JOAQUIN COUNTY
STORMWATER MANAGEMENT PLAN
TABLE OF CONTENTS

Page

Section 1 Program Management

Overview……...1-1
Environmental Characteristics…….. 1-1
Background……... 1-5
Permitted Area…….…. 1-6
Stormwater Management Plan (SWMP) Organization……..... 1-9
Control Measures and Performance Standards……. 1-10
Program Coordination…….. 1-12
Co-Permittees……...1-12
County of San Joaquin…….……... 1-12
Fiscal Analysis……...1-17
Source of Funds……1-17
Reporting……..1-17
Legal Authority……..1-19
Program Management Control Measures and Performance Standards…… 1-20
Program Coordination……. 1-20
Fiscal Analysis…… 1-20
Legal Authority…….. 1-20
Assessment Data and Information…… 1-20
Responsibility……1-21

Section 2 Illicit Discharge (ID)

Overview…….. 2-1
Objectives……. 2-1
Control Measures…….…2-2
Supporting Control Measures……..... 2-3
ID1 Detection of Illicit Discharges and Illegal Connections…… 2-4
ID2 Illegal Connection Identification and Elimination…… 2-10
ID3 Investigation/Inspection and Follow-Up……...…….…2-13
ID4 Enforcement…….....…2-18
ID5 Training…….…….....2-21
ID6 Effectiveness Assessment…….…….....2-24

TABLE OF CONTENTS (cont'd)

Section 3 Public Outreach and Education (PO)

Overview……...3-1
Objectives……. 3-1
Control Measures……..3-1
Supporting Control Measures……..... 3-2
PO1 Public Participation……...3-3
PO2 Hotline……...3-6
PO3 Public Outreach Implementation……..…. 3-8
PO4 Public School Education……... 3-14
PO5 Business Outreach……..…3-17
PO6 Effectiveness Assessment……..…… 3-20

Page

Section 4 Municipal Operations (MO)

Overview……...……..……. 4-1
Objectives……...……...……... 4-1
Control Measures……..……4-2
Supporting Control Measures……..……. 4-3
MO1 Sanitary Sewer Overflow and Spill Response…….…… 4-4
MO2 New Development and Construction Requirements for Municipal Capital Improvement Projects……..……4-7
MO3 Pollution Prevention at County Facilities……...……..…… 4-10
MO4 Landscape and Pest Management…….…… 4-13
MO5 Storm Drain System Maintenance……...……. 4-16
MO6 Street Cleaning and Maintenance…….…… 4-24
MO7 Parking Lots Maintenance…… 4-21
MO8 Training…….……...……4-27
MO9 Effectiveness Assessment…….……...……. 4-30

Section 5 Industrial and Commercial Program Element (IC)

Overview……..……5-1
State Industrial General Permit……5-1
Objectives……..……... 5-2
Control Measures……..……5-2
Supporting Control Measures……..……. 5-3
IC1 Facility Inventory…….…….5-4
IC2 Prioritization and Inspection..……..….5-7
IC3 Industrial/Commercial Outreach……...……5-11
IC4 Enforcement……..……5-14
IC5 Training……..……...……5-17
IC6 Effectiveness Assessment……5-20

TABLE OF CONTENTS (cont'd)

Page

Section 6 Construction (CO)

Overview……..……6-1
Objectives……...…….. 6-1
Requirements…… 6-1
State General Construction Activity Stormwater Permit…..……..… 6-1
Control Measures…….……6-2
Supporting Control Measures……... 6-3
CO1 Municipal Code for Construction Sites……...……..6-4
CO2 Plan Review and Approval Process……..…… 6-6
CO3 Construction Projects Inventory……..……. 6-10
CO4 Construction Outreach……..…… 6-13
CO5 Construction Site Inspections & BMP Implementation……...…… 6-16
CO6 Enforcement ……..……6-19
CO7 Training……..…6-23
CO8 Effectiveness Assessment……..… 6-26

Section 7 Planning and Land Development (LD)

Overview……..……7-1
Objectives…….…… 7-1
Control Measures…….……7-1
Supporting Control Measures…….…….. 7-2
LD1 Incorporation of Water Quality Protection Principles into County Procedures and Policies…… 7-3
LD2 New Development Standards……..……..7-6
LD3 Plan Review Sign-off……7-10
LD4 Maintenance Agreement and Transfer……..7-14
LD5 Training……7-17
LD6 Effectiveness Assessment…….…… 7-20

TABLE OF CONTENTS (cont'd)

Page

Section 8 Water Quality Based Programs

Overview……..……8-1
Objectives……...…….. 8-1
2007-2012 Permit Monitoring and Study Requirements……..8-1
Baseline Monitoring Program……..……8-6
Urban Discharge and Receiving Water Monitoring……. 8-6
Water Column Toxicity Monitoring……8-9
Dry Weather Field Screening……...… 8-10
Supplemental Water Quality Monitoring Programs……...…..…….. 8-12
Bioassessment Study……8-12
Detention Basin Monitoring……. 8-12
Best Management Practice (BMP) Effectiveness Studies…….....… 8-13
Sediment Toxicity…….....8-13
Reporting…….....…..…….. 8-19

Section 9 Water Quality Based Program

Overview……..…9-1
Pesticide Plan……9-3
Description…….……..……... 9-3
Implementation Activities……..……...….. 9-3
Assessment Data and Information…….……...……...9-4
Pathogen Plan……..……..9-6
Description……..……..…….. 9-6
Implementation Activities……..…..…… 9-7
Mercury Plan……9-9
Description……..…… 9-9
Mercury Plan components……...……9-9
Low Dissolved Oxygen Plan……...……. 9-14
Description……..…… 9-14
Plan Implementation…….……..…… 9-14
BMP Effectiveness……..9-14

Section 10 Program Implementation, Assessment, and Reporting

Overview…….……. 10-1
Program Implementation…….……. 10-1
Performance Standards……10-1
Assessment Tasks……..…..10-1
Annual Work Plan……... 10-1
Effectiveness Assessment …… 10-2
Reporting…….……..10-3
Annual Report.…… 10-3
Report of Waste Discharge……. 10-4

SAN JOAQUIN COUNTY
STORMWATER MANAGEMENT PLAN
APPENDICES
(See Enclosed CD)

A Program Management
- A-1 Memorandum of Understanding between the City of Stockton and the County of San Joaquin
- A-2 Certification of Legal Authority

B Illicit Discharges
- B-1 NPDES NonConstruction Illicit Discharge and Illegal Connection Investigation-Enforcement Management (ID2-15.01) Procedures
- B-2 SWMP Incident Report
- B-3 Sanitary Sewer Overflow Response Plan (SSORP)
- B-4 Hazardous Materials Area Plan: Appendix 11 – Oil Spills
- B-5 Illicit Discharge Hotline Incident Tracking Sheet
- B-6 Stormwater Management and Discharge Control (Division 10, Title 5)
- B-7 Grading and Excavation Provisions (Division 14, Title 9)
- B-8 NPDES Industrial & Commercial Investigation-Enforcement Management (IC4-14.01) Procedures
- B-9 NPDES Construction Investigation-Enforcement Management (CO6-19.01) Procedures
- B-10 NPDES Construction Investigation-Enforcement Management (CO6-19.01B) Procedures – Rainy Season (November 1st to April 15th)
- B-11 Training Strategy

C Public Outreach
- C-1 2009 NPDES Public Outreach Calendar

D Municipal Operations
- D-1 Sewer System Management Plan (SSMP) Goals and Organization & Development Plan and Schedule
- D-2 CEQA Environmental Checklist Form
- D-3 Construction Small Site Stormwater Management Plan
- D-4 Special Event Permit and Use Permit
- D-5 Maintenance Staff Guide
- D-6 Parking Lot Cleaning BMP Fact Sheet

E Industrial and Commercial
- E-1 Classification Criteria Industrial Sites
- E-2 Commercial Inspection Checklist
- E-3 Industrial Inspection Checklist

F Construction
- F-1 Permit Review Procedure Handout
- F-2 Permit/Application Review Process (Flow Chart)
- F-3 Plan Checklist
- F-4 Construction Inspection Checklists

G Planning and Land Development
- No Appendices

H Water Quality Monitoring Program
- H-1 Baseline Monitoring Constituents
- H-2 Types of Samples Collected at Baseline Monitoring Sites
- H-3 Dry Weather Monitoring Outfalls
- H-4 Sediment Toxicity Monitoring Constituents
- H-5 Detention Basin Monitoring Work Plan
- H-6 Legion Park Best Management Practice Revised Study Plan
- H-7 Best Management Practices Effectiveness Study Plan
- H-8 Sediment Toxicity Work Plan

I Water Quality Based Programs
- I-1 Pesticide Plan – 2009 Update
- I-2 Pathogen Plan – 2009 Update
- I-3 Mercury Plan – 2009 Update
- I-4 Mercury Monitoring Plan
- I-5 Low Dissolved Oxygen Monitoring and Assessment Work Plan

J Program Implementation, Assessment and Reporting
- No Appendices

LIST OF ACRONYMS

BAT	Best available technology
BCT	Best conventional pollutant control technology
BMP	Best management practice
CASQA	California Stormwater Quality Association
CDD	Community Development Department
CEQA	California Environmental Quality Act
CESQG	Conditionally-exempt small quantity generator
CFR	Code of Federal Regulations
CIP	Capital improvement project
COC	Chain of custody
CSA	County Service Area
CTR	California Toxics Rule
CWA	Clean Water Act
CWEA	California Water Environment Association
DFG	Department of Fish and Game
DO	Dissolved Oxygen
DWSC	Deep Water Ship Channel
EC	Electrical conductivity
ECG	Enforcement Consistency Guide
DLMOP	Delta Landscape Maintenance Outreach Program
DNA	Deoxyribonucleic acid
DRC	Development Review Committee
ESRI	Environmental Systems Research Institute
FPPP	Facility Pollution Prevention Plan
GIS	Geographic Information Systems
HHW	Household Hazardous Waste
IBI	Index to Biological Integrity
IC	Illegal connections
ID	Illicit discharges
IPM	Integrated Pest Management
LID	Low impact development
LPO	Licensed pesticide operator
MBAS	Methyl Blue Activated Substances
MDL	Method detection limit

MEP	Maximum extent possible
MFST	Media Filter Stormwater Treatment System
MOU	Memorandum of Understanding
MRP	Monitoring and Reporting Program
MS4	Municipal separate storm sewer system
MST	Microbial source tracking
MUD	Municipal Utilities Department
NOI	Notice of Intent
NONA	Notice of Non-Applicability
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
ODS	Owner/developer/successor-in-interest
OEHS	Office of Environmental Health Services
OES	Office of Emergency Services
OSHA	Occupational Safety and Health Administration
OP	Organophosphate
OWOW	Our Water Our World
PBO	Piperonyl Butoxide
PCOs	Pest control operators
POCs	Pollutants of Concern
PM	Pest Management
PSAs	Public service announcements
PW	Public Works
QA/QC	Quality Assurance/Quality Control
RC	Recorded Covenant
REACON	Recycling, Energy, Air, Conservation
RGOs	Retail Gasoline Outfits
RL	Reporting limit
ROWD	Report of Waste Discharge
RPD	Relative percent difference
RWCF	Regional Wastewater Control Facility
RWQCB	Regional Water Quality Control Board
RWQE	Reports of Water Quality Exceedances
SAWS	Stockton Area Water Suppliers
SIC	Standard Industrial Classification

SJAFCA	San Joaquin Area Flood Control Agency
SQCCP	Stormwater Quality Control Criteria Plan
SSC	Suspended sediment concentration
SSMP	Sewer System Management Plan
SSO	Sanitary sewer overflow
SSORP	Sanitary Sewer Overflow Response Plan
SUA	Stockton Urbanized Area
SUSMP	Standard Urban Stormwater Mitigation Plan
SW&R	Solid Waste & Recycling
SWAMP	Surface Water Ambient Monitoring Program
SWMP	Stormwater Management Plan
SWQCCP	Stormwater Quality Control Criteria Plan
SWPPP	Stormwater Pollution Prevention Plan
SYRCL	South Yuba River Citizens League
TIE	Toxicity Identification Evaluation
TIGER	Topologically Integrated Geographic Encoding Referencing system
TMDL	Total maximum daily load
TOPPS	Targeted Opportunities to Prevent Pollution
TRE	Toxicity Reduction Evaluation
US	United States
USEPA	United States Environmental Protection Agency
UWR	Universal waste recycling
WDID	Waste Discharge Identification number
WQBP	Water Quality Based Program
WQO	Water quality objective

Section 1

Program Management

OVERVIEW

This document outlines the Stormwater Management Plan (SWMP) that has been developed for and will be implemented within the jurisdictional limits of the City of Stockton and the Phase 1 Permit areas of San Joaquin County. The SWMP, which includes existing and enhanced program control measures, represents the strategy for controlling the discharge of pollutants from the municipal storm drain system to the maximum extent practicable (MEP).

The core objectives of the SWMP are to:

1. Identify and control those pollutants in urban runoff that pose significant threats to the waters of the State and waters of the U.S. and their beneficial uses;
2. Comply with the federal regulations to eliminate or control, to the maximum extent practicable (MEP), the discharge of pollutants from urban runoff associated with the stormwater drainage system;
3. Achieve compliance with water quality standards;
4. Develop a cost-effective program which focuses on pollution prevention of urban stormwater;
5. Seek cost-effective alternative solutions where prevention is not a practical solution for a significant problem; and
6. Coordinate the implementation of control measures with other agencies;

An increasingly important element to consider is the protection of the Delta through the development and implementation of Total Maximum Daily Loads (TMDLs). The SWMP has been structured to include relevant TMDL needs/requirements. As such, the SWMP addresses specific pollutants of concern that have been identified as impacting or potentially impacting local receiving water quality, including that of the Delta, in the Stockton Urbanized Area (SUA). The pollutants/conditions of concern that are being addressed through the implementation of special studies include pesticides, pathogens, mercury and low dissolved oxygen. The special studies are designed to characterize the fate and transport of these pollutants and to assist with source identification and identification of control measures.

To address the core objectives and pollutants of concern, the SWMP incorporates a series of commitments and performance standards and, as a result, provides for a long-term, comprehensive, and multidisciplinary effort by the County to achieve water quality standards and protect beneficial uses.

ENVIRONMENTAL CHARACTERISTICS

The County of San Joaquin (County) is located within the Central Valley and includes the San Joaquin Delta waterway connecting the Sacramento and San Joaquin Rivers to the San Francisco Bay. The County is located south of Sacramento, east of San Francisco, and is bordered by Sacramento County to the north, Amador and Calaveras Counties to the east, Stanislaus County to the south-east, and Contra Costa and Alameda Counties to the west. The County encompasses approximately 1,400 square miles with a density of approximately 403 people per square mile.[1] As of 2006, the County is home to 668,265 people; of

[1] http://quickfacts.census.gov/qfd/states/06/06077.html

these, 286,041 live within the City of Stockton, and 140,000 live within the unincorporated area. The County Phase I NPDES permit area consists of the urbanized unincorporated areas adjacent to or surrounded by the City of Stockton and has a population of approximately 43,000 people. With approximately 184 sunny days per year, an average temperature of 74.6 degrees F, and an annual precipitation of approximately 14 inches, San Joaquin County experiences dry hot summers and relatively wet and cool winters.[2] The County includes the Cities of Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy. An overview map of the County is provided in **Figure 1-1**.

[2] http://www.visitstockton.org

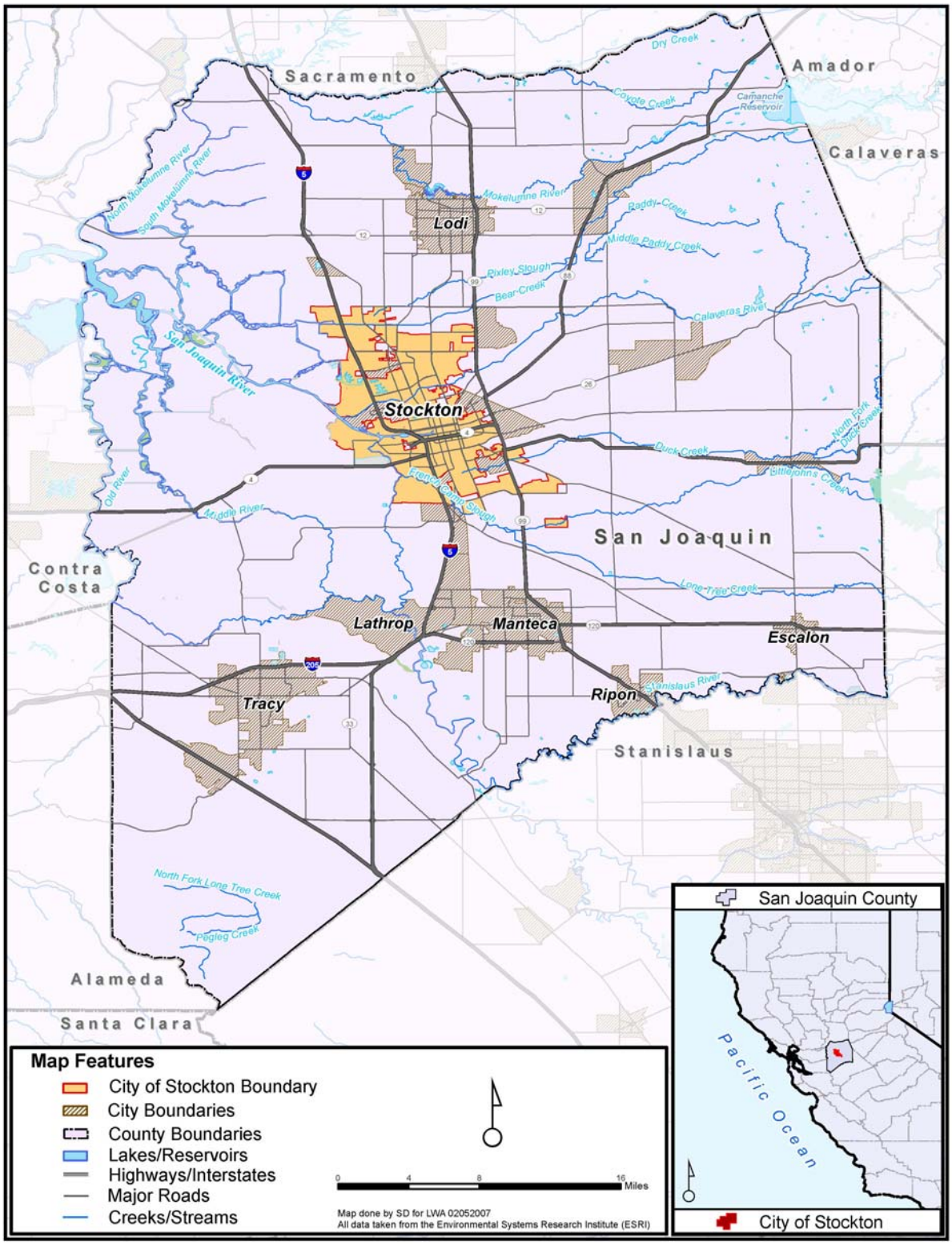

Figure 1-1. County of San Joaquin Area Map[3]

[3] All information was obtained from Environmental Systems Research Institute (ESRI).

Background

The stormwater pollution control effort, of which this SWMP is a part, is the result of over thirty years of legislative effort, beginning with the 1972 Federal Water Pollution Control Act, subsequently known as the Clean Water Act (CWA). The CWA established the NPDES program. The 1987 Federal CWA amendments created Section 402(p) of the Act, mandating, among other things, permits for municipal stormwater dischargers. Section 402(p) required that the municipal NPDES permits include:

- A requirement to effectively prohibit non-stormwater discharges into the municipal separate storm sewer systems (MS4s); and
- Controls to reduce the discharge of pollutants in stormwater discharges to the MEP, including management practices; control techniques; system, design, and engineering methods; and such other provisions as the Administrator of the State determines appropriate for the control of such pollutants.

The overarching goals of the stormwater management program are to a) reduce the degradation of waters of the State and waters of the United States (U.S.) by urban runoff and protect their beneficial uses and b) develop and implement an effective SWMP that is well-understood and broadly supported by regional stakeholders.

Subsequent regulations promulgated by the United States Environmental Protection Agency (U.S. EPA) on November 16, 1990 (40 CFR 122.26 (d)(2)(iv)) required municipal NPDES dischargers to develop and implement a management program to effectively address these requirements.

The County falls under the jurisdiction of the Central Valley Regional Water Quality Control Board (Regional Water Board) and must comply with the municipal National Pollutant Discharge Elimination System (NPDES) stormwater permit (Permit) as indicated below.

	County of San Joaquin
Regional Water Board Jurisdiction	Central Valley
Municipal Stormwater Permit	NPDES Municipal Permit, Order No. R5-2007-0173
Permit Adoption Date	December 6,, 2007
County Area Covered by Permit	Stockton Urbanized Area (City of Stockton and County of San Joaquin)

In response to these regulations, the County developed Part I (May 1992) and Part II (May 1993) permit applications, respectively, which served as the genesis of the SWMP contained herein. In February 1995, the City of Stockton and the County of San Joaquin were named as co-permittees in their first term NPDES municipal stormwater permit. The Regional Water Board adopted Order No. 95-035 (CA0082597). In October 2002, the first term municipal stormwater Permit was replaced with a second term Permit, Order No. R5-2002-0181 (CAS083470).

In December 2002, U.S. EPA Region 9 and the Regional Board conducted a program audit of the City of Stockton and the County of San Joaquin's stormwater programs. The purpose of the audit was to determine the Permittees' compliance with the Permit and to review the overall effectiveness of the program. The audit identified program deficiencies as well as positive program attributes. The September 2003 (revised May 2004) update of the SWMP was developed in compliance with the second term Permit requirements and incorporated performance standards to address the program deficiencies identified in the 2002 U.S. EPA program audit. Since the first term Report of Waste Discharge (ROWD) assessment indicated that many of the stormwater program elements were effective in reducing stormwater pollution, most of the previous programs were continued during the second term Permit. The revised SWMP

included a wide range of continuing and enhanced Best Management Practices (BMPs) and control measures that were implemented over the period covered by the second term Permit (2002-2007). These additional control measures assisted the co-permittees in improving the overall effectiveness of the stormwater program. Where possible, control measures were developed to focus on specific pollutants of concern or sources to enhance pollution reduction and provide increased environmental benefit.

The second term Permit required the co-permittees to submit a ROWD 180 days prior to the expiration of the Permit. Among other things, the ROWD required the co-permittees to assess the effectiveness of their stormwater program and determine what additional efforts may be necessary. As part of the ROWD preparations, the co-permittees developed an updated SWMP for the third term Permit. This SWMP proposes a wide range of continuing, enhanced, and new BMPs and control measures that will be implemented during the third term Permit period (2007-2012). It is the intent of this SWMP to meet all Permit requirements through an iterative process. Each year, the County will review its work to date and, if appropriate, modify and/or enhance the control measures to make progress towards permit compliance.

PERMITTED AREA

The City of Stockton is defined as a large municipality (population greater than 250,000) as described within the Code of Federal Regulations (CFR) 40 CFR 122.26 (b)(4). As such, the City is required to obtain an NPDES municipal stormwater permit for the area under its jurisdiction.

The County of San Joaquin contains urbanized areas and areas of potential growth that are either enclosed within the City limits or surround the City. Due to the proximity of the County's urbanized areas to the City, their physical interconnection with the City's storm drain system, and the locations of their discharges relative to the City's system, the County is designated as a part of the large MS4 in accordance with 40 CFR 122.26 (b)(4)(iii).

The City of Stockton, the urbanized areas of the County that are enclosed within the City, and the urbanized areas of the County which surround the City are referred to as the Stockton Urbanized Area and are subject to the NPDES municipal permit, Order No. R5-2007-0173. This area is presented in **Figure 1-2**.

San Joaquin County traverses six watersheds[4], including:

- **Middle San Joaquin-Lower Merced-Lower Stanislaus (South/South-East)**
- **San Joaquin Delta (West)**
- **Lower Calaveras-Mormon Slough (East)**
- **Lower Cosumnes-Lower Mokelumne (North)**
- Panoche-San Luis Reservoir (South)
- San Francisco Bay (West)

The first four sub-basins flow into the City of Stockton (**bold** text indicates that these watersheds are visible in **Figure 1-3**). The Stockton Urbanized Area falls within the San Joaquin River Basin. The San Joaquin River flows northward and drains the portion of the Central Valley south of the Sacramento-San Joaquin Delta and north of the Tulare Lake Basin. The principal streams in the Basin are the San Joaquin River and its larger tributaries: the Cosumnes, **Mokelumne**, **Calaveras**, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers (bold text indicates tributaries located within San Joaquin County).

[4] http://cfpub.epa.gov/surf/county.cfm?fips_code=06077

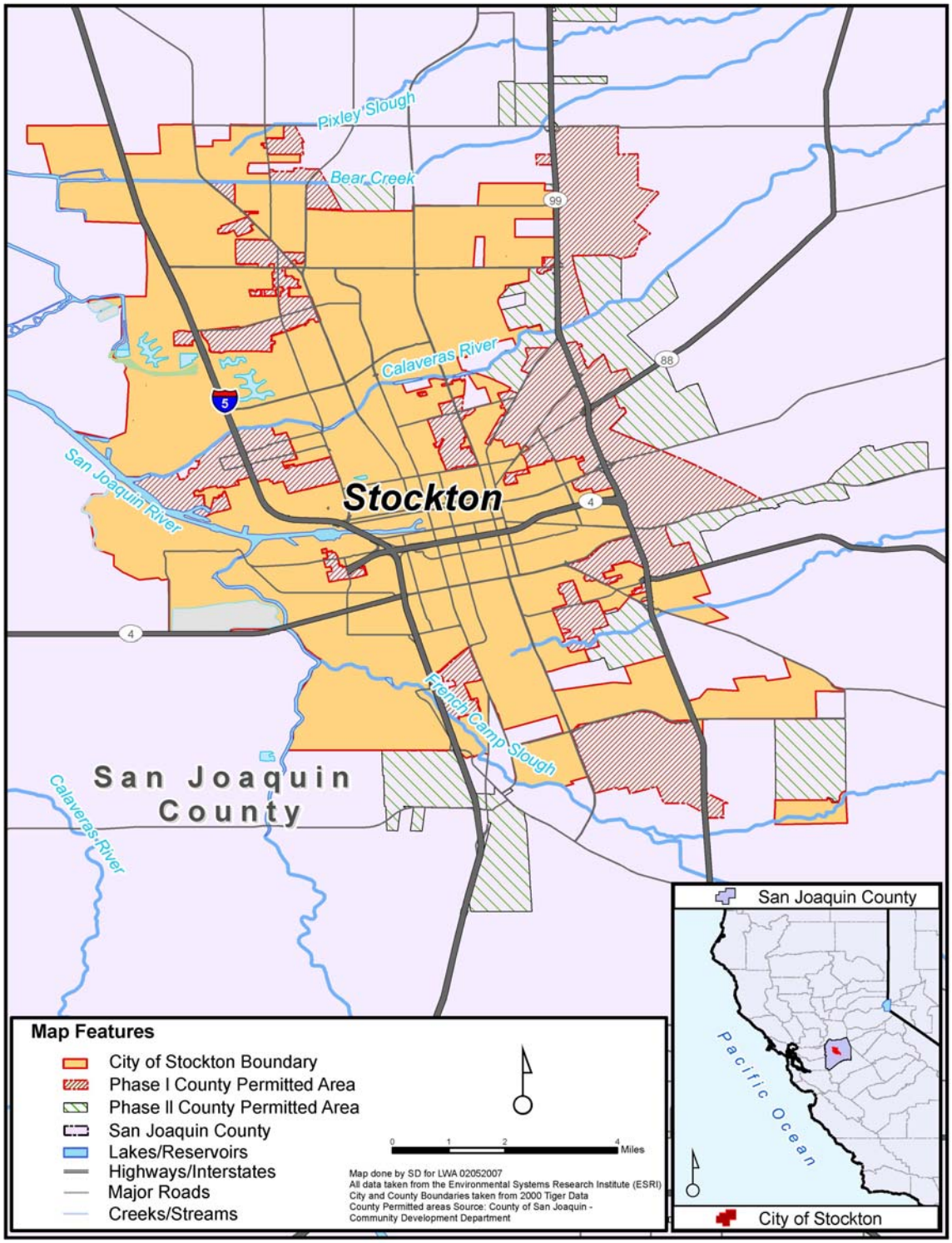

Figure 1-2. Stockton Urbanized Area Map[5]

[5] The City of Stockton Urbanized area was obtained from the 2000 U.S. Census Bureau TIGER Data. The County Incorporated Urban areas were obtained from the County of San Joaquin – Community Development Department. All other information was obtained from ESRI.

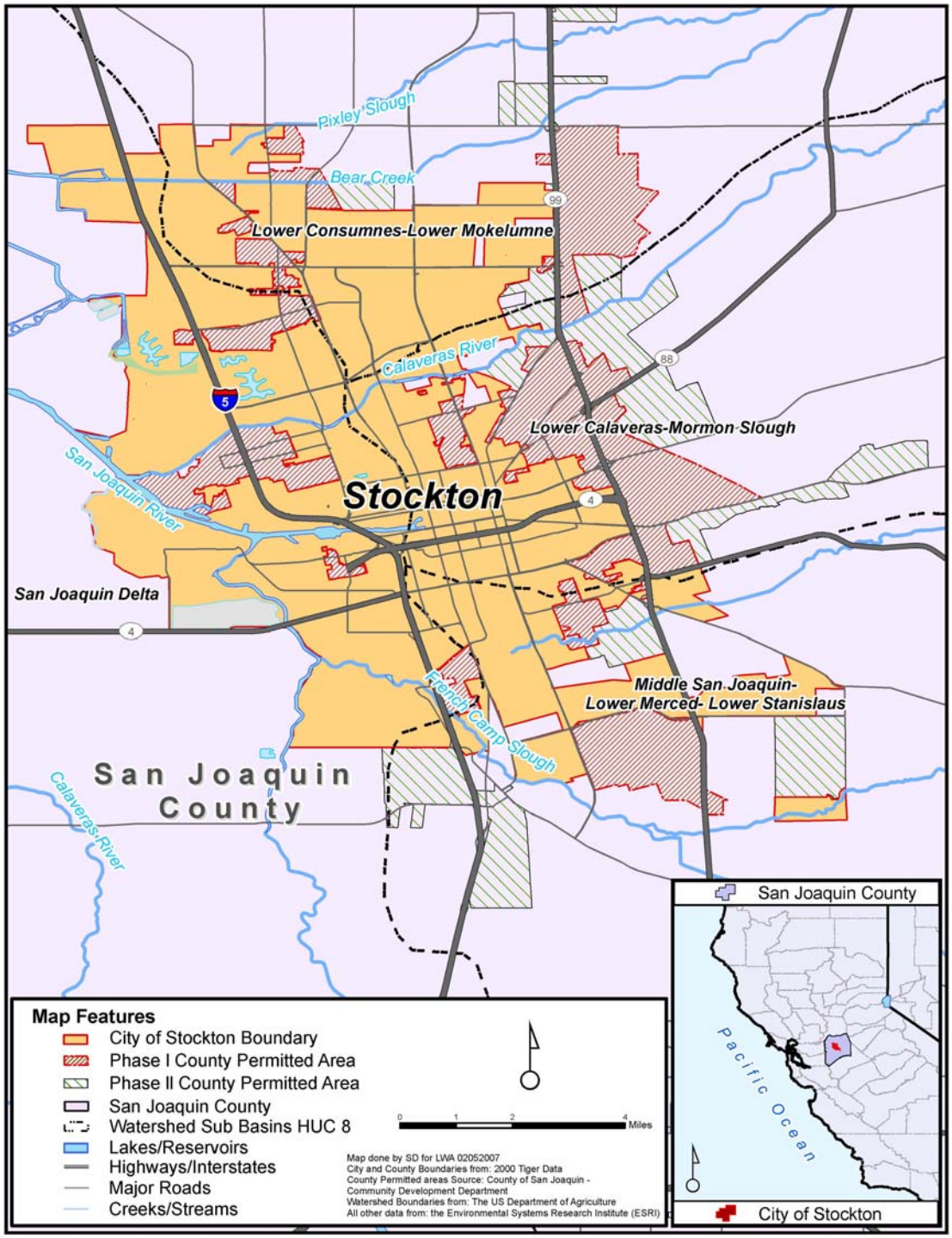

Figure 1-3. Stockton Urbanized Area Watersheds Map[6]

[6] The City of Stockton Urbanized area was obtained from the 2000 U.S. Census Bureau TIGER Data. The County Incorporated Urban areas were obtained from the County of San Joaquin. Community Development Department. Watershed Boundaries were obtained from the U.S. Department of Agriculture. All other information was obtained from ESRI.

STORMWATER MANAGEMENT PLAN (SWMP) ORGANIZATION

The SWMP provides a comprehensive approach for addressing pollutants in stormwater discharges and is organized into ten sections. Supporting guidance or implementation tools for each Program Element is provided in corresponding appendices. An overview of each section is provided in **Table 1-1**. The training performance standard, previously included in Section 10, is addressed within individual sections where applicable.

Table 1-1. Overview of SWMP Sections

SWMP Section	Description
Section 1 Program Management	This section addresses the program overview, background, management strategy, fiscal analysis, and legal authority.
Section 2 Illicit Discharges	This section describes the program developed to detect, respond to, investigate and eliminate illicit discharges and illegal connections.
Section 3 Public Education	This section describes the public education and outreach program developed to promote change in behavior and increase the knowledge of target communities to reduce pollutants to the storm drain systems.
Section 4 Municipal Operations	This section describes the program developed to address municipal operations so they are performed in a manner that is protective of water quality and minimizes the potential for pollutants to enter the storm drain system.
Section 5 Industrial and Commercial	This section describes the program developed to inspect and outreach to industrial and commercial businesses.
Section 6 Construction	This section describes the program developed to reduce pollutants from construction sites during all phases of construction.
Section 7 Planning and Land Development	This section describes the program developed to address the reduction of pollutants in new development through better site planning, design practices, and post-construction controls.
Section 8 Monitoring	This section describes the water quality monitoring program developed to assess the health of the local water bodies, evaluate selected treatment control BMPs (e.g., detention ponds), and characterize stormwater discharges.
Section 9 Water Quality Based Programs	This section provides an overview of the various water quality based programs that are being implemented, including the Pesticide Plan, Pathogen Plan, Dissolved Oxygen Plan, and Smith Canal Study.
Section 10 Program Implementation, Assessment and Reporting	This section describes the implementation schedule and identifies methods that will be used to evaluate the overall program and reporting requirements.

CONTROL MEASURES AND PERFORMANCE STANDARDS

Control Measures, Performance Standards, and Assessment Data and Information have been identified in order to assist the County in the implementation of the SWMP. In addition, implementation schedule tables have been included within each Control Measure to clearly identify what the performance standards are and when they are to be completed.

- Control Measure – Control Measures are programmatic actions required to meet Permit requirements. The Control Measures outlined within each section and discussed in more depth in the accompanying Fact Sheets were designed to adequately address all the applicable Permit provisions. For each Control Measure, there are accompanying Performance Standards which, once accomplished, constitute compliance with Permit requirements. The Control Measure Fact Sheets also identify assessment tools that are intended to be used to assess the status and effectiveness of program implementation and were developed as stand-alone documents so they can be individually provided to the responsible Department(s)/Division(s).
- Performance Standards – The Performance Standards included in each Control Measure Fact Sheet establish the level of effort required (i.e., the specific tasks or activities which must be completed) to comply with the Permit provision(s) related to the Control Measure.
- Assessment Data and Information – The Assessment Data and Information identify those items that should be tracked and reported as a part of the Annual Report and program effectiveness assessments. These items include information or data that allow the County to document and assess the effectiveness of the stormwater management program.
- Implementation Schedule – Implementation schedule tables are included within each Control Measure and Fact Sheet to clearly identify what the performance standards are, when they need to be completed during the five-year permit term, and who has primary and secondary responsibility for completion of these performance standards. The tables also help identify whether the performance standards constitute a new activity for the County (N), are building upon or are an enhancement of current activities (E), or are an activity that the County is already implementing and will continue (C). The implementation schedule table builds accountability into the program and will evolve slightly as the program is developed, implemented, and assessed over the next five years.

An overview of the SWMP organization is presented in **Figure 1-4**.

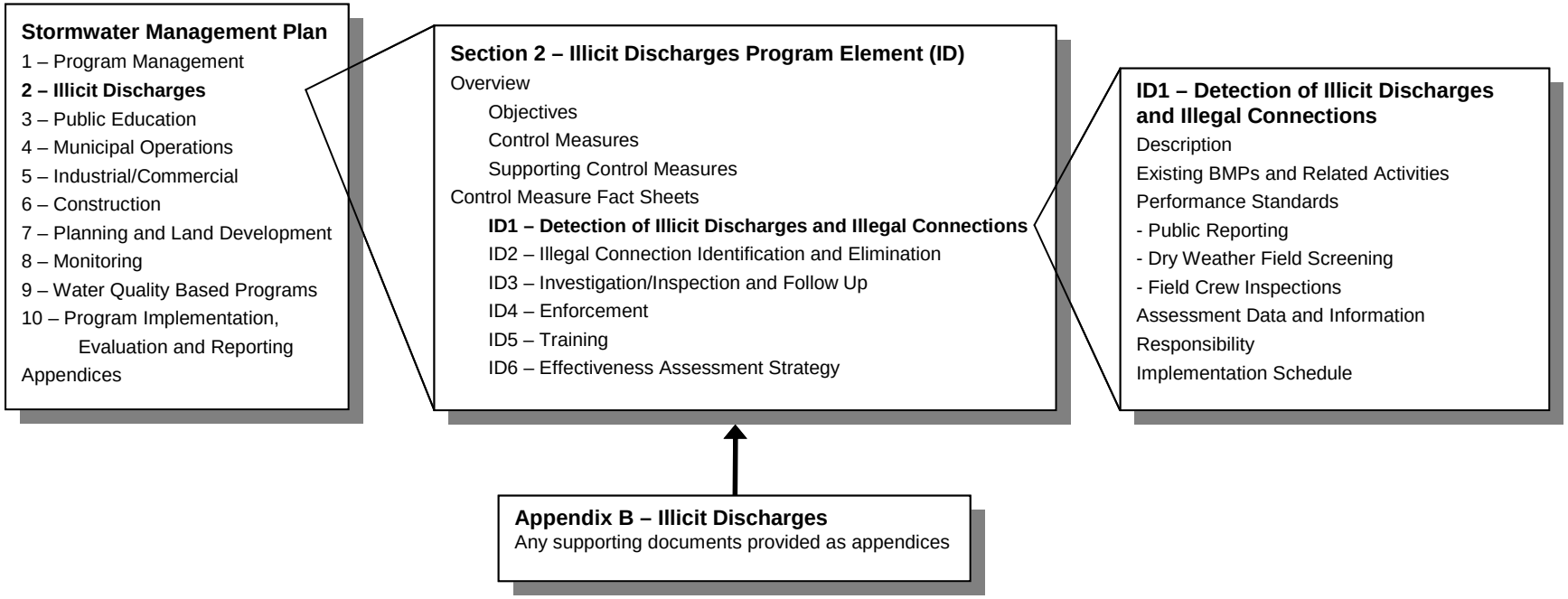

Figure 1-4. SWMP Organization

PROGRAM COORDINATION

Co-Permittees

The implementation of the SWMP requires a coordinated management effort by the City and County. While named as co-permittees to one permit, the City and County currently have separate programs and submit documents and reports separately to the Board. However, the programs are very similar, and the co-permittees collaborate with each other to address common issues, to plan and coordinate common activities, and to ensure consistency in program development and implementation.

In 1995, the City of Stockton and County of San Joaquin entered into a Memorandum of Understanding (MOU) for filing as co-permittees under one NPDES permit as well as the development of a receiving waters monitoring program. The MOU also provides a mechanism for the City and County to continue to work cooperatively on the development and implementation of additional NPDES programs. To facilitate the ongoing communication and coordination between the two agencies, meetings are held on an on-going basis.

The co-permittees have reviewed their existing MOU to ensure that it provides for designation of joint responsibilities, decision making, information management of data and reports, cost sharing objectives, and any other collaborative arrangements that are necessary for compliance with the Permit. The final MOU dated September 16th 2008, is included as **Appendix A-1** to the SWMP.

Although the co-permittees work together to coordinate the development and implementation of the program, each agency is responsible for implementing the stormwater program within their respective jurisdictions, and each has jurisdiction over and/or maintenance responsibilities for storm drains and/or watercourses in the City of Stockton and surrounding urbanized areas of San Joaquin County.

County of San Joaquin

The County's Public Works – Water Resources Division has primary responsibility for the development and implementation of the SWMP. Although administered and principally staffed by Public Works, the implementation of the SWMP requires the assistance of and close coordination with several other County departments as identified in **Figure 1-5.** The shaded boxes represent the primary Departments/Divisions involved in the development and implementation of the SWMP. Contact information will be provided and updated in the annual reports.

To ensure that the various County Departments and Divisions understand their roles and responsibilities and to facilitate the communication and coordination that is necessary to implement the SWMP, internal meetings and training sessions are held on an ongoing basis. In addition, upon request, the Public Works – Water Resources Division provides technical support to the other Departments/Divisions. This coordination facilitates the implementation of the requirements in an efficient and cost-effective manner. A brief description of the Department/Division responsibilities is provided in **Table 1-2**.

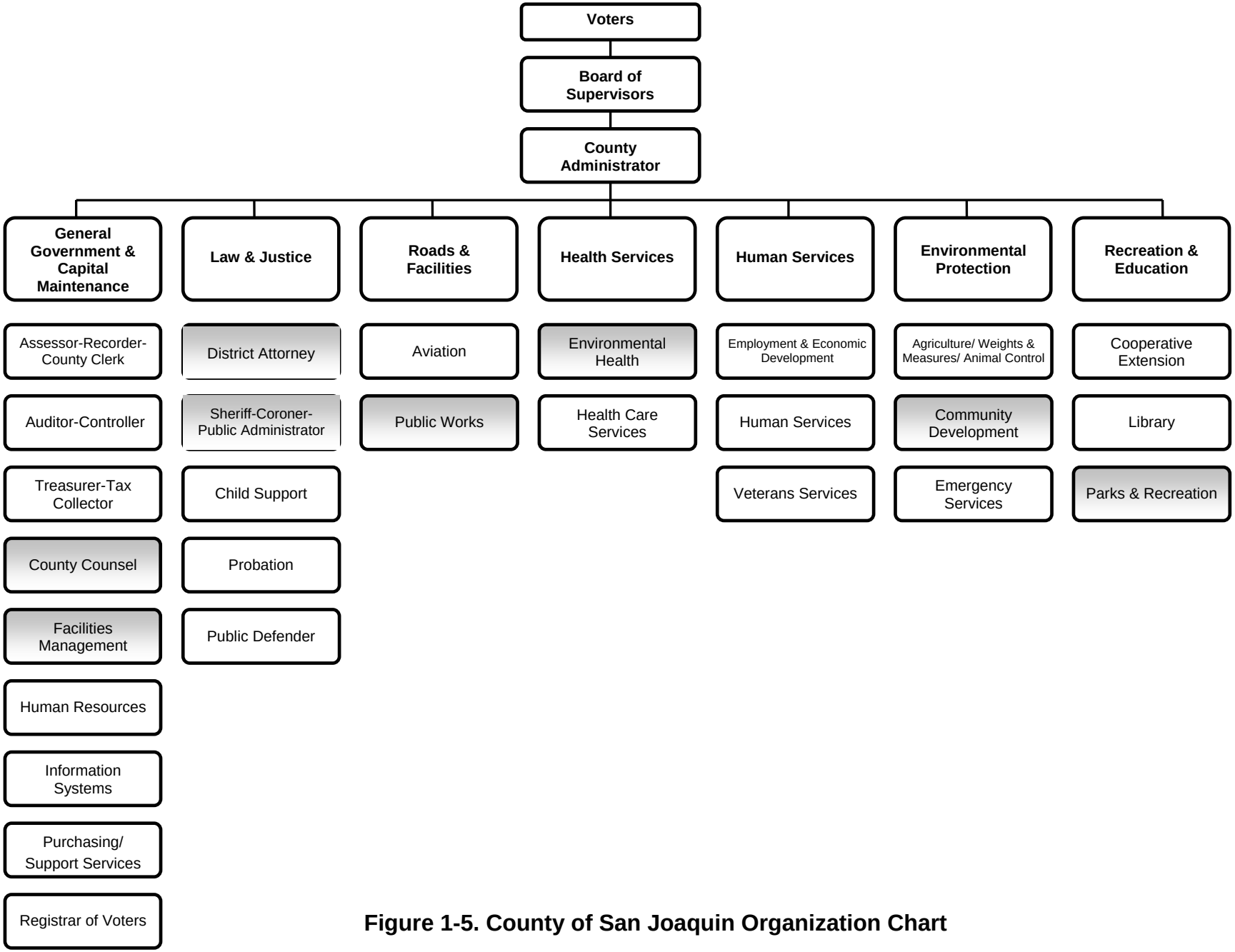

Figure 1-5. County of San Joaquin Organization Chart

Table 1-2. Primary Responsibilities of the County Departments/Divisions

Key County Department/Division for SWMP Implementation	Primary Departmental/Division Responsibilities
Public Works – Water Resources Division	Responsible for implementing, monitoring, and/or overseeing all County activities related to the stormwater program; Responsible for preparing and monitoring the NPDES budget.
Public Works—Administration	County Public Works Management including the Director and Deputy Directors.
Public Works – Design Engineering/Field Engineering Divisions	Responsible for design and delivery of Public Works Projects including the preparation of plans and specifications, construction contract administration, and inspection of contract construction, subdivisions, and encroachments.
Public Works – Flood Control/Channel Maintenance Divisions	Responsible for flood management activities including planning and implementation of flood risk reduction projects and maintenance of levees including implementing the IPM program, May coordinate with Water Resources Division on water related issues that may impact the NPDES program.
Public Works – Fiscal Divisions	Responsible for assisting with fiscal tracking and reporting related to the NPDES budget.
Public Works – Public Services Division/Community Infrastructure	Public Services is responsible for issuing permits to the public for new construction and construction improvements and collecting any development fees related to NPDES review. Community Infrastructure reviews and checks any applications that may have an impact on NPDES issues.
Public Works – Road Maintenance/Utility Maintenance Divisions	Responsible for maintenance of County storm drains, gutters, ditches, and roadways.
Public Works – Solid Waste Division	Responsible for integrated waste management services - disposal services, recycling, special waste recycling, household hazardous waste management, and waste oil collection.
Public Works – Utility Maintenance Division	Responsible for storm drain pump system operation and maintenance.
Facilities Management – Parks & Recreation Division	Responsible for maintaining the County's parks and recreational areas; implementing the pesticide, herbicide, and fertilizer application protocol; the IPM program; and the installation of pet waste bag dispensing stations.
County Administrator's Office – Capital Projects Division	Responsible for planning, design, and delivery of County Capital Improvement Projects and County facilities upgrades and renovations.
Community Development Department	Responsible for establishing policies and goals for long-range plans to provide for the orderly growth of the community. The Community Development staff directs and coordinates the activities of the Building Inspection and Planning Development Services Divisions to ensure that applicable codes and laws are implemented.

Key County Department/Division for SWMP Implementation	Primary Departmental/Division Responsibilities
Environmental Health Department	Provides environmental services which protect and enhance public health, well-being, and safety through prevention, education, inspection and enforcement of Federal, State and local environmental laws and regulations. The Environmental Health Department conducts inspections (e.g., restaurants, industrial and commercial sites, underground storage tanks, and well drilling) enforces environmental health regulations associated with many other business and construction activities.
District Attorney	Illicit discharges may be referred to the District Attorney's office to determine whether prosecution may be necessary pursuant to County ordinances.
County Counsel	Serves as legal representation to officials, boards, commissions, and County departments regarding legal and regulatory matters of concern.

Each of the key Departments/Divisions has a responsibility for the day-to-day implementation of the SWMP. A general overview of the Program Elements and responsible County Departments/Divisions is presented in **Table 1-3**. For specific information regarding each Control Measure and Performance Standard, the appropriate SWMP section should be consulted.

Table 1-3. County Departments and Divisions Responsible for Implementing the Stormwater Program

Department/Division	Program Management & Reporting	Illicit Discharges	Public Education	Municipal Operations	Industrial/ Commercial	Construction	Planning & Land Development	Water Quality Based Programs	Monitoring
PW – Water Resources Div.	P	P	P	P	P	P	P	P	P
PW – All Other Divisions	S	S	S	S	S	S	S	S	
FM – Parks & Rec.	S	S	S	S					
Capital Projects Div.				S					
Comm. Dev. Dept.	S	S		S		S	S		
Env. Health Dept.	S	S			S				
District Attorney	S	S			S	S			
County Counsel	S	S			S	S	S		

P – Primary responsibility
S – Provides support to primary department or division
PW – Public Works
FM – Facilities Management

FISCAL ANALYSIS

Source of Funds

The County of San Joaquin funds its stormwater-related activities through the County Service Area No. 54 (CSA 54) Special District Fund, which was established in 1993. This special district includes all unincorporated county territory that is within the NPDES permitted area. A user charge ($35/parcel) is collected on the tax rolls for each of the 16,000 parcels within CSA 54, providing approximately 98% of the County's stormwater program funds. In addition, the County obtains approximately 2% of its stormwater program funding through inspection/plan check fees.

Reporting

As a part of the Annual Report (Section 1), the co-permittees assess the current NPDES expenditures as well as the projected expenditures for the next fiscal year. The budget summary includes the expenditures incurred to implement the SWMP, written explanations where necessary. The summary also includes a description of the source(s) of the funds including any legal restrictions on the use of the funds.

Pursuant to the second term Permit, the co-permittees reviewed the fiscal analysis reporting format so that expenditures are consistently assessed by SWMP Program Element from year to year. The County will continue to report the Fiscal Analysis within the Annual Report and revise as needed. An example of the Fiscal Analysis reporting format is provided in **Table 1-4**.

Table 1-4. Example Fiscal Analysis Reporting Format

Program Element	Expenditures During Fiscal Year 20xx-20xx	Estimated Budget for Fiscal Year 20xx-20xx
Program Management		
Illicit Discharges		
Public Outreach		
Municipal Operations		
Industrial and Commercial		
Construction		
Planning and Land Development		
Water Quality Monitoring Program		
Water Quality Based Programs		
Program Implementation, Assessment, and Reporting		
TOTAL		

Notes:

Enter "U" if the information is unavailable

The costs provided should include 1) In-house and contracted Operations/Maintenance Costs and 2) Capital Costs

LEGAL AUTHORITY

The Permit requires that the co-permittees implement a stormwater management program to reduce the pollutants in stormwater discharges to the MEP. Central to this program is the establishment and/or verification that the co-permittees have adequate legal authority to regulate the discharge of pollutants to the storm drain system.

The City of Stockton and County of San Joaquin are legal entities with the authority to administer, implement, and enforce the stormwater management program within their separate jurisdictions. The co-permittees have broad legal authority from stormwater, wastewater, solid and hazardous materials regulations, and various public nuisance ordinances to address stormwater quality issues.

In March 1998, the County enacted a Stormwater Management and Discharge Control Ordinance No. 3966 (codified in Title 5, Division 10). This ordinance reorganized the existing County stormwater-related rules into a single document and added regulations required by the Clean Water Act that were not previously included. This ordinance also established uniform requirements for protecting and enhancing the water quality of the waters of San Joaquin County in a manner consistent with the Clean Water Act.

County Counsel provided the Regional Water Board with a certified statement of the County's existing legal authority on September 29, 2003. The certified statement recognized that the County had adequate legal authority to implement and enforce each of the requirements contained in the second term Permit and 40 CFR 122.26 (d)(2)(i)(A-F). County Counsel has reviewed the existing legal authority to ensure that the County has adequate legal authority to implement and enforce each of the requirements within Order No. R5-2007-0173.

The County received legal authority to implement the SWMP on May 29th 2008. An updated certified statement of legal authority is included as **Appendix A-2** to the SWMP. In addition, the certified statement describes the following:

- Citation of urban runoff related ordinances adopted by the County and the reasons they are enforceable
- Progressive Enforcement Policy and how it will be effectively implemented
- Identification of the local administrative and legal procedures available to mandate compliance with urban runoff related ordinances and therefore with the conditions of the Permit
- Description of how these ordinances are implemented and how enforcement actions under these ordinances may be appealed
- Description of whether the County can issue administrative orders and injunctions or if it must go through the court system for enforcement actions

The amendments or Ordinances will be developed and adopted within one year after the adoption of the SWMP (anticipated to be mid-late 2009).

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PROGRAM MANAGEMENT CONTROL MEASURES AND PERFORMANCE STANDARDS

The control measures and performance standards for the overall management of the stormwater program are listed below.

Program Coordination

- Review and revise the SWMP as needed
- Co-permittees (City of Stockton and County of San Joaquin) meet quarterly
- Participate in internal Stormwater Program Meetings (County Divisions and Departments) as needed
- Participate in statewide stormwater-related meetings, conferences, and stakeholder groups as needed
- Review and revise MOUs as necessary
- Establish, review, and revise cooperative agreements as needed

Fiscal Analysis

- Review and revise the Fiscal Analysis reporting format as needed
- Report the Fiscal Analysis within the Annual Report

Legal Authority

- Review the legal authority as needed

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments. The following data and information should be collected:

- Meeting information, including date and purpose
- Fiscal information needed to complete the Fiscal Analysis for the Annual Report, organized by Program Element

RESPONSIBILITY

The Public Works – Water Resources Division and all other Public Works Divisions share primary responsibility for all of the performance standards for this Program Element. Facilities Management – Capital Projects Division, Facilities Management – Parks and Recreation, Environmental Health Department, and County Counsel will provide support for this Program Element.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
Program Coordination																												
Review/revise the SWMP as needed	C																					P	P					
Co-permittees meet quarterly	C																					P	P					
Participate in internal Stormwater Program Meetings as needed	C																					P	P	S	S	S	S	S
Participate in statewide stormwater-related meetings, conferences, and stakeholder groups as needed	C																					P	P					
Review and revise MOUs as necessary	C																					P	P					
Establish, review, and revise cooperative agreements as needed	C																					P	P					S
Fiscal Analysis																												
Review/revise the Fiscal Analysis reporting format as needed	C																					P	P					
Report the Fiscal Analysis within the Annual Report	C									X				X				X				P	P					
Legal Authority																												
Review the legal authority as needed	C																					S	S					P

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.

= Performance standard will be completed on an ongoing basis or during the specified timeframe.

PW = Public Works Department

FM = Facilities Management Department

Section 2

Illicit Discharges (ID)

OVERVIEW

An illicit discharge is defined as any discharge to the storm drain system that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. Illicit discharges include the disposal of materials such as paint, spa water, or waste oil into the storm drain or the discharge of waste streams containing pollutants to the storm drain.

Illicit Discharge

Any discharge to the storm drain system that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations.

Illegal Connection

Undocumented and/or unpermitted physical connections from a facility to the storm drain system or receiving water.

Illegal connections are a subset of illicit discharges. Illegal connections are defined as undocumented and/or unpermitted physical connections from a facility to the storm drain system or receiving water (e.g., a sanitary sewer connection to the storm drain).

Because illicit discharges and illegal connections can be a significant source of pollutants to the storm drain system and receiving waters, the purpose of this Program Element is to ensure implementation of a comprehensive program for detecting, responding to, investigating and eliminating these types of discharges and connections in an efficient and effective manner.

OBJECTIVES

The objectives address the key components of the Illicit Discharges Program Element and identify that, in order to be effective, the program must:

- Proactively detect illicit discharges and illegal connections through a variety of mechanisms including, but not limited to, public reporting, dry weather field screening, and field crew inspections.
- Upon identification of an illegal connection, investigate and eliminate the connection through a variety of mechanisms including, but not limited to, permitting or plugging the connection.
- Upon identification of an illicit discharge, investigate the discharge and conduct any necessary follow-up actions to mitigate the impacts of the discharge.
- Maintain a database for recording the information related to illicit discharges and illegal connections and, to the extent possible, use a GIS map to assist in analyzing and reporting information including the identification of spatial or temporal trends and priority areas.
- Provide adequate legal authority to control and/or prohibit pollutants from being discharged to the municipal storm drain system and implement a progressive enforcement policy to ensure that adequate enforcement is conducted.
- Conduct training for employees who are responsible for identification, investigation, termination, cleanup, reporting, and enforcement of illicit discharges and illegal connections.
- As a part of the annual reporting process, conduct an assessment to determine the effectiveness of the Program Element and identify any necessary modifications.

CONTROL MEASURES

The Control Measures outlined in **Table 2-1** and discussed in more depth in the accompanying Fact Sheets were designed to address the program objectives. In developing the Control Measures, several key factors were considered:

- Each Control Measure must address one or more of the program objectives.
- Each Control Measure must clearly identify the Performance Standards, timeframe for completion, and responsible Department/Division to ensure that there is accountability built into the program.
- The data and information from the previous permit term and/or reporting period must be analyzed to determine the effectiveness of each Control Measure, and the iterative process must be used to ensure that each Control Measure is effective and has a commensurate benefit for the resources expended.
- Each Control Measure must actively identify enhancements/modifications that would improve the Program Element and overall effectiveness of the stormwater program.

Table 2-1. Control Measures for the Illicit Discharge Program Element

ID	Control Measure
ID1	Detection of Illicit Discharges and Illegal Connections • Emergency Spill Response • Public Reporting (Hotline) • Dry Weather Field Screening • Field Crew Inspections • Non-Stormwater Discharges
ID2	Illegal Connection Identification and Elimination • Investigation and Elimination • Enforcement
ID3	Investigation/Inspection and Follow-Up • Response and Investigation • Cleanup • Recordkeeping and Tracking
ID4	Enforcement
ID5	Training
ID6	Effectiveness Assessment

The Control Measure Fact Sheets developed for the Illicit Discharges Program Element (ID1 – ID6) address the program objectives and identify assessment tools that may be used to assess the effectiveness of the program. The Fact Sheets were developed as stand-alone documents so that they can be individually provided to the responsible Department(s)/Division(s).

Supporting Control Measures

While the individual, program-specific Control Measures are the primary focus of each Program Element (e.g., ID1-ID6 for Illicit Discharges), it is also important to understand how the Program Element fits within the overall SWMP and how each of the Program Elements complement and support each other. A brief summary of the Program Elements that support the Illicit Discharge program is provided below.

Supporting Control Measures	Program Element
---	**Illicit Discharges**
X	Public Outreach
X	Municipal Operations
X	Industrial/Commercial
X	Construction
X	Planning and Land Development

Public Outreach (Section 3)

- *24-hour Hotline Number* – Reporting of illicit discharges and illegal connections
- *Household Hazardous Waste Collections* – Promotion of proper disposal for wastes, avoids illicit discharges

Municipal Operations (Section 4)

- Municipal Maintenance Facilities(maintenance yards, fueling locations, washing stations) – Evaluated to prevent illicit discharges
- *Field Crews* – "Eyes" and "Ears" in the field, report suspected illicit discharges and illegal connections
- *Storm Drain Marking/Stenciling* – Educates the public and encourages them not to discharge pollutants to the storm drain
- *Training* – Field crews are trained to understand the ID/IC program and what to look for

Industrial and Commercial (Section 5)

- *Facilities in Database* – Reports of illicit discharges or illegal connections from facilities in the industrial and commercial program database are recorded so the facility history is documented

Construction (Section 6)

- *Facilities in Database* – Reports of illicit discharges or illegal connections from facilities in the construction program database are recorded so the facility history is documented This is especially important during periods of dry weather when sites may experience an increase in the washing off of construction-related materials such as concrete, paints, or plaster.
- *Inspections* – Facilities are inspected to identify illegal connections

Planning and Land Development (Section 7)

- *Plan Review* – Plans are reviewed to identify potential illegal connections

ID1 – Detection of Illicit Discharges and Illegal Connections

DESCRIPTION

Detection of illicit discharges through the availability of a public hotline, conducting dry weather field screening, and utilizing field crews ensures that the Illicit Discharges program is proactive in identifying and eliminating problematic discharges. This Control Measure reflects the County's efforts to detect and eliminate illicit discharges and illegal connections and provides several mechanisms for receiving information.

EXISTING BMPS AND RELATED ACTIVITIES

The County conducts a number of activities that prepare staff for responding to discharges and facilitate the proactive detection of illicit discharges and illegal connections. These include the establishment of emergency spill response procedures, public reporting, dry weather field screening, and field crew inspections, each of which are discussed in additional detail below.

Spill Response Procedures

The County addresses three types of spills: sewage, non-hazardous and hazardous spills. Procedurally, the sewage spills and non-hazardous spills are addressed in the same manner, whereas the hazardous spills are addressed by the Office of Emergency Services (OES) and/or Office of Environmental Health Services (OEHS).

The sewage spills and non-hazardous spills are addressed using the *NPDES nonConstruction Illicit Discharge and Illegal Connection Investigation-Enforcement Management* (ID2-15.01) procedures (see **Appendix B-1**). Details on the procedures the County follows in handling sewage spills are provided within Section 4 (see MO1). Although there are currently procedures that are in place for responding to spills involving hazardous and non-hazardous materials/wastes, the County will develop formal written Spill Response Procedures, including a responsibility flow chart and outlined response steps, to address emergency and non-emergency spills of both hazardous and non-hazardous materials/wastes. The procedures will also address the timeline and response/BMPs necessary for responding to "emergency spills" versus other types of spills.

Public Reporting

The County has established and maintains a 24-hour Hotline (**209-468-3055** and **866-755-4955)** to encourage the public to report water pollution problems. The County has facilitated the reporting of illicit discharges by advertising the hotline number internally with other County departments and agencies, in public education materials, on the County's website[1]; and in the government pages of the local telephone book. Calls to the hotline are taken as follows:

- Business Hours – During normal business hours, County personnel are available to answer and direct calls to the appropriate department.
- Evenings and Weekends – After hours, calls are directed to the County sheriff. If the discharge is hazardous, County Office of Emergency Services will be contacted for immediate cleanup. If the

[1] http://www.sjcleanwater.org/

discharge is non-hazardous, Department of Public Works after-hours contact person will be contacted to schedule a cleanup.

Within two (2) business days of a notification or complaint, the County responds and provides an on-site assessment. The investigation process includes determining whether the discharge is occurring on private or public property, whether the discharge is an authorized non-stormwater discharge, and whether the discharge is hazardous. If the illicit discharge is hazardous then the County crews follow appropriate protocols in notifying State and local agencies and protecting themselves from exposure. The complaint is tracked in a manner consistent with the County's *NPDES nonConstruction Illicit Discharge and Illegal Connection Investigation- Enforcement Management* (ID2-15.01) procedures (**Appendix B-1**).

Dry Weather Field Screening

The County has established an annual dry weather field screening program where every outfall is monitored each year and source tracking is conducted where there is sufficient flow[2]. This screening program helps to detect illicit discharges and illegal connections. During field screening, the outfall, or closest manhole to the outfall, is inspected for abnormally high dry-weather flow (i.e., above that expected from lawn watering or residential car washing) and suspicious discharges (e.g., sewage smells, laundry suds, or excessive trash). Target areas for monitoring, as well as the results of the annual monitoring, are tracked on a spreadsheet.

Field Crew Inspections

Field staff is trained to recognize illegal discharges so that, during their normal maintenance activities, they can identify signs of previous, current, or potential non-stormwater discharges/connections or illegal dumping into the storm drain system. Once they are discovered, field staff notifies the Public Works – Water Resources Division for follow-up investigation. The County's primary spill response investigator conducts follow-up inspections and accompanies field crews during cleanup to ensure that reported spills are properly cleaned up and identified illicit connections are corrected. Follow-up activities are described in Control Measures ID2 and ID3.

Non-Stormwater Discharges

Essential to identifying illicit discharges is recognizing that several categories of non-stormwater discharges are <u>not</u> prohibited, provided that they are not significant sources of pollutants to waters of the United States (U.S.)[3]. These conditionally allowed non-stormwater discharges are identified in the County's Ordinance[4], and are listed in **Table 2-2**.

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[2] The trigger for the source identification is based on flow, not the concentrations of certain constituents. Thus, where there is flow the County conducts source identification tracking to determine where the flow is coming from.

[3] Order No. R5-2007-1073, Section B, Discharge Prohibitions – Non-Storm Water Discharges

[4] General Discharge Prohibition: Title 5 Division 10, Sec. 5-10103. Discharges Exempt from the General Prohibition.

Table 2-2. Conditionally Allowed Non-Stormwater Discharges

Water line flushing, hydrant flushing, and other discharges from potable water sources (other than main breaks) *(k, m)*[5]	Spring water or flows from riparian habitats and wetlands *(f, j)*
Landscape irrigation and lawn watering *(n, l, q)*	Individual residential car washings and dechlorinated swimming pool discharges *(o), (p)*
Diverted stream flows or rising ground waters *(a, b)*	Street wash water *(r)*
Uncontaminated groundwater infiltration *(c)*	Emergency fire fighting flows
Uncontaminated pumped ground water *(d)*	Any discharge regulated under a NPDES permit issued to the discharger and administered by the State of California under the authority of the United States Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit and other applicable laws or regulations.
Water from foundation and footing drains, crawl space pumps, and air conditioning condensation *(e, g, h, i)*	

Per Section 5-10102(b)[6] of the Ordinance, in areas not served by sanitary sewers (i.e., on septic system), the discharge of filtered, dechlorinated swimming pool water to the storm drain system[7] is allowed. Otherwise (i.e., when public sanitary services are available), per Section 5-6414[8] of the Ordinance, all public and private swimming pool water is prohibited from being discharged into a storm drain system[9] or gutter and must be discharged into a sanitary sewer.

The discharges in **Table 2-2** are allowed unless identified as a significant source of pollutants to waters of the U.S. When a discharge category is identified as a significant source of pollutants to waters of the U.S., the discharge is prohibited unless BMPs are implemented that will reduce pollutants to the maximum extent practicable.

To date, none of the conditionally allowed non-stormwater discharge categories have been identified as significant sources of pollutants. Dry weather field screening data (Section 8) will be evaluated to assist in the determination of whether any of the allowed discharge categories are significant sources of pollutants to waters of the U.S. If so determined, BMPs to reduce the pollutants to the MEP will be identified in the SWMP and will be required by the County. Should it not be possible to reduce pollutants, the County will prohibit the discharge on a case-by-case or categorical basis and update the County's Ordinance and SWMP[10].

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[5] *(x, x)* refer to the letters identifying non-stormwater discharges specified in 40 CFR 122.26(d)(2)(iv)(B)(1).

[6] http://municipalcodes.lexisnexis.com/codes/sanjoaquinweb/

[7] County Ordinance refers to Storm Drain System as "Storm Sewer".

[8] http://municipalcodes.lexisnexis.com/codes/sanjoaquinweb/

[9] County Ordinance refers to Storm Drain System as "Storm Sewer".

[10] Isolated problems will be addressed as such until the County has enough evidence to warrant designating an entire category as a source of pollutants

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

Spill Response Procedures

- Develop formal Spill Response Procedures which outline the steps that will be taken in the event of an emergency or non-emergency spill and how the County will respond to all types of spills including sewage, hazardous materials or otherwise.

Public Reporting

- Facilitate reporting of illicit discharges by maintaining the Hotline and advertising it in the white pages, County website, and stormwater-related public education materials.
- Coordinate with other departments and agencies to ensure that all reports are appropriately received, routed, tracked, and investigated.
- Review/revise current procedures for internal communication between Departments and Divisions and modify as necessary.
- Review/revise flowchart summarizing the internal communication procedures established and to assist with the routing of calls as necessary.
- Review the form that is used to document the complaints received and modify as needed.

Dry Weather Field Screening

- Conduct dry weather field screening as described in Section 8.
- Continue the annual dry weather field screening of all outfalls
- Continue implementation of source tracking at all outfalls where sufficient flow exists
    - The County currently screens all outfalls and completes source tracking for each outfall with sufficient flow.
- Develop and implement follow-up investigation plans where signs of illicit discharges/connections exist.
- By the end of the permit term, evaluate the effectiveness of the dry weather field screening program in identifying ID/IC issues and revise as needed.

Field Crew Inspections

Continue field observations as part of maintenance operations, document evidence of non-stormwater discharges/connections or illegal dumping.

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see ID6). The data and information to be collected may include, but will not be limited to, the following:

- Number of water pollution complaints received and source of complaint (hotline, dry weather field screening, field staff, other)
- Number of verified complaints reported by source
- Locations of verified complaints
- Number of outfalls monitored and number of problem areas identified
- Number and locations of dry weather discharges tracked
- Types of pollutants (materials/waste) involved
- Associated source identification activities and investigation plans developed
- Monitoring data collected as part of dry weather field screening program, source identification activities, and investigation plans.

RESPONSIBILITY

The Public Works – Water Resources Division has primary responsibility for this Control Measure with support from the Public Works Department, Facilities Management – Parks and Recreation Division, the Community Development Department, and the Environmental Health Department.

- Public Works – Field Engineering has secondary responsibility for all performance standards.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
ID1 – Detection of Illicit Discharges and Illegal Connections																												
Spill Response Procedures																												
Develop Spill Response Procedures	N										X											P	S					
Public Reporting																												
Maintain and advertise Hotline	C																					P						
Coordinate with other agencies and departments	C																					P	S		S	S	S	
• Review/revise procedures as necessary	E									X												P	S		S	S	S	
• Review/revise flowchart	E									X												P						
Review and revise complaint form	E									X												P						
Dry Weather Field Screening																												
Continue field screening (Section 8)	C																X					P	S					
• Continue monitoring at all outfalls	C									X				X				X				P						
• Continue implementation of source tracking at all outfalls with sufficient flow	C									X				X				X				P						
• Develop source identification and investigation plans	N																X					P						
Re-evaluate program and revise as needed	E																				X	P						
Field Crew Inspections																												
Continue field observations for ID/IC	C																					P	S		S	S		

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ID2 – Illegal Connection Identification and Elimination

DESCRIPTION

Similar to the County's efforts to detect and eliminate illicit discharges, the County proactively detects illegal connections to the storm drain system. County field staff have been trained to identify illegal connections to the storm drain system. Upon identification of an illegal connection, the County investigates and eliminates illegal connections through a variety of mechanisms including, but not limited to, permitting or plugging the connection.

EXISTING BMPS AND RELATED ACTIVITIES

As noted previously, the County conducts dry weather field screening to characterize the quality of dry weather flows. County field crews are instructed to notify the Public Works – Water Resources Division should they identify signs of previous, actual, or potential illegal connections that warrant further investigation during field screening operations. Once advised of the situation, the County may use various methods to investigate sources of illicit discharges including dye or smoke tests, video (TV), construction certification, and an inspection program.

As described in the Planning and Land Development Program Element, the County requires that tentative parcel maps be reviewed to ensure that they are consistent with the standards. Plan reviews ensure that no illegal connections are proposed. All plan reviews are tracked in a database and construction inspections are conducted upon project completion to ensure that the project was built correctly.

When a complaint or alleged violation is discovered or reported concerning an illicit discharge, illegal dumping, spills, or illegal connection etc, a Violation File is initiated by the NPDES investigator. If the cal, referral, or complaint is concerning a construction or industrial site, a note is made in the Hotline Tracking Log, referring the situation to the pertinent database regarding construction or industrial sites. The following outlines the investigation/inspection procedures from the *NPDES nonConstruction Illicit Discharge and Illegal Connection Investigation-Enforcement Management* (ID1-15.01) procedures (See **Appendix B-1**):

- The NPDES investigator initiates a Violation File. The Violation Files are file by an ID number assigned by water year, and the order in which the complaint is received. The investigator conducts an investigation of the complain tor alleged violation within two (2) business days. For matters relating to illegal connection, the investigation may span up to 21 business days. A complaint Form is completed, pictures are taken, samples of materials may be taken, any witnesses or parties to the action are interviewed and other evidence is collected to investigate the incident. As needed, the investigator may call other County Departments to assist with the incident.
- The competed and dated Complaint Form, interview notes and other pertinent notes are filed inside the Violation Log. Any photographs or materials will also be dated and filed in the Violation File.
- A chronology of the events is logged in the Chrono Log, which is filed inside of the front of the Violation File.
- All pertinent information relating to the incident and the enforcement is entered in the Hotline Tracking Log
- All incident sites within the Phase I boundary are recorded and labeled by address and ID number on the "Phase I Incident Sites" GIS map of San Joaquin County.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Investigate and eliminate illegal connections discovered through response to illicit discharges. Ensure that all illegal connections are investigated within 21 calendar days to determine the source of the connection, nature and volume of discharge through the connection, and the responsible party for the connection. All illegal connections shall be terminated or permitted within 180 days of completion of the investigation.
- Coordinate with the Planning and Land Development program to conduct plan reviews and identify illegal connections.
- Coordinate with the Construction program to inspect projects and identify illegal connections.

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see ID6). The data and information to be collected may include, but will not be limited to, the following:

- Number of illegal connections reported
- Number and location of illegal connections verified
- Source of illegal connection identification (field staff, hotline, plan review, etc.)
- Number of illegal connections eliminated and mechanism for elimination (permitted, plugged, etc.)
- For those connections eliminated, information and data available for load reduction estimates
- Number of plans reviewed and number requiring revision due to identified illegal connections
- Number of illegal connections identified during plan review process
- Number of illegal connections identified during project construction inspections

RESPONSIBILITY

The Public Works – Water Resources Division has primary responsibility for all of the performance standards for this Program Element. The Public Works Department, Facilities Management – Parks and Recreation, Community Development Department, and Environmental Health Department will provide support for this Program Element.

- Public Works – Public Services and Public Works – Design Engineering have secondary responsibility for coordination with the Planning and Land Development program.
- Public Works – Field Engineering and Design Engineering have secondary responsibility for coordination with the Construction program.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
ID2 – Illegal Connection Identification and Elimination																												
Investigate and eliminate illegal connections	C																					P	S		S		S	
Coordinate with Planning and Land Development program	C																					P	S			S		
Coordinate with Construction program	C																					P	S			S		

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ID3 – Investigation/Inspection and Follow-Up

DESCRIPTION

The investigation and inspection of potential illicit discharges and illegal connections to the storm drain system, as well as appropriate follow-up actions, are essential in order to eliminate illicit discharges and illegal connections. The response and follow-up actions may include cleanup and/or other necessary actions to mitigate the impacts of the discharge.

In addition to the investigation and follow-up activities, it is also necessary to maintain a database for recording the information related to illicit discharges and illegal connections and, to the extent possible, to use a GIS map to assist in analyzing and reporting information including the identification of spatial or temporal trends and priority areas.

EXISTING BMPS AND RELATED ACTIVITIES

The County has a comprehensive approach for responding to reported illicit discharges. The approach includes response, investigation, cleanup, and record keeping and tracking. Related enforcement activities are addressed in ID4.

Response and Investigation

When a notification or complaint is received, the first responder (Office of Emergency Services (OES), Fire Departments, Environmental Health Department, or Public Works – Water Resources Division) provides an on-site assessment to determine the conditions of the discharge within two (2) business days (during or immediately following containment and cleanup). The complaint shall be tracked in a manner consistent with the County's *NPDES nonConstruction Illicit Discharge and Illegal Connection Investigation - Enforcement Management* (ID2-15.01) procedures (**Appendix B-1**). As part of the County's Spill Response Procedures, an Incident Report is completed by field staff and circulated to County Stormwater Program staff for documentation and reporting purposes (see **Appendix B-2**).

As identified in ID1, the County will also be developing formal Spill Response Procedures to outline the steps that will be taken in the event of an emergency or non-emergency spill, for both hazardous and non-hazardous materials

The investigation process includes determining whether the discharge is occurring on private or public property, whether the discharge is an authorized non-stormwater discharge, and whether the discharge is hazardous. If the illicit discharge is hazardous, County crews follow appropriate protocols in notifying state and local agencies and protecting themselves from exposure. The County has adopted two plans to facilitate consistent and coordinated response to spills and releases:

- Sanitary Sewer Overflow Response Plan (SSORP) (see **Appendix B-3**)
- Hazardous Materials Area Plan, Appendix 11 – Oil Spills (June 2003) (**Appendix B-4**, p. F-1)

The local administering agency for the Hazardous Materials Area Plan[11] is the San Joaquin County Office of Emergency Services (OES). The procedures followed in case of a spill event can be found in the *Hazardous Materials Area Plan, Appendix 11 – Oil Spills* (see **Appendix B-4**, p. F-1). The plan outlines the following items as part of the emergency spill procedures: Equipment, Logistics, Personnel &

[11] An appendix to the Hazardous Materials Area Plan is attached as **Appendix B-4**.

Information Resources, and Special Forces. Public Works serves as a resource to OES regarding emergency spills that may impact the storm drain system.

The County's procedures for addressing SSOs are detailed in MO4.

County staff carefully document investigations to ensure that accurate information is obtained and all evidentiary requirements are met. The investigation may include one or more of the following:

- Collection of samples and submittal of a Chain of Custody form to the laboratory
- Photographs to record the visual observations
- Interviews

The County completes a detailed description of each report, action taken, and final resolution. A complaint form (Illicit Discharge Hotline Incident Tracking Sheet) has been developed to ensure all pertinent information is gathered (see **Appendix B-5**).

The County is in the process of developing an Enforcement Consistency Guide (ECG) comprising the various NPDES procedures (see ID4). In addition to addressing progressive enforcement steps, the ECG will establish general guidelines that may be utilized to ensure that the procedures followed and information obtained during an investigation are defensible. Various techniques that can be used while investigating incidents will be identified, including record keeping; site entry; informal interviews; environmental sample collection; photographs; record reviews; report writing; and case development. The County will ensure that the ECG adequately addresses investigative guidance. The types of information that will be collected during investigations may include, but are not limited to, the following:

- Inspector and responder names
- Site entry procedures, events, and contacts, especially if there were problems
- Names, titles, and phone numbers of site contacts
- Any description of site and event
- Dates and times of specific events
- Any deviations from established protocol or procedure
- Names and contact information of everyone interviewed
- Interview notes
- Discussion of unusual conditions
- Environmental samples and all sampling log information (e.g., chain of custody form)
- Photographs and/or videos with relevant log information (e.g., when and where photo was taken and description of photo)
- Informal witness interview information

Cleanup

The main objective of the cleanup effort is to restore the impacted area back to its original state and prevent further environmental degradation in the area surrounding the incident. During this phase, , Public Works – Water Resources, County Office of Emergency Services, and/or County Environmental Health Department staff provide oversight to ensure that the discharge is removed and disposed of properly and to verify cleanup charges. Depending on the incident, the County may serve the owner or occupant of the property with an invoice for the cleanup cost.

The County eliminates any discharge or connection by means of appropriate actions or legal procedures, depending on the type of illicit discharge/connection detected. Illicit discharges are eliminated by contacting the appropriate supervisor who oversees the activities resulting in the discharge and notifying the individual of necessary actions. If hazardous or unknown substances are found, the County notifies OES to request Hazardous Materials response. Follow-up is conducted to ensure that abatement activities have been successfully and adequately implemented.

Crews from Public Works – Maintenance/Solid Waste Divisions or OES will clean up non-hazardous discharges when either no responsible party can be found or the discharge must be cleaned immediately in the interest of public welfare or water quality. If necessary, the County will contract with a clean-up specialist to remove the discharge. In these cases, costs are passed on to the responsible party when located.

Recordkeeping and Tracking

The County developed an Illicit Discharge Database and utilizes the information to identify and respond to areas that required focused attention. As a part of the Illicit Discharge Database, the County is in the process of ensuring that GPS coordinates are recorded so that the discharge locations can be mapped on an annual basis to identify problem areas/responsible parties. The information will be used to evaluate patterns and trends of illicit discharges and illegal connections with the objective of identifying problematic areas.

In addition, the County maintains an Illicit Discharge and Hotline Incident Tracking Sheet (Complaint Form) which can be found in **Appendix B-5**. The Illicit Discharge Hotline Incident Tracking Sheet contains the following categories for acquiring pertinent information:

- Responder Information
- Reporter Information
- Incident Location
- Upland Problem Indicator Description (i.e. dumping, oil/solvents/chemicals, sewage, wash water, suds etc)
- Stream Corridor Problem Indicator Description (i.e. odor, appearance, floatables)
- Investigation Notes

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Respond to illicit discharges. Ensure that staff respond within two business days to reports of illicit discharges, implementing activities to abate, contain, and cleanup all illicit discharges, including hazardous substances.
- Ensure that Enforcement Consistency Guide (developed under ID4) includes adequate investigative guidance
- Coordinate with Emergency Services for cleanup and removal of hazardous materials
- Maintain the Illicit Discharges Database
- Evaluate, optimize, and incorporate the waste categories used to characterize materials present in the discharges requiring a response. The waste categories currently in use (i.e., Inorganic, Paint, Petroleum Products, Sewage, Miscellaneous, and Unidentified) are broad and unassociated with particular activities. Specific categories and sub-categories will be evaluated and created to more accurately characterize the pollutants and activities involved. This will allow the County to effectively focus resources on the more prevalent types of incidents. By targeting pollutants and associated activities for additional outreach efforts, the County may be able to eliminate a large portion of the incidents that occur, thereby resulting in a more effective Illicit Discharge program.
- Identify reported illicit discharges in the database on a map using a convenient scale and in a format that is easily discernible. Evaluate the information annually for patterns and trends of illicit discharges, with the objectives of identifying priority areas and tracking repeat offenders for elimination of illicit discharges.

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see ID6). The data and information to be collected may include, but will not be limited to, the following:

- Number of illicit discharges reported
- Number and location of illicit discharges verified
- Types of pollutants and activities involved in the illicit discharges verified
- Number of illicit discharges requiring clean up or follow-up activities
- For those discharges verified, information and data available for load reduction estimates

RESPONSIBILITY

The Public Works – Water Resources Division has primary responsibility for this Control Measure with support from Public Works – Road Maintenance and Public Works – Utilities Maintenance Divisions.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
ID3 – Investigation/Inspection and Follow Up																												
Respond to illicit discharges	C																					P	S					
Ensure Enforcement Consistency Guide adequately addresses investigative guidance	N										X											P	S					
Maintain contractual services for incident cleanup	C																					P	S					
Maintain Illicit Discharges Database	E																					P	S					
• Evaluate, optimize, and incorporate the waste categories	N										X											P	S					
• Map ID/IC incidents and locations	C					X				X				X				X				P	S					

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FM = Facilities Management Department

ID4 - Enforcement

DESCRIPTION

The Enforcement Control Measure establishes policies and procedures and outlines the progressive levels of enforcement applied to responsible parties not complying with County ordinances. By adopting and implementing a progressive enforcement policy the County will ensure that the program is effective at reducing illicit discharges and illegal connections.

EXISTING BMPS AND RELATED ACTIVITIES

The County has established adequate legal authority to control and/or prohibit pollutants from being discharged to the municipal storm drain system (see also SWMP Section 1). The County has developed a progressive enforcement policy so that the enforcement actions match the severity of violation and include distinct, progressive steps. Corrective actions may involve verbal warnings followed by written warnings and legal action, if necessary. Illicit discharges by businesses are addressed in a more formal manner through issuance of notices of non-compliance, cease and desist orders, and criminal enforcement, depending upon the compliance history of the facility. Corrective actions are taken in every instance where a responsible party is identified.

Relevant portions of the San Joaquin ordinance that provide the County with the authority to implement the SWMP include the following:

- Title 5 Div. 10, Stormwater Management and Discharge Control (**Appendix B-6**)
- Title 9 Div. 14, Grading and Excavation Provisions (**Appendix B-7**)

The various remedies available for progressive enforcement are addressed within the above ordinances as well as procedurally within the *NPDES non-Construction Illicit Discharge and Illegal Connection Investigation-Enforcement Management* (ID2-15.01) procedures (**Appendix B-1**). Currently, the County relies upon its Illicit Discharge Database (see ID3) to assess and determine consistency. The County is also in the process of developing an Enforcement Consistency Guide (ECG). The ECG will comprise the following NPDES procedures and policies already in place at the County:

- *NPDES NonConstruction Illicit Discharge Investigation – Enforcement Management* (ID2-15.01) procedures;
- *NPDES Industrial & Commercial Investigation-Enforcement Management* (IC4-14.01) procedures (**Appendix B-8**);
- *NPDES Construction Investigation-Enforcement Management* (CO6-19.01) procedures (**Appendix B-9**); and
- *NPDES Construction Investigation-Enforcement Management* (CO6-19.01B) procedures (**Appendix B-10**).

The progressively severe corrective actions involve verbal warnings followed by written warnings and legal action, if necessary. Illicit discharges by facilities are addressed in a more formal manner through notices of non-compliance, cease and desist orders, and criminal enforcement, depending upon the compliance history of the facility. Corrective actions are taken in every instance where a responsible party is identified.

The types of enforcement actions that may be taken include the following:

- Administrative Remedies
  - Verbal Warning
  - Warning Notice or Notice to Clean
  - Notice of Violation
- Legal Action
  - Referral letter to San Joaquin District Attorney and the Central Valley Regional Water Quality Control Board

The ECG will allow for Countywide consistency in the enforcement of the local ordinances and will provide standard guidelines and protocols for identifying, documenting, responding to, and enforcing violations. The County's Progressive Enforcement Policy will be encapsulated within the ECG. Although the procedures currently contain progressive enforcement steps, the County will review and revise the procedures comprising the ECG to include more stringent progressive enforcement steps (e.g., re-inspections, fines).

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Develop an Enforcement Consistency Guide, comprising the various NPDES procedures and containing the County's Progressive Enforcement Policy.
- Review/revise existing procedures within Enforcement Consistency Guide to include more stringent progressive enforcement steps (e.g., re-inspections, fines)
- Implement the progressive enforcement policy
- Review/revise the Illicit Discharges Database to incorporate enforcement-related information
- Track enforcement actions using the Illicit Discharges Database

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see ID6). The data and information to be collected may include, but will not be limited to, the following:

- Number and types of enforcement actions taken
- Number of repeat offenders identified

RESPONSIBILITY

The Public Works – Water Resources Division has primary responsibility for this Control Measure with support from District Attorney.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	District Attorney
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
ID4 – Enforcement																												
Develop an Enforcement Consistency Guide that includes the County's Progressive Enforcement Policy	N										X											P						S
Review/revise existing procedures within Enforcement Consistency Guide to include more stringent progressive enforcement steps (e.g., re-inspections, fines)	N										X											P						S
Implement progressive enforcement	C																					P						S
Review/revise the Illicit Discharges Database to incorporate enforcement-related information.	E										X											P						
Track enforcement actions in the Illicit Discharges Database	E																					P						

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ID5 – Training

DESCRIPTION

Training is important for the implementation of the Illicit Discharges Program Element. An effective training program is one of the best pollution prevention Best Management Practices (BMPs) that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality.

The County has developed a formal training strategy (see **Appendix B-11**) to address the multiple levels of staff involvement in the implementation of the stormwater program.

The objectives of the training program are to:

- Increase the general awareness and understanding of the SWMP and Illicit Discharges program;
- Increase the awareness and understanding of the Illicit Discharges Control Measures and Performance Standards;
- Create a training program to increase understanding and awareness and prompt the behavioral changes needed to protect and improve water quality;
- Increase knowledge and understanding of Best Management Practices; and
- Conduct training for employees responsible for identification, tracking, investigation, termination, cleanup, reporting, and enforcement of illicit discharges and illegal connections and measure the effectiveness of the training.
- Specific areas of focus for the training efforts for the Illicit Discharges Program Element are summarized in **Table 2-3** below.

The Illicit Discharge Training Module 1 (Section 2) provides an overview of the NPDES program and San Joaquin County's obligation to manage water quality. The training focuses on illicit discharge and illegal connection detection, enforcement and reporting and the adoption of pollution prevention/good housekeeping behaviors. The training will also address the Permit requirements and SWMP Section 2.

Table 2-3. Areas of Focus for the Illicit Discharge Detection and Elimination Program Training

Target Audience	Format	Subject Material	Comments
• Public Works Flood Management • Public Works Water Resources • Public Works Transportation Department • Planning Department • Sherriff Dept.	• Classroom • Demonstrations • Meeting or assemblies	• Overview of stormwater management program • Stormwater ordinance and enforcement policy • Identification and elimination • Conducting field inspections • Response and notification • Database tracking	• Training seminars or workshops related to ID/ICs may be made available by other organizations

EXISTING BMPS AND RELATED ACTIVITIES

To ensure that the various Department and Division personnel understand their roles and responsibilities under the SWMP, the County developed classroom training for key staff identifying or responding to complaints. By having responsible Department and Division staff attend the training, the County is able to effectively implement the SWMP.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Conduct training for key staff involved in the Illicit Discharge Detection and Elimination program (see **Table 2-3**). Training will occur twice throughout the Permit term (2009 and 2011); each training will consist of 45-minute sessions held throughout the fourth quarter (see **Appendix B-11**).
- Conduct refresher trainings the years that the full training module is not provided
- Review and Revise Training Strategy as needed

Training will occur twice throughout the Permit term; each training will consist of 45-minute sessions held three separate times throughout the third quarter (See Training Schedule **Appendix B-11**).

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see ID6). The following data and information should be collected:

- Number and types of training sessions held
- Number of attendees at each session and the Division/Department that they work for
- Results of pre- and post-training surveys

RESPONSIBILITY

The Public Works – Water Resources Division has primary responsibility for this Control Measure.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012										
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
ID5 – Training																												
Conduct training	C										X							X				P						
Conduct Annual Refresher Training	C													X								P						
Review/Revise Training Strategy as needed	N									X												P						

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2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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ID6 – Effectiveness Assessment

DESCRIPTION

Effectiveness Assessment

The process that is used to evaluate if programs are resulting in desired outcomes.

Effectiveness assessment is a fundamental and necessary component for developing and implementing successful stormwater programs. A well-executed assessment can provide the feedback necessary to determine whether the programs are achieving intended outcomes and, ultimately, whether continued implementation will result in maintaining or improving water quality.[12]

Effectiveness assessments are an integral part of the iterative process, which is the foundation for the stormwater program. By utilizing the iterative process and conducting effectiveness assessments, program managers can use the information gained to adapt their programs and ensure that the resources expended are providing commensurate benefit and are protective of water quality. The iterative process is illustrated in **Figure 2-1**; the points at which effectiveness assessments (implementation and water quality) are conducted are also identified.

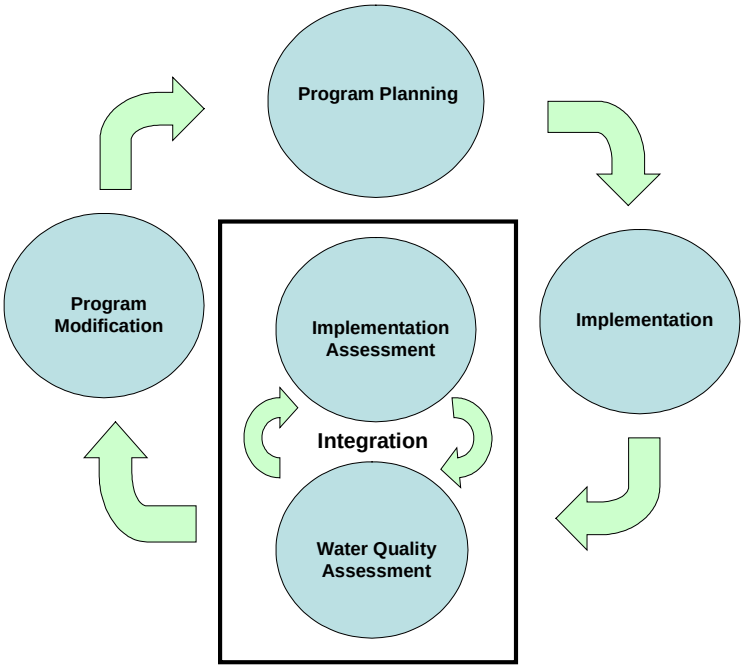

Figure 2-1. Iterative Process and Effectiveness Assessments Outcome Levels

[12] California Stormwater Quality Association (CASQA), Municipal Stormwater Program Effectiveness Assessment Guidance, March 2007.

Outcome levels help to categorize and describe the desired results of the Program Elements and related Control Measures. Pursuant to the 2007 CASQA guidance, outcomes for stormwater programs have been categorized into six levels, as shown in **Figure 2-2**.

Outcome Level	Description
6	Protecting Receiving Water Quality
5	Improving Runoff Quality
4	Reducing Loads from Sources
3	Changing Behavior
2	Raising Awareness
1	Documenting Activities

Figure 2-2. Effectiveness Assessment Outcome Levels

The outcome levels identify the key areas that are evaluated for the program effectiveness assessment within the Annual Report. The primary questions that should be assessed for each Program Element or Control Measure include the following:

- Level 1 Outcome – Was the Program Element/Control Measure implemented in accordance with the Permit Provisions, SWMP Control Measures, and Performance Standards?
- Level 2 Outcome – Did the Program Element/Control Measure raise the target audience's awareness of an issue?
- Level 3 Outcome – Did the Program Element/Control Measure change a target audience's behavior, resulting in the implementation of recommended BMPs?
- Level 4 Outcome – Did the Program Element/Control Measure reduce the load of pollutants from the sources to the storm drain system?

As a part of the annual reporting process, effectiveness assessments will be conducted for the Illicit Discharge program and related Control Measures to determine their effectiveness and identify any necessary modifications. Although the effectiveness assessment may change from year to year as new information is learned, the assessment will initially focus on Outcome Levels 1-4 and may include, but not be limited to, the approach outlined in **Table 2-4.** Level 5 and 6 outcomes will be assessed, to the extent possible, as a part of the water quality based programs and water monitoring program (SWMP Sections 8 and 9).

The effectiveness assessment conducted as a part of each annual report will address the following:

- Purpose or focus of the assessment –The outcome level(s) being assessed as well as the related management questions will be summarized. Where applicable, the identified goals that have or will be established for the program/activity will also be summarized.
- Baseline conditions – A baseline is a defined point or metric by which effectiveness can be measured or compared. Baselines are linked to a particular point in time and are particularly important for measuring change over time. Where feasible, the baselines that have or will be established for the program/activity will be summarized.
- Assessment methods – The assessment methods (those activities, actions, or processes used to obtain and evaluate assessment data or information) will be summarized.

- Using the information – The improvements that have been identified for the program element will be summarized.

Table 2-4. Assessment Tasks for the Illicit Discharges Program Element

ID1 – Detection of Illicit Discharges and Illegal Connections
Was the program implemented in accordance with the SWMP Control Measures and Performance Standards (*Level 1 Outcome*)? • Developed Emergency Spill Response Procedures for both hazardous and non-hazardous materials • Hotline maintained and related advertising conducted • Internal procedures and complaint form reviewed and revised as needed, flowchart reviewed/revised • Continued dry weather field screening of all outfalls • Continued source identification for all outfalls with sufficient flow • Investigation plans developed and implemented for problem areas identified • Field crews identifying, documenting and reporting problems **Did the program raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • Identified # of water pollution complaints, location, and % from each source (hotline, website, monitoring, field staff) • # and % of complaints that were verified, year to year • # of verified complaints year to year, total and % from each source • # of complaints year to year correlated with trainings/education • Identify # of problems reported and % verified • # and % of problems that were verified, year to year • # of problems year to year correlated with trainings/education **Did the program change a target audience's behavior which resulted in the implementation of recommended BMPs (*Level 3 Outcome*)?** • # of outfalls monitored and # of problem areas identified • % of areas that were identified as problems from year to year and pollutants involved – action levels exceeded (totals & year to year) **Did the program reduce the load of pollutants from the sources to the storm drain system (*Level 4 Outcome*)?** • Used investigation plan and related monitoring data (from dry weather field screening) to estimate load reductions

Table 2-4. Assessment Tasks for the Illicit Discharges Program Element (continued)

ID2 – Illegal Connection Identification and Elimination
Was the program implemented in accordance with the SWMP Control Measures and Performance Standards (*Level 1 Outcome*)? • Investigated and eliminated illegal connections discovered through response to illicit discharges. • Coordinated with the Planning and Land Development program to conduct plan reviews and identify illegal connections. • Coordinated with the Construction program to inspect projects and identify illegal connections. **Did the program raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • Identify # of plans reviewed and % requiring revision • # of reported illegal connections, by source, and % verified **Did the program change a target audience's behavior which resulted in the implementation of recommended BMPs (*Level 3 Outcome*)?** • Identify # of illegal connections reported and # and location of those that were verified • # and % of illegal connections year to year that were verified • Identify # of illegal connections eliminated and mechanism (permitted, plugged, etc.) • # of illegal connections identified during plan review • % plans year to year in conformance with County standards • # of illegal connections identified during project construction inspections • # of illegal connections identified, total and year to year **Did the activity reduce the load of pollutants from the sources to the storm drain system (*Level 4 Outcome*)?** • Used inspection and related monitoring data (if available) to estimate load reductions

Table 2-4. Assessment Tasks for the Illicit Discharges Program Element (continued)

ID3 – Illegal Connection Investigation/inspection and Follow-Up
Was the program implemented in accordance with the SWMP Control Measures and Performance Standards (*Level 1 Outcome*)? • Responded to reported illicit discharges • Ensured that Enforcement Consistency Guide (developed under ID4) includes adequate investigative guidance • Maintained contractual services for cleanup activities • Maintained the Illicit Discharge Database • Evaluated, optimized, and incorporated waste categories • Mapped information to identify spatial and/or temporal trends as well as problem areas **Did the program raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • Identify # and types of illicit discharges reported and # verified • # of, types, and % illicit discharges year to year that were verified • % responses by type of pollutant and activity (source of pollutant) • Identified # and % illicit discharges requiring clean up or follow-up activities • Identified locations of problem areas by types of illicit discharges year to year that were verified • Identified temporal issues by types of illicit discharges by wet/dry season **Did the program reduce the load of pollutants from the sources to the storm drain system (*Level 4 Outcome*)?** • Used investigation and related monitoring data (if available) to estimate load reductions

Table 2-4. Assessment Tasks for the Illicit Discharges Program Element (continued)

ID4 – Enforcement
Was the program implemented in accordance with the SWMP Control Measures and Performance Standards (*Level 1 Outcome*)? • Conducted enforcement as needed • Developed an Enforcement Consistency Guide that includes the County's Progressive Enforcement Policy • Reviewed/revised existing procedures within Enforcement Consistency Guide to include more stringent progressive enforcement steps (e.g., re-inspections, fines) • Implemented progressive enforcement • Reviewed/revised Illicit Discharges Database to incorporate enforcement related information • Tracked enforcement actions using the Illicit Discharges Database Developed Enforcement Consistency Guide **Did the program change a target audience's behavior which resulted in the implementation of recommended BMPs (*Level 3 Outcome*)?** • # and types of enforcement actions taken total and year to year • # of repeat offenders identified total and year to year • % enforcement actions taken major (court case, etc.) vs. minor (verbal warning)
ID5 – Training
Was the program implemented in accordance with the SWMP Control Measures and Performance Standards (*Level 1 Outcome*)? • Conducted training - # training sessions held and # attendees (including Dept./Div. worked for) at each session • Conducted Annual Refresher Training • Reviewed and Revised Training Schedule to reflect Implementation Schedule for each Training Control Measure in the SWMP **Did the program raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • % increase in awareness before and after training sessions **Did the program change a target audience's behavior which resulted in the implementation of recommended BMPs (*Level 3 Outcome*)?** • # of hotline calls accurately routed - % year to year • # of illegal connections and illicit discharges accurately reported - % year to year

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
ID6 – Effectiveness Assessment																												
Revise effectiveness assessment strategy as needed	N									X				X				X				P						
Conduct effectiveness assessment on an annual basis	E					X				X				X				X				P						
Identify program modifications as a result of the assessment	C					X				X				X				X				P						
Review effectiveness assessments and identify goals, baselines, and trends.	N									X				X				X				P						

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.

☐ = Performance standard will be completed on an ongoing basis or during the specified timeframe.

PW = Public Works Department

FM = Facilities Management Department

Section 3
Public Outreach (PO)

OVERVIEW

The purpose of the Public Outreach Program Element is to inform the public (increase knowledge) regarding the impacts of urban stormwater runoff and introduce steps the public can take (change behavior) to reduce pollutants from everyday activities. In addition, helping the public understand the problems associated with urban stormwater runoff can help build support for the stormwater program.

The Public Outreach Program Element is designed to implement and evaluate a comprehensive short- and long-term public education campaign that will inform the community about how our actions may impact urban stormwater discharges and, subsequently, our local water bodies.

This Program Element is designed to maximize the use of limited resources and to develop partnerships among all stakeholders in the Stockton Urbanized Area. Local stewardship and partnerships among governmental agencies, schools, universities, and private interests are vital parts of the types of involvement envisioned in this Program Element.

OBJECTIVES

The objectives address key components of the Public Outreach Program and identify that, in order to be effective, the program must:

- Encourage the public to actively participate in the implementation of the stormwater program as well as various outreach events.
- Promote the use of the 24-hour public reporting hotline. The County maintains a 1-800 number and a local number for 24-hour public reporting. These have been displayed on the website for reference.
- Implement a public education strategy for the overall program that includes the following efforts:
    - Develop and distribute materials (BMP fact sheets, brochures, etc.)
    - Conduct mixed media campaigns (radio, print ads, signage, etc.)
    - Participate in community outreach events
    - Conduct public opinion surveys to gauge the level of awareness and behavior change within a community and/or target audience
- Evaluate the ability to interface and coordinate with school education programs on a regional or local level.
- Implement a business outreach program.
- Conduct an assessment as part of the annual reporting process to determine the effectiveness of the Public Outreach Program Element and identify any necessary modifications.

CONTROL MEASURES

The six Control Measures outlined in **Table 3-1** and discussed in more depth in the accompanying Fact Sheets were designed to address the program objectives. In developing the Control Measures, several key factors were considered:

- Each Control Measure must address one or more of the program objectives.

- Each Control Measure must clearly identify the performance standards, timeframe for completion, and responsible Department/Division to ensure that there is accountability built into the program.
- The data and information from the previous permit term and/or reporting period must be analyzed to determine the effectiveness of each Control Measure, and the iterative process must be used to ensure that each Control Measure is effective and has a commensurate benefit for the resources expended.
- Each Control Measure must actively identify enhancements/modifications that would improve the Program Element and overall effectiveness of the stormwater program.

Table 3-1. Control Measures for the Public Outreach Program Element

PO	Control Measure
PO1	Public Participation
PO2	Hotline
PO3	Public Outreach Implementation
PO4	Public School Education
PO5	Business Outreach
PO6	Effectiveness Assessment

The Control Measure Fact Sheets developed for the Public Outreach Program Element (PO1-PO6) address the program objectives and identify assessment tools that may be used to assess the effectiveness of the program. The Fact Sheets were developed as stand-alone documents so that they may be individually provided to the responsible Department(s)/Division(s).

Supporting Control Measures

While individual, program-specific Control Measures are the primary focus of each program, it is also important to understand how the program fits within the overall SWMP. In order to adequately cover all aspects of the Public Outreach Program, overlap between other programs in the SWMP is often necessary. A brief summary of the Program Elements that support the Public Outreach Program Element is provided below.

Supporting Control Measures	Program Element
X	Illicit Discharges
---	**Public Outreach**
---	Municipal Operations
X	Industrial/Commercial
X	Construction
---	Planning and Land Development

- Illicit Discharges (Section 2)
  - *Detection of Illicit Discharges and Illegal Connections* – Promote the public reporting hotline.
- Industrial/Commercial (Section 5)
  - *BMP Implementation* – BMP Fact Sheets developed as part of the Public Outreach Program Element are distributed during industrial and commercial site inspections.
  - *Training* – The County coordinates external training for commercial/industrial businesses.
- Construction (Section 6)
  - *Construction Outreach* – Provide relevant outreach materials to the building community.

PO1 – Public Participation

DESCRIPTION

The participation of the public in the implementation of the County's Stormwater Management Program is critical to a successful effort to protect the water resources. Therefore, active public participation is encouraged and supported by the County through a variety of mechanisms which are described in additional detail below.

EXISTING BMPS AND RELATED ACTIVITIES

A number of public education and outreach activities involving citizen volunteers have been conducted by the County. These activities have included the Storm Drain Stencil Program, the stream cleanup events, the Adopt-A-Stream program, the booth at Earth Day, the Hmong New Year, Cambodian New Year, Annual Native American Day, Merlo Career Day, Houston School Earth Day, Got SWPPP, Public Works Week, Senior Awareness Day, California Coastal Clean Up, and Make a Difference Day.

For the Storm Drain Stencil Program, the County loans the supplies to volunteers and coordinates the stenciling activities. By working with the citizen volunteers the County has been able to stencil storm drain catch basins countywide.

The County's stormwater outreach effort has also included partnering with several groups for community stream cleanup events. To date the events have included participation in the California Coastal Cleanup Day as well as other local cleanup efforts within the Calaveras River, Duck Creek, Five Mile Slough, Mormon Slough, Mosher Slough, Pixley Slough, Smith Canal, and Walker Slough.

The County actively recruits volunteers from the local high schools, community colleges, and other environmental and social community organizations for various events. The County currently solicits schools and arranges "clean-ups" on school campuses and/or of local waterways. These solicitations are informal yet effective, and the County plans to conduct these throughout the permit term.

The County's 2009-2010 Public Outreach Plan is included as **Appendix C-1**. This Plan is reviewed annually and updated each December; a copy of each year's Plan is incorporated into the Annual Report.

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Continue implementation of the Storm Drain Stencil Program
- Organize, support, and/or participate in stream cleanup events
- Support and/or participate in events and projects with the Center for Land Based Learning
- Promote Used Oil and Household Hazardous Waste Programs as well as other waste management literature on the County Web site and through the media, phone book environmental information section, direct mailings, and community events.
- Coordinate with Household Hazardous Waste Program for pesticide disposal (Water Quality Based Programs Performance Standard)
- Maintain and update pesticide disposal information on the County Web site (Water Quality Based Programs Performance Standard)

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Progress Report and used within the program effectiveness assessments (see PO6). The data and information to be collected may include, but will not be limited to, the following:

- Identify how volunteers were solicited
- # storm drains stenciled by volunteers (see also MO5)
- # events and volunteers per event
- Volume and types of materials removed
- Amount of used oil and number of filters collected
- Types of wastes that were collected through local events or through the permanent collection site (for both the City and County)

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure with support from Public Works – Solid Waste.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
PO1 – Public Participation																												
Implement Storm Drain Stencil Program	C				X	X			X	X			X	X			X	X				P						
Organize, support, and/or participate in stream cleanup events	C				X	X			X	X			X	X			X	X				P	S					
Support and/or participate in events and projects with the Center for Land Based Learning	C																					P	S					
Promote Used Oil and Household Hazardous Waste Programs on the County Web site, through the media, and through mass mailings	C																					P	S					
Coordinate with Household Hazardous Waste program for pesticide disposal (**WQBP**)	C																					P	S					
Maintain and update pesticide disposal information on the County Web site (**WQBP**)	C																					P	S					

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.
PW = Public Works Department
WQBP = Water Quality Based Programs Performance Standard

☐ = Performance standard will be completed during this timeframe as specified.
FM = Facilities Management Department

PO2 – Hotline

DESCRIPTION

The purpose of this Control Measure is to operate a public hotline number to facilitate public reporting of illicit discharges, illegal dumping, and other observed pollution problems. This Control Measure also ensures that through the hotline, complaint information is forwarded to the appropriate contacts for follow-up and/or investigation.

EXISTING BMPS AND RELATED ACTIVITIES

The County has established a 24-hour hotline (**209-468-3055 or 866-755-4955**) that will allow the general public to report illegal dumping or illicit discharges into the stormwater system. All calls are documented, and each call is responded to within two (2) business days. Once a complaint is received, staff responds using the process described within Section 2 of the SWMP. If necessary, the reporting party is updated on any actions taken. Additional information regarding the hotline is provided in Section 2 of the SWMP.

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Maintain 24-hour hotline numbers
- Promote/publicize the 24-hour hotline numbers in various media, including the telephone book and County Web site

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Progress Report and used within the program effectiveness assessments (see PO6). The data and information to be collected may include, but will not be limited to, the following:

- Track hotline calls received by specific types of problems/requests (i.e., Illegal Dumping or Illicit Discharges, Faded or Missing Catch Basin Stencils)

RESPONSIBILITY

The Public Works – Water Resources Division is responsible for this Control Measure.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
PO2 – Hotline																												
Maintain 24-hour hotline numbers	C																					P						
Promote/publicize the 24-hour hotline numbers in various media, including the telephone book and County Web site	C																					P						

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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FM = Facilities Management Department

PO3 – Public Outreach Implementation

DESCRIPTION

The Public Outreach Implementation Control Measure provides that outreach be conducted with the residential community and general public to inform these audiences of the impacts of urban stormwater runoff and introduce steps they can take to reduce pollutants in stormwater runoff. Such outreach communicates to the County's residents and visitors the importance of stormwater quality protection and pollution prevention as it relates to the protection of the local water bodies.

EXISTING BMPS AND RELATED ACTIVITIES

The County implements an extensive public outreach program through a variety of means including newsletters; newspaper, radio, and television articles/messages; participation in County-wide public events where promotional and education brochures are distributed; making presentations to various community groups; and through the Storm Drain Stenciling Program. Public outreach efforts targeting a variety of diversified public cross-sections have included the following:

- Attended and participated in community events and distributed outreach materials. Events have included (but are not limited to) the following: America Recycles Day; Agriculture Day at the San Joaquin County Fair; Black Family Day, Cinco de Mayo; Earth Day Festival; Orchard Supply Hardware – Our Water Our World; San Joaquin County Boat and RV Show; and the San Joaquin County Home and Garden Show.
- Coordinated outreach efforts with watershed groups and other groups, including:
    - American Medical Response Community Outreach Staff
    - Annual Earth Day Festival Committee
    - Bay Area Pollution Prevention Group (Our Water Our World)
    - Bay Area Stormwater Management Association (Our Water Our World)
    - Bear Creek High School Faculty and Students
    - Boy Scouts – Stockton based troop
    - California Coastal Commission
    - Caltrans
    - Corn Products Management and Staff
    - Delta Boater Network/Keep the Delta Clean Committee
    - Delta Protection Commission Members
    - Franklin High School ROTC
    - Girl Scouts – Stockton Based troop
    - Port of Stockton Management and Staff
    - San Joaquin County Human Services Agency Senior Citizen Services
    - San Joaquin County Storm Water Quality Partnership
    - San Joaquin Delta College Faculty and Students
    - Sea Scouts – Stockton based troop

    - Stockton Bass Association Members
    - Stockton Police Department – Community Policing Staff
    - The City of Stockton NPDES Staff
    - The Great Water Mystery Program/Stockton Area Water Suppliers (SAWS)
    - UC Extension Program – San Joaquin Master Gardeners
    - University of the Pacific Faculty and Students
- Provided general stormwater outreach materials on the County's Web site, civic locations, community events, and direct mailers.
- Held briefing sessions/presentations for community leaders and public employees, as well as with local community and environmental organizations.
- Formed active partnerships by participating in the Phase II Cities group and partnering with other County and City departments and agencies so that resources and efforts could be shared.
- Annually evaluate the effectiveness of the outreach program to diversify the target audiences and incorporate enhancements to make the program more effective.

As a goal for the Public Outreach Program, the County will make at least 800,000 impressions during the Permit term through mixed media campaigns.[1]

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Update survey and conduct survey twice during the permit term (2009 and 2011)
- Identify and/or create, revise, and distribute educational materials as needed
- Ensure that educational materials (e.g., fact sheets) address proper disposal of pet waste (Water Quality Based Programs Performance Standard)
- Develop outreach materials specifically targeted at pet owners regarding the proper disposal of pet waste (Water Quality Based Programs Performance Standard)
- Update audiovisual tools and Web site as needed
- Modify County's Web site to include information regarding mercury (Water Quality Based Programs Performance Standard)
- Conduct mixed media campaigns (e.g., PSAs, signage, print, radio, television, theater slides, County Web site)
- Participate in community-wide events throughout the year, including, but not limited to:
    - State of the City (February)
    - Earth Day (April)

[1] It should be noted that tracking the number of impressions only provides a quantitative way to identify the level of implementation and does not provide the feedback necessary to determine the impacts of the Public Outreach program. In order to provide this type of feedback to help improve the effectiveness of the Public Outreach program, the County has included a number of other performance standards within the SWMP that are aimed at identifying the changes in awareness and behavior change.

    - Cinco de Mayo (May)
    - Senior Awareness Day (May)
    - Strut Your Mutt/Dog Day Afternoon (August)
    - Family Literacy Day in the Park (September)
    - Black Family Day (September)
    - Stockton Energy & Clean Air Business Expo (December)
    - Orchard Supply Hardware Store Pesticide Prevention Program/No Tax Days (March, April, May, June, October, November)
    - Home and Garden Show at San Joaquin County Fair Grounds (April)
    - San Joaquin County Fair (June)
    - 2009 San Joaquin County Kennel Club Annual Dog Show (November)
- Review, monitor, and evaluate the effectiveness of the Keep the Delta Clean Pilot pet waste bag dispensing stations program at several marinas in San Joaquin County for possible future expansion to new and existing County parks (Water Quality Based Programs Performance Standard)
- Implement the pet waste outreach program by providing outreach to/at the following businesses, events, or pet organizations (Water Quality Based Programs Performance Standard):
    - Kennels in the County portion of the Stockton Urbanized Area (during inspections)
    - Strut Your Mutt/Dog Day Afternoon (annually in August)
    - Other pet-related organizations/businesses (Q2)
- Identify new opportunities to provide outreach to clients and customers of pet-related businesses and organizations about reducing pollution associated with pet waste. Such organizations/businesses may include, but are not limited to, pet-related organizations such as the San Joaquin Kennel Club and animal shelters and pet-related businesses such as Petco and PetSmart (Water Quality Based Programs Performance Standard)
- Provide community relations
- Implement pesticide outreach effort for County staff, residents, retail stores, and pest control operators (PCOs) (Water Quality Based Programs Performance Standard)
- Conduct periodic surveys in conjunction with other regional programs regarding local or regional sales and use of residential and commercial pest control products (Water Quality Based Programs Performance Standard)

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Progress Report and used within the program effectiveness assessments (see PO6). The data and information to be collected may include, but will not be limited to, the following:

- # and types of educational/outreach materials distributed and # impressions made
- # and types of mixed-media campaigns and # impressions made
- # community-wide events, # materials distributed, and # impressions made

- # community relations events and # attendees
- Number of and locations where pet waste bag dispensing stations have been installed
- Survey results

RESPONSIBILITY

Public Works – Water Resources Division is responsible for implementing this Control Measure with support from Public Works – Solid Waste and Facilities Management – Parks and Recreation. Public Works – Solid Waste has primary responsibility for the performance standards related to pet waste bag dispensing stations.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
PO3 – Public Outreach Implementation																												
Update survey and conduct survey twice during the permit term	E										X								X			P						
Identify and/or create, revise, and distribute educational materials as needed	C																					P						
Ensure that educational materials address proper disposal of pet waste (**WQBP**)	C								X				X				X				X	P	S					
Develop outreach materials specifically targeted at pet owners regarding the proper disposal of pet waste (**WQBP**)	N												X															
Review, monitor, and evaluate the effectiveness of the Keep the Delta Clean Pilot pet waste bag dispensing stations program at several marinas in San Joaquin County for possible future expansion to new and existing County parks (**WQBP**)	N																					S	P		S			
Implement pet waste outreach program (**WQBP**):	N																											
• Kennels	N																											
• Strut Your Mutt/Dog Day Afternoon	N									X				X				X										
• Other pet-related businesses, events, or organizations	N								X				X				X				X							
Identify new opportunities to provide pet waste outreach to pet-related businesses/organizations	N								X				X				X				X							
Update audiovisual tools and Web site as needed	C																					P						
Modify County's Web site to include mercury information (**WQBP**)	N									X																		
Conduct mixed media campaigns	C																					P	S					

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
Participate in community-wide events throughout the year:	C																					P	S					
• State of the City	C											X				X				X								
• Earth Day	C				X				X				X				X				X							
• Cinco de Mayo	C				X				X				X				X				X							
• Senior Awareness Day	C				X				X				X				X				X							
• Strut Your Mutt/Dog Day Afternoon	C									X				X				X										
• Family Literacy Day in the Park	C					X				X				X				X										
• Black Family Day	C					X				X				X				X										
• Stockton Energy & Clean Air Business Expo	C						X				X				X				X									
• Orchard Supply Hardware Store Pesticide Prevention Program	C																											
• Home and Garden Show at San Joaquin County Fair Grounds	C				X				X				X				X				X							
• San Joaquin County Fair	C				X				X				X				X				X							
• 2009 San Joaquin County Kennel Club Annual Dog Show	N										X																	
Provide community relations	C																					P	S					
Implement pesticide outreach effort for County staff, residents, retail stores, and PCOs (**WQBP**)	C																					P	S		S			
Conduct surveys regarding sales and use of residential and commercial pest control products (**WQBP**)	N									X								X				P						

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2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

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FM = Facilities Management Department
WQBP = Water Quality Based Programs Performance Standard

PO4 – Public School Education

DESCRIPTION

Presentations made to school-age children may be an effective outreach method because the children are asked to pass the pollution prevention information on to their families. This Control Measure provides public school districts and after school and summer camp programs within the County with outreach materials to educate school-age children about stormwater pollution.

EXISTING BMPS AND RELATED ACTIVITIES

An interactive presentation has been developed that discusses the water cycle, wastewater, and water conservation using skits and Power Point. The program was developed to help teachers meet the science component of the California Content Standards for fifth and sixth grades. Each teacher receives a packet of information from the Department of Water Resources regarding free water, wastewater, stormwater supplies and materials available to teachers.

The County recently evaluated the ability to interface and coordinate with school education programs on a regional or local level. The school outreach efforts over the 2002-2007 Permit term have been successful; however, due to increased curriculum and testing requirements, stormwater program staff has found it to be progressively more difficult to gain access to schools in order to provide outreach to students. The County has reviewed the existing program and assessed the feasibility of alternative programs. As a result, the County concluded that the most consistent and guaranteed mechanism for reaching out to school aged children within the County is through after-school and summer camp programs.

For the after-school and day camp outreach, a 30 minute presentation is given discussing the importance of water, water uses, the water cycle, and stormwater. A Water Relay (30-45 minutes) is organized to reiterate the presentation through unscrambling age-appropriate words related to stormwater and rotating stations of recycling and water conservation games. Complementary activities for day camps in conjunction with the presentation include storm drain stenciling (2-3 hours) and stream cleanups (provided facility can provide adult organizers and parental consent is obtained).

As a goal for the Public Outreach Program, the County will make at least 300 impressions/year through the Public School Education Control Measure.[2]

[2] It should be noted that tracking the number of impressions only provides a quantitative way to identify the level of implementation and does not provide the feedback necessary to determine the impacts of the Public Outreach program. In order to provide this type of feedback to help improve the effectiveness of the Public Outreach program, the County has included a number of other performance standards within the SWMP that are aimed at identifying the changes in awareness and behavior change.

PERFORMANCE STANDARDS

The performance standard listed below establishes the level of effort required for this Control Measure.

- Send letters to 5th grade teachers and principals inviting them to take part in the County's stormwater education program
- Contribute to and coordinate with the Stockton Area Water Suppliers Water Education Programs (SAWS)
- Reach out to school age children outside of school by providing presentations through after school programs (County will provide presentations at two (2) sessions at each of four (4) schools)
- Present at day camp programs (County will provide presentations at one (1) session)

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Progress Report and used within the program effectiveness assessments (see PO6). The data and information to be collected may include, but will not be limited to, the following:

- # and types of educational/outreach materials distributed
- Number of impressions
- Pre- and post-presentation surveys to gauge the level of awareness before and after presentations

RESPONSIBILITY

Public Works – Water Resources Division staff are responsible for implementing this Control Measure.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
PO4 – Public School Education																												
Send letters to 5th grade teachers and principals inviting them to take part in the County's stormwater education program.	C					X				X				X				X				P						
Contribute to the Stockton Area Water Suppliers Water Education Programs (SAWS)	C																					P						
Reach out to school age children outside of school by providing presentations through after school programs.	N							X				X				X				X		P						
Present at day camp programs.	N							X				X				X				X		P						

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.

☐ = Performance standard will be completed during this timeframe as specified.

PW = Public Works Department

FM = Facilities Management Department

PO5 – Business Outreach

DESCRIPTION

Since commercial and industrial businesses can be sources of stormwater pollutants, this Control Measure ensures that business owners and operators are informed about stormwater quality and impacts on water resources. Efforts are primarily targeted at specific business types.

EXISTING BMPS AND RELATED ACTIVITIES

Business outreach activities include holding workshops and distributing educational materials to selected businesses during inspections. Although efforts are described within this Control Measure, business outreach also takes place as part of the Industrial/Commercial and Construction Programs (see IC3 and CO4, respectively). Additional outreach mechanisms may be identified following the development of the mobile business pilot program (see IC1).

The County collaborates with the Targeted Opportunities to Prevent Pollution in San Joaquin County (TOPPS) organization, a public-private partnership formed for the sole purpose of providing education on and support for pollution prevention to business, industry, and agriculture in San Joaquin County. TOPPS sponsors major events each year including: the Annual Solutions for Compliance Workshop, held in April to coincide with Earth Day, and the Mayor's Environmental Excellence Awards, held in September as part of National Pollution Prevention Week. TOPPS is currently undergoing restructuring.

The County has contacted the Greater Stockton Chamber of Commerce to explore the feasibility of using the Chamber's meetings to network and introduce stormwater management to with their members. Working with the Chamber, the County intends to focus on establishing business targets and shall develop a plan for providing stormwater pollution prevention information to both commercial and industrial businesses. The County will also explore other potential business target audiences.

General educational materials have been developed for industrial and commercial businesses. The County is in the process of updating these outreach materials and will provide the updated materials to area businesses.

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Conduct business workshops twice during the five-year permit term. Additional workshops may be scheduled subject to the availability of resources and public interest in the workshops. Pollutant-specific outreach shall be based upon typical pollutants (e.g., fats, oils, and grease; pesticides and fertilizers; pet waste) resulting from activities taking place at the businesses listed below. The business types targeted for workshops will include the following:
    - Auto Body Shops
    - Auto Repair Shops
    - Equipment Rental Businesses
    - Kennels
    - Nurseries
    - Restaurants
    - Retail Gasoline Outlets

- Review and update educational material
- Develop a plan for providing stormwater pollution prevention information to both commercial and industrial businesses
- Distribute educational material to selected businesses. The Chamber will provide a venue to reach the target audience. The business types targeted for outreach will include, but are not limited to, the following:
    - Auto Body Shops
    - Auto Dealers
    - Auto Repair Shops
    - Dry Cleaners
    - Equipment Rental
    - Kennels
    - Nurseries
    - Restaurants
    - Retail Gasoline Outlets
- Ensure business workshops address the proper handling and disposal of mercury-containing products (Water Quality Based Programs Performance Standard)
- Revise business-specific fact sheets to include proper handling and disposal of mercury-containing products (Water Quality Based Programs Performance Standard)

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Progress Report and used within the program effectiveness assessments (see PO6). The data and information to be collected may include, but will not be limited to, the following:

- Number of attendees at each business workshop
- Results of pre- and post-workshop surveys
- Number and types of educational materials distributed

RESPONSIBILITY

Public Works – Water Resources Division staff are primarily responsible for implementing this Control Measure with support from Public Works – Solid Waste and the Environmental Health Department.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
PO5 – Business Outreach																												
Conduct business workshops twice during the five-year permit term	C								X								X					P	S				S	
Review and update educational material	E										X				X				X			P						
Develop a plan for providing stormwater pollution prevention information to both commercial and industrial businesses	N										X																	
Distribute educational material to selected businesses	C																					P	S				S	
Ensure business workshops address the proper handling and disposal of mercury (**WQBP**)	N								X								X											
Revise business-specific fact sheets to include proper handling and disposal of mercury-containing products (**WQBP**)	N										X																	

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PO6 – Effectiveness Assessment

DESCRIPTION

Effectiveness Assessment

The process that is used to evaluate if programs are resulting in desired outcomes.

Effectiveness assessment is a fundamental and necessary component for developing and implementing successful stormwater programs. A well-executed assessment can provide the feedback necessary to determine whether the programs are achieving intended outcomes and, ultimately, whether continued implementation will result in maintaining or improving water quality.[3]

Effectiveness assessments are an integral part of the iterative process, which is the foundation for the stormwater program. By utilizing the iterative process and conducting effectiveness assessments, program managers can use the information gained to adapt their programs and ensure that the resources expended are providing commensurate benefit and are protective of water quality. The iterative process is illustrated in **Figure 3-1**; the points at which effectiveness assessments (implementation and water quality) are conducted are also identified.

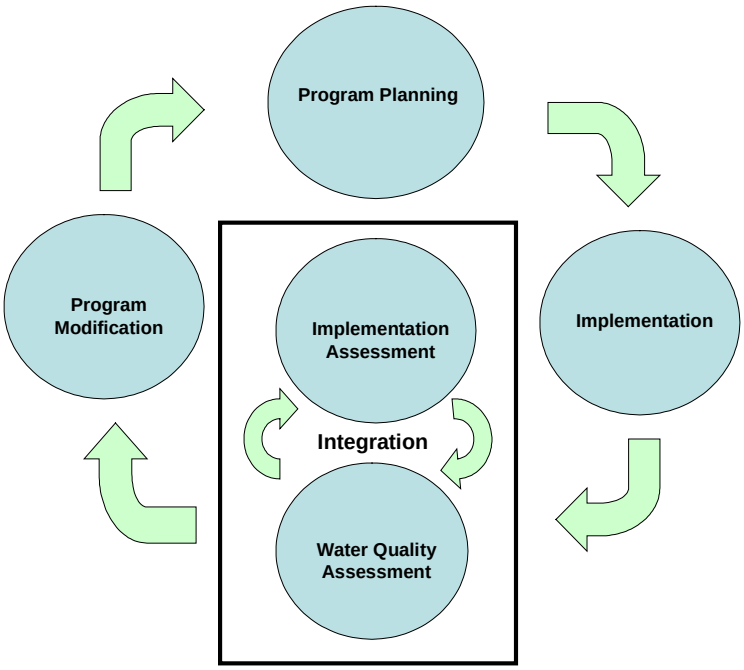

Figure 3-1. Iterative Process and Effectiveness Assessments Outcome Levels

Outcome levels help to categorize and describe the desired results of the Program Elements and related Control Measures. Pursuant to the 2007 CASQA guidance, outcomes for stormwater programs have been categorized into six levels, as shown in **Figure 3-2**.

[3] California Stormwater Quality Association (CASQA), Municipal Stormwater Program Effectiveness Assessment Guidance, March 2007.

Outcome Level	Description
6	Protecting Receiving Water Quality
5	Improving Runoff Quality
4	Reducing Loads from Sources
3	Changing Behavior
2	Raising Awareness
1	Documenting Activities

Figure 3-2. Effectiveness Assessment Outcome Levels

The outcome levels identify the key areas that are evaluated for the program effectiveness assessment within the Annual Report. The primary questions that should be assessed for each Program Element or Control Measure include the following:

- Level 1 Outcome – Was the Program Element/Control Measure implemented in accordance with the Permit Provisions, SWMP Control Measures, and Performance Standards?
- Level 2 Outcome – Did the Program Element/Control Measure raise the target audience's awareness of an issue?
- Level 3 Outcome – Did the Program Element/Control Measure change a target audience's behavior, resulting in the implementation of recommended BMPs?
- Level 4 Outcome – Did the Program Element/Control Measure reduce the load of pollutants from the sources to the storm drain system?

As a part of the annual reporting process, effectiveness assessments will be conducted for the Public Outreach Program and related Control Measures to determine their effectiveness and identify any necessary modifications. Although the effectiveness assessment may change from year to year as new information is learned, the assessment will initially focus on Outcome Levels 1-4 and may include, but not be limited to, the approach outlined in **Table 3-2**. Level 5 and 6 outcomes will be assessed, to the extent possible, as a part of the water quality based programs and water monitoring program (SWMP Sections 8 and 9).

The effectiveness assessment conducted as a part of each annual report will address the following:

- Purpose or focus of the assessment –The outcome level(s) being assessed as well as the related management questions will be summarized. Where applicable, the identified goals that have or will be established for the program/activity will also be summarized.
- Baseline conditions – A baseline is a defined point or metric by which effectiveness can be measured or compared. Baselines are linked to a particular point in time and are particularly important for measuring change over time. Where feasible, the baselines that have or will be established for the program/activity will be summarized.
- Assessment methods – The assessment methods (those activities, actions, or processes used to obtain and evaluate assessment data or information) will be summarized.
- Using the information – The improvements that have been identified for the program element will be summarized.

Table 3-2. Assessment Tasks for Public Outreach Program Element

PO1 – Public Participation
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (*Level 1 Outcome*)? • Implemented Storm Drain Stencil Program • Organized, supported, and/or participated in stream cleanup events • Organized, supported, and/or participated in informal cleanup events and Center for Land Based Learning projects and events • Promoted Used Oil and Household Hazardous Waste Programs as well as other waste management literature on the County Web site and through the media, phone book environmental information section, direct mailings, and use of outdoor advertising on local buses and billboards, and community events. • Coordinated with Household Hazardous Waste Program for pesticide disposal (**WQBP**) • Maintained and updated pesticide disposal information on the County Web site (**WQBP**) **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • # events and # volunteers per event (including how solicited), year to year, % change over time • # storm drains marked by volunteers • Volume and types of materials removed at events, year to year, % change over time • Amount of used oil and number of filters collected, % change over time • Amount and types of wastes collected, % change over time
PO2 – Hotline
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (*Level 1 Outcome*)? • Maintained 24-hour hotline numbers • Publicized the 24-hour hotline numbers • Publicized the hotline number in various media, including the telephone book and County Web site **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • Track # of calls and type of problems/requests, % change year to year • # calls verified, % change year to year

Table 3-2. Assessment Tasks for Public Outreach Program Element (continued)

PO3 – Public Outreach Implementation
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (*Level 1 Outcome*)? • Updated survey and conduct survey twice during the permit term (2009 and 2011) • Identified and/or created, revised, and distributed educational materials as needed • Ensured that educational materials (e.g., fact sheets) address proper disposal of pet waste (**WQBP**) • Updated audiovisual tools and Web site as needed • Modified County's Web site to include information regarding mercury (**WQBP**) • Conducted mixed media campaigns (e.g., PSAs, signage, print, radio, television, theater slides, County Web site). • Participated in community-wide events throughout the year • Review, monitor, and evaluate the effectiveness of the Keep the Delta Clean Pilot pet waste bag dispensing stations program at several marinas in San Joaquin County for possible future expansion to new and existing County parks (**WQBP**) • Implemented the pet waste outreach program by providing outreach to/at businesses, events, or pet organizations (**WQBP**) • Identified new opportunities to provide pet waste outreach to pet-related businesses and organizations (**WQBP**) • Provided community relations • Implemented pesticide outreach effort for County staff, residents, retail stores, and PCOs (**WQBP**) • Investigated feasibility of conducting periodic surveys in conjunction with other regional programs regarding local or regional sales and use of residential and commercial pest control products (**WQBP**) **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • % change in survey target audience response to questions related to water quality issues (e.g., "Perceptions of the Seriousness and Impacts of Pollution", "Awareness of the Storm Drain System", and "Understanding of Major Contributors to Water Pollution") • % of all parks with pet waste bag dispensing stations and # installed at each, year to year **Did the activity change a target audience's behavior which results in implementation of recommended BMPs (*Level 3 Outcome*)?** • % change in survey target audience response to questions related to behavior (e.g., "Use Patterns and Disposal Practices")

Table 3-2. Assessment Tasks for Public Outreach Program Element (continued)

PO4 – Public School Education
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (Level 1 Outcome)? • Evaluated ability to interface and coordinate with school education programs on a regional or local level. • Sent letters to 5th grade teachers and principals inviting them to take part in the County's stormwater education program • Contributed to and coordinate with the Stockton Area Water Suppliers Water Education Programs (SAWS) • Reached out to school age children outside of school by providing presentations through after school programs • Presented at summer camp programs **Did the activity raise the target audience's awareness of an issue (Level 2 Outcome)?** • Assessment data • % increased awareness before and after presentations
PO5 – Business Outreach
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (Level 1 Outcome)? • Conducted business workshops twice during the five-year permit term • Reviewed and updated educational material • Coordinated with the Chamber to establish targets for business outreach • Distributed educational material to selected businesses • Ensured business workshops address the proper handling and disposal of mercury-containing products **(WQBP)** • Revised business-specific fact sheets to include proper handling and disposal of mercury-containing products **(WQBP)** **Did the activity raise the target audience's awareness of an issue (Level 2 Outcome)?** • Assessment data • % increased awareness before and after workshops

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
PO6 – Effectiveness Assessment																												
Revise effectiveness assessment strategy as needed	N									X				X				X				P						
Conduct effectiveness assessment on an annual basis	E					X				X				X				X				P	S		S	S	S	
Identify program modifications as a result of the assessment	C					X				X				X				X				P	S		S	S	S	
Review effectiveness assessments and identify goals, baselines, and trends.	N									X				X				X				P	S		S	S	S	

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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Section 4
Municipal Operations (MO)

OVERVIEW

The County, as part of its normal operations, conducts a number of activities (e.g., catch basin cleaning, street sweeping) that may generate or mobilize pollutants. The Municipal Operations Program Element comprises Control Measures that are designed to ensure that these operations and maintenance activities are performed using processes and procedures to minimize the pollutants generated and the potential for pollutants to enter the storm drain system.

OBJECTIVES

The objectives address key components of the Municipal Operations Program and identify that, in order to be effective, the program must:

- Prevent sanitary sewer overflows (SSOs) from entering the storm drain system and respond quickly and appropriately if an SSO does enter the storm drain system.
- Implement Development Standards that require source and treatment control BMPs to reduce pollutants from County-owned construction projects.
- Implement pollution prevention BMPs for public facilities (e.g., corporation yards) and Facility Pollution Prevention Plans (FPPPs) for public facilities to minimize or eliminate flows to the storm drain system.
- Implement a standard protocol for storage, usage, and disposal of pesticides and fertilizers on County-owned property such as park sites, landscaped medians, and golf courses.
- Promote the use of IPM methods and less toxic alternatives.
- Clean and maintain catch basin inlets to prevent debris accumulation and flooding.
- Stencil/mark catch basin inlets to discourage illicit discharges into the storm drain and promote the County's 24-hour hotline numbers to facilitate reporting of missing or faded catch basin stencils.
- Maintain and inspect detention basins and pump stations.
- Conduct street sweeping activities.
- Clean and inspect County-owned parking facilities to minimize build-up and discharge of pollutants to the storm drain system.
- Train employees responsible for conducting municipal operations about general stormwater issues and BMPs.
- Conduct an annual assessment for the Annual Report to determine the effectiveness of the Municipal Operations Program Element and identify any necessary modifications.

CONTROL MEASURES

The nine Control Measures outlined in **Table 4-1** and discussed in more depth in the accompanying Fact Sheets were designed to address the program objectives. In developing the Control Measures, several key factors were considered:

- Each Control Measure must address one or more of the program objectives.
- Each Control Measure must clearly identify the performance standards, timeframe for completion, and responsible Department/Division to ensure that there is accountability built into the program.
- The data and information from the previous permit term and/or reporting period must be analyzed to determine the effectiveness of each Control Measure, and the iterative process must be used to ensure that each Control Measure is effective and has a commensurate benefit for the resources expended.
- Each Control Measure must actively identify enhancements/modifications that would improve the Program Element and overall effectiveness of the stormwater program.

Table 4-1. Control Measures for the Municipal Operations Program Element

MO	Control Measure
MO1	Sanitary Sewer Overflow and Spill Response
MO2	New Development and Construction Requirements for Municipal Capital Improvement Projects
MO3	Pollution Prevention at County Facilities
MO4	Landscape and Pest Management
MO5	Storm Drain System Maintenance
MO6	Street Cleaning and Maintenance
MO7	Parking Lots Maintenance
MO8	Training
MO9	Effectiveness Assessment

The Control Measure Fact Sheets developed for the Municipal Operations Program Element (MO1-MO9) address the program objectives and identify assessment tools that may be used to assess the effectiveness of the program. The Fact Sheets were developed as stand-alone documents so that they may be individually provided to the responsible Department(s)/Division(s).

Supporting Control Measures

While individual, program-specific Control Measures are the primary focus of each program, it is also important to understand how the program fits within the overall SWMP. In order to adequately cover all aspects of the Municipal Program, overlap between other programs in the SWMP is often necessary. A brief summary of the Program Elements that support the Municipal Program Element is provided below.

Supporting Control Measures	Program Element
X	Illicit Discharges
X	Public Outreach
---	**Municipal Operations**
---	Industrial/Commercial
X	Construction
X	Planning and Land Development

- Illicit Discharges (Section 2)
  - *Detection of Illicit Discharges and Illegal Connections* – Implement the Sanitary Sewer Overflow Response Plan to minimize illicit discharges to the storm drain system.
- Public Outreach (Section 3)
  - *Hotline* – Promote the 24-hour hotline number to facilitate reporting of illegible stencils or missing or damaged curb markers at catch basin inlets.
- Construction (Section 6)
  - *BMP Implementation* – Ensure implementation of construction BMPs at County-owned development sites.
- Planning and Land Development (Section 7)
  - *New Development Standards* – Ensure implementation and maintenance of post-construction BMPs specified in the Stormwater Quality Control Criteria Plan (SQCCP) (i.e., Site Design Control Measures, Site-Specific Source Control Measures, and Treatment Control Measures) for County-owned development projects.

MO1 – Sanitary Sewer Overflow and Spill Response

DESCRIPTION

The Sanitary Sewer Overflow Response Plan (SSORP) provides steps for the County to take to minimize potential impacts to the receiving water from sanitary sewer overflows (SSOs) and spills. Sanitary overflow and spill response comprises three steps: investigation of complaints, containment, and notification to appropriate agencies. Follow-up to an overflow or spill includes procedures for containing and cleaning spills and leaks that enter the storm drain system.

EXISTING BMPS AND RELATED ACTIVITIES

The SSORP (see **Appendix B-3**) outlines steps that the County takes to prevent SSOs from entering the storm drain system, including notification procedures so that the responsible agencies are informed when these spills occur. As part of the response, an Incident Report is completed by field staff and circulated to County Stormwater Program staff for documentation and reporting purposes (see **Appendix B-2**). In addition, the County's current program to limit infiltration from sanitary sewers uses a combination of inspecting sanitary systems to ensure they are properly constructed, reporting by experienced maintenance personnel, and dry weather field screening. During the construction phase, regular inspection ensures verification of leak testing and no cross connections.

In 2003-2004, the County reviewed and modified the SSORP. The SSORP was updated to address the fact that some sections of the County are served by independent sanitary or drainage districts, and the procedures vary accordingly.

As part of the County's Sewer System Management Plan (SSMP) Goals and Organization & Development Plan and Schedule (see **Appendix D-1**, p. 6), a Chain of Communication for Reporting SSOs is incorporated to ensure that stormwater management is aware of the spills, spill conditions, and spill management. The stormwater investigator works closely with the spill chain of command to monitor stormwater-related risks. Contact is also made with the County's Office of Emergency Services and Environmental Health Offices. In addition, as part of the SSMP, the County is required to submit a Sanitary Sewer Overflow Emergency Response Plan (SSOERP) by 2010. The SSOERP, once adopted, will replace the SSORP as a more comprehensive plan for addressing emergency SSOs.

The *NPDES nonConstruction Illicit Discharge and Illegal Connection Investigation - Enforcement Management* (ID2-15.01) procedure also addresses spills of any nature, including sewer spills.

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Implement the Sanitary Sewer Overflow Response Plan
- Review the Sanitary Sewer Overflow Response Plan and revise as necessary (every two years)

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see MO9). The data and information to be collected may include, but will not be limited to, the following:

- Number of SSOs that occur and if spills enter the storm drain system and/or receiving waters
- SSO total volume estimates; amount captured and returned to the sewer system; amount entering storm drain; and amount entering receiving waters
- Locations and frequencies of SSOs

RESPONSIBILITY

The Public Works –Utilities Maintenance Division is primarily responsible for this Control Measure, with support from Public Works – Water Resources.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
MO1 – Sanitary Sewer Maintenance & Overflow and Spill Response																												
Implement the SSORP	C																					S	P					
Review the SSORP and revise as necessary	C				X								X								X	S	P					

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2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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PW = Public Works Department

= Performance standard will be completed on an ongoing basis or during the specified timeframe.
FM = Facilities Management Department

MO2 – New Development and Construction Requirements for Municipal Capital Improvement Projects

DESCRIPTION

The New Development and Construction Requirements for Municipal Capital Improvement Projects Control Measure provides protocols to be followed in the design and construction phases of capital projects undertaken by the County. In essence, the County will follow the Development Standards and Construction Program Element requirements for all capital improvement projects (CIP), and obtain coverage under the General Construction Permit for projects greater than or equal to one acre in size.

EXISTING BMPS AND RELATED ACTIVITIES

The County adheres to the requirements for CIPs and obtains coverage under the General Permit for Discharges of Stormwater Associated with Construction Activity (Construction General Permit) for projects greater than or equal to one acre in size. Since the County CIP plans were not historically subject to review for stormwater issues, during the second Permit term the County developed standard specifications and notes for CIP design drawings stipulating compliance with the Construction General Permit and other relevant practices required under the Construction Program Element.

The County requires that CIP plans be reviewed by Public Works staff to ensure that the Construction BMPs and New Development standards are incorporated during the pre-design phase including environmental reviews. There are two kinds of CIP projects that occur in the County: Public Works projects and Capital projects. Both kinds of projects have incorporated the Construction General Permit requirements in their plans and bid documents. In addition, CIP and Public Works designers receive specialized NPDES/Water Quality training that covers both Construction General Permit and Post-Construction BMP measures. Simple overlay projects that maintain existing lines and grades are covered by standardized BMPs.

By County ordinance, any construction project, including a CIP or Public Works project, greater than or equal to one acre in size is required to submit an erosion control plan.[1] A notice of intent (NOI) is prepared and submitted for each CIP greater than or equal to one acre, thereby obtaining the proper coverage under the General Construction Permit. In addition, if a CIP meets the criteria as a priority project as defined within the SWQCCP, the CIP is developed so that it conforms to the new development standards. During construction, both CIP and Public Works projects are required to implement site specific Stormwater Pollution Prevention Plans (SWPPP) which is enforced by the resident engineer or inspector. The County makes no distinction between private and public incidents and addresses all CIP violations and complaints through its *Construction Violations Investigation Inspection Policy and Procedures and Progressive Enforcement Policy* (CO6-19.01) (see **Appendix B-9**).

As part of the Planning and Land Development Program Element, the County reviewed the CEQA checklist to ensure that it adequately addresses potential impacts a proposed CIP could have on stormwater quality. A copy of the CEQA checklist is provided in **Appendix D-2**.

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[1] The County ordinances requiring erosion and sediment control measures include the following:

- Title 5, Division 10. Stormwater Management and Discharge Control (**Appendix B-6**)
- Title 9, Division 14. Grading and Excavation Provisions (**Appendix B-7**)

The County addresses sites less than one acre in size that may be a threat to water quality through its Small Site Stormwater Management Plan, which is included as **Appendix D-3**.

The County is addressing interdepartmental communication through the stormwater training and internal working meetings. The County recently held working meetings to address plan reviews with PW – Design, PW – Public Services, and the County Capital Improvement Program. During these meetings, processes and collaborations were discussed to improve upon current efforts. Other working meetings will be scheduled throughout the Permit term.

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Review CIP designs to ensure specifications and notes are included
- Require submission of NOI for CIP greater than or equal to one acre
- If the CIP is a priority project, ensure that it is developed in conformance with the SWQCCP

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see MO9). The data and information to be collected may include, but will not be limited to, the following:

- Total number of CIP plans reviewed
- Total number of CIP plans requiring revisions
- Total number of active CIP construction sites
- Total number of active CIP construction sites that are greater than or equal to one acre
- Total number of active CIP construction sites greater than or equal to one acre that submitted an NOI

RESPONSIBILITY

Capital Projects Division is primarily responsible for this Control Measure, with support from Public Works – Water Resources.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
MO2 – Construction Requirements for Municipal Capital Improvement Projects																												
Review CIP designs to ensure specifications and notes are included	C																					S		P				
Require submission of NOI for CIP greater than or equal to one acre	C																					S		P				
If a priority project, develop in conformance with the SWQCCP	C																					S		P				

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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= Performance standard will be completed on an ongoing basis or during the specified timeframe.

PW = Public Works Department

FM = Facilities Management Department

MO3 – Pollution Prevention at County Facilities

DESCRIPTION

The Pollution Prevention at County Facilities Control Measure addresses pollutants entering the storm drain system from County-owned facilities (e.g., corporation yard, motor pool). To further the framework provided by this Control Measure, Facility Pollution Prevention Plans (FPPPs) will be developed and maintained for the County's facilities that are not covered by the Industrial General Permit. This Control Measure also addresses the County's procedures for addressing emergency and non-emergency fire fighting flows.

EXISTING BMPS AND RELATED ACTIVITIES

Facility Pollution Prevention Plans

The County continues to assess, develop, and implement BMPs for a wide variety of activities at the Corporation Yard, Motor Pool, and the Stockton Metropolitan Airport, including material storage control, vehicle maintenance, spill control, and illicit discharges. The County plans to develop a general FPPP that addresses all County facilities within the Stockton Urbanized Area. The FPPPs will include site descriptions and identify BMPs that address potential sources of pollutants to the storm drain system, as well as procedures for addressing spills that may occur onsite at such County facilities. The FPPP will also outline when inspections are performed, how many are performed, and how compliance with the FPPP is assessed.

Emergency and Non-Emergency Fire Fighting Flows

The majority of the fire response in the Stockton Urbanized Area (SUA) is managed by the City of Stockton. The County Fire Department jurisdictions in the SUA are in rural areas where there are no storm drains. The County Fire Department does coordinate with the Environmental Health Department to investigate concerns regarding ground contamination, and compliance issues are communicated to Public Works Community Infrastructure. The Public Works Community Infrastructure Division, storm water management program shall extend an invitation to the Fire Marshall to attend its new NPDES/storm water management training to ensure that they understand stormwater-related issues.

The current procedures adequately address firefighting flow stormwater management issues in the County area. However, the County will meet with the County Fire Marshall to attempt to negotiate a formal fire fighting flow management plan. The meeting shall occur in the second quarter of 2009 with a possible deliverable in the third quarter of 2009. The results of the meeting and resulting Plan shall be reported in the Annual Report.

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Assess facilities to determine if they require coverage under the General Industrial Permit
- Develop general FPPP for all County facilities
- Implement general FPPP for all County facilities
- Review CIP projects for compliance with general stormwater requirements, including review for vehicle or equipment wash areas
- Develop procedures to address Emergency Events
- Meet with the County Fire Marshal to discuss development of procedures to address emergency and non-emergency fire fighting flows
- Develop procedures to address emergency and non-emergency fire fighting flows

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see MO9). The data and information to be collected may include, but will not be limited to, the following:

- Number of facilities with coverage under the General Industrial Permit or FPPP
- Number of facilities that require FPPP
- Number of facilities implementing FPPP
- Total number of CIP sites with vehicle and/or equipment wash areas
- Number of CIP sites with vehicle and/or equipment wash areas connected to the sanitary sewer or other treatment control BMP.

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure, with support from Public Works – Administration and Facilities Management.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	Facilities Management	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
MO3 – Pollution Prevention at County Facilities																												
Assess facilities to determine if they require coverage under the General Industrial Permit	C																					P	S					
Develop general FPPP for all County facilities	N										X											P	S					
Implement general FPPP for all County facilities	N																					P	S					
Review CIP projects for compliance with general stormwater requirements, including review for vehicle or equipment wash areas	C																					P			S			
Develop procedures to address Emergency Events	N												X									P						
Meet with the County Fire Marshal to discuss development of procedures	N									X												P						
Develop procedures to address non-emergency fire fighting flows	N												X									P						

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MO4 – Landscape and Pest Management

DESCRIPTION

The Landscape and Pest Management Control Measure ensures that the discharge of pollutants from the County's use and storage of fertilizers and pesticides is reduced to the MEP. Among other things, the BMPs promote the use of integrated pest management (IPM) and retention and planting of native plant species requiring less water and chemical augmentation to remain healthy. By choosing less toxic and non-chemical landscaping methods, the County will serve as a positive example to citizens and prevent adverse impacts on the local water bodies.

EXISTING BMPS AND RELATED ACTIVITIES

In general, the County follows these procedures for routine and non-routine use of pesticides and fertilizers:

- Store fertilizer and pesticides indoors, under cover on paved surfaces, or protected by secondary containment, meeting OSHA, HAZMAT, California Department of Pesticide Regulation, and County Agricultural Commissioner's requirements by providing secure storage and spill control.
- Do not apply or store banned or unregistered pesticides.
- Inspect storage areas annually.
- Perform landscaping to maintain a healthy landscape.
- Use native plants and trees whenever possible to reduce water needs while promoting resistance to disease and pests.
- Use pesticides as a last resort, conforming to sound IPM practices.
- To maximize the benefit of applications, apply all chemicals at the minimum dose while avoiding runoff and wind drift. Only when practical are chemicals and pesticides used. Soil needs vary based on the level of soil amendments, thus the pesticide applications will also vary.
- To prevent stormwater and receiving water pollution, do not apply pesticides or fertilizers immediately before, during, or after a rain event; when water is flowing off the area; or when fog is present (if using spray application). However, it is also recognized that some pesticides, such as pre-emergents, require application just prior to rainfall.

The employees involved in the application of pesticides and/or fertilizers are state-certified and trained (see MO8). As such, they apply pesticides and/or fertilizers in an NPDES-compliant manner. The County primarily relies upon state-licensed pesticide operators to manage the County's property using BMPs consistent with state laws and regulations regarding the use of pesticides, herbicides, and fertilizers.

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Implement pesticide and fertilizer application protocol (Parks and Recreation Department Landscape Management Procedures, Landscape Maintenance BMP MO-1) at park sites (Water Quality Based Programs Performance Standard)
- Implement IPM practices (Water Quality Based Programs Performance Standard)
- Develop a formal document describing IPM-related policies and procedures (Water Quality Based Programs Performance Standard)

- Maintain and expand internal inventory on pesticide use and track Department of Parks and Recreation reported pesticide use (Water Quality Based Programs Performance Standard)

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see MO9). The data and information to be collected may include, but will not be limited to, the following:

- Annual use of pesticides by active ingredient and total area for application
- Annual use of fertilizers by element (e.g., nitrogen) applied and total area for application
- Areas and types of IPM measures that are being implemented

RESPONSIBILITY

Facilities Management – Parks and Recreation is primarily responsible for this Control Measure, with support from the Public Works – Water Resources Division.

- Public Works – Road Maintenance Division has secondary responsibility for the IPM program and the pesticide inventory.
- Public Works – Road Maintenance Division and Channel Maintenance shares primary responsibility with Facility Management - Parks and Recreation to maintain the internal inventory of pesticides.
- Public Works – Water Resources Division has primary responsibility for developing a formal document describing IPM-related policies and procedures

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
MO4 – Landscape and Pest Management																												
Implement pesticide and fertilizer application protocol at park sites, landscaped medians, and golf courses (**WQBP**)	C																					S			P			
Implement IPM program (**WQBP**)	C																					S	S		P			
Develop document describing IPM-related policies/procedures (**WQBP**)	N										X											P			S			
Maintain and expand internal inventory on pesticide use and track reported pesticide use (**WQBP**)	C																					S	P		P			

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X = Performance Standard will be completed during this quarter.
PW = Public Works Department
WQBP = Water Quality Based Programs Performance Standard

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FM = Facilities Management Department

MO5 – Storm Drain System Maintenance

DESCRIPTION

The Storm Drainage System Maintenance Control Measure provides for the long-term performance and integrity of the County's storm drain system. The County prioritizes catch basins for cleaning based on the required level of maintenance. This Control Measure includes special event requirements to prevent debris accumulation in catch basins and storm drains.

EXISTING BMPS AND RELATED ACTIVITIES

Storm Drain System

The County's Maintenance Utilities and Road Maintenance Divisions implement a maintenance program for the storm drain system, including main lines, catch basins, and catch basin laterals. Records are maintained for numbers of catch basin grates and laterals unplugged, main lines unplugged, catch basins cleaned, catch basin laterals cleaned, and main lines cleaned.

Catch Basins

The County maintains detailed mapping of the storm drain system, including all catch basins, and has established prioritization criteria for cleaning catch basins and sumps as summarized in the table below. The priority for cleaning catch basins is based on the amount of debris accumulated during the annual visual inspection prior to the rainy season. Additionally, pump station sumps are also inspected annually and cleaned at least once every two years. If evidence of an illicit discharge is found, the catch basin location is referred to Public Works – Water Resources Division.

Priority	Relevant Conditions	Inspection & Cleaning Frequency	Number of Catch Basins/Sumps[2]
A (High)	Catch basins with >40% debris accumulation per year *and* discharges directly to waters of the State.	Clean once prior to the wet season[1]	465
B (Medium)	Pump stations sumps	Inspect annually, clean as necessary with minimum of once every two years	28
C (Low)	Catch basins with <40% debris accumulation per year *and* discharges directly to waters of the State.	Inspect annually and clean as necessary	1,006

Notes:
1. That is, during the period July to October
2. As of April 14, 2009

The County inspects pump stations annually and cleans them as necessary. Basins and pumps are cleaned annually based upon visual inspection or a complaint. The inspection and cleaning take place primarily in the summer and fall. Vegetation and debris is removed from the pumps and properly disposed of in accordance with regulatory requirements.

The County also implements IPM while maintaining catch basins and sumps. Chemicals are only applied to perimeter fencing, frontage road, and around pump houses. Chemicals are tracked by active ingredient. Slopes and drainage areas are maintained using mechanical methods to promote vegetation growth, lessen erosion, and to prevent discharge of chemicals into local waterways.

Detention Basins

Maintenance of detention basins, including removal of vegetation and debris, is performed primarily in the summer and fall. Debris is removed and disposed of in accordance with regulatory requirements.

The County will develop and implement maintenance procedures for the detention basins. In addition, control measure LD4 in Section 7 of the SWMP identifies that maintenance agreements and transfers are required to be executed between the County and the owner/developer/successor-in-interest for any facilities, including detention basins, where the developer is responsible for ongoing maintenance of the treatment BMPs.

The County also implements IPM while maintaining detention basins. Chemicals are applied only to perimeter fencing, frontage roads, and around pump houses. Chemical amounts applied for each detention basin are tracked by active ingredient. Slopes and drainage areas are maintained using mechanical methods to promote vegetation growth, lessen erosion, and prevent discharge of chemicals into local waterways.

Catch Basin Stenciling

Catch basins are planned for marking with a storm drain message that is either included as a storm drain marker or stenciled on the curb above the catch basin. Volunteers stencil catch basins through the Public Outreach Program Element (see PO1), and municipal staff are also responsible for stenciling and/or marking the catch basins with missing or faded stencils.

The County does inspections of existing locations and is informed of catch basins stencils that need maintenance/replacement from municipal staff and/or the public. Volunteers re-stencil catch basins through the Public Outreach Program. Municipal staff also assist with stenciling and/or marking the catch basins. The goal for replacement is within 180 days.

Special Use Permits

Periodically, special events occur at County-owned/operated facilities (including parks). When the County issues Special Event Permits or Use Permits and related regulations for these events, it includes provisions for trash and debris removal including containerization and street sweeping as appropriate. The Special Event Permits and Use Permits are subject to review by Public Works – Water Resources. The Special Event Permits and Use Permits requirements for ensuring trash controls are included as **Appendix D-4**.

- Special Event Permit – Community Development Department (County-owned/operated facilities)
- Use Permit –Park and Recreation Department (County Parks and Recreational Facilities)

For the Use Permit distributed through Community Development Department. The request is circulated through Public Services to Public Works – Water Resources to determine if any issues may affect storm water quality. Public Works – Water Resources comments on stormwater-related issues, and the Permit will be issued subject to these conditions. A copy is retained for Public Works – Water Resources records. Please note that Special Events in the County area are very rare. Most events are held through County Parks & Recreation or within the City of Stockton.

Treatment Feasibility Study

The City and County were required by the second term Permit (Provision D.12.b.) to evaluate the feasibility of diverting dry weather discharges from the storm drainage system to the City's Regional Wastewater Control Facility (RWCF) or, alternatively, to provide treatment of dry weather discharges using BMP treatment controls. Using a prioritization process, each outfall in the storm drain system was

analyzed to determine the feasibility for dry weather discharge diversion opportunities. The prioritization effort is summarized in the table below.

Watershed	Outfall Name	Outfall ID	Outfall Type	Treatment Option	Prioritization Score
Recommended for 10% design assessment					
5-Mile Creek	Swenson & 5-Mile Creek P.S.	5M-27	Pump	Diversion	51
Calaveras River	Brookside & I-5 P.S.	CR-40	Pump	Diversion	53
	Sutter & Calaveras River P.S.	CR-45	Pump	Diversion	49
	Holman & Calaveras River P.S.	CR-48	Pump	Diversion	46
Mosher Slough	Mariner & Mosher Slough P.S.	MS-13	Pump	Diversion	53
	Kelly & Mosher Slough P.S.	MS-14	Pump	Diversion	49
San Joaquin River	Eighth Street & San Joaquin River P.S.	SJ-61	Pump	Diversion	47
Walker Slough	Turnpike & Walker Slough P.S.	WK-64	Pump	Diversion	50

The Treatment Feasibility Study Report describing these efforts was submitted to the Regional Water Board in April 2006.

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Implement storm drain system mapping
- Review/revise prioritization for catch basin cleaning as needed
- Maintain and annually update Catch Basin Database
- Implement catch basin maintenance program
- Implement pump station maintenance program
- Develop procedures for detention basin maintenance, including prioritization for cleaning
- Implement detention basin maintenance program
- Implement notification procedures for ID/IC and missing catch basin markers or illegible stencils
- Include Special Use Provisions in Special Event Permits and Use Permits for proper management of trash and litter
- Request revisions to the Special Event Permits and Use Permits process and information to incorporate specific reference to stormwater management, BMPs, and other measures to specifically address stormwater quality.

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see MO9). The data and information to be collected may include, but will not be limited to, the following:

- Total number of catch basins, number of high priority catch basins, and number of low priority catch basins
- Total number of catch basins stenciled/permanently imprinted with storm drain message prior to reporting period
- Total number of catch basins stenciled for first time by type (municipal/contract staff; volunteers)

- Total number of catch basins stenciled to date
- Total number of catch basins inspected or re-stenciled (municipal/contract staff)
- Total number of catch basins inspected/cleaned, number of high priority catch basins inspected/cleaned, number of low priority catch basins inspected/cleaned, and amount of material/debris removed from the storm drain system each year
- Total length of channels/pipes cleaned and amount of material/debris removed from channels/pipes each year
- Total number of pump stations
- Number of pump stations inspected/cleaned and amount of materials/debris removed from the pump station each year.
- Total number of dry detention basins
- Number of dry detention basin inspections after significant storms each year
- Number of regular dry detention basin inspections each year
- Total amount of trash, debris and sediment that was removed from the forebays and basins
- Number of Special Use Permits with special event provisions issued each year

RESPONSIBILITY

The Public Works – Community Infrastructure Division has primary responsibility for this Control Measure with support from Public Works – Road Maintenance and Utilities Maintenance.

- Public Works – Road Maintenance and Utilities Maintenance share primary responsibility for implementing the catch basin and detention basin maintenance programs.
- Public Works – Utilities Maintenance is primarily responsible for the pump station maintenance program.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
MO5 – Storm Drain System Maintenance																												
Implement storm drain system mapping	N																					P						
Review/revise prioritization for catch basin cleaning as needed	N																					S	P					
Maintain and annually update Catch Basin Database	C																					S	P					
Implement catch basin maintenance program	C																					S	P					
Implement pump station maintenance program	C																					S	P					
Develop procedures for detention basin maintenance	N												X									S	P					
Implement detention basin maintenance program	N																					S	P					
Implement notification procedures for ID/IC and missing catch basin markers or illegible stencils	C																					P						
Include Special Use Provisions in Special Event Permits and Use Permits for proper management of trash and litter	C									X												P			S			
Request revisions to the Special Event Permits and Use Permits process to specifically address stormwater management	N										X											P						

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2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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FM = Facilities Management Department

MO6 – Street Cleaning and Maintenance

DESCRIPTION

The Street Cleaning and Maintenance Control Measure ensures that County streets are maintained and cleaned to reduce pollutants to the MEP. In conducting the Control Measure, the County designates the streets or segments of streets based on the required level of maintenance. Street sweeping requirements and street maintenance materials control are also components of this Control Measure.

EXISTING BMPS AND RELATED ACTIVITIES

The County currently performs street sweeping on curbed streets in residential, industrial, and commercial areas once monthly. In addition, two leaf pickups are conducted each fall. The solid waste contracts have been renewed and contain provisions for green waste pickup. The County maintains records of tonnage removed by month for street sweeping. The minimum street sweeping frequency for the County is provided in the table below:

Location	Priority	Sweeping Frequency
Residential	A	Once per month
Industrial	A	Once per month
Commercial	A	Once per month
Open space	B	As necessary

The County has an established pavement maintenance program addressing the removal and proper disposal of pavement material, paint residue, and other construction waste. A street sweeper is permanently assigned to each road crew to facilitate daily clean-up of debris, at a minimum, with more frequent clean-up activities conducted as needed.

The Staff Maintenance Guide provides guidance to County maintenance personnel on the operation of daily activities in a stormwater-sensitive environment. The BMPs included within the Guide act as procedures and mitigate the affect of stormwater pollution. As a process improvement measure, the Guide is reviewed and updated annually. The current Staff Maintenance Guide is attached as **Appendix D-5.**

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Implement street sweeping program
- Review/revise prioritization of streets for street sweeping program as needed
- Implement green waste collection program (Water Quality Based Programs Performance Standard)
- Review the Road Maintenance and Small Site Construction BMPs (in Maintenance Staff Guide) and update as needed
- Implement Road Maintenance and Small Site Construction BMPs (in Maintenance Staff Guide)

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see MO9). The data and information to be collected may include, but will not be limited to, the following:

- Number of curb miles swept
- Amount of material/debris removed each year (tons)

RESPONSIBILITY

- Public Works – Road Maintenance is primarily responsible for the street sweeping program and road maintenance BMPs.
- Public Works – Solid Waste is primarily responsible for the green waste collection program.
- Public Works – Community Infrastructure is primarily responsible for the Maintenance Staff Guide.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
MO6 – Street Cleaning and Maintenance																												
Implement street sweeping program	C																					S	P					
Implement green waste collection program (**WQBP**)	C																					S	P					
Review/revise prioritization of streets for street sweeping program as needed	N																					S	P					
Review Road Maintenance and Small Construction BMPs (in Maintenance Staff Guide) and update annually as needed	C								X				X				X				X	P	S					
Implement Road Maintenance and Small Construction BMPs (in Maintenance Staff Guide)	C																					P	S					

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2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

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WQBP = Water Quality Based Programs Performance Standard

= Performance standard will be completed on an ongoing basis or during the specified timeframe.
FM = Facilities Management Department

MO7 – Parking Lots Maintenance

DESCRIPTION

The Parking Lots Maintenance Control Measure ensures the County's parking lots and structures are kept clear of debris and excessive oil buildup is prevented. This Control Measure consists of a schedule of cleaning and inspections of the parking lots and structures.

EXISTING BMPS AND RELATED ACTIVITIES

The County maintains 20 parking lots within the SUA. They are as follows:

- Mental Health Complex/Family Health
- Agriculture/CDD/Public Works
- Airport
- Boggs Tract Community Center
- Cal Works
- Facilities Management/Voters Registration
- Cooperative Extension
- Downtown Parking Garage
- Family Support Building
- Government Buildings
- Garden Acres Community Center
- Gianone Community Center
- Public Health
- Kennedy Community Center
- Motor Pool Building
- Mourfield Community Center
- County Courthouse
- Regional Sports Complex
- Schools Administration
- Household Hazardous Waste

Parking lots are swept to control litter as part of the street sweeping effort. Each parking lot will be monitored and cleaned to prevent excessive oil or debris build-up as needed. A Parking Lot Cleaning BMPs Fact Sheet was developed and is currently implemented by the County (**Appendix D-6**).

Inspections of County-owned parking lots are conducted each August as part the County's Dry Weather Monitoring Program. BMP fact sheets concerning parking lot maintenance are delivered in conjunction with inspections. To date, the County has not found any violations.

County-owned (or -occupied) sites not swept by Road Maintenance, as referenced above, are cleaned and swept by Parks & Recreation at least annually prior to the rainy season. County building sites in the Downtown area—whether City-owned, County-owned, or County-leased—are swept and cleaned by the Downtown Alliance on a regular basis.

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Implement BMPs for parking lot cleaning as specified in the Parking Lot Cleaning BMPs Fact Sheet
- Inspect County-owned parking lots

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see MO9). The data and information to be collected may include, but will not be limited to, the following:

- Total number of County-owned parking lots and structures
- Frequency and number of parking lots cleaned
- Estimate of amount of waste removed, if available
- Number of inspections conducted each year

RESPONSIBILITY

Public Works – Water Resources and Road Maintenance Divisions share primary responsibility for this Control Measure.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
MO7 – Parking Lots Maintenance																												
Implement BMPs for parking lot cleaning	C																					P	P					
Inspect County-owned parking lots annually	C					X				X				X				X				P	P					

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MO8 – Training

DESCRIPTION

Training is important for the implementation of the Municipal Operations Program Element. An effective training program is one of the best pollution prevention BMPs that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality.

The County has developed a formal training strategy (see **Appendix B-11**) to address the multiple levels of staff involvement in the implementation of the stormwater program.

The objectives of the training program are to:

- Increase the general awareness and understanding of the SWMP and Municipal Operations program;
- Increase the awareness and understanding of the Municipal Operations Control Measures and performance standards;
- Create a training program to increase understanding and awareness and prompt the behavioral changes needed to protect and improve water quality; and
- Conduct training for employees responsible for the Municipal Operations Program Element.

The Municipal Operations Training Module 2 provides training on municipal operations best management practices with the ultimate goal of preventing or reducing pollutant runoff from operations into the storm sewer system. It also provides information on the County's inspection, reporting, and enforcement practices. The training will also address the Permit requirements and SWMP Section 4.

Specific areas of focus for the training efforts for the Municipal Operations Program Element are summarized in **Table 4-2**.

Table 4-2. Municipal Operations Program Element Training

Audience	Format	Subject Material
• Public Works-Maintenance crews (Channel, Road, Utility) • Public Works-Fleet Services • Parking Facilities crews • Public Works- Solid Waste • County Parks & Rec. • County Airport Staff • County Environmental Health • Fire Department and Trainers	• Classroom • Field demos • Tailgate sessions	• Overview of stormwater management • BMPs for municipal operations, commercial and industrial • Recognize, respond and report illicit discharges and illegal connections • Tracking and enforcement of illicit discharges and illegal connections • Industrial/commercial control measures • Stormwater ordinance and enforcement policy.

EXISTING BMPS AND RELATED ACTIVITIES

To ensure that the various Department and Division personnel understand their roles and responsibilities under the SWMP, the County developed a classroom training module for key staff responsible for the Municipal Operations Program Element. By having responsible Department and Division staff attend the training modules, the County is able to effectively implement the SWMP.

PERFORMANCE STANDARDS

The performance standards listed below establish the level of effort required for this Control Measure.

- Conduct training for key staff involved in the Municipal Operations program (see **Table 4-2**)
- Conduct refresher trainings the years that the full training module is not provided

Training will occur twice per year throughout the Permit term and will consist of 60-minute sessions held six separate times throughout the first quarter. (See Implementation Schedule and **Appendix B-11**)

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see MO9). The data and information to be collected may include, but will not be limited to, the following:

- Number and types of training sessions held
- Number of attendees at each session and the Division/Department that they work for
- Results of pre- and post-training surveys

RESPONSIBILITY

The Public Works – Community Infrastructure Division has primary responsibility for this Control Measure.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
MO8 – Training[2]																												
Conduct training	C							X								X						P						
Conduct Annual Refresher Training	C											X								X		P						

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.
PW = Public Works Department

☐ = Performance standard will be completed on an ongoing basis or during the specified timeframe.
FM = Facilities Management Department

[2] The Module and Refresher Training dates in the County's Training Strategy will be revised as needed (see ID5).

MO9 – Effectiveness Assessment

DESCRIPTION

Effectiveness assessment is a fundamental and necessary component for developing and implementing successful stormwater programs. A well-executed assessment can provide the feedback necessary to determine whether the programs are achieving intended outcomes and, ultimately, whether continued implementation will result in maintaining or improving water quality.[3]

Effectiveness Assessment

The process that is used to evaluate if programs are resulting in desired outcomes.

Effectiveness assessments are an integral part of the iterative process, which is the foundation for the stormwater program. By utilizing the iterative process and conducting effectiveness assessments, program managers can use the information gained to adapt their programs and ensure that the resources expended are providing commensurate benefit and are protective of water quality. The iterative process is illustrated in **Figure 4-1**; the points at which effectiveness assessments (implementation and water quality) are conducted are also identified.

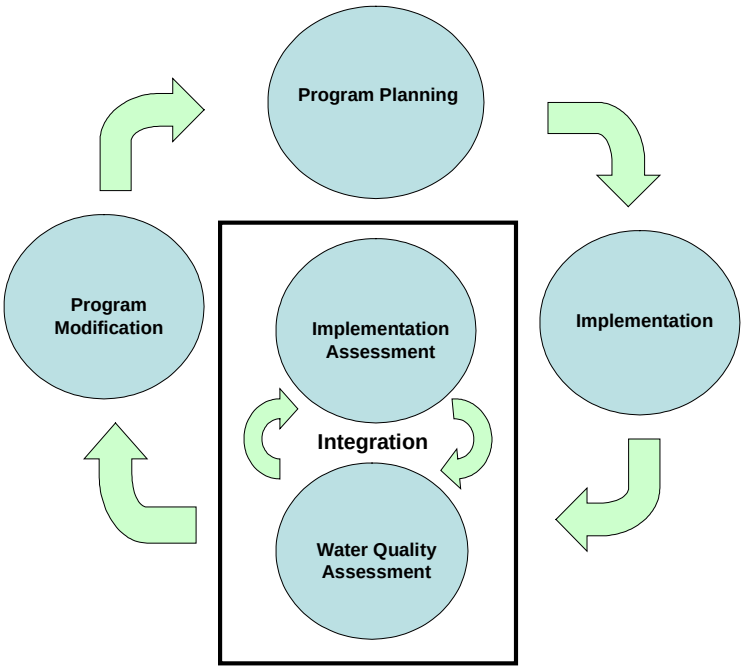

Figure 4-1. Iterative Process and Effectiveness Assessments Outcome Levels

[3] California Stormwater Quality Association (CASQA), Municipal Stormwater Program Effectiveness Assessment Guidance, March 2007.

Outcome levels help to categorize and describe the desired results of the Program Elements and related Control Measures. Pursuant to the 2007 CASQA guidance, outcomes for stormwater programs have been categorized into six levels, as shown in **Figure 4-2**.

Outcome Level	Description
6	Protecting Receiving Water Quality
5	Improving Runoff Quality
4	Reducing Loads from Sources
3	Changing Behavior
2	Raising Awareness
1	Documenting Activities

Figure 4-2. Effectiveness Assessment Outcome Levels

The outcome levels identify the key areas that are evaluated for the program effectiveness assessment within the Annual Report. The primary questions that should be assessed for each Program Element or Control Measure include the following:

- Level 1 Outcome – Was the Program Element/Control Measure implemented in accordance with the Permit Provisions, SWMP Control Measures, and Performance Standards?
- Level 2 Outcome – Did the Program Element/Control Measure raise the target audience's awareness of an issue?
- Level 3 Outcome – Did the Program Element/Control Measure change a target audience's behavior, resulting in the implementation of recommended BMPs?
- Level 4 Outcome – Did the Program Element/Control Measure reduce the load of pollutants from the sources to the storm drain system?

As a part of the annual reporting process, effectiveness assessments will be conducted for the Municipal Program and related Control Measures to determine their effectiveness and identify any necessary modifications. Although the effectiveness assessment may change from year to year as new information is learned, the assessment will initially focus on Outcome Levels 1-4 and will include the approach outlined in **Table 4-3**. Level 5 and 6 outcomes will be assessed, to the extent possible, as a part of the water quality based programs and water monitoring program (SWMP Sections 8 and 9).

- The effectiveness assessment conducted as a part of each annual report will address the following:
- Purpose or focus of the assessment –The outcome level(s) being assessed as well as the related management questions will be summarized. Where applicable, the identified goals that have or will be established for the program/activity will also be summarized.
- Baseline conditions – A baseline is a defined point or metric by which effectiveness can be measured or compared. Baselines are linked to a particular point in time and are particularly important for measuring change over time. Where feasible, the baselines that have or will be established for the program/activity will be summarized.
- Assessment methods – The assessment methods (those activities, actions, or processes used to obtain and evaluate assessment data or information) will be summarized.

- Using the information – The improvements that have been identified for the program element will be summarized.

Table 4-3. Assessment Tasks for Municipal Operations Program Element

MO1 – Sanitary Sewer Maintenance & Overflow and Spill Response
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (*Level 1 Outcome*)? • Implement the SSORP • Review the SSORP and revise as necessary (every two years) **Did the activity change a target audience's behavior which results in implementation of recommended BMPs (*Level 3 Outcome*)?** • Estimate reduction of sewage discharge from implementation of protocols **Did the activity reduce the load of pollutants from the sources to the storm drain system (*Level 4 Outcome*)?** • Estimate reduction of sewage discharge from implementation of protocols
MO2 – Construction Requirements for Municipal Capital Improvement Projects
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (*Level 1 Outcome*)? • Review CIP designs to ensure specifications and notes are included • Require submission of NOI for CIPs • one acre • If the CIP is a priority project, ensure that it is developed in conformance with the SWQCCP **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • % CIP plans that required revisions year to year • % CIP projects • one acre that submitted NOIs

Table 4-3. Assessment Tasks for Municipal Operations Program Element (continued)

MO3 – Pollution Prevention at County Facilities
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (*Level 1 Outcome*)? • Assess facilities to determine if they require coverage under the General Industrial Permit • Assess, develop, and implement FPPP for all County sites • Review CIP projects for vehicle or equipment wash areas • Develop procedures to address Emergency Events • Meet with the County Fire Marshal to discuss development of a formal Fire Fighting Flow Management Plan • Develop formal Fire Fighting Flow Management Plan • Develop procedures to address non-emergency fire fighting flows **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • # facilities that have FPPPs developed, implemented, and available on site • # CIP projects with vehicle wash areas connected, % year to year **Did the activity change a target audience's behavior which results in implementation of recommended BMPs (*Level 3 Outcome*)?** • # facilities with BMPs implemented and maintained, % year to year

Table 4-3. Assessment Tasks for Municipal Operations Program Element (continued)

MO4 – Landscape and Pest Management
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (*Level 1 Outcome*)? • Implement pesticide and fertilizer application protocol at park sites, landscaped medians, and golf courses (**WQBP**) • Implement IPM program (**WQBP**) • Develop a formal document describing IPM-related policies and procedures (**WQBP**) • Maintain and expand internal inventory on pesticide use and track Department of Parks and Recreation reported pesticide use (**WQBP**) • Research and evaluate San Joaquin County newly implemented Master Gardener Program for the development of landscaping standards (WQBP) **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • % change in amount and type of pesticides applied, year to year • % change in total area to which pesticides are applied, year to year • % change in amount and chemical element of fertilizers applied, year to year • % change in total area to which fertilizers are applied, year to year • % change in types of IPM measures that are being implemented, year to year • % change in total area where IPM is implemented, year to year **Did the activity change a target audience's behavior which results in implementation of recommended BMPs (*Level 3 Outcome*)?** • Estimates of pesticide and fertilizer applied and reductions over time

Table 4-3. Assessment Tasks for Municipal Operations Program Element (continued)

MO5 – Storm Drain System Maintenance
Was the program implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (*Level 1 Outcome*)? • Implement storm drain system mapping • Review/revise prioritization for catch basin cleaning as needed • Maintain and annually update Catch Basin Database • Implement catch basin maintenance program • Implement pump station maintenance program • Implement detention basin maintenance program • Implement notification procedures for ID/IC and missing catch basin markers or illegible stencils • Include Special Use Provisions in special use permits for proper management of trash and litter • Request revisions to the Special Event Permit process to specifically address stormwater management **Did the activity change a target audience's behavior which results in implementation of recommended BMPs (*Level 3 Outcome*)?** • Number of catch basins, pump stations, etc. cleaned, year to year **Did the program reduce the load of pollutants from the sources to the storm drain system (*Level 4 Outcome*)?** • Estimate of pounds of pollutants removed through cleaning of catch basins, pump stations, etc.
MO6 – Street Cleaning and Maintenance
Was the program implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (*Level 1 Outcome*)? • Implement street sweeping program • Review/revise prioritization of streets for street sweeping program as needed • Implement green waste collection program (**WQBP**) • Update Road Maintenance and Small Construction BMPs in Maintenance Staff Guide and review annually for as-needed changes • Implement Road Maintenance and Small Construction BMPs in Maintenance Staff Guide **Did the program reduce the load of pollutants from the sources to the storm drain system (*Level 4 Outcome*)?** • Estimate of waste removed through street sweeping and green waste collection program

Table 4-3. Assessment Tasks for Municipal Operations Program Element (continued)

MO7 – Parking Lots Maintenance
Was the program implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (*Level 1 Outcome*)? • Implement BMPs for parking lot cleaning • Inspect County-owned parking lots annually **Did the program reduce the load of pollutants from the sources to the storm drain system (*Level 4 Outcome*)?** • Estimate of waste removed through parking lot cleaning
MO8 – Training
Was the program implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and performance standards (*Level 1 Outcome*)? • Conducted training for key staff involved in the Municipal Operations program • Conducted Annual Refresher Training **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • Percent increased awareness before and after training sessions

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
MO9 – Effectiveness Assessment																												
Revise effectiveness assessment strategy as needed	N					X				X				X				X				P	S	S	S			
Conduct effectiveness assessment on an annual basis	E					X				X				X				X				P						
Identify program modifications as a result of the assessment	C					X				X				X				X				P	S	S	S			
Review effectiveness assessments and identify goals, baselines, and trends.	N									X				X				X				P						

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.

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PW = Public Works Department

FM = Facilities Management Department

Section 5

Industrial and Commercial Program Element (IC)

OVERVIEW

The purpose of the Industrial and Commercial Program Element is to prohibit unauthorized non-stormwater discharges and reduce pollutants in stormwater runoff from industrial and commercial facilities to the MEP. The program for industrial and commercial facilities is accomplished by tracking, inspecting, providing outreach, and ensuring compliance at industrial and commercial facilities identified as significant or potentially significant sources of pollutants in stormwater. Due to the similarities in the industrial and commercial programs, the two programs have been combined into one Program Element. In addition to program similarities, the industrial and commercial land uses within the County are, in general, located in close proximity to each other, often in the same watersheds or sub-watersheds.

State Industrial General Permit

The state Industrial General Permit (CAS No. 000001, Order No. 97-03-DWQ) was issued on April 17, 1997. In general, facilities designated by the Regional Board, facilities whose operators seek coverage, and facilities required by U.S. EPA stormwater regulations are covered by the Industrial General Permit. Among other things the Industrial General Permit requires:

- Prohibition of unauthorized non-stormwater discharges. The authorized non-stormwater discharges are addressed in the Special Conditions section of the Industrial General Permit.
- Control of pollutant discharges using the best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT).
- All facility operators to prepare, retain on site, and implement a SWPPP. Development and implementation requirements for the SWPPPs are included in sections of the Industrial General Permit. However, SWPPPs are developed emphasizing BMP implementation and elimination of unauthorized non-stormwater discharges.
- Implementation of a monitoring program to demonstrate compliance with the Industrial General Permit. Allowances for alternative monitoring and group monitoring are also provided in the Permit.

The Industrial General Permit is similar to the County's municipal Stormwater Permit in that the regulatory agencies (the Regional Water Board and the County) are required to inventory and provide outreach to industrial facilities and/or enforce state and local codes and ordinances for industrial facilities that are out of compliance. As such, the County will work closely with the state in implementing the industrial program. The State Water Resources Control Board is in the process of reissuing the Industrial General Permit. Upon completion of the reissuing process, permit requirements are likely to change.

OBJECTIVES

The objectives address the key components of the Industrial and Commercial Program Element and identify that, in order to be effective, the program must:

- Provide adequate legal authority to control pollutants from industrial and commercial facilities to the MS4 (see Section 1)
    - Develop and maintain an inventory of industrial and commercial facilities located within the County's jurisdiction.
- Prioritize the industrial and commercial facilities within the inventory based on their threat to water quality.
- Conduct inspections of the industrial and commercial facilities that pose a significant threat to water quality with an inspection frequency based on the prioritization of the facility. Conduct follow-up inspections to bring the facility into compliance.
- Implement a progressive enforcement policy to ensure that adequate enforcement is conducted, and coordinate with the Regional Water Board regarding referrals of potential non-filers and inspections.
- Provide internal and external training on components of the SWMP and related Permits.
- Conduct an assessment as a part of the annual reporting process to determine the effectiveness of the Program Element and identify any necessary modifications.

CONTROL MEASURES

The Control Measures outlined in **Table 5-1** and discussed in more depth in the accompanying Fact Sheets were designed to address the program objectives. In developing the Control Measures, several key factors were considered:

- Each Control Measure must address one or more of the program objectives.
- Each Control Measure must clearly identify the Performance Standards, timeframe for completion, and responsible Department/Division to ensure that there is accountability built into the program.
- The data and information from the previous permit term and/or reporting period must be analyzed to determine the effectiveness of each Control Measure, and the iterative process must be used to ensure that each Control Measure is effective and has a commensurate benefit for the resources expended.
- Each Control Measure must actively identify enhancements/modifications that would improve the Program Element and overall effectiveness of the stormwater program.

Table 5-1. Control Measures for the Industrial and Commercial Program Element

ID	Control Measure
IC1	Facility Inventory
IC2	Prioritization and Inspection
IC3	Industrial/Commercial Outreach
IC4	Enforcement
IC5	Training
IC6	Effectiveness Assessment

The Control Measure Fact Sheets developed for the Industrial and Commercial Program Element (IC1 – IC6) address the program objectives and identify assessment tools that may be used to assess the effectiveness of the program. The Fact Sheets were developed as stand-alone documents so that they can be individually provided to the responsible Department(s)/Division(s).

Supporting Control Measures

While the individual, program-specific Control Measures are the primary focus of each Program Element (i.e., IC1-IC6 for Industrial and Commercial), it is also important to understand how the Program Element fits within the overall SWMP and how each of the Program Elements complement and support each other. A brief summary of the Program Elements that support the Industrial and Commercial Program is provided below.

Supporting Control Measures	Program Element
X	Illicit Discharges
X	Public Outreach
-----	Municipal Operations
-----	**Industrial/Commercial**
-----	Construction
-----	Planning and Land Development

- Illicit Discharges (Section 2)
    - *Facilities in Database* – Reports of illicit discharges or illegal connections from facilities in the Industrial and Commercial Program database are recorded so the facility history is documented.
- Public Outreach (Section 3)
    - *Outreach Materials* – Materials are developed for industrial and commercial sites that can be distributed during inspections.

IC1 – Facility Inventory

DESCRIPTION

The Facility Inventory Control Measure addresses the need to develop and maintain a complete database of industrial and commercial facilities that are significant sources of pollutants in stormwater and/or receiving water or have the potential to impact water quality. Information for the database is primarily obtained from Permits Plus and the County's Auditor Office on new business licenses and sanitary sewer hook-up permits. The inventory provides the basis for prioritization of facilities within the County and serves as a repository for all outreach, inspection, and notices for each facility.

EXISTING BMPS AND RELATED ACTIVITIES

The County is improving its inventory records of industrial and commercial facilities, including those covered under the state Industrial General Permit. The inventory/database tracks the following information:

- Name and address of the facility
- Mailing address of the facility
- Name and address of owner
- SIC code and SIC description
- Waste Discharge Identification (WDID) number
- Due date for next inspection
- Date of most current inspection
- Date (if) a Notice of Non-Applicability (NONA) was granted to facility
- Date of most recent Annual Report
- Check boxes for SWPPP and if there is risk of exposure
- Box to indicate whether business is commercial or industrial
- Follow-up activities (industrial only)
- Additional comments

The inventory tracks the following categories of industrial and commercial facilities:

Industrial Facilities

- Manufacturing Facilities;
- Hazardous Waste Treatment, Storage, or Disposal Facilities;
- Solid Waste Transfer Stations;
- Recycling Facilities;
- Transportation Facilities; and
- Sewage or Wastewater Treatment Facilities

Commercial Facilities

Significant Sources

- Auto body shops
- Auto dealers
- Auto repair shops
- Dry cleaners
- Equipment rentals
- Kennels
- Nurseries
- Restaurants and caterers
- Retail gasoline outlets (RGOs)

Temporary or Intermittent Sources

- Automotive washing and detailing
- Carpet cleaners
- Commercial pesticide applicators
- Concrete pouring contractors
- Concrete cutting contractors
- General building contractors
- Landscape installation/maintenance contractors
- Paint contractors
- Portable toilet rental and maintenance
- Pressure washers
- Street sweepers
- Swimming pool contractors
- Swimming pool maintenance

Scheduling of inspections will also be integrated as a component of the County's database. Queries to the database identify the facilities scheduled for inspection, sites overdue for inspections, and sites requiring re-inspection.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Perform an internal audit of the database every other year to verify that the information is accurately entered.
- Maintain and update the industrial and commercial facility inventory.
- Identify industrial and commercial facilities in the inventory/database on a map using a convenient scale and an easily-discernible format.
- Develop and implement a mobile business pilot program for one mobile business category deemed to be a potentially significant source and include all mobile business within this category in the inventory.

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Progress Report and used within the program effectiveness assessments (see IC6). The following data and information should be collected:

- Number and types of industrial and commercial facilities

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure with support from the County Environmental Health Department.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
IC1 – Facility Inventory																												
Internal audit of database	C				X								X								X	P					S	
Maintain and annually update the inventory and database	C					X				X				X				X				P					S	
Map the industrial and commercial facilities on an annual basis	E					X				X				X				X				P					S	
Develop a mobile business pilot program for one mobile business category deemed to be a potentially significant source and include all mobile business within this category in the inventory	N										X											P					S	
Implement a mobile business pilot program for one mobile business category deemed to be a potentially significant source and include all mobile business within this category in the inventory.	N																											

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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PW = Public Works Department FM = Facilities Management Department

IC2 – Prioritization and Inspection

DESCRIPTION

The Prioritization and Inspection Control Measure establishes procedures for prioritizing industrial and commercial facilities within the County for inspection as well as the inspection requirements associated with the site visits. The inspections ensure that the facility operator has pertinent educational materials, the operator complies with the County ordinances, and unauthorized non-stormwater discharges do not occur. Inspection of facilities covered under the state Industrial General Permit also ensure that the operator has a current WDID number, the SWPPP is available on-site, and the operator is effectively implementing BMPs in compliance with County ordinances.

EXISTING BMPS AND RELATED ACTIVITIES

Prioritization

The County developed procedures for prioritizing industrial and commercial facilities for inspection frequency. The County considers all industries and businesses specifically listed in the previous permit (e.g., state Industrial General Permit holders, auto body shops) as high priority sites and inspects each facility twice during the five-year Permit cycle. All other businesses are considered low priority and are inspected as needed. If the County should encounter a business that may pose a threat to water quality, the business is evaluated using the prioritization evaluation criteria and ranking system (see **Appendix E-1**). The County will review the industrial and commercial facilities and may change the prioritization based on performance data.

Inspections

The County ordinance allows authorized personnel to enter any property or building to perform inspections. On refusal by the owner, tenant, occupant, agent or other responsible party to allow an inspection, the County may contact law enforcement and/or seek an Administrative search warrant.

In order to ensure that the inspectors conduct thorough and consistent inspections, industrial and commercial inspection checklists have been developed (see **Appendices E-2** and **E-3**). In the checklists, four categories are tabulated, including administrative evaluation, indoor evaluation, outdoor inspection, and specific areas of concern. The industrial checklist for facilities covered by the state Industrial General Permit also confirms that:

- Each operator has a current Waste Discharge Identification (WDID) number for facilities discharging stormwater associated with industrial activity;
- A SWPPP is available on site; and
- The operator is effectively implementing BMPs in compliance with local ordinances.

The County inspects industrial sites annually, in part to respond to violations of water quality standards. The County will inspect a portion of the industrial facilities each year so that all sites will be inspected at least twice during the Permit term, resulting in an annual presence in the field.

County industrial and commercial inspectors receive proper training to adequately assess facilities and offer assistance in suggesting remedies. County ordinances and County Counsel also provide the proper legal backing for inspections and any necessary enforcement actions.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

Prioritization

- Prioritize industrial and commercial facilities as necessary
- Evaluate the prioritization criteria and incorporate exceedances of the water quality benchmarks (identified from data provided by the Regional Board) as a criteria for prioritizing the industrial facilities

Inspections

- Review/revise the industrial inspection checklists as needed.
- Review/revise the commercial business-specific checklist as needed to ensure that critical areas within facilities that have a significant potential to discharge a pollutant for which there is a water quality based plan are inspected. For example, since there is a Pathogen Plan, kennels should be inspected to ensure that there is a sanitary sewer connection for the wash water from the kennel area. (Water Quality Based Programs Performance Standard)
- Revise industrial and commercial inspection evaluation checklists to include discussion of mercury-containing products, along with proper handling and disposal procedures (Water Quality Based Programs Performance Standard)
- Continue to inspect high priority industrial and commercial facilities twice during the Permit term. The first inspection should occur prior to July 2009 and the second inspection prior to July 2011. In addition, the County will inspect a portion of the industrial facilities each year so that all sites will be inspected at least twice during the Permit term, resulting in an annual presence in the field. If the inspection reveals that there is no risk of exposure of the commercial/industrial activities to stormwater at a facility, the facility may be dropped from the high priority list. At least one year will elapse before the second inspection.
- Evaluate the feasibility of developing a compliance rating system to track the effectiveness of the program and assist inspectors in defining compliance.
- Conduct follow-up inspections as necessary in order to bring the facility into compliance.
- Identify how inspections may be conducted for the mobile business category identified in IC1.

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Progress Report and used within the program effectiveness assessments (see IC6). The following data and information should be collected:

- Number of industrial and commercial inspections conducted year to year
- Number of industrial facilities with SWPPPs on site
- Number of industrial and commercial facilities adequately implementing BMPs
- Number of industrial and commercial facilities in general compliance with the County's stormwater control requirements and having submitted required filings to the state stormwater program
- Number of industrial and commercial facilities requiring follow-up inspections
- Number of industrial and commercial facilities in compliance pre- and post-follow-up inspection

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure, with support from the County Environmental Health Department.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
IC2 – Prioritization and Inspection																												
Prioritization																												
Prioritize facilities as necessary	C																					P						
Evaluate the prioritization criteria and incorporate the water quality benchmark data for industrial facilities	N										X											P						
Inspections																												
Review/revise industrial inspection checklists as needed	C																					P					S	
Review/revise commercial inspection checklist as needed (**WQBP**)	E									X												P					S	
Revise industrial and commercial inspection evaluation checklists to include mercury handling and disposal procedures	N										X											P					S	
Inspect high priority facilities	C																					P					S	
Evaluate the feasibility of developing a compliance rating system	N												X									P					S	
Conduct follow-up inspections as needed	C																					P					S	
Identify how inspections may be conducted for the mobile business category identified in IC1.	N										X											P					S	

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2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.
☐ = Performance standard will be completed on an ongoing basis or during the specified timeframe.

PW = Public Works Department
FM = Facilities Management Department
WQBP = Water Quality Based Programs Performance Standard

IC3 – Industrial/Commercial Outreach

DESCRIPTION

The Industrial/Commercial Outreach Control Measure requires industrial and commercial businesses to reduce pollutants in stormwater discharges and effectively prohibits unauthorized non-stormwater discharges to the storm drain system. Although the County may provide guidance to facility operators on appropriate Source and Treatment Control BMP selection and application, the selection of specific BMPs to be implemented is the responsibility of the discharger.

EXISTING BMPS AND RELATED ACTIVITIES

Industrial/Commercial outreach activities include requiring BMPs at facilities and distributing educational materials. Currently, the County distributes educational materials during inspections, as well as through the Got SWPPP? sponsored Industrial and Construction Workshops; the San Joaquin County stormwater partnership sponsored Industrial and Construction Workshops; County libraries; the Public Works Customer Service counter; and outreach activities such as the RV and Boat Show and the Home and Garden Show. Additional outreach mechanisms may be identified with the development of the mobile business pilot program. Although efforts are described within this Control Measure, business outreach also takes place as part of the Public Outreach and Construction Programs (see PO5 and CO4, respectively).

As a continuous quality improvement goal, the County will continue to review and expand its outreach as new sources are identified. Current mechanisms for outreach include the Greater Stockton Chamber of Commerce – Industrial Roundtable and the Got SWPPP? Industrial Workshops hosted by WGR, Inc.. The County will also be developing a Stormwater Awareness Workshop with a focus on commercial facilities.

In order to assist the industrial and commercial facilities in selecting and implementing the appropriate types of BMPs, the County has BMP information for dissemination to high priority commercial businesses, including the following:

- Auto Body Shops
- Auto Dealers
- Auto Repair Shops
- Dry Cleaners
- Equipment Rentals
- Kennels
- Nurseries
- Restaurants
- Retail Gasoline Outlets

The BMP information is disseminated during the inspections. In addition, events are also provided for public benefit, including National Pollution Week and Chamber of Commerce – Business and Industrial Meetings.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Review/revise BMP information for high priority industrial and commercial facilities as needed
    - Advise facilities of additional resources for BMP selection and implementation, including the CASQA Industrial BMP Handbook
    - Ensure facilities that have a significant potential to discharge a pollutant for which there is a water quality based plan (i.e., pesticides, pathogens, mercury) receive guidance. For example, since there is a Pathogen Plan, kennels should receive a kennel-specific BMP Fact Sheet that identifies BMPs that would prevent the discharge of fecal matter containing the specific pollutants of concern (Water Quality Based Programs Performance Standard)
- Distribute appropriate BMP information during inspections
- Based on the potential development of a compliance rating system (see IC2), target outreach efforts as needed
- Identify BMPs for the mobile business category identified in IC1 and develop an outreach/education strategy.
- Implement outreach efforts to mobile businesses

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Progress Report and used within the program effectiveness assessments (see IC6). The following data and information should be collected:

- Number and types of materials distributed
- Number of industrial and commercial facilities with BMP fact sheets or other stormwater-related information posted

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure, with support from the County Environmental Health Department.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
IC3 – BMP Implementation																												
Review/revise BMP information for high priority facilities as needed (**WQBP**)	C																					P					S	
Distribute BMP information	C																					P					S	
Based on the development of a compliance rating system, target outreach efforts	N																					P					S	
Identify BMPs for the mobile business category identified in IC1 and develop an outreach/education strategy.	N										X											P					S	
Implement outreach efforts to mobile businesses	N																					P					S	

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.

= Performance standard will be completed on an ongoing basis or during the specified timeframe.

PW = Public Works Department FM = Facilities Management Department

WQBP = Water Quality Based Programs Performance Standard

IC4 - Enforcement

DESCRIPTION

The Enforcement Control Measure outlines the progressive levels of enforcement applied to industrial and commercial facilities that are out of compliance with local ordinances and establishes the protocol for referring apparent violations of facilities subject to the Industrial General Permit to the Regional Board. The Enforcement Control Measure has been developed to address specific legal authority issues related to industrial and commercial facility discharges and should be implemented in coordination with the County's efforts to maintain adequate legal authority for the Stormwater Program in general (see Section 1).

EXISTING BMPS AND RELATED ACTIVITIES

The County has a progressive enforcement and referral policy to ensure enforcement actions match the severity of violations and include distinct, progressive steps. Options are available for progressive corrective actions for repeat offenders. Inspections are performed to assess compliance with County stormwater ordinances. Noncompliance may include non-submittal by an industrial facility of an NOI, failure to implement BMPs, or other violation of County ordinances.

The various remedies available for progressive enforcement are addressed within County ordinances as well as procedurally within the *NPDES non-Construction Illicit Discharge and Illegal Connection Investigation-Enforcement Management* (ID2-15.01) procedure (**Appendix B-1**). The County is also in the process of developing an Enforcement Consistency Guide (ECG) (see ID4).

The progressively severe corrective actions involve verbal warnings followed by written warnings and legal action, if necessary. Illicit discharges by facilities are addressed in a more formal manner through notices of non-compliance, cease and desist orders, and criminal enforcement, depending upon the compliance history of the facility. Corrective actions are taken in every instance where a responsible party is identified.

The types of enforcement actions that may be taken include the following:

Administrative Remedies

- Verbal Warning
- Warning Notice or Notice to Clean
- Notice of Violation

Legal Action

- Referral letter to San Joaquin District Attorney and the Central Valley Regional Water Quality Control Board

The County's industrial/commercial database contains a comment box for notes pertaining to a specific facility. Typically, if there is an unsatisfactory inspection, special note is made in the comment box, and the facility is marked for reinspection. Past experience with facilities in the County has shown that facility operators are cooperative and are willing to bring facilities into compliance. However, the database will be modified as needed to allow for better tracking of enforcement actions.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Implement the progressive enforcement and referral policy.
- Track enforcement actions using the industrial/commercial database.
- Implement procedures for responding to complaints forwarded by the Regional Water Board to ensure inspections occur within two business days. Inspections initiated in response to complaints will determine, at a minimum, if the facility is out of compliance with County stormwater ordinances.
- Review and modify, as necessary, the procedures for informing the Regional Board of violations at industries covered by the Industrial General Permit. Referral to the Regional Board is appropriate concurrently (within 30 days) with issuance of Notice of Violations. The referral to the Regional Board should include:
    - Name of facility
    - Operator of facility
    - Owner of facility
    - Industrial activity or activities subject to the state Industrial General Permit conducted at the facility
    - Records of communication between the County and facility owner and operator
- Develop an enforcement strategy that specifically addresses the mobile business category identified in IC1.

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Progress Report and used within the program effectiveness assessments (see IC6). The following data and information should be collected:

- Number and types of enforcement actions taken
- Number of repeat offenders identified
- Number of industrial facilities referred to the Regional Water Board as non-filers

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure, with support from the County Environmental Health Department and the District Attorney.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	District Attorney
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
IC4 – Enforcement																												
Implement progressive enforcement	C																					P					S	S
Track enforcement actions in the industrial/commercial database	E																					P					S	
Implement procedures for Regional Water Board based complaints	C																					P					S	
Implement industrial referral policy	C																					P					S	
Develop an enforcement strategy that specifically addresses the mobile business category identified in IC1.	N										X											P					S	

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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FM = Facilities Management Department

IC5 – Training

DESCRIPTION

The Training Control Measure is important for the implementation of the Industrial and Commercial Program Element. An effective training program is one of the best pollution prevention Best Management Practices (BMPs) that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality.

The County has developed a formal training strategy (see **Appendix B-11**) to address the multiple levels of staff involvement in the implementation of the stormwater program.

The objectives of the training program are to:

- Increase the general awareness and understanding of the SWMP and Industrial and Commercial Program;
- Increase the awareness and understanding of the Industrial and Commercial Control Measures and Performance Standards;
- Create a training program to increase understanding and awareness and prompt the behavioral changes needed to protect and improve water quality; and
- Conduct training for employees responsible for inspecting industrial and commercial facilities and measure the effectiveness of the training.

The Industrial/Commercial Environments Training Module provides training to industrial/commercial inspectors and disseminators of BMPs with the ultimate goal of preventing or reducing pollutant runoff from operations into the storm sewer system. It also provides information on the County's inspection, reporting and enforcement practices. The training will also address the Permit requirements and SWMP Section 5.

Specific areas of focus for the training efforts for the Industrial and Commercial Program Element are summarized in **Table 5-2** below.

Table 5-2. Areas of Focus for the Industrial and Commercial Program Training

Target Audience	Format	Subject Material	Comments
• Public Works – Stormwater Inspectors • County Environmental Health	• Classroom • Field Demos	• Overview of stormwater management program • Stormwater ordinance and enforcement policy • BMPs for commercial and industrial environments • Recognize, respond and report illicit discharges and illegal connections • Tracking and enforcement of illicit discharges and illegal connections • Industrial/commercial control measures	• Stormwater Inspection Training may be conducted by other organizations.

EXISTING BMPS AND RELATED ACTIVITIES

To ensure that the various Department and Division personnel understand their roles and responsibilities under the SWMP, the County developed a classroom training module for key staff identifying or responding to complaints. By having responsible Department and Division staff attend the training modules, the County is able to effectively implement the SWMP.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Conduct training for key staff involved in the Industrial and Commercial Program (see **Table 5-2**)
- Conduct refresher trainings the years that the full training module is not provided

Training will occur twice per year throughout the Permit term during the first quarter. (See Implementation Schedule and **Appendix B-11**)

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Progress Report and used within the program effectiveness assessments (see IC6). The following data and information to be collected may include, but will not be limited to, the following:

- Number and types of training sessions held
- Number of attendees at each session and the Division/Department that they work for
- Results of pre- and post-training surveys

RESPONSIBILITY

The Public Works – Water Resources Division has primary responsibility for this Control Measure with support from the County Environmental Health Department.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
IC5 – Training																												
Conduct training	C							X								X						P					S	
Conduct Annual Refresher Training	C											X								X		P					S	

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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PW = Public Works Department

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IC6 – Effectiveness Assessment

DESCRIPTION

Effectiveness Assessment

The process that is used to evaluate if programs are resulting in desired outcomes.

Effectiveness assessment is a fundamental and necessary component for developing and implementing successful stormwater programs. A well-executed assessment can provide the feedback necessary to determine whether the programs are achieving intended outcomes and, ultimately, whether continued implementation will result in maintaining or improving water quality.[1]

Effectiveness assessments are an integral part of the iterative process, which is the foundation for the stormwater program. By utilizing the iterative process and conducting effectiveness assessments, program managers can use the information gained to adapt their programs and ensure that the resources expended are providing commensurate benefit and are protective of water quality. The iterative process is illustrated in **Figure 5-1**; the points at which effectiveness assessments (implementation and water quality) are conducted are also identified.

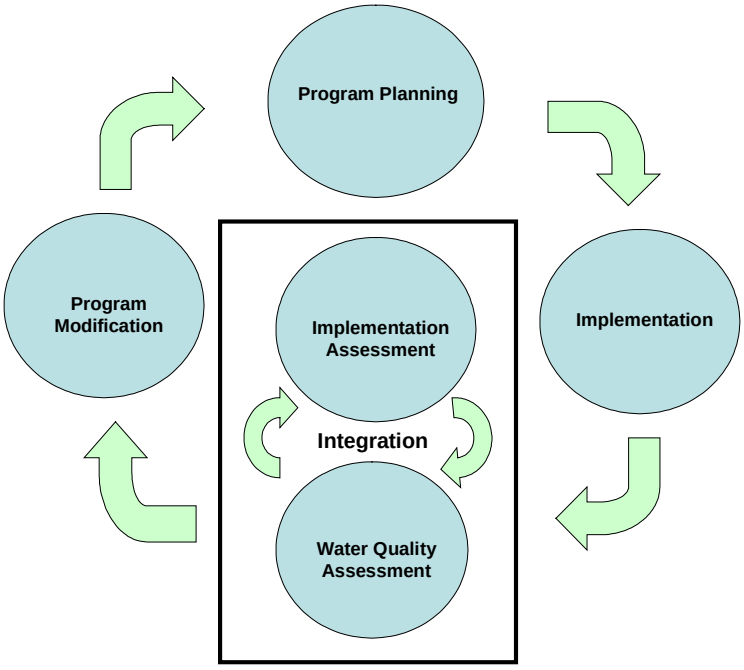

Figure 5-1. Iterative Process and Effectiveness Assessments Outcome Levels

[1] California Stormwater Quality Association (CASQA), Municipal Stormwater Program Effectiveness Assessment Guidance, March 2007.

Outcome levels help to categorize and describe the desired results of the Program Elements and related Control Measures. Pursuant to the 2007 CASQA guidance, outcomes for stormwater programs have been categorized into six levels, as shown in **Figure 5-2**.

Outcome Level	Description
6	Protecting Receiving Water Quality
5	Improving Runoff Quality
4	Reducing Loads from Sources
3	Changing Behavior
2	Raising Awareness
1	Documenting Activities

Figure 5-2. Effectiveness Assessment Outcome Levels

The outcome levels identify the key areas that are evaluated for the program effectiveness assessment within the Annual Report. The primary questions that should be assessed for each Program Element or Control Measure include the following:

- Level 1 Outcome – Was the Program Element/Control Measure implemented in accordance with the Permit Provisions, SWMP Control Measures, and Performance Standards?
- Level 2 Outcome – Did the Program Element/Control Measure raise the target audience's awareness of an issue?
- Level 3 Outcome – Did the Program Element/Control Measure change a target audience's behavior, resulting in the implementation of recommended BMPs?
- Level 4 Outcome – Did the Program Element/Control Measure reduce the load of pollutants from the sources to the storm drain system?

As a part of the annual reporting process, effectiveness assessments will be conducted for the Industrial and Commercial Program and related Control Measures to determine their effectiveness and identify any necessary modifications. Although the effectiveness assessment may change from year to year as new information is learned, the assessment will initially focus on Outcome Levels 1-4 and may include, but not be limited to, the approach outlined in **Table 5-3**. Level 5 and 6 outcomes will be assessed, to the extent possible, as a part of the monitoring program and water quality based programs (SWMP Sections 8 and 9).

The effectiveness assessment conducted as a part of each annual report will address the following:

- Purpose or focus of the assessment –The outcome level(s) being assessed as well as the related management questions will be summarized. Where applicable, the identified goals that have or will be established for the program/activity will also be summarized.
- Baseline conditions – A baseline is a defined point or metric by which effectiveness can be measured or compared. Baselines are linked to a particular point in time and are particularly important for measuring change over time. Where feasible, the baselines that have or will be established for the program/activity will be summarized.

- Assessment methods – The assessment methods (those activities, actions, or processes used to obtain and evaluate assessment data or information) will be summarized.
- Using the information – The improvements that have been identified for the program element will be summarized.

Table 5-3. Assessment Tasks for the Industrial and Commercial Program Element

IC1 – Facility Inventory
Was the program implemented in accordance with the SWMP Control Measures and Performance Standards (*Level 1 Outcome*)? • Conducted internal audit of the inventory/database • Maintained and annually updated the inventory/database • Developed maps on an annual basis to identify the facilities and trends • Identified # of industrial/commercial facilities in inventory by category • # industrial and commercial facilities by prioritization category (high, med, and low)

Table 5-3. Assessment Tasks for the Industrial and Commercial Program Element (continued)

IC2 – Prioritization and Inspection and IC3 – BMP Implementation
Was the program implemented in accordance with the SWMP Control Measures and Performance Standards (*Level 1 Outcome*)? • Prioritized facilities as necessary • Evaluated the prioritization criteria and incorporate the water quality benchmark data for industrial facilities • Review/revised industrial inspection checklists as needed • Review/revised commercial inspection checklist as needed (**WQBP**) • Revised industrial and commercial inspection evaluation checklists to include mercury handling and disposal procedures (**WQBP**) • Inspected high priority facilities • Evaluated the feasibility of developing a compliance rating system • Conducted follow up inspections as needed • Identified how inspections may be conducted for the mobile business category identified in IC1. • Review/revised BMP Fact Sheets for high priority facilities as needed (**WQBP**) • Distributed BMP Fact Sheets • Based on the development of a compliance rating system, target outreach efforts • Identified BMPs for the mobile business category identified in IC1 and develop an outreach/education strategy • Implemented outreach efforts to mobile businesses **Did the program raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • # inspections conducted total and year to year • Identify # of industrial facilities with SWPPP available onsite • # of facilities aware of County BMP Fact Sheets or who have stormwater-related information posted/available • # of industrial facilities referred to Regional Water Board as potential non-filers **Did the program change a target audience's behavior which resulted in the implementation of recommended BMPs (*Level 3 Outcome*)?** • # and % of industrial and commercial facilities and types adequately implementing BMPs and year to year • # and % of industrial and commercial facilities in compliance with local codes and ordinances • # and % of industrial facilities in compliance with state Industrial General Permit • # facilities requiring municipal stormwater follow-up inspections • # and % industrial and commercial facilities in compliance pre- and post-follow-up inspection and year to year **Did the activity reduce the load of pollutants from the sources to the storm drain system (*Level 4 Outcome*)?** • Use inspection and related monitoring data (if available) to estimate load reductions

Table 5-3. Assessment Tasks for the Industrial and Commercial Program Element (continued)

IC4 – Enforcement
Was the program implemented in accordance with the SWMP Control Measures and Performance Standards (*Level 1 Outcome*)? • Conducted enforcement as needed • Reviewed/revised database to incorporate enforcement related information • Developed Enforcement Consistency Guide • Implemented procedures for referrals to and from the Regional Water Board **Did the program change a target audience's behavior which resulted in the implementation of recommended BMPs (*Level 3 Outcome*)?** • # and types of enforcement actions taken total and year to year • # of repeat offenders identified total and year to year • # of industrial facilities referred to Regional Water Board as potential non-filers • % enforcement actions taken major (court case, etc.) vs. minor (verbal warning)
IC5 – Training
Was the program implemented in accordance with the SWMP Control Measures and Performance Standards (*Level 1 Outcome*)? • Conducted training - # training sessions held and # attendees at each session **Did the program raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • % increase in awareness before and after training sessions **Did the program change a target audience's behavior which resulted in the implementation of recommended BMPs (*Level 3 Outcome*)?** • # facilities in compliance and implementing BMPs

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	FM – Capital Projects	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
IC6 – Effectiveness Assessment																												
Revise effectiveness assessment strategy as needed	N									X				X				X				P						
Conduct effectiveness assessment on an annual basis	E					X				X				X				X				P					S	
Identify program modifications as a result of the assessment	C					X				X				X				X				P					S	
Review effectiveness assessments and identify goals, baselines, and trends.	N									X				X				X				P					S	

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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Section 6
Construction (CO)

OVERVIEW

During construction projects, a number of activities may generate or mobilize pollutants. The purpose of the Construction Program Element is to coordinate County programs and resources to effectively reduce pollutants in runoff from construction sites during all construction phases.

OBJECTIVES

The objectives address key components of the Construction Program and identify that, in order to be effective, the program must:

- Provide adequate legal authority to control pollutants to the MS4 from construction sites with land disturbance greater than or equal to one acre in size;
- Review construction plans and issuing grading permits consistent with County requirements;
- Require BMPs to control sediment and pollutants from construction sites to the MS4;
- Maintain a tracking system (inventory) of active construction sites;
- Inspect construction sites to ensure proper BMP implementation and compliance with County requirements and all applicable Permit conditions;
- Bring forth enforcement actions for sites in violation of County requirements and advise the Regional Water Board of apparent violations of General Construction Permit requirements;
- Provide regular internal (County staff) and external (contractors, developers, etc.) training on applicable components of the SWMP and the related Permits; and
- Conduct an assessment as a part of the annual reporting process, determine the effectiveness of the construction program and identify any necessary modifications.

REQUIREMENTS

State General Construction Activity Stormwater Permit

The State General Construction Activity Stormwater Permit (General Construction Permit), CAS000002 Order No. 99-08-DWQ, was adopted by the State Water Board on August 19, 1999. The State Water Board Resolution No. 2001-046 amended the permit on April 26, 2001. The General Construction Permit requires all dischargers where construction activity disturbs one acre or more to:

- Develop and implement a SWPPP which specifies BMPs that will prevent all construction pollutants from contacting stormwater and that have the intent of keeping all products of erosion from moving off-site into receiving waters;
- Eliminate or reduce non-stormwater discharges from storm drain systems and other waters of the U.S.; and
- Perform inspection of all BMPs.

It is the responsibility of the landowner to obtain coverage under the General Construction Permit prior to commencement of construction activities. To obtain coverage, the landowner must file a Notice of Intent (NOI) with a vicinity map and the appropriate fee with the State Water Board.

The General Construction Permit is similar to the County of San Joaquin Stormwater Permit in that the regulatory agencies (the Regional Water Board and the County) are required to inventory and provide outreach to construction site owners/developers and/or enforce state and local codes and ordinances for construction sites that are out of compliance. As such, the County will work closely with the State in implementing the Construction program. The State Water Resources Control Board is in the process of reissuing the General Construction Permit. Upon completion of the reissuing process, permit requirements are likely to change.

CONTROL MEASURES

The Control Measures outlined in **Table 6-1** and discussed in more depth in the accompanying Fact Sheets were designed to address the program objectives. In developing the Control Measures, several key factors were considered:

- Each Control Measure must address one or more of the program objectives.
- Each Control Measure must clearly identify the Performance Standards, timeframe for completion, and responsible Department/Division to ensure that there is accountability built into the program.
- The data and information from the previous permit term and/or reporting period must be analyzed to determine the effectiveness of each Control Measure, and the iterative process must be used to ensure that each Control Measure is effective and has a commensurate benefit for the resources expended.
- Each Control Measure must actively identify enhancements/modifications that would improve the Program Element and overall effectiveness of the stormwater program.

The eight Control Measures comprising this Program Element provide mechanisms for the review and approval process, updating of the construction site inventory, outreach, site inspections, enforcement activities, training, and effectiveness assessment.

Table 6-1. Control Measures for the Construction Program Element

CO	Control Measure
CO1	Municipal Code for Construction Sites
CO2	Plan Review and Approval Process
CO3	Construction Projects Inventory
CO4	Construction Outreach
CO5	Construction Site Inspections & BMP Implementation
CO6	Enforcement
CO7	Training
CO8	Effectiveness Assessment

The Control Measure Fact Sheets developed for the Construction Program Element (CO1 – CO8) address the program objectives and identify assessment tools that may be used to assess the effectiveness of the program. The Fact Sheets were developed as stand-alone documents so that they can be individually provided to the responsible Department(s)/Division(s).

Supporting Control Measures

While individual, program-specific Control Measures are the primary focus of each program, it is also important to understand how the program fits within the overall SWMP. In order to adequately cover all aspects of the Construction Program, overlap between other programs in the SWMP is often necessary. A brief summary of the Program Elements that support the Construction Program Element is provided below.

Supporting Control Measures	Program Element
---	Illicit Discharges & Illegal Connections
---	Public Outreach
---	Municipal Operations
---	Industrial/Commercial
---	**Construction**
X	Planning and Land Development

Planning and Land Development (Section 7)

- *New Development Standards* – Although the emphasis of the Development Standards in the Stormwater Quality Control Criteria Plan (SWQCCP) is on post-construction BMPs, these Control Measures are considered during the planning process and generally included or installed during construction. During regular inspections of construction sites, inspectors can ensure that the Site Design Control Measures, Site-Specific Source Control Measures, and Treatment Control Measures included in the project plans are being properly constructed and/or installed.

CO1 – Municipal Code for Construction Sites

DESCRIPTION

The goal of this Control Measure is to ensure that the County has adequate legal authority to control pollutants from construction sites with land disturbances greater than or equal to one acre. This authority is typically provided through the adoption of an ordinance (and resulting codification in the County Code) and erosion and sediment control standards. This Control Measure addresses specific legal authority issues related to construction activities and should be implemented in coordination with Section 1 of the SWMP.

EXISTING BMPS AND RELATED ACTIVITIES

The County's Grading and Erosion Control Ordinance (see **Appendix B-6**), which adopts the California Building Code – 2007 and Stormwater Quality Criteria Control Plan (SWQCCP) to establish requirements for:

- Providing a copy of the local Stormwater Pollution Prevention Plan (SWPPP) and proof that a Notice of Intent (NOI) has been filed.
- Clearing and grubbing, grading, filling, and excavation of land to minimize damage to surrounding property, public right of way, and degradation of water quality;
- Controlling the discharge of sediments and pollutant runoff from construction related activities to municipal separate storm drains; and
- Reducing pollutants in stormwater discharges to the MEP.

The Ordinance also authorizes County inspectors to inspect construction sites and BMPs throughout the life of the project. Inspectors may photograph any conditions thought to constitute a violation of applicable laws.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Review the Grading and Erosion Control Ordinance and the County Standard Specifications to address sites that are equal to or greater than one (1) acre in size for consistency with the state Construction General Permit (when adopted)

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see CO8). The data and information to be collected may include, but will not be limited to, the following:

- Summary of any modifications made to the Grading and Erosion Control Ordinance or the County Standard Specifications

RESPONSIBILITY

The Public Works – Water Resources Division has primary responsibility for this Control Measure, with support from Public Works – Public Services, Community Development Department, and County Counsel.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
CO1 – Municipal Code for Construction Sites																												
Review Grading Ordinance and County Standard Specifications for consistency with the state Construction General Permit	C													X								P	S			S		S

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.

☐ = Performance standard will be completed on an ongoing basis or during the specified timeframe.

PW = Public Works Department

FM = Facilities Management Department

CO2 – Plan Review and Approval Process

DESCRIPTION

Effective planning of construction site activities leads to minimizing erosion and preventing pollutants from entering the storm drain system. The County requires projects that disturb one acre or more of land to address pollutants and activities during the construction phase of the project. Prior to issuing a grading permit, the County reviews construction drawings to ensure that erosion and sediment control BMPs and source and treatment control BMPs are identified.

EXISTING BMPS AND RELATED ACTIVITIES

The County's Grading Ordinance (see Control Measure CO1) requires the submittal with grading plans of proof that a Notice of Intent (NOI) has been filed and that a SWPPP has been developed. For development projects, the Public Works – Water Resources Division reviews land use applications and initial design plans involving subdivisions to ensure that stormwater quality is considered in the early stages of the planning process.

Permit Review Procedure

A Permit Review Procedure Handout is provided to applicants to explain the review procedure (see **Appendix F-1**). The Public Works – Public Services Division or County Community Development signs off on the initial design approval as well as the final design or for issuing of building and grading permits. The County provides a link on its website[1] to the State's Model SWPPP for Construction Activities for project developers. A NPDES permit review process flow chart has been developed (**Appendix F-2).** The flow chart identified the review process so that applicants are aware of the requirements and criteria.

Plan Review

A Plan Checklist (see **Appendix F-3**) is used to route applications to the Water Resources Division by collecting the following information:

- Applicant information (i.e. name, address, project location, project description)
- SIC Code
- Type of Development
- Planning Priority Projects Subject to Comply with the SWQCCP

The Public Works – Water Resources Division reviews erosion and sediment control plans along with project plans to verify the following:

- An NOI has been submitted to the State Water Resources Control Board;
- The name of and contact information for the person responsible for SWPPP implementation are provided; and
- The location of and details for all construction activity BMPs are listed.
- No permit is issued until the NPDES stormwater requirements are satisfied.

Upon review, the County concluded that its current process of requesting SWPPPs on projects disturbing one acre or more of ground could be improved by also requesting "Small Site SWPPPs" for projects that

[1] http://www.sjcleanwater.org

disturb less than one acre of ground. The County is currently revising this process and is developing a "Small Site SWPPP" program. Permit Review Procedures and Application Review Procedure are attached (see **Appendix F-1 and F-2**).

Small Site Stormwater Management Plan

The County has established and is currently enhancing a program (see **Appendix D-3**) to minimize stormwater pollution from all construction sites. State regulations require that any construction project in the state that disturbs greater than or equal to one (1) acre of land file for coverage under the state Construction General Permit. Projects less than one (1) acre in size that are part of a larger development also require coverage. Any permitted projects within the County Permit area are regulated by the County. In addition, as mentioned above, all construction sites regardless of size must submit a "Small Site SWPPP".

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

Review grading and building permit applications for SWPPP requirements. Continue to check for the following requirements prior to issuing a grading permit:

- Certification that a Notice of Intent to comply with the General Construction Permit has been submitted to the State Board (if applicable);
- Submittal of an erosion and sediment control plan that, at a minimum, contains the following:
  - A vicinity map showing nearby roadways, the construction site perimeter, and the geographic features and general topography surrounding the site;
  - A site map showing the construction project in detail, including the existing and planned paved areas and buildings; general topography both before and after construction; drainage patterns across the project area; and anticipated stormwater discharge locations (i.e., the receiving water, a conduit to receiving water, and/or drain inlets);
  - A description of BMPs to address contractor activities that may generate pollutants including, but not limited to, vehicle washing, equipment maintenance, and waste handling;
  - A description of the type and location of erosion and sediment control BMPs to be employed on site including, but not limited to, limited grading during the wet season, and planting and maintenance of vegetation on slopes; and
- The name and telephone number of the qualified person responsible for implementing the SWPPP.
- Review/revise the permit review procedure handout as needed
- Require permits for projects greater than or equal to one (1) acre, as well as projects less than one (1) acre that are not part of a larger project (Small Site SWPPP)

- Develop a "Small Site SWPPP" program for sites <1 acre that are not part of a larger project
- Develop a process for requesting "Small Site SWPPPs" for sites <1 acre that are not part of a larger project; and
- Revise Plan Review Checklist

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see CO8). The data and information to be collected may include, but will not be limited to, the following:

- Number of grading permits issued each year
- Number of Erosion and Sediment Control Plans reviewed
- Number of applications requiring proof of NOIs and SWPPPs
- Number of sites greater or equal to one acre that submitted proof of an NOI and that SWPPP has been developed

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure, with support from other Public Works Divisions and the Community Development Department.

- Public Works – Public Services has secondary responsibility for reviewing grading and building permit applications and for the performance standard regarding the Small Site Stormwater Management Plan.
- Public Works – Public Services, Design Engineering, and Field Engineering have secondary responsibility for reviewing erosion control plans.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
CO2 – Plan Review and Approval Process																												
Review grading and building permit applications for SWPPP requirements	C																					P	S			S		
Review/revise the permit review procedure handout as needed	C																					P				S		
Review erosion control plans	C																					P	S			S		
Require permits for projects greater than 1 acre and less than 1 acre (Small Site Stormwater Management Plan)	N																					P	S			S		
Develop "Small Site SWPPP" Program for sites <1 acre	N										X											P	S			S		
Develop a process for requesting "Small Site SWPPPs" for sites <1 acre	N										X											P	S			S		
Revise Plan Review Checklist	E										X											P	S			S		

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.

☐ = Performance standard will be completed on an ongoing basis or during the specified timeframe.

PW = Public Works Department

FM = Facilities Management Department

CO3 – Construction Projects Inventory

DESCRIPTION

The Construction Projects Inventory Control Measure involves tracking construction sites from the planning stage to completion. This is essential for ensuring that stormwater pollutants are reduced to the MEP. Maintaining a database to track all stages of the construction process is the foundation of construction-related source identification and helps to ensure that pollution prevention and source control are emphasized during all phases of the construction project.

EXISTING BMPS AND RELATED ACTIVITIES

Public Works receives all information regarding construction applications and that the associated WDID numbers are verified. The Planning Division of the Community Development Department refers applications and permit requests to the Public Services Division of the Public Works Department for processing and internal distribution within Public Works to the various divisions that need to review and comment on the application and/or permit requests. The comments are returned to Public Services and referred back to the Planning Division with the conditions that must be met for the application or permit request to be processed and approved. A copy of the NOI/WDID is retained on file for verification purposes. See **Appendix F-2** for a flow chart outlining the process.

The Public Works – Water Resources Division maintains a database system that is capable of tracking SWPPPs reviewed and inspections that occur at each construction site. The current database fields include:

- Site owner and contact information
- Name, address, and description (type) of project
- WDID and SWPPP numbers

Once a month, the Building Permit Releases received from Public Services are entered into the Construction Log database; Phase I and Phase II are entered into separate databases for ease of tracking. Information includes, but is not limited to:

- Owner Name,
- Public Works ID #
- Parcel Number; and
- Description of Work

The database is updated when monthly inspections are done, or when any enforcement action takes place, (i.e. Verbal Warnings, Notices of Violation, etc.) all of which should be noted in the Construction Log. Maintenance of the database is also done continuously throughout the month. The database shall be considered a “live/active document” as it is continuously maintained and updated throughout the month.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Maintain and update the Construction Project Database
- Enhance and maintain the Construction Project Database to include the following:
    - Inspector and inspection date
    - Comments on site conditions
    - Notices of Violation and other letters sent

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see CO8). The data and information to be collected may include, but will not be limited to, the following:

- Number of active and completed public and private construction projects

RESPONSIBILITY

The Public Works – Water Resources Division is responsible for this Control Measure, with support from Public Works – Public Services and Field Engineering.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
CO3 – Construction Projects Inventory																												
Maintain the Construction Project Database	C																					P	S					
Update Construction Project Database	C																					P	S					

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FM = Facilities Management Department

CO4 – Construction Outreach

DESCRIPTION

The Construction BMP Implementation Control Measure is required to ensure that appropriate BMPs are implemented at construction sites to prevent pollutants from being discharged to the storm drain system to the MEP. Construction site BMP implementation is accomplished through a combined approach of requiring BMPs at construction sites; educating contractors about the needs and requirements to implement BMPs for different construction-related activities; reviewing grading and erosion control plans and building plans to ensure that stormwater controls have been adequately considered; and ensuring through inspection and enforcement that contractors have a construction site SWPPP and are implementing identified BMPs. This Control Measure focuses on the County's requirements for BMPs at construction sites and the associated outreach efforts to the building community.

EXISTING BMPS AND RELATED ACTIVITIES

Construction outreach activities include requiring BMPs at construction sites and distributing educational materials at construction sites during inspections. Although efforts are described within this Control Measure, business outreach also takes place as part of the Public Outreach and Industrial/Commercial Programs (see PO5 and IC3, respectively).

As noted in CO2, all construction project applicants identified as having to comply with the Grading and Erosion Control Ordinance are provided in the Permit Review Procedure Handout (**Appendix F-**1).

The County shall provide education and training for construction developers, builders and contractors, which addresses the State Construction Permit requirements and the County requirements for construction site and related BMPs. Since the County has no traditional subdivision projects to inspect but rather a collection of individually single-lot developments, larger annual training sessions have proven to be a more time- and cost-effective method of educating industry stakeholders in the County's permit area.

Construction Workshop training is scheduled in partnership with City of Stockton, Port of Stockton and others to occur twice during the Permit term. The "Got SWPPP?" workshop is targeted toward management staff in the construction field. The workshops are in classroom format and take place by invitation to the construction industry. Currently the County is partnering with the "Got SWPPP?" program to fulfill this requirement. Program agendas include: Stormwater Regulations and Permits (NOI, NOT, NCC); Stormwater Pollution Prevention Plans; Consequences of Non-Compliance; Preventing Erosion; and Categories of BMPs for Water Pollution Prevention (see **Appendix B-11**). Brochures with this information are also available at the Public Works Department counter.

Tailgate meetings will be held through the Permit term once per year at the end of the third quarter. The meetings are targeted training for construction crews and onsite personnel responsible for keeping stormwater BMPs in place during the construction project. Construction sites will serve as the venue for these meetings. Dissemination of general stormwater guidelines will take place as well as expressing the importance of protecting water quality. Attendance records are kept on file.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Disseminate BMP information/literature and/or guidance during inspections.
- Conduct contractor tailgate meetings once annually in the late summer for County Contract Projects to review the following:
    - Construction General Permit; and
    - County requirements for construction sites, including BMPs.
- Conduct workshop training for developers, builders and contractors twice during the permit term.

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see CO8). The data and information to be collected may include, but will not be limited to, the following:

- Number and types of outreach materials distributed
- Number, locations, and dates of contractor tailgate meetings
- Number of attendees and active construction sites represented at each tailgate meeting
- Number of attendees at training session(s)
- Results of training evaluation forms from attendees
- Results of pre- and post-training surveys/quizzes

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure with support from other Public Works Divisions and the Community Development Department.

- Public Works – Field Engineering has secondary responsibility for conducting tailgate meetings.
- Public Works – Public Services, Design Engineering, and Field Engineering have secondary responsibility for the other performance standards (BMP literature and training).

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
CO4 – Construction Outreach																												
Disseminate BMP information/ literature during inspections	C																					P	S			S		
Conduct contractor tailgate meetings for County Contract Projects annually	C									X				X				X				P	S					
Conduct workshop training for developers, builders, and contractors twice during the permit term [2]	N									X								X				P	S			S		

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2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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= Performance standard will be completed on an ongoing basis or during the specified timeframe.
FM = Facilities Management Department

[2] The Workshop Training dates in the County's Training Strategy will be revised as needed (see ID5).

CO5 – Construction Site Inspections & BMP Implementation

DESCRIPTION

The Construction Site Inspection Control Measure is critical to the ultimate success of the Construction Program Element. An effective construction site inspection program requires having adequate legal authority to enforce County requirements, tracking active construction sites to identify repeat violators, and conducting inspections to ensure the sources are identified and that BMPs are being implemented and maintained. The inspection program also provides the basis for notifying the Regional Water Board when inspectors identify non-compliant sites including non-filers or repeat violators. Building and engineering inspectors should also be aware of stormwater quality issues and notify the Public Works – Water Resources Division if any violations are noticed.

EXISTING BMPS AND RELATED ACTIVITIES

County inspectors refer to SWPPPs and improvement/building plans to ensure that appropriate stormwater BMPs are being put into place and maintained. In addition to inter-departmental coordination and reporting, the County maintains a 24-hour hotline (**209-468-3055** and **866-755-4955**) as an avenue for public reporting of problems at construction sites. All reports are recorded and responded to, as appropriate.

The Public Works – Water Resources Division and Community Development Department has responsibility for the inspection of private construction projects.

The County construction inspector reviews plans as needed based upon referral by the engineering staff in the Stormwater Management unit. The inspector receives on the job training through the senior engineering staff in addition to. As needed and funding permitting the inspector will attending formal trainings to obtain additional experience with inspections for construction stormwater management.

All construction sites greater than or equal to one (1) acre, at a minimum, are inspected twice per month during the wet season and one time during the dry season to verify compliance with the County's Ordinances and applicable standards. The construction inspection checklist is provided as **Appendix F-4**. All sites that have been cited by either a Verbal Warning, Notice to Clean or Notice of Violation are re-inspected and follow-ups are made for possible further progressive enforcement until the environment is managed and the case is closed. Inspections are conducted until a notice of termination for coverage under the General Construction Permit is issued by the Regional Water Board.

Additional inspections are conducted as time allows or as follow-up when problems were detected in previous inspections. The inspection program ensures that the following minimum requirements are effectively implemented at construction sites:

- Sediments generated on the project site are retained using adequate source control BMPs;
- Construction-related materials, wastes, spills, or residues are retained at the project site to avoid discharges to streets, drainage facilities, receiving waters, or adjacent properties by wind or runoff;
- Non-stormwater runoff from equipment and vehicle washing and any other activity is contained at the project site; and
- Erosion from slopes and channels are controlled by implementing an effective combination of BMPs.

The Public Works – Water Resources Division's current inspection checklist includes key fields recommended by the Regional Water Board, as well as an area for general comments. During the first field visit, the inspector verifies that SWPPPs are on-site and being implemented. BMP implementation is assessed at each site. If any problems are identified, the current practice is to identify the sources and conduct a comparison of on-site conditions with SWPPPs or grading plans. Inspections are documented within the Construction Projects Inventory.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Review/revise Stormwater Construction Site Inspection Form as needed
- Evaluate options for assisting project proponents to assess construction site compliance
- Inspect construction sites • 1 acre twice monthly during the wet season and one time during the dry season

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see CO8). The data and information to be collected may include, but will not be limited to, the following:

- Number of active construction sites of size greater than or equal to 1 acre
- Number of construction sites with BMP fact sheets or other stormwater-related information posted on-site
- Number of regular inspections conducted *at each active construction site*
    - Regular inspections: Number of construction sites adequately implementing and maintaining BMPs
- Number of follow-up inspections conducted *at each active construction site*
    - Follow-up inspections: Number of construction sites adequately implementing and maintaining BMPs
- Monitoring data

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure, with support from Public Works – Public Services, Design Engineering, and Field Engineering.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
CO5 – Construction Site Inspections & BMP Implementation																												
Review/revise Stormwater Construction Site Inspection Form as needed	E										X											P	S					
Evaluate options for assisting project proponents to assess construction site compliance	N										X											P	S					
Inspect construction sites • 1 acre monthly during the wet season and one time during the dry season	C																					P	S					

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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FM = Facilities Management Department

CO6 – Enforcement

DESCRIPTION

The Enforcement Control Measure outlines the progressive levels of enforcement applied to construction sites that are out of compliance with local ordinances and establishes the protocol for referring apparent violations of construction sites subject to the General Construction Permit to the Regional Water Board. The progressive enforcement and referral policy, as well as the accompanying legal authority to execute it, is an important tool for providing a fair and equitable approach to bringing contractors and developers into compliance with the County Code and ordinance requirements. Enforcement actions range from issuance of verbal warnings to stop work orders. Legal action may also be taken. For repeat offenders or contractors that have not filed appropriate applications, the referral policy includes notification to the Regional Board.

EXISTING BMPS AND RELATED ACTIVITIES

County inspectors currently have the legal authority, under the Stormwater Management and Discharge Control Ordinance Title 5, Division 10 (see **Appendix B-6**), to issue administrative complaints (Notice to Clean, Notice of Violation, or NOV) and, if necessary, to pursue civil actions, criminal actions, and criminal penalties, including arrests and issuance of citations. The Regional Board receives copies of all written administrative complaints and criminal referrals.

The various remedies available for progressive enforcement of construction sites are addressed within County ordinances as well as procedurally within the *NPDES Construction Investigation-Enforcement Management Policy* (see **Appendix B-9**). The County is also in the process of developing an Enforcement Consistency Guide (ECG) (see ID4).

The progressively severe corrective actions involve verbal warnings followed by written warnings and legal action, if necessary. Illicit discharges by facilities are addressed in a more formal manner through notices of non-compliance, cease and desist orders, and criminal enforcement, depending upon the compliance history of the facility. Corrective actions are taken in every instance where a responsible party is identified.

The types of enforcement actions that may be taken include the following:

Administrative Remedies

- Verbal Warning
- Warning Notice or Notice to Clean
- Notice of Violation

Legal Action

- Referral letter to San Joaquin District Attorney and the Central Valley Regional Water Quality Control Board

The following is an overview of the investigation and/or inspection procedures outlined in the *NPDES Construction Investigation-Enforcement Management Policy* (**Appendix B-9**). When a construction project has been permitted, a Construction File is initiated by the NPDES investigator. The Construction File will typically contain a copy of the NPDES Construction Permit, if on file; correspondence; inspection reports; photographs; communications record with the violators; complainants; witnesses or their representatives; and other pertinent information pertaining to the construction.

The following briefly outlines the investigation/inspection procedures:

1. NPDES investigator initiates a Construction File
2. A chronology of the events is logged in the Chrono Log
3. All pertinent information related to the enforcement is entered in the construction Project Inventory
4. All incident sites within the Phase I boundary are recorded and labeled by address and ID number on the "Phase I Incident Sites" GIS map of San Joaquin County

The following provides an overview of the steps taken for enforcement of complaints and/or alleged violations. Pursuant to San Joaquin County's NPDES Permit and Stormwater Management Plan, the following briefly outlines the progressive enforcement which shall be taken for construction or post construction occurrences (note that the Regional Board is copied on all notices and orders beginning with the Written Notice to Clean):

1. Verbal Warning, if individual(s) is present during time of inspection;
2. Issuance of a Written Notice to Clean;
3. Issuance of a Written Notice of Violation;
4. Issuance of an Order to Cease and Desist; and
5. Referral letter to San Joaquin District Attorney and the Central Valley Regional Water Quality Control Board.

To account for a timely referral to the Regional Board the County follows the *NPDES Construction Investigation-Enforcement "Rainy Season" Policy* (**Appendix B-10**).

The County generally refers construction site violations to the Regional Board under certain circumstances:

- If three *significant violations* have occurred within a 12-month period;

  <u>Per Rain Season Policy:</u>

  - The first enforcement action consists of a follow-up and/or final inspection within two business days;
  - The second enforcement action is considered "urgent" and the owner is given a shortened period to respond and clean up (7 days).
  - The third enforcement action also shortens the time for the owner to respond and clean up the incident (10 days).
    - The Regional Board is notified on all written notices.
- If it is determined that a site should obtain coverage under the General Construction Permit (potential non-filers); and
- At the discretion of the County, based on circumstances involving violation, gravity and/or location
- If a construction site has received its third notice for a significant violation (First issue of a Notice of Violation) of the County's Stormwater Management and Discharge Control Ordinance Title 5, Division 10 (see **Appendix B-6**) within a 12-month period, the County notifies the Regional Board. The construction site referral is made in writing within 30 days of the inspection that led to the third notice. It should be noted that some referrals may vary from this schedule due to the nature of the violation and the type of response involved.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Implement progressive enforcement and referral policy
- Track enforcement actions using the construction database
- Review and modify, as necessary, the procedures for informing the Regional Board of violations at construction sites subject to the General Construction Permit. Referral to the Regional Board is appropriate concurrently (within 30 days) with issuance of a Notice of Violation.

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see CO8). The data and information to be collected may include, but will not be limited to, the following:

- Total number and type of violations that occur at each active construction site
- Number and types of enforcement actions taken at each active construction site
- Number of construction sites referred to the Regional Water Board as significant violators or non-filers
- Number of repeat offenders (sites) identified and action taken

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure, with support from other Public Works Divisions, the Community Development Department, and the District Attorney.

- Public Works – Public Services had secondary responsibility for implementing the progressive enforcement policy.
- Public Works – Field Engineering has secondary responsibility for developing the Enforcement Consistency Guide.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	District Attorney
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
CO6 – Progressive Enforcement and Referral Policy																												
Implement progressive enforcement policy	C																					P	S			S		S
Track enforcement actions using the construction database	C																					P	S					
Review and modify, as necessary, the procedures for informing the Regional Board of violations	E										X											P						S

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.
PW = Public Works Department

= Performance standard will be completed on an ongoing basis or during the specified timeframe.
FM = Facilities Management Department

CO7 – Training

DESCRIPTION

Training is important for the implementation of the Construction Program Element. An effective training program is one of the best pollution prevention best management practices (BMPs) that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality.

The County has developed a formal training strategy (see **Appendix B-11**) to address the multiple levels of staff involvement in the implementation of the stormwater program. The objectives of the training program are to:

- Increase the general awareness and understanding of the SWMP and Construction program;
- Increase the awareness and understanding of the Construction Control Measures and Performance Standards;
- Create a training program to increase understanding and awareness and prompt the behavioral changes needed to protect and improve water quality;
- Awareness on the impacts of land development from design, construction and post-construction; and
- Conduct training for employees responsible for the Construction Program Element (i.e., inventory, inspection, reporting, tracking, BMP implementation, and enforcement).
- Specific areas of focus for the training efforts for the Construction Program Element are summarized in **Table 6-2**.

The Construction Training Module 3 provides training on construction, design, and development BMPs to prevent negative impacts on water quality, as well as the natural landscape. The training will also address the Permit requirements and SWMP Sections 6 and 7.

Table 6-2. Construction Program Element Training

Audience	Format	Subject Material	Comments
• Public Works- Bridge, Design, Traffic and Field Engineering • Public Works-Special Projects • Public Works- Public Services • Community Development Department • County- Capital Projects Div.	• Classroom • Field demos • Tailgate sessions (see CO4) • Meetings	• Overview of stormwater management • Stormwater impacts of land development • Stormwater ordinance and enforcement policy • Construction stormwater inspection training • Stormwater Hotline • BMPs for construction activities • Tracking database • SWPPP Requirements • SWQCCP Overview	• Training seminars or workshops related to Construction may be made available by other organizations (see CO4)

EXISTING BMPS AND RELATED ACTIVITIES

To ensure that the various Department and Division personnel understand their roles and responsibilities under the SWMP, the County developed a classroom training module for key staff responsible for the Construction Program Element. By having responsible Department and Division staff attend the training modules, the County is able to effectively implement the SWMP.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Conduct training for key staff involved in the Construction program (see **Table 6-2**).
- Conduct refresher trainings the years that the full training module is not provided

Training will occur twice throughout the Permit term; each training will consist of 60-minute sessions held throughout the fourth quarter (See Training Schedule **Appendix B-11**).

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see CO8). The data and information to be collected may include, but will not be limited to, the following:

- Number and types of training sessions held
- Number of attendees at each session and the Division/Department that they work for
- Results of pre- and post-training surveys

RESPONSIBILITY

The Public Works – Water Resources Division has primary responsibility for this Control Measure with support from Public Works Divisions and the Environmental Health Department.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
CO7 – Training[3]																												
Conduct training	C										X								X			P	S				S	
Conduct Annual Refresher Training	C													X								P	S				S	

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.
☐ = Performance standard will be completed on an ongoing basis or during the specified timeframe.
PW = Public Works Department
FM = Facilities Management Department

[3] The Module and Refresher Training dates in the County's Training Strategy will be revised as needed (see ID5).

CO8 – Effectiveness Assessment

DESCRIPTION

Effectiveness Assessment

The process that is used to evaluate if programs are resulting in desired outcomes.

Effectiveness assessment is a fundamental and necessary component for developing and implementing successful stormwater programs. A well-executed assessment can provide the feedback necessary to determine whether the programs are achieving intended outcomes and, ultimately, whether continued implementation will result in maintaining or improving water quality.[4]

Effectiveness assessments are an integral part of the iterative process, which is the foundation for the stormwater program. By utilizing the iterative process and conducting effectiveness assessments, program managers can use the information gained to adapt their programs and ensure that the resources expended are providing commensurate benefit and are protective of water quality. The iterative process is illustrated in **Figure 6-1**; the points at which effectiveness assessments (implementation and water quality) are conducted are also identified.

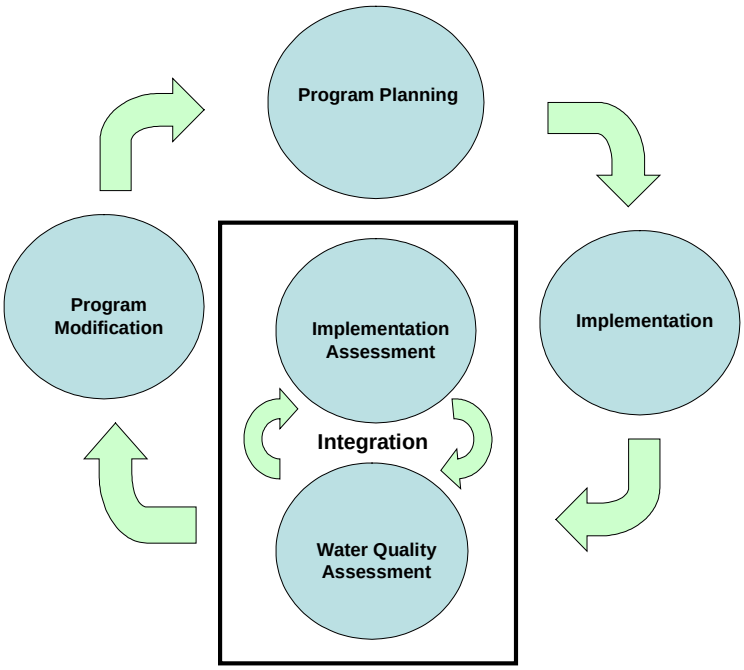

Figure 6-1. Iterative Process and Effectiveness Assessments Outcome Levels

[4] California Stormwater Quality Association (CASQA), Municipal Stormwater Program Effectiveness Assessment Guidance, March 2007.

Outcome levels help to categorize and describe the desired results of the Program Elements and related Control Measures. Pursuant to the 2007 CASQA guidance, outcomes for stormwater programs have been categorized into six levels, as shown in **Figure 6-2**.

Outcome Level	Description
6	Protecting Receiving Water Quality
5	Improving Runoff Quality
4	Reducing Loads from Sources
3	Changing Behavior
2	Raising Awareness
1	Documenting Activities

Figure 6-2. Effectiveness Assessment Outcome Levels

The outcome levels identify the key areas that are evaluated for the program effectiveness assessment within the Annual Report. The primary questions that should be assessed for each Program Element or Control Measure include the following:

- Level 1 Outcome – Was the Program Element/Control Measure implemented in accordance with the Permit Provisions, SWMP Control Measures, and Performance Standards?
- Level 2 Outcome – Did the Program Element/Control Measure raise the target audience's awareness of an issue?
- Level 3 Outcome – Did the Program Element/Control Measure change a target audience's behavior, resulting in the implementation of recommended BMPs?
- Level 4 Outcome – Did the Program Element/Control Measure reduce the load of pollutants from the sources to the storm drain system?

As a part of the annual reporting process, effectiveness assessments will be conducted for the Construction Program and related Control Measures to determine their effectiveness and identify any necessary modifications. Although the effectiveness assessment may change from year to year as new information is learned, the assessment will initially focus on Outcome Levels 1-4 and may include, but not be limited to, the approach outlined in **Table 6-3. Table 6-3**. Level 5 and 6 outcomes will be assessed, to the extent possible, as a part of the water quality based programs and water monitoring program (SWMP Sections 8 and 9).

The effectiveness assessment conducted as a part of each annual report will address the following:

- Purpose or focus of the assessment –The outcome level(s) being assessed as well as the related management questions will be summarized. Where applicable, the identified goals that have or will be established for the program/activity will also be summarized.
- Baseline conditions – A baseline is a defined point or metric by which effectiveness can be measured or compared. Baselines are linked to a particular point in time and are particularly important for measuring change over time. Where feasible, the baselines that have or will be established for the program/activity will be summarized.
- Assessment methods – The assessment methods (those activities, actions, or processes used to obtain and evaluate assessment data or information) will be summarized.

- Using the information – The improvements that have been identified for the program element will be summarized.

Table 6-3. Assessment Tasks for Construction Program Element

CO1 – Municipal Code for Construction Sites
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Reviewed Grading Ordinance and County Standard Specifications
CO2 – Plan Review and Approval Process
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Reviewed grading and building permit applications for SWPPP requirements • Reviewed/revised the permit review procedure handout as needed • Reviewed erosion control plans • Required permits for projects greater than or equal to one (1) acre, as well as projects less than one (1) acre (Small Site Stormwater Management Plan) • Developed "Small Site SWPPP" Program • Developed a process for requesting "Small Site SWPPPs" for sites <1 acre (which are not part of a larger project) • Revise Plan Review Checklist **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • Compared # erosion and sediment control plans reviewed vs. # requiring revisions • % plans year to year incorporating controls and not requiring revisions • Compared # applications requiring NOIs and SWPPPs to the # applications submitting NOIs and SWPPPs • % sites year to year submitting NOIs and SWPPPs
CO3 – Construction Projects Inventory
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Maintained the Construction Project Database

Table 6-3. Assessment Tasks for Construction Program Element (continued)

CO4 – Construction Outreach
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Disseminated appropriate BMP information/literature during inspections • Conducted contractor tailgate meetings • Conducted training workshops for developers, builders and contractors twice during the Permit term **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • % increased in awareness before and after the training • % awareness from year to year
CO5 – Construction Site Inspections & BMP Implementation
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Reviewed/revised Stormwater Construction Site Inspection Form as needed • Evaluated options for a rating system for construction site compliance • Inspected construction sites > 1 acre monthly during the wet season and one time during the dry season **Did the activity change a target audience's behavior which results in implementation of recommended BMPs (*Level 3 Outcome*)?** • # active construction sites • % sites adequately implementing BMPs • Compared follow up inspection results to original inspection results • % sites originally not implementing or maintaining BMPs during first inspection vs. the sites that are implementing and maintaining BMPs after the follow up inspection **Did the program reduce the load of pollutants from the sources to the storm drain system (*Level 4 Outcome*)?** • Used monitoring and inspection data, if available, to estimate load reductions and/or determine if additional controls are necessary

Table 6-3. Assessment Tasks for Construction Program Element (continued)

CO6 – Enforcement
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Implemented progressive enforcement and referral policy • Tracked enforcement actions using the construction database • Developed an Enforcement Consistency Guide for inspectors • Reviewed and modify, as necessary, the procedures for informing the Regional Board of violations at construction sites subject to the General Construction Permit **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • Identify # and types of enforcement actions taken • Identified % enforcement actions and major vs. minor, year to year • Identified # referrals made to Board and repeat offenders/problem areas identified
CO7 – Training
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Conducted training for key staff involved in the Construction program • Conducted Annual Refresher Training **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • % increased in awareness before and after the training

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
CO8 – Effectiveness Assessment																												
Revise effectiveness assessment strategy as needed	N									X				X				X				P	S			S	S	S
Conduct effectiveness assessment on an annual basis	E					X				X				X				X				P	S			S		
Identify program modifications as a result of the assessment	C					X				X				X				X				P	S			S		
Review effectiveness assessments and identify goals, baselines, and trends.	N									X				X				X				P						

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.
PW = Public Works Department

☐ = Performance standard will be completed on an ongoing basis or during the specified timeframe.
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Section 7
Planning and Land Development (LD)

OVERVIEW

The addition of impervious areas for homes, industrial and commercial businesses, parking lots, and streets and roads increases the amount of stormwater runoff, as well as the potential for pollution. The Planning and Land Development Program Element ensures that the impacts on stormwater quality from new development and redevelopment are limited through implementation of General Site Design Control Measures, Site-Specific Source Control Measures, and Treatment Control Measures. The general strategy for development is to avoid, minimize, and mitigate (in that order) the potential adverse impacts to stormwater. The potential for long-term stormwater impacts from development is also reduced by requiring ongoing operation and maintenance of post-construction treatment controls selected for a site.

OBJECTIVES

The objectives address key components of the Planning and Land Development Program and identify that, in order to be effective, the program must:

- Incorporate water quality and watershed protection principles into the County's policies and planning procedures.
- Ensure that selected post-construction stormwater controls will remain effective upon project completion by requiring a maintenance agreement and transfer for all priority development projects.
- Provide a comprehensive review of development plans to ensure that stormwater quality controls are properly selected to minimize stormwater quality impacts.
- Provide training for employees who are responsible for Planning and Land Development activities about general stormwater issues, plan review, development standards (*Stormwater Quality Control Criteria Plan* (SWQCCP)), and relevant sections of the SWMP.
- Conduct an assessment as part of the annual reporting process to determine the effectiveness of the Planning and Land Development Program Element and identify any necessary modifications.

CONTROL MEASURES

The six Control Measures outlined in **Table 7-1** and discussed in more depth in the accompanying Fact Sheets were designed to address the program objectives. In developing the Control Measures, several key factors were considered:

- Each Control Measure must address one or more of the program objectives.
- Each Control Measure must clearly identify the Performance Standards, timeframe for completion, and responsible Department/Division to ensure that there is accountability built into the program.
- The data and information from the previous permit term and/or reporting period must be analyzed to determine the effectiveness of each Control Measure, and the iterative process must be used to ensure that each Control Measure is effective and has a commensurate benefit for the resources expended.
- Each Control Measure must actively identify enhancements/modifications that would improve the Program Element and overall effectiveness of the stormwater program.

Table 7-1. Control Measures for the Planning and Land Development Program Element

LD	Control Measure
LD1	Incorporation of Water Quality Protection Principles into County Procedures and Policies
LD2	New Development Standards
LD3	Plan Review Sign-Off
LD4	Maintenance Agreement and Transfer
LD5	Training
LD6	Effectiveness Assessment

The Control Measure Fact Sheets developed for the Planning and Land Development Program Element (LD1-LD6) address the program objectives and identify assessment tools that may be used to assess the effectiveness of the program. The Fact Sheets were developed as stand-alone documents so that they may be individually provided to the responsible Department(s)/Division(s).

Supporting Control Measures

While individual, program-specific Control Measures are the primary focus of each program, it is also important to understand how the program fits within the overall SWMP. In order to adequately cover all aspects of the Planning and Land Development Program, overlap between other programs in the SWMP is often necessary. A brief summary of the Program Elements that support the Planning and Land Development Program Element is provided below.

Supporting Control Measures	Program Element
---	Illicit Discharges
---	Public Outreach
---	Municipal Operations
---	Industrial/Commercial
X	Construction
---	**Planning and Land Development**

- Construction (Section 6)
    - *Construction Outreach* – Although the emphasis of the Development Standards in the SWQCCP is on post-construction BMPs, these Control Measures are considered during the planning process and generally included or installed during construction. During regular inspections of construction sites, inspectors can ensure that the General Site Design Control Measures, Site-Specific Source Control Measures, and Treatment Control Measures included in the project plans are being properly constructed and/or installed.

LD1 – Incorporation of Water Quality Protection Principles into County Procedures and Policies

DESCRIPTION

Traditional methods of land development tend to increase stormwater discharge volumes and flow velocities. These alterations to the natural hydrologic regime may lead to increased erosion and flooding and decreased habitat integrity. Water quality and watershed protection principles and policies such as minimization of impervious areas, pollutant source controls, preservation of natural areas, and peak runoff controls can help to minimize the impacts of urban development on the local hydrology and aquatic environment. Integration of stormwater quality and watershed principles into the County's General Plan will serve as the basis for directing future planning and development in order to minimize these adverse effects. In addition, the CEQA process provides for consideration of water quality impacts and appropriate mitigation measures.

EXISTING BMPS AND RELATED ACTIVITIES

The County is in the process of updating its General Plan. Public Works shall provide input to incorporate, enhance and/or update the General Plan to include water quality protection principles. These amendments may include policies directed toward implementation of the following:

- Minimize the amount of impervious surfaces and directly connected impervious surfaces in areas of new development and redevelopment and, where feasible, maximize on-site infiltration of runoff and encourage low impact development concepts.
- Implement pollution prevention methods supplemented by pollutant source controls and treatment. Where practical, use strategies that control the sources of pollutants or constituents (i.e., the point where water initially meets the ground) to minimize the transport of urban runoff and pollutants offsite and into MS4s.
- Preserve and, where applicable, create or restore areas that provide important water quality benefits, such as riparian corridors, wetlands, and buffer zones.
- Limit disturbances of natural water bodies and natural drainage systems caused by development including roads, highways, and bridges.
- Estimate increases in pollutant loads in runoff flows resulting from projected future development. Require incorporation of structural and non-structural BMPs to mitigate the projected increases in pollutant loads.
- Identify and avoid development in areas that are particularly susceptible to erosion and sediment loss, or establish development guidance that protects areas from erosion and sediment loss.
- Coordinate with local traffic management programs to reduce pollutants associated with vehicles and increased traffic resulting from development.
- Implement source and structural controls, where applicable, to protect downstream receiving water quality from increased pollutant loads and flows (hydromodification concepts) from new development and significant redevelopment.
- Control the post-development peak stormwater run-off discharge rates and velocities to maintain or reduce pre-development downstream erosion and to protect stream habitat.

The updated General Plan will serve as the basis for directing future planning and development in order to minimize the negative impacts of urban development on the aquatic environment. The County General Plan Update began in June 2008 and is expected to be completed in approximately 36-months. Public Works – Water Resources will provide comments throughout the General Plan Update.

The County's Stormwater Management and Discharge Control Ordinance serves as the enforcement mechanism to ensure new development and redevelopment projects comply with County policies and the General Plan. During 2004-2005, the County reviewed applicable ordinances to ensure that the County has adequate legal authority to implement and enforce the new development and redevelopment standards.

The CEQA review process is necessary for determining what impacts a proposed development project could have on the environment. The County's current CEQA review process includes procedures for considering potential stormwater quality impacts and providing for appropriate mitigation. The Public Works – Water Resources Division reviews all CEQA documents, responding to checklist items under the NPDES/Water Quality section.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Revise the General Plan to include the identified water quality protection principles and the Permit requirements (p. 48)
- Provide drafts of proposed General Plan amendments to Regional Board
- Review and revise CEQA review documents as needed for consistency with p. 53 of the Permit. The CEQA review process shall require consideration of the following:
    - Potential impact of project construction on stormwater runoff;
    - Potential impact of project post-construction activity on stormwater runoff;
    - Potential for discharge of stormwater from areas from material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work areas;
    - Potential for discharge of stormwater to impair the beneficial uses of the receiving waters or areas that provide water quality benefit;
    - Potential for the discharge of stormwater to cause significant harm on the biological integrity of the waterways and water bodies;
    - Potential for significant changes in the flow velocity or volume of stormwater runoff that can cause environmental harm; and
    - Potential for significant increases in erosion of the project site or surrounding areas.
- Revise municipal code for enforcing standards as needed

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure, with support from the Community Development Department and County Counsel.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW- Water Resources	PW – Community Infrastructure Div.	PW – Public Service	PW – Other Divisions	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
LD1 – Incorporation of Water Quality Protection Principles into County Procedures and Policies																												
Revise the General Plan to include the identified water quality protection principles	C														X							S				P		
Provide drafts of proposed General Plan amendments to Regional Board	C																	X				P				S		
Review and revise CEQA review documents as needed	C																					P				S		
Revise municipal code for enforcing standards as needed	C																					P				S		S

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter

☐ = Performance standard will be completed on an ongoing basis or during the specified timeframe.

PW = Public Works Department

LD2 – New Development Standards

DESCRIPTION

Post-construction BMPs, including those for site design, source control, and treatment, are necessary for development and redevelopment projects in order to mitigate potential water quality impacts. In addition, priority projects identified within the Permit require specific mitigation measures. In order to assist developers in meeting these requirements, the County has stormwater quality control guidelines for new development and redevelopment, the Stormwater Quality Control Criteria Plan (SWQCCP).

EXISTING BMPS AND RELATED ACTIVITIES

The City of Stockton and the County of San Joaquin updated the 2005 Stormwater Quality Control Criteria Plan (SWQCCP) to reflect new permit requirements with a special emphasis on the implementation of low impact development (LID) strategies in the Stockton Urbanized Area. The 2009 SWQCCP revisions encompass guidelines and provide recommendations encouraging the use of LID/ hydromodification strategies for the development community in the Stockton Urbanized Area by March 31, 2009. The City and the County requested and received an extension of the due date for submission of the revised SWQCCP from December 6, 2008 to March 31, 2009. The revised version of the SWQCCP was submitted to the Regional Board on March 31, 2009 and is awaiting final approval by the Regional Board. Stakeholder participation and input was solicited through a three stakeholder meetings and three rounds of public comment. The Final 2009 SWQCCP will be made available through the County website once it is adopted by the County Board of Supervisors. A summary of modifications made to the SWQCCP is provided below:

- Added language explaining the objectives of LID strategies.
- Created a Volume Reduction Requirement to provide a measureable criterion for achievement of LID. The Volume Reduction Requirement:
    - Is defined as the post-project runoff volume minus the pre-project runoff volume for the 0.51” rainfall event (~85th percentile, 24 hour storm depth).
    - Applies to all Priority New Development Projects.
    - Significant Redevelopment Projects also adhere to the Volume Reduction Requirement with reduction incentives built in. A reduction of 0.05” may be applied to any of the following types of redevelopment: significant redevelopment, brownfield redevelopment, high density, vertical density, mixed use and transit oriented development.
    - Must be met through the application of Volume Reduction Measures and LID Treatment Controls.
    - Encourages the use of multiple BMPs.
- Added Volume Reduction Measures (i.e., non-structural BMPs such as rain gardens and rain barrels).
- Classified Treatment Controls as either LID Treatment Controls (BMPs that have the ability to reduce stormwater volume) and Conventional Treatment Controls.
- Added LID Treatment Controls (e.g., bioretention and tree-well filters).
- Required that projects that cannot fully meet the Volume Reduction Requirement and are located in a watershed with a 303(d) listed waterbody must select Treatment Controls with a medium to high removal efficiency for the listed pollutant.

- Required the following priority projects to comply with the revised SWQCCP:

  1) **Significant redevelopment** - Significant redevelopment is defined as the creation or addition of at least 5,000 square feet of impervious surfaces on an already developed site. Significant redevelopment includes, but is not limited to, expansion of a building footprint or addition or replacement of a structure; structural development including an increase in gross floor area and/or exterior construction or remodeling; replacement of impervious surface that is not part of a routine maintenance activity; and land disturbing activities related with structural or impervious surfaces. Where significant redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing development, and the existing development was not subject to the Development Standards, the numeric sizing criteria discussed below applies only to the addition, and not the entire development.

  2) **Home subdivision of 10 housing units or more** – This category includes single-family homes, multi-family homes, condominiums, and apartments.

  3) **Commercial developments greater than or equal to 5,000 square feet** – This category is defined as any development on private land that is not for heavy industrial or residential uses, where the land area for development is greater than or equal to 5,000 square feet of impervious area (not including the parking lot, see separate parking lot requirement below). The category includes but is not limited to hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, commercial retail nurseries, multi-apartment buildings, car wash facilities, mini-malls, and other business complexes, shopping malls, hotels, office buildings, public warehouses, and other industrial facilities.

  4) **Automotive repair shops** – This category is defined as a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539, where the total impervious area for development is greater than or equal to 5,000 square feet.

  5) **Restaurants –** This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812), where total impervious area for development is greater than or equal to 5,000 square feet.

  6) **Parking lots 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to urban runoff** – Parking lot is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce.

  7) **Street and roads** – This category includes any paved surface equal to or greater than one acre of impervious area used for the transportation of automobiles, trucks, motorcycles, and other vehicles.

  8) **Retail Gasoline Outlets** – Retail Gasoline Outlet (RGO) is defined as any facility engaged in selling gasoline with 5,000 square feet or more of impervious surface area.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Require priority projects in the Phase I area to implement the 2009 SWQCCP.
- Review local development standards for compatibility with the 2009 SWQCCP.

RESPONSIBILITY

The Public Works – Public Services is primarily responsible for this Control Measure, with support from Public Works – Water Resources.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources	PW – Community Infrastructure	PW – Public Services	PW – Other Divisions	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
LD2 – New Development Standards																												
Require priority projects to comply with the 2009 SWQCCP	E																					S		P				
Review local development standards for compatibility with the 2009 SWQCCP	E								X													S		P				

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
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PW = Public Works Department

LD3 – Plan Review Sign-Off

DESCRIPTION

Stormwater quality controls should be considered throughout the development plan review and approval process. The County provides comprehensive review of development plans to ensure that stormwater controls minimize stormwater quality impacts.

EXISTING BMPS AND RELATED ACTIVITIES

In 2003-2004, the County developed conditions of approval for use with development plans to ensure that the SWQCCP requirements are addressed. The conditions of approval are as follows:

- Proprietary treatment control devices will be accepted by the County if they are properly sized, applied, and on the approved list of Sacramento County, Caltrans, Los Angeles County, Washington State, and/or the Federal EPA or if the proprietary device is selected from the City- and County-approved list (see the SWQCCP).
- A Recorded Covenant (RC) must be in place that commits the property owner/homeowners association to properly maintain the treatment control device. Provisions are included within the RC to ensure that if the owner does not maintain the device/process, the County will be reimbursed for doing so.

The County has modified and implemented sign-off procedures for final plans for selected categorical development projects, including all CIP projects and projects involving a "change of use" or footprint additions, to ensure that post-construction control measures are properly integrated into project plans. The Public Works – Public Services Division in coordination with Community Infrastructure Division has final permit sign-off procedures on grading permit site approvals, improvement plans for minor subdivisions, major subdivisions, and Building Permits. This allows permitted construction sites to be referred to the construction inspectors and projects that qualify for enhanced post-construction BMPs to be identified.

In 2003-2004, the County reviewed the stormwater plan review checklist to ensure that the SWQCCP requirements are met and determined that revisions were not necessary. The County also implemented a separate checklist for SWQCCP-applicable projects.

The County's review processes, 1) public projects and 2) County projects. These processes are described below.

Public Projects: Public Works - Public Services receives project referrals from the Community Development Department (CDD). During the review process, Public Services staff include all development standard conditions applicable, including those prescribed within the SWQCCP, to each individual project and forwards all project conditions to CDD. CDD informs the developer to comply with all conditions including Public Works conditions of approval once the review process is completed. Once the developers apply for their building permits, the plan checking process commences. Upon completion of the plan checking process, CDD requires the developers to obtain a Public Works Release in order to issuing their building permits. At this stage Public Works staff will review the plans and make sure that the development standards they required are included in the project design and shown on the plans. Once all conditions are met, a building permit can be released.

County Projects: The Public Works – Engineering procedure is to send all projects through Public Works – Water Resources for review, comments, and suggestions. The information is then incorporated into the project designs. Water Resources ensures that all required development standards, including those

prescribed within the SWQCCP, are included in the project design and shown on the plans. Follow-up is performed if necessary.

When the projects are ready for bid, the project specifications include SWPPP conditions that address compliance with NPDES regulations. SWPPP conditions are incorporated into the bid packages by Public Works – Engineering to apprise bidders on their responsibilities to develop and comply with the project's SWPPP.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Review and revise Phase I Plan Review Checklist to be in conformance with 2009 SWQCCP (see **Appendix F-3** for current version of the Plan Review Checklist)
- Revise Plan Review Checklist, as needed
- Use Plan Review Checklist
- Review project plans and grading plans for stormwater BMPs
- Explore options for a GIS or other electronic system for tracking project with post-construction treatment controls BMPs.
- Implement a GIS or other electronic system for tracking projects that have been conditioned for post-construction treatment control BMPs. The electronic system, at a minimum, should contain the following information:
    - Municipal Project ID
    - State WDID No.
    - Project Acreage
    - BMP Type and Description
    - BMP Location (coordinates)
    - Date of Acceptance
    - Date of O&M Certification
    - Inspection Date and Summary
    - Corrective Action
    - Date Certificate of Occupancy Issued
- Develop an inspection program and establish an inspection fee to conduct inspections of completed priority projects
- Conduct inspections of completed priority projects to ensure that all approved Control Measures have been implemented and are being maintained
- Evaluate and document workflow procedures to ensure projects receive adequate review, check, conditioning, and inspection.

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see LD6). The following data and information should be collected:

- # priority development projects approved
- # acres covered by approved priority development projects
- # and type of post-construction BMPs approved for priority development projects
- # and type of post-construction BMPs implemented and maintained by priority development projects
- # and type of proprietary Control Measures approved for priority development projects
- # and type of proprietary Control Measures implemented and maintained by priority development projects
- # priority development projects draining to regional treatment facility

RESPONSIBILITY

The Public Works – Public Services Division is primarily responsible for this Control Measure, with support from other Public Works Divisions and the Community Development Department.

- Public Works – Design Engineering, Field Engineering, and Public Services have secondary responsibility for reviewing project plans and grading plans for stormwater BMPs as well as developing and implementing a GIS/electronic tracking system.
- Public Works – Field Engineering has secondary responsibility for conducting inspections of completed projects.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources	PW - Community Infrastructure	PW – Public Services	PW – Other Divisions	Comm. Dev. Dept	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
LD3 – Plan Review Sign-off																												
Review and revise Plan Review Checklist to be in conformance with 2009 SWQCCP	E										X													P	S			
Revise Plan Review Checklist as needed	C																							P	S			
Use Plan Review Checklist	C																							P	S			
Review project plans and grading plans for stormwater BMPs	C																							P	S			
Explore options for a GIS or other electronic system for tracking projects with post-construction treatment control BMPs	N									X														P	S			
Implement a GIS or other electronic system for tracking projects with post-construction treatment control BMPs	N																							P	S			
Develop an inspection program and establish an inspection fee to conduct inspections of completed priority projects	N														X									P				
Conduct inspections of completed priority projects to ensure Control Measures are implemented and maintained	N																							P	S			
Evaluate and document workflow procedures	C					X				X				X				X				P		S	S			

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
X = Performance Standard will be completed during this quarter.
PW = Public Works Department
3. P = Primary Responsibility; S = Secondary Responsibility
= Performance standard will be completed on an ongoing basis or during the specified timeframe.

LD4 – Maintenance Agreement and Transfer

DESCRIPTION

Maintenance agreement and transfers ensure that selected post-construction stormwater Control Measures will remain effective upon project completion. As a condition of approval for all priority development projects, the County requires the owner/developer/successor-in-interest (ODS) of stormwater Control Measures to provide proof of Control Measure maintenance in the form of a Stormwater Treatment Device Access and Maintenance Agreement and a Maintenance Plan.

EXISTING BMPS AND RELATED ACTIVITIES

The County integrated the development/submittal of a stormwater maintenance agreement as a condition within the project approval process for priority projects. To enforce the requirements of post-construction BMPs, a Maintenance Agreement is required to be executed between the County and the owner/developer/successor-in-interest (ODS) for any private facilities who remain the responsible party in operating and maintaining the post-construction Treatment Control Measures. Private property owners are responsible for maintaining BMPs for approved for non-priority projects. All BMPs regardless of project designation must have a maintenance agreement.

During the application review process for non-priority projects, Public Works – Public Services will require that the developer provide the following:

> 1) Latitude and Longitude of all treatment devices shall be obtained by use of a global positioning system and reported to the county. This information will be useful if deployed to Public Works GIS for tracking.
>
> 2) The property owner shall execute an agreement and record a deed restriction, in a form acceptable to the County, regarding maintenance and perpetuation of the installed systems.
>
> 3) The property owner shall be responsible for the ongoing operation and maintenance of any system installed unless the system is accepted for maintenance by a government agency.
>
> 4) The property owner shall be responsible for providing the county with an annual report of operation and maintenance of any system.
>
> 5) The property owner shall provide the County with the maintenance manual of the installed device(s).

If the BMP will be transferred to the County for maintenance, the ownership title is transferred and the assessment district establishment process is completed before final inspections are completed and construction permits are closed.

The County maintains oversight of its post-construction maintenance through its County Service Areas pursuant to the General Improvement Act of 1911.

The SWQCCP addresses the County's Development Standards (see LD2) as well as the need for the development and submittal of Maintenance Agreements when a developer is responsible for ongoing maintenance of on-site treatment BMPs.

Water Resources staff have drafted a spreadsheet to keep track of the post-construction BMPs that require maintenance or over sight within the County's jurisdiction. Improved methods of tracking are being explored through County fee system Permits Plus and Public Works GIS system.

The County is developing its Post Construction BMPs Maintenance Oversight Protocols and is considering a self certification approach where it is incumbent on the property owner to inspect and maintain the BMP(s). A self certification approach may also include an inspection component where

County staff would inspect a small percentage of the BMPs each year as an enforcement mechanism to help ensure that inspection and maintenance occurs on a regular basis.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Require Stormwater Treatment Device Access and Maintenance Agreement as part of project approval process
- Evaluate possible improved methods of tracking post-construction BMPs
- Finalize and populate post-construction BMP tracking mechanism
- Finalize and implement Post-Construction BMP Maintenance Oversight Protocols

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see LD6). The following data and information should be collected:

- # maintenance agreements executed; will differentiate between County-maintained BMPs and publicly maintained BMPs

RESPONSIBILITY

The Public Works – Public Services Division is primarily responsible for this Control Measure, with support from Public Works –Water Resources Division and Public Works – Utilities Maintenance Division.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources	PW – Community Infrastructure	PW – Public Services	PW – Other Divisions	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
LD4 – Maintenance Agreement and Transfer																												
Require Stormwater Treatment Device Access and Maintenance Agreement as part of project approval process	C																					S		P	S			
Evaluate possible improved methods of tracking post-construction BMPs	E									X												S		P	S			
Finalize and populate post-construction BMP tracking mechanism	E									X												S		P	S			
Finalize Post-Construction BMP Maintenance Oversight Protocols	N									X												S		P	S			
Implement Post Construction BMP Maintenance Oversight Protocols	N																					S		P	S			

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter. ☐ = Performance standard will be completed on an ongoing basis or during the specified timeframe.

PW = Public Works Department

LD5 – Training

DESCRIPTION

Training is important for the implementation of the Planning and Land Development Program Element. An effective training program is one of the best pollution prevention BMPs that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality.

The County has developed a formal training strategy (see **Appendix B-11**) to address the multiple levels of staff involvement in the implementation of the stormwater program.

The objectives of the training program are to:

- Increase the general awareness and understanding of the SWMP and Planning and Land Development program;
- Increase the awareness and understanding of the Planning and Land Development Control Measures and Performance Standards;
- Create a training program to increase understanding and awareness and prompt the behavioral changes needed to protect and improve water quality;
- Awareness of the impacts on land development from design, construction and post-construction; and
- Conduct training for employees responsible for the Planning and Land Development Program Element (i.e., plan review and approval, project tracking database).

The Planning/Land Development Training Module 3 provides training on construction, design and development best management practices to mitigate negative impacts on changing the natural landscape and water quality. The training will also address the Permit requirements and SWMP Sections 6 and 7.

Specific areas of focus for the training efforts for the Planning and Land Development Program Element are summarized in **Table 7-2**.

Table 7-2. Planning and Land Development Program Element Training

Audience	Format	Subject Material
• Public Works- Engineering • Public Works-Special Projects • Public Works- Public Services • Community Development Department • Facilities Management Department-Capital Projects	• Classroom • Meetings	• Overview of stormwater management • Stormwater Ordinance • Enforcement policy • SWQCCP and overview of post-construction Control Measures • Impacts on land development • Inspection, Reporting, Tracking and Enforcement • Stormwater Hotline • Project tracking database • Associated BMPs • SWPPP Requirements

EXISTING BMPS AND RELATED ACTIVITIES

To ensure that the various Department and Division personnel understand their roles and responsibilities under the SWMP in 2003, the County developed training for staff responsible for the Planning and Land Development Program Element. The training modules must be reviewed and updated.

PERFORMANCE STANDARDS

The Performance Standards listed below establish the level of effort required for this Control Measure.

- Conduct training for key staff involved in the Planning and Land Development program (see **Table 7-2**). Training will occur twice throughout the five-year permit term and will consist of 60-minute sessions held throughout the fourth quarter (see Implementation Schedule) (see **Appendix B-11**).
- Conduct refresher trainings the years that the full training module is not provided

Training will occur twice throughout the Permit term; each training will consist of 60-minute sessions held four separate times throughout the fourth quarter (See Training Schedule **Appendix B-11**).

ASSESSMENT DATA AND INFORMATION

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments (see LD6). The data and information to be collected may include, but will not be limited to, the following:

- Number and types of training sessions held
- Number of attendees at each session and the Division/Department that they work for
- Results of pre- and post-training surveys

RESPONSIBILITY

The Public Works – Water Resources Division is primarily responsible for this Control Measure with support from the Public Works – Public Services and Engineering Divisions.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources	PW – Community Infrastructure	PW – Public Services	PW – Other Divisions	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
LD5 – Training[1]																												
Conduct training for key staff	C										X							X				P		S	S			
Conduct Annual Refresher Training	C													X								P		S	S			

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2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter. ☐ = Performance standard will be completed on an ongoing basis or during the specified timeframe.

PW = Public Works Department

[1] The Module and Refresher Training dates in the County's Training Strategy will be revised as needed (see ID5).

LD6 – Effectiveness Assessment

DESCRIPTION

Effectiveness Assessment

The process that is used to evaluate if programs are resulting in desired outcomes.

Effectiveness assessment is a fundamental and necessary component for developing and implementing successful stormwater programs. A well-executed assessment can provide the feedback necessary to determine whether the programs are achieving intended outcomes and, ultimately, whether continued implementation will result in maintaining or improving water quality.[2]

Effectiveness assessments are an integral part of the iterative process, which is the foundation for the stormwater program. By utilizing the iterative process and conducting effectiveness assessments, program managers can use the information gained to adapt their programs and ensure that the resources expended are providing commensurate benefit and are protective of water quality. The iterative process is illustrated in **Figure 7-1**; the points at which effectiveness assessments (implementation and water quality) are conducted are also identified.

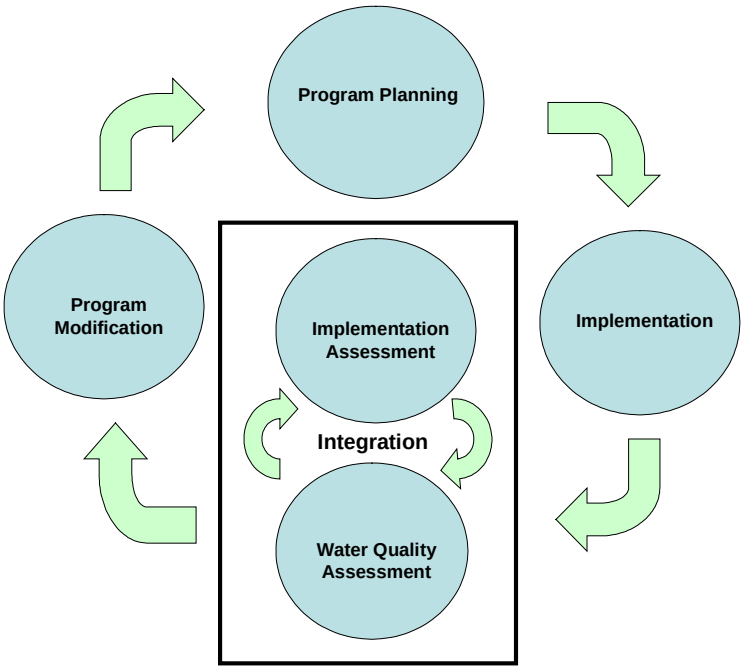

Figure 7-1. Iterative Process and Effectiveness Assessments Outcome Levels

[2] California Stormwater Quality Association (CASQA), Municipal Stormwater Program Effectiveness Assessment Guidance, March 2007.

Outcome levels help to categorize and describe the desired results of the Program Elements and related Control Measures. Pursuant to the 2007 CASQA guidance, outcomes for stormwater programs have been categorized into six levels, as shown in **Figure 7-2**.

Outcome Level	Description
6	Protecting Receiving Water Quality
5	Improving Runoff Quality
4	Reducing Loads from Sources
3	Changing Behavior
2	Raising Awareness
1	Documenting Activities

Figure 7-2. Effectiveness Assessment Outcome Levels

The outcome levels identify the key areas that are evaluated for the program effectiveness assessment within the Annual Report. The primary questions that should be assessed for each Program Element or Control Measure include the following:

- Level 1 Outcome – Was the Program Element/Control Measure implemented in accordance with the Permit Provisions, SWMP Control Measures, and Performance Standards?
- Level 2 Outcome – Did the Program Element/Control Measure raise the target audience's awareness of an issue?
- Level 3 Outcome – Did the Program Element/Control Measure change a target audience's behavior, resulting in the implementation of recommended BMPs?
- Level 4 Outcome – Did the Program Element/Control Measure reduce the load of pollutants from the sources to the storm drain system?

As a part of the annual reporting process, effectiveness assessments will be conducted for the Planning and Land Development Program and related Control Measures to determine their effectiveness and identify any necessary modifications. Although the effectiveness assessment may change from year to year as new information is learned, the assessment will initially focus on Outcome Levels 1-4 and will include the approach outlined in **Table 7-3**. Level 5 and 6 outcomes will be assessed, to the extent possible, as a part of the water quality based programs and water monitoring program (SWMP Sections 8 and 9).

The effectiveness assessment conducted as a part of each annual report will address the following:

- Purpose or focus of the assessment –The outcome level(s) being assessed as well as the related management questions will be summarized. Where applicable, the identified goals that have or will be established for the program/activity will also be summarized.
- Baseline conditions – A baseline is a defined point or metric by which effectiveness can be measured or compared. Baselines are linked to a particular point in time and are particularly important for measuring change over time. Where feasible, the baselines that have or will be established for the program/activity will be summarized.
- Assessment methods – The assessment methods (those activities, actions, or processes used to obtain and evaluate assessment data or information) will be summarized.

- Using the information – The improvements that have been identified for the program element will be summarized.

Table 7-3. Assessment Tasks for Planning and Land Development Program Element

LD1 – Incorporation of Water Quality Protection Principles into County Procedures and Policies
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Revised the General Plan to include the identified water quality protection principles • Provided drafts of proposed General Plan amendments to Regional Board • Reviewed & revised CEQA review documents, as needed • Revised municipal code for enforcing standards, as needed
LD2 – New Development Standards
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Required priority project to comply with the 2009 SWQCCP • Reviewed local development standards for compatibility with the 2009 SWQCCP

Table 7-3. Assessment Tasks for Planning and Land Development Program Element

LD3 – Plan Review Sign-Off
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Reviewed and revised Plan Review Checklist to be in conformance with 2009 SWQCCP • Revised Plan Review Checklist as needed • Used Plan Review Checklist • Reviewed project plans and grading plans for stormwater BMPs • Explore options for a GIS or other electronic system for tracking projects that have been conditioned for post-construction treatment control BMPs • Implemented a GIS or other electronic system for tracking projects that have been conditioned for post-construction treatment control BMPs • Develop an inspection program and establish an inspection fee to conduct inspections of completed priority projects • Conduct inspections of completed priority projects to ensure that all approved control measures have been implemented and are being maintained **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • # priority projects approved, year to year • Compare # priority projects reviewed vs. # priority projects requiring revisions, year to year • # acres covered by approved priority development projects, year to year • # and type of post-construction BMPs approved for priority development projects, year to year • # and type of proprietary Control Measures approved for priority development projects, year to year • # of projects draining to regional treatment facilities **Did the activity change a target audience's behavior which results in implementation of recommended BMPs (*Level 3 Outcome*)?** • # and type of post-construction BMPs implemented and maintained by priority development projects, year to year • # and type of proprietary Control Measures implemented and maintained by priority development projects, year to year

Table 7-3. Assessment Tasks for Planning and Land Development Program Element (continued)

LD4 – Maintenance Agreement and Transfer
Was the activity implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Required Stormwater Treatment Device Access and Maintenance Agreement as part of project approval process • Evaluated possible improved methods of tracking post-construction BMPs • Finalized and populated post-construction BMP tracking mechanism • Finalized and implemented Post-Construction BMP Maintenance Oversight Protocols **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • % of total priority development projects with maintenance agreements executed, year to year; will sub-divide into County maintained BMPs and publically maintained BMPs
LD5 – Training
Was the program implemented in accordance with the NPDES permit provisions, SWMP Control Measure, and Performance Standards (*Level 1 Outcome*)? • Conducted training for key staff involved in the Planning and Land Development program **Did the activity raise the target audience's awareness of an issue (*Level 2 Outcome*)?** • Percent increased awareness before and after training sessions

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources	PW – Community Infrastructure	PW – Public Services	PW- Other Divisions	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
LD6 – Effectiveness Assessment																												
Revise effectiveness assessment strategy as needed	N									X				X				X				P				S		
Conduct effectiveness assessment on an annual basis	E					X				X				X				X				P				S		
Identify program modifications as a result of the assessment	C					X				X				X				X				P				S		
Review effectiveness assessments and identify goals, baselines, and trends.	N									X				X				X				P				S		

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PW = Public Works Department

Section 8

Water Quality Monitoring Program

OVERVIEW

Pollutants of Concern (POCs)

Pollutants that warrant special attention due to their potential impacts on local waterbodies

The Stockton Urbanized Area (SUA) stormwater NPDES Permit requires monitoring of urban runoff and receiving waters from 2007-2012 as detailed in the Monitoring and Reporting Program (MRP). The MRP includes the characterization of runoff and receiving water quality and toxicity as well as an assessment of the effectiveness of control measures. Monitoring elements are designed to characterize trends over long-term periods and to identify specific pollutants of concern (POCs). The most fundamental aspect of the stormwater monitoring effort is urban discharge and receiving water monitoring, which has historically occurred along four urbanized, tidally-influenced tributaries to the San Joaquin River. Other components of the MRP, including dry weather field screening and detention basin monitoring are used to further develop "baseline" water quality datasets. In conjunction with the MRP, the Water Quality Based Programs (see **Section 9**) are studies that are designed to evaluate spatial and temporal trends in POCs in local waterbodies.

Section 8 outlines MRP efforts to be conducted from 2007-2012.

OBJECTIVES

The 2007-2012 MRP is designed to:

- Assess compliance with the Permit
- Characterize urban runoff
- Identify sources of pollutants and POCs
- Assess the chemical, physical, and biological impacts on receiving waters resulting from urban runoff
- Assess the overall health and evaluate the long-term trends in receiving water quality
- Provide information for the development and implementation of the SWMP

Elements of the MRP are explained in the following section.

2007-2012 PERMIT MONITORING AND STUDY REQUIREMENTS

Pursuant to the MRP Section I.A, the Program is required to submit an annual work plan that supports the development, implementation, and effectiveness evaluation of the SWMP. The work plan comprises several integrated studies. Each study is designed to conform to the sampling protocol and standard monitoring provisions set forth in the MRP. The monitoring program collectively characterizes the quality and quantity of urban runoff, receiving water quality, and the effectiveness of control measures (both structural and programmatic).

The following "baseline" monitoring studies are included in the MRP for the 2007-2012 Permit period:

- Urban Discharge Monitoring
- Receiving Water Monitoring
- Water Column Toxicity Monitoring

- Dry Weather Field Screening

Baseline monitoring is used to characterize long-term trends in urban discharge and receiving water quality. Details of the program are outlined in **Table 8-1**. In addition, the following supplemental studies are included in the MRP:

- Bioassessment Analysis
- Detention Basin Monitoring (see **Appendix H-5**)
- Best Management Practice (BMP) Effectiveness Studies (see **Appendices H-6** and **H-7**)
- Sediment Toxicity (see **Appendix H-8**)

Each of the supplemental MRP elements is summarized in **Table 8-2.** As part of the previous 2002-2007 permit, bioassessment monitoring characterized habitat and species in the receiving water to identify potential impairment. The 2007-2012 Permit requires a Bioassessment Analysis report of these results to be included with the 2007/2008 Annual Report. Detention basin monitoring allows the Program to gauge the effectiveness of basins in removing pollutants and examines variables that control methylmercury production. The BMP Effectiveness Study is designed to allow the Program to evaluate BMPs for their effectiveness in removing pathogens, nutrients, metals, and pesticides from stormwater runoff. Sediment toxicity monitoring allows the Program to identify toxicity due to pesticides and pyrethroids.

Monitoring is also conducted for four studies under the Water Quality Based Program (see Section 9). The studies are used to target specific waterbodies, evaluate the spatial and temporal trends in POCs, and identify appropriate POC-control measures. During the 2007-2012 Permit period, these studies, which are described in **Table 8-3**, include the following:

- Pesticide Plan
- Pathogen Plan
- Mercury Plan
- Low Dissolved Oxygen Plan

The goals and objectives of the Water Quality Based Program are detailed in Section 9 of this SWMP.

Table 8-1. Baseline MRP Monitoring for 2007-2012

Monitoring Activity	Summary
Urban Discharge Monitoring	• Four waterbodies monitored • One outfall site on each waterbody • Two wet weather events per Permit year at each site, including an event that will target the first qualifying storm event of the season • Two dry weather events per Permit year at each site • Samples collected during each event are tested for constituents listed in **Appendix H-1** • **Appendix H-2** shows which samples are composite samples and which samples are grab samples • All urban discharge monitoring coordinated with receiving water monitoring
Receiving Water Monitoring	• Same four waterbodies monitored as in urban discharge monitoring • Two sampling sites on each waterbody: one directly downstream of the urban discharge monitoring site and one upstream of the SUA boundary (except for Smith Canal which does not have a location upstream of the SUA boundary) • Two wet weather events per Permit year at each site, including an event that will target the first qualifying storm event of the season • Two dry weather events per Permit year at each site • Grab samples collected during each event are tested for constituents in **Appendix H-1** • All events coordinated with urban discharge water monitoring
Water Column Toxicity	• Same urban discharge and receiving water sites as listed above (four urban discharge and seven receiving water sites) • Two wet weather events and two dry weather events during two non-consecutive Permit years at each receiving water station • Toxicity tests performed on grab samples from each event • Events coordinated where possible with urban discharge and receiving water monitoring
Dry Weather Field Screening	• Dry weather monitoring of 20% of outfalls each year so that all outfalls are monitored once in Permit term • 46 outfalls in total • Grab samples collected during each event tested for limited constituents if sufficient flow exists (see section on Dry Weather Field Screening)

Table 8-2. Supplemental MRP Monitoring Activities for 2007-2012

Monitoring Activity	Summary
Bioassessment Analysis	• Report on data collected in 2004 and 2005 was submitted with 2007/2008 Annual Report and recommended continued monitoring • Sampling and Analysis Plan will be developed by 2009/2010 • Bioassessment monitoring to take place during 2010-2012
Detention Basin Monitoring	• One basin with mixed land use monitored • Influent and effluent monitoring during two wet weather events in two Permit years (total four wet weather events) • Sediment monitoring during one dry weather event in two Permit years (total two dry weather events) • Grab samples of influent and effluent tested for limited constituents • Toxicity testing as well as tests for pesticides, pyrethroids, and mercury performed on sediment samples
BMP Effectiveness Studies	• Assessment of two BMPs: Legion Park media filter and Morelli Park swale
Sediment Toxicity	• Staggered sampling of eight sites over the five-year Permit term • One post first flush[1] and one dry weather monitoring event will be sampled at each site • As samples undergo toxicity testing with Hyalella azteca and are analyzed for grain size and total organic carbon. • Follow-up testing including "targeted" sediment Phase 1 TIE approaches and chlorpyrifos/pyrethroid analyses required if statistically significant toxicity is detected (see **Appendix H-4**)

[1] Post first flush timeframe is within two weeks of the qualifying storm event.

Table 8-3. Water Quality Based Monitoring To Be Conducted under the 2007-2012 Permit Term

Monitoring Activity	Summary (see Section 9)
Pesticide Plan	• Four waterbodies monitored during dry and wet weather • Urban discharge, receiving water, and rainwater monitored • Annual monitoring of one storm event during the dormant spray season, one storm event following the dormant spray season, and once during the dry season • Analyze water samples for diazinon, chlorpyrifos, and pyrethroids • Use GIS tool to evaluate spatial trends

Pathogen Plan	• Focus on six waterbodies that are impaired by fecal indicator bacteria
	• Three-Phase monitoring approach, comprising characterization monitoring, source identification monitoring, and BMP effectiveness monitoring
	  o Two sets of waterbodies during each of three phases
	  o Phase I waterbodies included Mormon Slough and Smith Canal (Monitoring began in 2004)
	  o Phase II waterbodies are Five Mile Slough and Mosher Slough (Monitoring began in 2007)
	  o Phase III waterbodies are Lower Calaveras River and Walker Slough
	• Characterization monitoring conducted for each waterbody monitored over one year, followed by source identification and BMP effectiveness studies
	• Five wet weather events in characterization monitoring year
	• Two dry weather samples per month in characterization monitoring year

Mercury Plan	• Monitor a combination of discharge outfalls, upstream tributaries, downstream locations, detention basins and sediments • Three wet weather events per Permit year at eight stations over a three year duration • Two dry weather events per Permit year at eight stations over a three year duration • Total mercury, methylmercury, and suspended sediment monitoring; along with flow estimates
Low Dissolved Oxygen Plan	• Six waterbodies monitored over the course of the Permit term • Each waterbody monitored for two years, with the exception of Smith Canal • Two urban discharge and two receiving water stations on each waterbody with the exception of Smith Canal and Mormon Slough • Two wet weather events during monitoring year • Monthly grab samples for selected constituents at both urban discharge and receiving water monitoring sites • Continuous monitoring of dissolved oxygen, pH, turbidity, and electrical conductivity at receiving water stations • Monitoring of Smith Canal began in November 2008. Monitoring of the remaining waterbodies is anticipated to commence during 2009/2010 and continue through the 2011/2012 permit term. • Monitoring of DWSC used to assess effectiveness of Bubbler System BMP

BASELINE MONITORING PROGRAM

The baseline monitoring program elements are designed to be complementary, in order to provide a comprehensive evaluation of the health of SUA waterways. Urban discharge and corresponding receiving waters on some waterbodies have been sampled for over fifteen years creating long term data sets on watersheds representing various land uses. Dry weather field screening samples outfalls throughout the SUA evaluating a broader area and detecting any illicit connections. Finally, detention basin monitoring samples treated stormwater to evaluate efforts to decrease the pollutant loads entering the local waterbodies.

Urban Discharge and Receiving Water Monitoring

All baseline urban discharge and receiving water monitoring stations are sampled in conjunction and are sampled during two wet weather events and two dry weather events each Permit year. Urban discharge monitoring characterizes the quantity and quality of urban runoff discharged directly to receiving waters within the SUA. Receiving water monitoring is used to evaluate the health of SUA waterbodies, and used to identify POCs. A pair of receiving water sites is sampled on each monitored waterbody (with the exception of Smith Canal). One receiving water site is located upstream of the SUA to characterize the water before contributions from urban discharges. Another receiving water site is located just downstream of the urban discharge location, and is sampled on the same day as urban discharge monitoring and only after discharges have occurred.

The locations of both receiving water and urban discharge baseline sites are shown in **Figure 8-1**. The watersheds included in the monitoring program are:

- Mosher Slough (MS)
- Calaveras River (CR)
- Duck Creek (DC)
- Smith Canal (SC)

In the 2002-2007 permit term, baseline monitoring consisted of urban discharge sites CR46, DC65, MS14, and SC1 as well as downstream receiving water sites which have corresponding labels ending in an R for receiving water. In the 2007-2012 Permit, upstream receiving water sites were added on Mosher Slough, Calaveras River, and Duck Creek. These sites have labels ending in RU or RUS for receiving water, upstream.

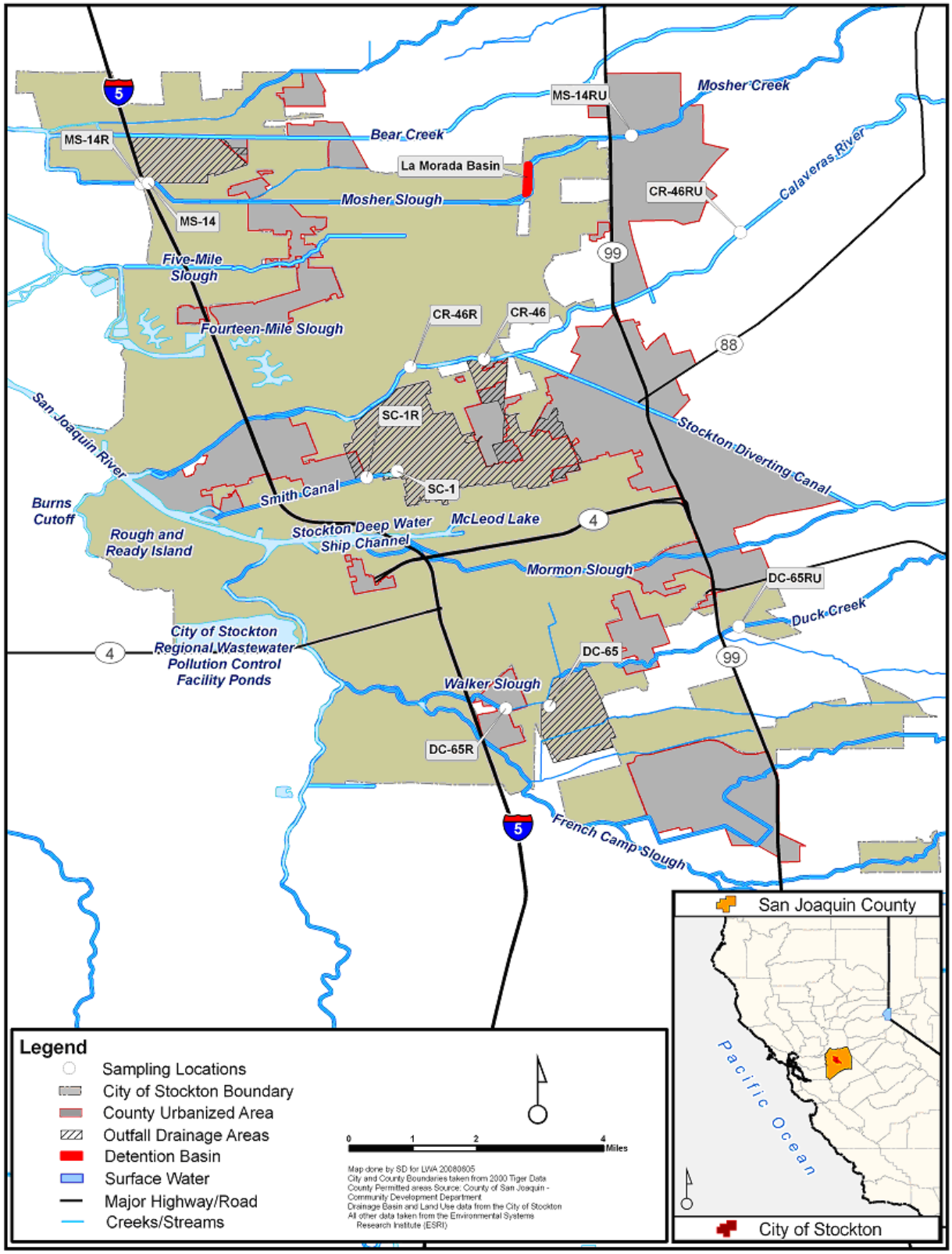

Figure 8-1. Baseline Monitoring Locations and Detention Basin Monitored in Stockton Urbanized Area

Most watersheds in the SUA are tidally-influenced tributaries to the San Joaquin River. The urban discharge monitoring locations shown in **Figure 8-1** were chosen to be representative of the various land uses within the urbanized area. The selected monitoring stations are located at sites with primarily commercial, industrial, residential, or mixed land use drainages; these sites are listed in **Table 8-4**. Except for the Duck Creek site (DC-65), each monitoring site includes a lift station discharging directly to receiving water. The DC-65 site is an outfall discharging to a detention basin.

Table 8-4. Urban Runoff Discharge and Receiving Water Monitoring Sites

Monitoring Program	Station ID	Monitoring Site Location	Predominant Land Use	Watershed Area (acres)
Urban Discharge	MS-14	9211 Kelly Drive	Residential	533
	CR-46	4250 North West Lane	Commercial	169
	DC-65	555 Zephyr Drive	Industrial	343
	SC-1	840 Baker Place	Mixed use	1,866
Receiving Water	MS-14RUS	Mosher Slough at North Cole Drive	Residential	NA
	MS-14R	Mosher Slough at Mariners Drive Bridge	Residential	NA
	CR-46RU	Calaveras River at Solari Road	Agricultural	NA
	CR-46R	Calaveras River at east side of the bridge for El Dorado St.	Commercial	NA
	DC-65RUS	Duck Creek at Stagecoach Road	Industrial	NA
	DC-65R	Duck Creek at Odell Ave. over-crossing	Industrial	NA
	SC-1R	Smith Canal at east side of the bridge for Pershing Avenue	Mixed use	NA

Notes: "NA" – information not available

The comprehensive set of constituents for which samples are analyzed is listed in **Appendix H-1**. It should be noted that during wet weather, all urban discharge samples are collected as flow-weighted composites, with the exception of a few parameters (volatile and semi-volatile organic compounds, oil and grease, and indicator bacteria), which are collected as grab samples. During dry weather, all urban discharge samples are collected as grab samples, and all receiving water samples (dry and wet) are collected as grab samples. A summary of the types of samples taken at each site is provided in **Appendix H-2**. The timing of monitoring events is based on forecasted precipitation amounts and number of days of antecedent dry weather. The first wet weather event of each Permit year targets the first qualifying storm event.

Incoming storm events are tracked and assessed against storm selection criteria[2] and the forecasted reliability that the storm will occur. Wet weather monitoring is particularly challenging in the SUA, as

[2] A qualifying storm event occurs when there is sufficient rainfall within a 24-hour period to monitor at least one drainage basin and one corresponding receiving water station. Storms with a predicted rainfall of at least 0.25 inches at a seventy percent probability of rainfall 72 hours prior to the event are targeted.

rainfall forecasts are often unreliable due to the convective nature of incoming storms. In addition, because storms normally intersect the SUA traveling from the west to the east, it is not unusual for northern part of the SUA to receive significant rainfall, while southern part of the SUA remains dry, or vice versa. With this in mind, wet weather events are timed to capture urban runoff impacts with the highest possible representation of the targeted storm event (i.e., high percent capture) using flow-based composite samplers at urban discharge stations. Data regarding total storm event rainfall, total runoff volume, percent storm event capture, duration of storm events, antecedent dry weather conditions, total runoff volume, and receiving water discharge conditions are recorded and reported with each Annual Report.

Water Column Toxicity Monitoring

The water column toxicity monitoring component of the 2007-2012 Monitoring Program allows for assessment of toxicity in local receiving waters and, if toxicity is found, provides further steps for determination of the cause of toxicity. Toxicity samples are collected from baseline urban discharge and receiving water stations during two wet events and two dry events annually. These samples may be taken at the same time as baseline monitoring grab samples. Because the pesticide study also requires dormant spray period monitoring and pesticides are known to be toxic, sampling events may also be coordinated with pesticide sampling when possible.

Water column toxicity is conducted in accordance with USEPA methods. A minimum grab sample volume of five gallons is collected at each site for the following freshwater species tests:

1) Survival test with water fleas (the crustacean *Ceriodaphnia dubia*)
2) Survival test with larval fathead minnows (*Pimephales promelas*)

Efforts are taken to ensure that holding time does not exceed 36 hours.

Using these two species, a phased approach is used to quantify chronic toxicity:

1) If toxicity is determined to be statically significant and greater than or equal to a 50% increase in *Pimpehales promelas* or *Ceriodaphnia dubia* mortality or reduction in *Ceriodaphnia dubia* reproduction compared to the laboratory control is observed, then a Phase 1 Toxicity Identification Evaluation (TIE)[3] will be conducted as described below and in Footnote 3:
    i) Chelex for divalent metals
    ii) C18 or C8 SPE column for non-polar organics (including pesticides)
    iii) Centrifugation for particulates and associated toxins
    iv) Piperonyl Butoxide (PBO) for metabolically-activated pesticides and some other organics

[3] Although the cause of toxicity in any given ambient water sample can often not be determined without a TIE, the classes of contaminants likely to be the cause of toxicity in ambient waters are often very different than that of effluents. For example, it is not uncommon for effluents to be toxic due to polymers, pH-labile toxicants (e.g., detergents, ammonia), and treatment system by-products (e.g., bisulfite). Classes of contaminants usually of the greatest concern in ambient waters are organics (e.g., pesticides) and metals. Therefore, it is not uncommon to implement a “targeted” TIE approach for ambient water monitoring programs (e.g., CVRWQCB Irrigated Lands Regulatory Program). For ambient waters, the Phase I TIE should be targeted to include methods that assist in the identification of organics and metals. Should the “targeted” Phase I TIE not resolve the cause of the toxicity, then a full Phase I TIE should be implemented.

2) If 100% mortality is detected in a receiving water sample within 24 hours of test initiation, a dilution series testing is conducted (0.5x steps ranging from the undiluted sample to 6.25% of the sample) to determine the magnitude of toxicity.

3) If a toxicant is identified through the TIE process, a Toxicity Reduction Evaluation (TRE) is performed to identify the sources of the toxicity and discuss appropriate BMPs to eliminate the causes of toxicity.

If toxicity is greater than or equal to a 50% increase in *Pimpehales promelas* or *Ceriodaphnia dubia* mortality or reduction in *Ceriodaphnia dubia* reproduction and is statistically different to the laboratory control results, a TRE Corrective Action Plan will be included in the Annual Report to detail the source of pollutants and corrective actions. The SWMP will also be updated to reflect any changes to reduce the pollutants causing toxicity or increase pollutant monitoring.

Dry Weather Field Screening

The primary purpose of the dry weather monitoring program is to identify dry weather flows and potential illicit discharges and illegal connections (see Section 2). The County monitors all of its 46 outfalls each year. Field screening occurs during dry weather periods throughout each Permit year (July 1 – June 30) and each event is preceded by a non-rainfall period of at least two weeks. Grab samples are taken at sites with sufficient flow and analyzed in the field for temperature, pH, phenols, chlorine, total copper, electrical conductivity (EC), methyl blue activated substances (MBAS, which are detergents/surfactants), and turbidity. A list of outfalls planned to be screened every year is provided in **Appendix H-3**. The list will be confirmed in the field and updated as necessary. If sufficient flow exists, source tracking upstream of the exceedance location is conducted in order to isolate the discharge to a specific segment of the drainage system, if possible.

Dry weather field screening is ongoing throughout the dry season and is not coordinated with other baseline monitoring. However, the monitoring activities of baseline monitoring overlap as shown in **Table 8-5**.

Table 8-5. Baseline Monitoring and Reporting Program (MRP) Implementation Schedule

Program Components	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
Water Quality Monitoring Program – Baseline Monitoring																												
Baseline Reporting																												
Annual Report	C					X				X				X				X				P						
Annual Work Plan	C				X				X				X				X				X	P						
Baseline Monitoring																												
Baseline Urban Discharge Sites																												
Water quality parameters	C		F	1		2	F	1		2	F	1		2	F	1		2	F	1		P						
Baseline Receiving Water Sites																												
Water quality parameters	C		F	1		2	F	1		2	F	1		2	F	1		2	F	1		P						
Water column toxicity	E		F	1		2	F	1		2	F	1		2	F	1		2	F	1		P						
20% of Outfalls																												
Dry weather field screening	C				2				2				2				2					P						

Notes:

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance standard will be completed during this quarter. F = First flush event. 1 = One sampling event will be completed during this quarter. 2 = Two sampling events will be completed during this quarter.
PW = Public Works. FM = Facilities Management.

SUPPLEMENTAL WATER QUALITY MONITORING PROGRAMS

Bioassessment Study

The primary objective of the bioassessment monitoring program during the 2002-2007 permit term was to characterize biological and physical conditions in the receiving waters and to collect data to contribute to the Surface Water Ambient Monitoring Program (SWAMP). The SWAMP is a statewide effort to develop standardized measures and criteria for monitoring and assessing the physical and biological integrity of the state's waters, with the goal of developing an Index to Biological Integrity (IBI) for each geographic region of California. Bioassessment monitoring consisted of quantitative biodiversity measurements of benthic macroinvertebrates and qualitative evaluation of habitat quality to allow for the calculation of an IBI for a waterway.

In general, the ultimate goals of bioassessment are to assess the biological integrity of receiving waters, detect biological responses to pollution, and identify probable causes of impairment not detected by chemical and physical water quality analysis. Along with the 2007/2008 Annual Report, the City and County submitted a report on the bioassessment monitoring conducted in 2004 and 2005 (Analysis of Bioassessment Efforts Conducted from 2003 to 2007 under Monitoring and Reporting Program Order No. R5-2002-0181, 2008). The report analyzed the 2004 and 2005 results and identified sites on Duck Creek, Mosher Slough, and the Calaveras River as potentially impaired. Two years of data, however, were insufficient to draw strong conclusions. The data provides a baseline for the area and a Sampling and Analysis Plan to be developed by 2009/10 for further bioassessment monitoring. Additional monitoring may be conducted during 2010-2012.

Detention Basin Monitoring

Detention basin monitoring is designed to evaluate the effectiveness of detention basins in removing various constituents including POCs. Monitoring will occur during 2008/09 and 2010/11 (see **Table 8-3**), and includes influent, effluent, sediment chemistry, and sediment toxicity sampling. **Figure 8-1** shows the location of La Morada Basin to be sampled. It should be noted that the basin has been called Basin 2 or the San Joaquin Area Flood Control Agency (SJAFCA) Basin in the past. La Morada Basin drains about 760 acres and represents primarily residential discharge. During each of the two years of monitoring, sampling influent and effluent sampling will occur during two storms of sufficient runoff and sediment sampling will be performed during the following dry season. The first wet weather sample will target a post first flush event. Wet weather stormwater samples are analyzed for:

- Bacteria
- Field measurements (EC, dissolved oxygen, pH, and temperature)
- Mercury (Total and Methyl)
- Organophosphate pesticides (Chlorpyrifos and Diazinon)
- Pyrethroids
- Total Dissolved Solids
- Total Suspended Solids
- Turbidity

Dry weather sediment chemistry samples are analyzed for organophosphate pesticides, pyrethroids, and total mercury. As much as possible sediment toxicity testing will be conducted in coordination with other

detention basin sampling. Toxicity samples will target a post first flush event and take place during one dry weather event in both the second and forth year of the Permit for a total of two wet weather events and two dry weather events. Samples taken to conduct sediment toxicity analysis will be tested for total organic carbon and grain size. If toxicity is detected and sediment toxicity samples have been taken during the same period as sediment chemistry samples, chlorpyrifos and pyrethroid analysis conducted as part of sediment chemistry sampling will simply be reviewed. If sediment chemistry and toxicity samples have not been taken within sufficient proximity, the toxicity test will be followed with analysis for chlorpyrifos and pyrethroids as shown in **Appendix H-4** (Sediment Toxicity Monitoring Constituents). Until the nature of and cause of toxicity is defined, toxicity testing and sediment chemistry testing for chlorpyrifos and pyrethroids will continue. Overall, detention basin monitoring will be conducted in compliance with the Detention Basin Monitoring Workplan (**Appendix H-5**).

Best Management Practice (BMP) Effectiveness Studies

The BMP Effectiveness Study will continue to evaluate the Legion Park BMP as well as a new study of a Low Impact Development (LID) BMP. The Legion Park BMP is a Media Filter Stormwater Treatment System (MFST) which is intended to reduce pollutants entering the adjacent Yosemite Lake. Based on the Smith Canal Work Plan and an agreement with the Friends of Smith Canal, the City constructed the MFST System and began operation in December 2005. The filter is connected to the 2800 gallons per minute (gpm) low-flow pump, which is the main pump during dry weather and during the early portion of storm events. Flow-weighted composite samples of the Legion Park filter influent and effluent are monitored for pathogens, nutrients, heavy metals and pesticides. The study is discussed in depth in the Legion Park BMP Revised Study Plan (**Appendix H-6)**.

The LID BMP is defined fully in the Best Management Practices Effectiveness Study Plan (**Appendix H-7**). Finding 57 of the Permit describes LID as any stormwater management strategy that maintains or restores natural hydrologic function. The BMP selected for monitoring is Morelli Park Swale A. Swale A is one of three grassy swales designed for pollutant removal at the Morelli Park Boat Launching Facility, which is a recent downtown Stockton redevelopment effort. In 2008/09, a sampling and analysis plan for Swale A will be developed and the swale will be monitored within 2009/10 to 2011/12. Influent and effluent will be monitored each year for a total of ten storm events during the Permit term. In addition, the ability of Swale A to reduce runoff volume will be monitored as this has an impact on the overall pollutant load. Constituents to be monitored include pathogens, nutrients, heavy metals, and pesticides to correspond with the constituents monitored at Legion Park.

Sediment Toxicity

The purpose of the Sediment Toxicity Work Plan is to characterize sediment quality in areas subject to urban discharge and pending these results, to identify BMPs for controllable sources of sediment toxicity. Five SUA waterways listed as impaired due to pesticides as described in **Table 8-6**.

Table 8-6. Pesticide Impaired Waterways within the SUA

Impaired Waterbody	Impaired Reach	Estimated Size Affected	Potential Toxicity Source
Calaveras River	Lower	5.8 Miles	Pesticides
Delta Waterways	Stockton Deep Water Ship Channel (DWSC)	1,603 Acres	Pesticides Dioxin/Furans PCBs Unknown Toxicity
Five-Mile Slough	Alexandria Place to Fourteen-Mile Slough	1.6 Miles	Pesticides
Mosher Slough	Downstream of Interstate 5	1.3 Miles	Pesticides
Smith Canal	Entirety	2.3 Miles	Pesticides

The Permit instructs the Permittees to select sediment toxicity sampling sites based on the following criteria: (1) sediment depositional areas downstream and within close proximity of representative stormwater outfalls; (2) assessment of land uses including residential, suburban residential, commercial, industrial, and mixed; and 3) age of residential and suburban neighborhood drainage areas including less than 10 years old, 10 to 25 years old, and older than 25 years old. To select sampling sites that consider these diverse criteria and also focus on the impaired waterways in **Table 8-6**, the eight sites listed in **Table 8-7** will be sampled.

Table 8-7. SUA Sediment Toxicity Monitoring Locations

Waterbody	Monitoring Location*	Receiving Water Site ID	Land Use	Approximate Developmen t Age
Mosher Slough	Mariner's Bridge	MS-14R	Residential/Commercial	10 – 25 years
Mosher Slough	La Morada Basin	MS-5R	Residential	< 10 years
NA	La Morada Detention Basin[4]	NA	Residential	< 10 years
Five-Mile Slough	Swenson Park Golf Course	5M-27R	Residential/Recreational	≥ 25 years
Calaveras River	Brookside Road	CR-39R	Residential/Recreational	< 10 years
Calaveras River	West Lane Bridge	CR-46R	Mixed Use	≤ 5 to ≥ 25 years
Smith Canal	Yosemite Lake	SC-5R	Residential/Commercial	≥ 25 years
Mormon Slough	Commerce Street	MR-2R	Mixed Use	≥ 25 years
Duck Creek / Walker Slough	Manthey Road Bridge	WK-64R	Mixed Use	≥ 25 years

*Nearest cross street or urban feature
NA = Not Applicable
Mixed Use = Residential/Commercial/Industrial Uses

Sites are shown in **Figure 8-2**. Monitoring at each site will target one post first flush and sample one dry weather event. A staggered sampling schedule will be implemented so that all eight sites are sampled twice during one fiscal year between 2008/09 and 2011/12. An amphipod (*Hyalella azteca*) 10-day survival and growth test as well as an analysis of sediment organic carbon and grain size will be conducted on each sample. If at any site toxicity is determined to be statistically significant and greater than or equal to 50% increase in Hyalella azteca mortality is observed, follow-up testing including targeted sediment Toxicity Identification Evaluation (TIE) and analyses for chlorpyrifos and pyrethroids as listed in **Appendix H-4** will be conducted at the site until the cause of the toxicity is determined. More details are included in the Sediment Toxicity Work Plan attached in **Appendix H-8**.

[4] Detention basin sediment toxicity monitoring will be addressed in the Detention Basin Monitoring Work Plan, updated April 2009.

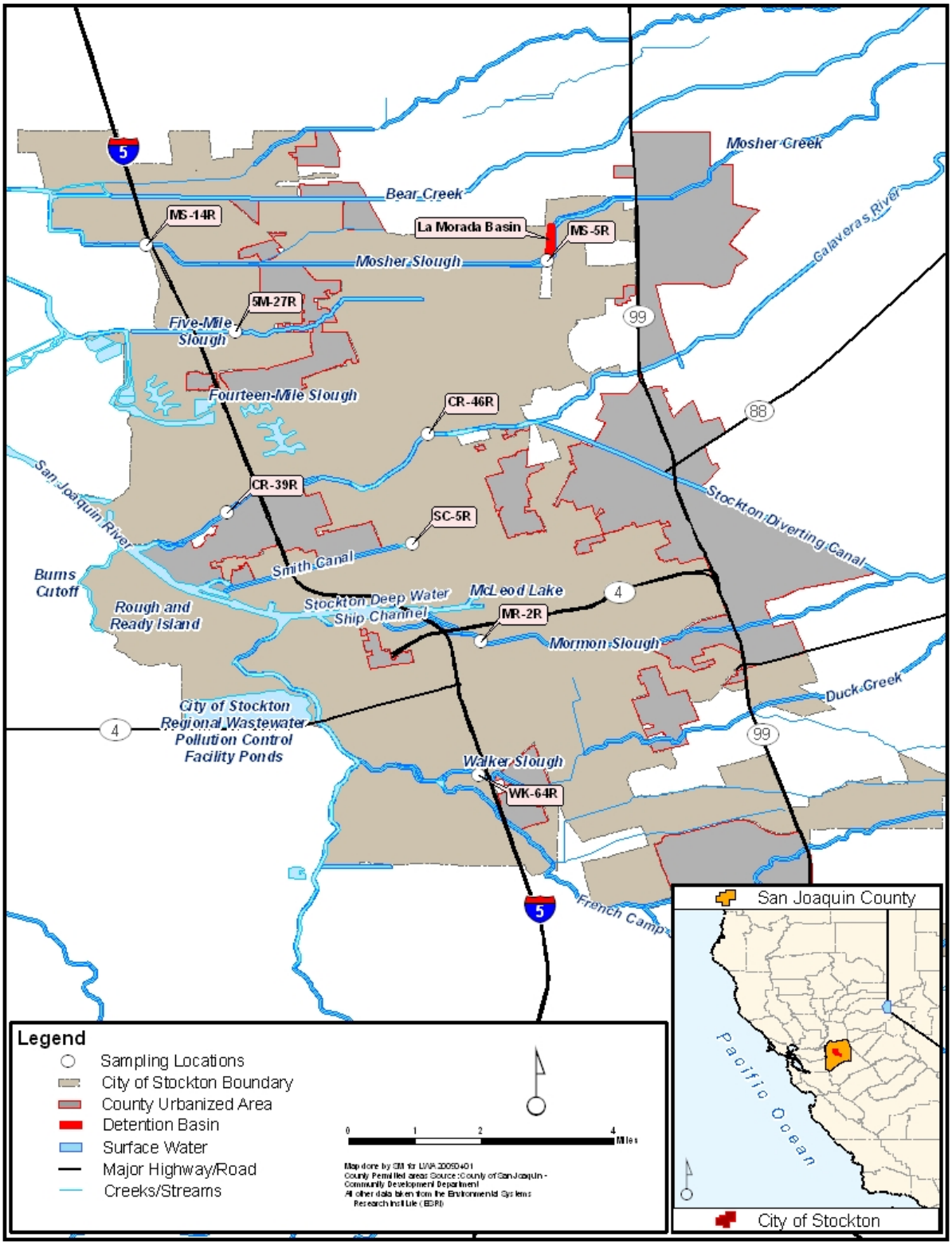

Figure 8-2. Sediment Toxicity Monitoring Locations in Stockton Urbanized Area

The Supplemental Water Quality Monitoring activities overlap as shown in **Table 8-8**.

Table 8-8. Supplemental Monitoring and Reporting Program (MRP) Implementation Schedule

Program Components	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
Water Quality Monitoring Program – Supplemental Monitoring																												
Supplemental Monitoring Development and Implementation																												
BMP Effectiveness Study	N																					P						
Bioassessment Sampling and Analysis Plan	N																					P						
Supplemental Monitoring																												
Baseline Receiving Water Sites																												
Sediment toxicity	N						F		1		F		1		F		1		F		1	P						
La Morada Basin																												
Influent / Effluent	E							2								2						P						
Sediment chemistry	E					1								1								P						
Sediment toxicity	N					1		1						1		1						P						

Notes:

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance standard will be completed during this quarter. F = Post first flush event. 1 = One sampling event will be completed during this quarter. 2 = Two sampling events will be completed during this quarter. ▢ = Plan component will be completed during the specified timeframe.

PW = Public Works. FM = Facilities Management.

REPORTING

A summary of the monitoring performed prior to June 30 of each year will be reported in the Annual Report due September 1st of each Permit year. The report will contain a summary of completed field activities and the appropriate analytical and sampling data. The report will include the results of a complete data evaluation based on the collected quality control (QC) samples and the laboratory quality assurance (QA) program. Data will be qualified according to the EPA standard procedures. The reported data will be compared to the applicable water quality standards in the Water Quality Control Plan for the California RWQCB, Central Valley Region (Basin Plan), the California Toxics Rule (CTR), and California Title 22.

Section 9

Water Quality Based Program

OVERVIEW

The purpose of the Water Quality Based Program is to address specific pollutants that have been identified as impacting or potentially impacting local receiving water quality in the SUA. Special studies addressing these pollutants are designed to characterize their fate and transport and to assist with source identification and identification of control measures. Over the course of the Permit term (2007-2012), the following pollutant plans will be implemented:

- Pesticide Plan (continued from the 2002-2007 permit)
- Pathogen Plan (continued from the 2002-2007 permit)
- Mercury Plan and Methylmercury Monitoring Plan
- Low Dissolved Oxygen Plan (continued from the 2002-2007 permit)

An overview of the pollutant plans is provided in the following sections and in **Table 9-1**. The plans are included in **Appendices I-1** through **I-5**

Table 9-1. Water Quality Based Program–Pollutant Specific Plans

Pollutant Specific Plan	Highlights
Pesticide Plan	• Provide public education/outreach to promote safe pesticide handling and uses of safer pesticide alternatives • Promote integrated pest management (IPM) in municipal and public pest management practices • Monitor waterbodies to determine extent of pesticide contamination and to determine plan effectiveness • Conduct a survey of pesticide use and disposal, track outreach activities and track municipal IPM activities to determine plan effectiveness
Pathogen Plan	• Identify host (human, livestock, dog) sources of fecal bacterial contamination • Implement three-phased approach to mitigate high indicator bacteria levels in six SUA waterbodies • Implement targeted BMPs to mitigate pathogen contamination • Monitor waterbodies to determine levels of fecal indicator bacteria and effectiveness of plan
Mercury Plan and Methylmercury Monitoring Plan	• Promote proper handling and disposal of mercury-containing products through public education/outreach • Assess mercury use in municipal operations • Support BMPs to minimize erosion, and transport of sediment-associated mercury • Monitor total mercury and methylmercury in waterbodies to determine the contribution to Delta mercury levels by the Permittees
Low Dissolved Oxygen Plan	• Identify areas and activities that contribute to low DO in receiving waters • Identify and implement BMPs to mitigate low DO • Monitor waterbodies to determine extent of DO impairment

PESTICIDE PLAN

Description

During previous years, the Program identified organophosphate pesticides (OP; i.e., diazinon and chlorpyrifos) as problematic pollutants that impaired local waterbodies. In order to address the OP pesticide impairment of urban streams, and as specified in Provision D.18.a.•. of the 2002-2007 permit, the Permittees developed a Pesticide Plan that addressed the use of diazinon and chlorpyrifos by the Permittees and others. The Pesticide Plan results from 2002-2007 are summarized in the updated Pesticide Plan (**Appendix I-1)**. Results suggest that diazinon and chlorpyrifos are no longer stormwater POCs in the SUA. Additionally, pyrethroids were not detected in any samples.

As diazinon and chlorpyrifos are phased out, the most important component of the Pesticide Plan will likely be the promotion of IPM, which is applicable to all types of pesticides. The goal of IPM is to control pests using safer, more effective, longer-lasting methods.

The overall goal of the Pesticide Plan is to protect water quality by implementing IPM and associated BMPs to minimize or eliminate pesticides in stormwater runoff. The Pesticide Plan addresses this goal both through water quality monitoring and the promotion of IPM to the public and within municipal operations. As outlined in the Pesticide Plan, the Permittees will continue public outreach and promotion of IPM that was implemented during the 2004-2007 pesticide program and will extend their monitoring efforts to ensure that OP pesticides are no longer POCs. The Pesticide Plan includes the following components:

- Public education and outreach;
- IPM and municipal operations; and
- Water quality monitoring

Implementation Activities

Public Education and Outreach

The Permittees will continue to provide targeted information to the public about safe pesticide use and disposal, as well as less toxic pest control alternatives. Education and outreach programs that have been conducted thus far as components of the Pesticide Plan will continue to be implemented. Key outreach forums/mechanisms include:

- The “Our Water Our World” (OWOW) outreach (including outreach to pesticide retail outlets);
- Annual public outreach messages, including brochures, public service announcements, and newspaper articles; and
- City-sponsored workshops to promote IPM.
- Conducting surveys (every two years) of local or regional sales and use of residential and commercial pest control products.

Municipal Operations

The Permittees will continue to implement pesticide and fertilizer application protocol at park sites, landscaped medians, and golf courses. Public Works—Parks Division (City) and Facilities Management—Parks and Recreation Division (County) will continue to conduct an internal inventory tracking pesticide use. In addition, the Permittees will continue coordination with the Household

Hazardous Waste program to promote proper disposal of pesticides. The IPM program focuses on alternative pest control strategies as urban use of diazinon and chlorpyrifos decreases.

Specific components of the IPM practices include the following:

- Develop and implement IPM protocols, including proper handling, application, and disposal of pesticides;
- Train municipal staff and pest control operators;
- Develop landscape alternative standards; and
- Develop contract language for outside landscape contractors to use IPM.

Water Quality Monitoring

Monitoring will continue annually for diazinon, chlorpyrifos, and pyrethroids in the Calaveras River, Mosher Slough, Five-Mile Slough, and Smith Canal. The objectives will be to determine the Permittees' contribution of pesticides discharged to the above waterbodies, to determine the effectiveness of the phase-out of urban diazinon and chlorpyrifos uses, and assess whether water quality objectives are met. Monitoring will include the following efforts:

- Monitor annually until it is demonstrated that water quality objectives are met
- Sample two wet events coinciding with dormant and post-dormant spray seasons and one dry weather event
- Analyze all water samples for diazinon and chlorpyrifos
- Analyze urban runoff/discharge samples for pyrethroids

Assessment Data and Information

The assessment data and information identifies those items that should be tracked and reported as a part of the Annual Report and used within the program effectiveness assessments. The data and information to be collected may include, but will not be limited to, the following:

- Annual use of pesticides by active ingredient and total area for application (see MO4)
- Areas and types of IPM measures that are being implemented (see MO4)
- Number of retail stores participating in OWOW or similar programs
- Distribution of outreach messages, including numbers of brochures, television commercials, and newspaper articles, with an estimation of the number of people who were reached (see PO3)
- Number of public workshops and number of attendees, with comments collected from attendees
- Number of pest control operators and municipal employees who participated in training workshops (see MO8)

Table 9-2. Pesticide Plan Implementation Schedule

Pesticide Plan Component	Type of Component[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Community Infrastructure Div.	PW – Other Divisions	FM – Capital Projects	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
Pesticide monitoring	C																					P						
Public Education and Outreach																												
OWOW Program outreach	N																					P						
Annual public outreach messages	E					X				X				X				X				P						
Pest control workshops	N																				X	P						
Conduct survey of pesticides available for the public	N																	X				P						
Municipal Operations																												
Review pesticide application protocols	C								X													P						
Implement IPM protocols	C																											
Train municipal employees	E								X				X				X				X	P						
Review and implement landscaping standards	C																					S			P			
Enforce IPM standards for contracted landscapers	C																					S			P			

Notes:

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March (wet events); Q2 = April-June (wet events); Q3 = July-Sep (dry events); Q4 = Oct-Dec (wet events)
3. P = Primary Responsibility; S = Secondary Responsibility

X = Plan component will be implemented during this quarter.

MUD = Municipal Utilities Department

= Plan component will be completed on an ongoing basis or during the specified timeframe.

PATHOGEN PLAN

Description

The focus of the Pathogen Plan is the San Joaquin River tributaries within the SUA that are classified as impaired due to the presence of fecal indicator bacteria. The Permittees developed a Pathogen Plan in accordance with Provision D.18.b of the 2002-2007 permit.

The overall goals of the Pathogen Plan are to identify, monitor and mitigate the controllable sources of bacteria. The Pathogen Plan was designed to accomplish these goals and satisfy permit requirements through the following components:

- Characterization Monitoring (using traditional indicator bacteria) to determine the magnitude of bacterial contamination at various points in each waterbody
- Source Identification (ID) Studies to identify the host (human, cow/horse, or dog) that contributed to fecal contamination
- BMP Development and Implementation to identify effective BMPs to reduce fecal contamination
- Effectiveness Monitoring and Plan Assessment to determine whether BMPs have effected fecal contamination

An additional goal of the Pathogen Plan is to address the Pathogen TMDL[1] in a timely manner. The Pathogen Plan will be conducted over three phases until 2018 (**Appendix I-2)**. The Plan addresses six waterbodies, and is implemented in a three phase approach that focuses on two waterbodies for each phase (**Table 9-3)**. Phase I, focusing on Smith Canal and Mormon Slough, began during the previous permit. Under the current permit, Phase I will be completed and Phase II (Mosher Slough and Five-Mile Slough) and Phase III (Walker Slough and lower Calaveras River) will begin. The total time frame for each phase will be periodically reviewed, and may be reduced based on experience and knowledge gained from the previous phase. The schedule will be reconsidered upon completion of Phase I, during the Permit renewal in 2012.

Table 9-3. Pathogen Plan Implementation Phases.

Monitoring Phase	Waterbody	Start Date	End Date
Phase I	Smith Canal Mormon Slough	July 1, 2004	June 30, 2012
Phase II	Mosher Slough Five-Mile Slough	July 1, 2007	June 30, 2015
Phase III	Lower Calaveras River Walker Slough	July 1, 2010	June 30, 2018

[1] Regional Water Quality Control Board, Central Valley Region. 2008. Total Maximum Daily Load Report for Pathogens In: Five-Mile Slough, Lower Calaveras River, Mormon Slough, Smith Canal and Walker Slough. Final Staff Report. March 2008.

Implementation Activities

Characterization Monitoring

The goal of the characterization monitoring is to determine long-term trends in bacteria loading and identify bacteria "hot spots" that contribute to beneficial use impairments. Monitoring of traditional indicator bacteria (total coliform, fecal coliform, and *E. coli*) is conducted at strategic locations along impaired waterbodies, both at stormwater discharge sites and in receiving waterbodies.

- The Phase II sites (Mosher Slough and Five-Mile Slough) and Phase III sites (Lower Calaveras River and Walker Slough) will undergo characterization monitoring.

Source Identification Studies

Source ID studies are conducted using Microbial Source Tracking (MST). Analytical methods are used to evaluate the organisms (e.g., human or non-human) from which the indicator bacteria likely originated. The MST method is based on species-specific DNA sequences in *Bacteroidales-Prevotella (Bacteroidales)*, which are anaerobic bacteria that are highly abundant in the intestines of warm-blooded animals. At this time, methods have been developed to quantify bacteria from the following hosts: general warm-blooded animal inputs (called "universal"); humans; cow and horses; and dogs. In addition, samples are analyzed for concentrations of human-specific viruses known as entero- and adenovirus.

- Source ID will be conducted for Phase II sites (Mosher Slough and Five-Mile Slough) and Phase III sites (Lower Calaveras River and Walker Slough).
- Characterization monitoring for fecal indicator bacteria only will be conducted during Source ID monitoring events (at locations selected for source identification).

BMP Development and Implementation

The ultimate goal of the Pathogen Plan is to protect beneficial uses through focused BMP implementation. Once a site or activity that contributes to high bacteria concentrations from a specific source has been determined, BMPs can be better identified, selected, and implemented.

- Targeted BMPs for Phase I sites (Smith Canal and Mormon Slough) will be applied based on Source ID results.
- Targeted BMPs for Phase II sites (Mosher Slough and Five-Mile Slough) will be determined and implemented.

A list of current and proposed BMPs, along with schedules for their implementation, are presented in the Pathogen Plan (Appendix I-2).

Effectiveness Monitoring

After BMPs are implemented and monitored for a sufficient amount of time, the success of implemented bacteria control programs will be assessed. Such monitoring will also include receiving water monitoring to determine if recreational use WQOs are attained.

- Effectiveness monitoring will be conducted for Phase I sites (Smith Canal and Mormon Slough) to determine BMP effectiveness.

Table 9-4. Pathogen Plan Implementation Schedule

Pathogen Plan Component	Type of Component[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Community Infrastructure Div.	PW – Other Divisions	FM – Capital Projects	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
Phase I																												
BMP Implementation	E																					P						
Effectiveness Monitoring	N																					P						
Phase II																												
Characterization Monitoring	N																					P						
Source ID Monitoring	N																					P						
BMP Implementation	N																					P						
Effectiveness Monitoring	N																					P						
Phase III																												
Characterization Monitoring	N																					P						
Source ID Monitoring	N																					P						

Notes:
1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March (wet events); Q2 = April-June (wet events); Q3 = July-Sep (dry events); Q4 = Oct-Dec (wet events)
3. P = Primary Responsibility; S = Secondary Responsibility
X = Plan component will be implemented during this quarter. ☐= Plan component will be completed on an ongoing basis or during the specified timeframe.
MUD = Municipal Utilities Department

MERCURY PLAN

Description

The Sacramento-San Joaquin Delta Estuary (the Delta) is on the Clean Water Act Section 303(d) List of Impaired Water Bodies because of elevated levels of methylmercury in fish. To address mercury impairment in the Delta, the Permittees will develop and implement a mercury pollution prevention program.

The Permittees' mercury pollution prevention strategy is described in the Mercury Plan (**Appendix I-3).** The focus of the Mercury Plan is to reduce mercury in urban runoff to the maximum extent possible. The Mercury Plan identifies possible sources of mercury to urban runoff, and describes public outreach and education strategies to mitigate the controllable sources of mercury pollution. It addresses the following goals:

- Public outreach to promote proper use and disposal of products containing mercury, including coordination with household hazardous waste facilities and commercial and industrial outreach
- Assessment and reduction of municipal use of mercury-containing products
- Support of sediment and erosion control efforts
- Characterization of total mercury and methylmercury in Stockton waterbodies and stormwater discharges

Mercury Plan components

Public Outreach

The goal of public outreach is to promote public awareness about mercury pollution prevention, as well as inform the public of the health risk of mercury contamination in fish and DHS fish consumption advisories. Activities include:

- Public outreach programs, including classroom and community presentations and Earth Day Festival participation (see PO3 and PO4)
- Webpage providing mercury-specific information (City of Stockton) (see PO3)
- Coordination with the household hazardous waste collection programs to inform the public about proper disposal of mercury-containing products (see PO1)

Commercial and Industrial Outreach

The Permittees provide pollution prevention information for businesses, with a focus on minimizing pollutants in stormwater runoff. Fact sheets detailing BMPs specific to auto shops, dry cleaners, equipment rental shops, and restaurants are distributed and are available online.

- Information specific to each business, listing products that contain mercury, along with proper handling and disposal procedures, will be added to business-specific fact sheets (see PO5)
- City inspections of commercial and industrial operations will include a discussion regarding mercury-containing products, along with proper handling and disposal procedures (see IC2)

Municipal Operations

The Permittees are required to identify the extent of their use of mercury containing products. This will be accomplished through a mercury use survey, administered to municipal departments. The Permittees will do the following:

- Develop and administer a survey to identify the types of mercury-containing products used by municipal departments, and will report the results
- Identify products with a potential to enter stormwater runoff and determine possible alternative products, or proper disposal procedures
- Develop guidelines for a mercury policy to require elimination of mercury from municipal operations when possible, and to ensure the proper management of mercury-containing products

Erosion Prevention BMPs

Sediment-associated elemental mercury from historic mining activity is a prevalent mercury source within the Central Valley. Erosion control BMPs will be implemented to avoid increased erosion and transport of mercury-contaminated soil into receiving waters via runoff.

Mercury Characterization Monitoring

The Permit requires monitoring to characterize the concentrations and loads of methylmercury entering the Delta from SUA runoff. Characterization studies will focus on total and methylmercury concentrations in receiving waters and discharges (including detention basins). The objective of the Mercury Plan (**Appendix I-3)** and the Methylmercury Monitoring Plan (**Appendix I-4**) at this stage is to conduct baseline monitoring to determine the methylmercury and total mercury concentrations and loads discharged to the Delta by the SUA.

The specific monitoring activities are outlined below:

- A combination of discharge outfalls, major upstream tributaries of the SUA and or downstream locations will be monitored for total mercury, methylmercury, and suspended sediment
- Three storm events and two dry weather events will be monitored each year for three years, including a range of storm intensities
- The instantaneous discharges will be estimated at the sampled locations during the time of sampling, and used to estimate the annual discharge volumes from the Stockton area within each watershed

Table 9-5. Mercury Plan Implementation Schedule

Mercury Plan Component	Type of Component[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Community Infrastructure Div.	PW – Other Divisions	FM – Capital Projects	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
Monitor methylmercury and total mercury	N																					P						
Public Outreach																												
Modify City's website to include information re: mercury	N																					P						
Coordinate with HHW Program to publicize mercury-containing product information and disposal	E																					P						
Commercial and Industrial Outreach																												
Distribute fact sheet for businesses	N																				X	P						
Business inspections	E																				X	P						
Track commercial and industrial business' participation in UWR and CESQG programs	N												X								X	P						
Municipal Operations																												
Develop survey to identify use of mercury-containing products	N								X													P						
Administer survey	N																	X				P						
Develop recommendations for City Departments	N											X										P						
Implement recommendations	N																					P						
Track mercury-containing products disposed through the HHW and e-waste collection events	C								X				X				X				X	P						
Estimate increases in mercury loads in runoff from construction and projected future development	N									X				X				X			X	P						

Develop annual urban runoff mercury load calculations	N									X				X				X			X	P						
Collaboration with Delta MS4s and tracking regional mercury programs	N							X		X		X		X		X		X		X		P						
Coordinate with Regional Board staff to assess air pollution sources to mercury in stormwater	N													X				X				P						
Erosion/Sediment Control																												
Implement Sediment/Erosion Control BMPs	C																					P						

Notes:
1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March (wet events); Q2 = April-June (wet events); Q3 = July-Sep (dry events); Q4 = Oct-Dec (wet events)
3. P = Primary Responsibility; S = Secondary Responsibility

X = Plan component will be implemented during this quarter. ☐ = Plan component will be completed on an ongoing basis or during the specified timeframe.
MUD = Municipal Utilities Department

LOW DISSOLVED OXYGEN PLAN

Description

The Low Dissolved Oxygen Plan will address dissolved oxygen (DO) impairment of the following water bodies:

- Smith Canal
- Mosher Slough
- Five-Mile Slough
- Lower Calaveras River
- Mosher Slough
- Stockton Deep Water Ship Channel (DWSC) near McLeod Lake (Stockton Channel)
- Mormon Slough

A previous report accepted by the Regional Water Board found that urban runoff did not appear to be the cause of low DO in Smith Canal. Instead, the report asserted that impairment was caused by sediment oxygen demand which resulted from sediments being disturbed and resuspended during storm events. The Regional Water Board responded to the report by requiring additional monitoring. Specifically, the Permittees are directed to identify areas and activities which contribute to low DO in all listed receiving waters. Possible causes of low DO include unsewered areas within the SUA, natural vegetation, animal and bird waste, discharges of food wastes, and direct discharges from the sanitary sewer due to overflows and blockages.

Plan Implementation

Smith Canal will be monitored for one additional year and the Calaveras River, each of the sloughs, and the Stockton Channel near McLeod Lake will be monitored for two years. With the exception of Smith Canal and Mormon Slough, each waterbody will be sampled at two urban discharge sites and two receiving water sites. The first urban discharge site was chosen to discharge from a large catchment area located as close to the eastern SUA boundary as possible. The second urban discharge site was chosen to discharge from a large catchment area located as close as possible to the waterbody's confluence with the DWSC. In general, receiving water sites near the SUA boundary will represent upstream urban water quality and water quality leaving the SUA. Receiving water sites, however, are limited to locations that consistently have sufficient water column depth to support *in-situ* water quality monitoring.

During the sampling terms for each waterbody, two storm events per year and one grab sample per month will be analyzed for the following:

- BOD
- COD
- DO
- TSS
- Total Ammonia-Nitrogen
- Nitrate and Nitrite as N
- Ortho Phosphate
- Total Phosphorus

Field analysis will be performed to measure specific conductance, salinity, turbidity, and TDS. Based on data collected, a final report will be submitted to the Regional Water Board by December 1, 2012. The report will identify areas and activities that contribute to low DO, will recommend BMPs to address these issues and areas, and will include a schedule for the implementation of the BMPs.

The complete Low DO Plan is attached as **Appendix I-5**.

Deep Water Ship Channel Bubbler System BMP Effectiveness Assessment

In conjunction with sampling for the Low DO Plan, the effectiveness of a BMP that has been identified as increasing DO in the Stockton Channel will also be assessed. Interspersed along the reach of the DWSC from McLeod Lake to the I-5 overpass are eight (8) laterals which extend from the south shore of the Stockton Channel roughly 75% across the Stockton Channel along its bottom. The laterals are pipes with 1/16'' diameter holes in them every three (3) feet that diffuse air into the water column. The system was originally designed by HDR Engineering (HDR) to address blue-green algae problems in the waterway. At the time of the project, DO was considered adequate, but significant temperature stratification was a concern. After investigating chemical, biological, and physical solutions to this problem, HDR selected this "bubbler" system to increase circulation. The bubbler system is operated continuously from April to October and intermittently for maintenance-only purposes from November to March. Current DO monitoring in the Stockton Channel has shown that DO increases when the bubbler system is turned on.

Stockton Channel monitoring, as outlined in the Low DO Plan Implementation section, will be used to assess the effectiveness of the bubbler system in minimizing low DO events. In addition to this monitoring, water column profiling of temperature may also be conducted to assess the bubbler system's effect on previously observed temperature stratification. A detailed description of the bubbler system and planned monitoring is included as **Appendix I-5**.

Table 9-6. Low Dissolved Oxygen Plan Implementation Schedule

Low Dissolved Oxygen Plan Component	Type of Component[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				MUD – Stormwater Management	MUD – Engineering	MUD – Environmental Control	Community Development	Public Works	Parks and Recreation	City Attorney
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
Dissolved Oxygen Monitoring																												
Smith Canal	E																					P						
Mosher Slough and Lower Calaveras River	N																					P						
Stockton DWSC near McLeod Lake	N																					P						
Five-Mile Slough and Mormon Slough	N																					P						

Notes:
1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March (wet events); Q2 = April-June (wet events); Q3 = July-Sep (dry events); Q4 = Oct-Dec (wet events)
3. P = Primary Responsibility; S = Secondary Responsibility
X = Plan component will be implemented during this quarter. ☐ = Plan component will be completed on an ongoing basis or during the specified timeframe.
MUD = Municipal Utilities Department

Section 10

Program Implementation, Assessment, and Reporting

OVERVIEW

The County is actively and adaptively managing the SWMP through the implementation, assessment, and reporting of the Program Elements and the related Control Measures and Performance Standards. Each of these aspects is summarized below.

PROGRAM IMPLEMENTATION

The SWMP has been structured to identify the specific activities that must be implemented as well as the responsible party for implementing the activities. This has been accomplished through the establishment of Control Measures and Performance Standards. However, some Control Measures and Performance Standards require a series of tasks to be undertaken in order to complete them. Therefore, progressive implementation of the Performance Standards throughout the Permit term will be necessary in order to completely implement the Program Elements.

Successful implementation of the SWMP also requires an extensive training effort by the County to ensure that its employees understand the Stormwater Program and conduct their activities in a manner to minimize pollutants from stormwater discharges. The County's proposed training effort is described within each of the SWMP Program Elements.

Performance Standards

Each Program Element described in the SWMP has a list of associated Control Measures that address activities required by the Permit. The County will follow these Control Measures and implement the associated Performance Standards (i.e., the specific efforts outlined to complete the Control Measures). The Performance Standards will be assessed annually to determine whether they are effective or should be modified.

Assessment Tasks

Assessment tasks have also been identified for each Control Measure. The assessment tasks identify the data that need to be collected in order to document the County's activities and to aid in assessing the effectiveness of the Control Measures. These data will be compiled and reviewed each year to assess trends, improvements, and data gaps.

Annual Work Plan

An Annual Work Plan will be submitted to the Regional Board by **April 1** of each year. The work plan will summarize the proposed activities that the County will undertake during the next fiscal year (July 1 – June 30). While the annual work plan will generally follow the Control Measures and Performance Standards outlined within the SWMP, it may also include additional activities that the County has identified as being necessary during the previous reporting period.

EFFECTIVENESS ASSESSMENT

Paramount to the success of the stormwater program is the need for the County to evaluate the effectiveness of its program by compiling and reviewing program data. As a part of this process, the County is currently assessing effectiveness as a part of the annual reporting process (see each of the Program Elements) and has identified an effectiveness assessment strategy as a part of the SWMP However, the strategy will continue to build upon the results of the annual reports and initial program effectiveness assessments and address the stormwater program in terms of achieving both programmatic goals (i.e., raising awareness, changing behavior) and environmental goals (i.e., reducing pollutant discharges, improving environmental conditions). Different tools will be used to assess these different types of goals or outcomes. In refining the long-term strategy, the County will consider efforts by CASQA to identify methods for assessing the effectiveness of a stormwater program.[1] The County will incorporate these guidelines as applicable in the effectiveness assessment strategy.

Generally, program evaluations will be conducted by comparing how well the County implemented Program Elements, the completion of which are likely to lead to stormwater quality improvement. If correlations can be established between the program (e.g., conducting a survey, assessing BMP implementation) and water quality, it may allow predictions of water quality resulting from implementation of certain types of programs. Over time, correlating water quality improvement to programmatic results may help to identify the most expedient and cost-effective approaches to planning and assessing the program. As a part of the program effectiveness assessment, the County will track the long-term progress of achieving improvements in receiving water quality.

By utilizing the iterative process and conducting effectiveness assessments, the County can use the information gained to adapt its programs and ensure that the resources expended are providing commensurate benefit and are protective of water quality. The iterative process is illustrated in **Figure 10-1**; the points at which effectiveness assessments (implementation and water quality) are conducted are also identified. The results of these assessments and proposed modifications to the SWMP will be provided to the Regional Water Board on an annual basis as a part of the reporting process.

[1] California Stormwater Quality Association (CASQA), Municipal Stormwater Program Effectiveness Assessment Guidance, March 2007.

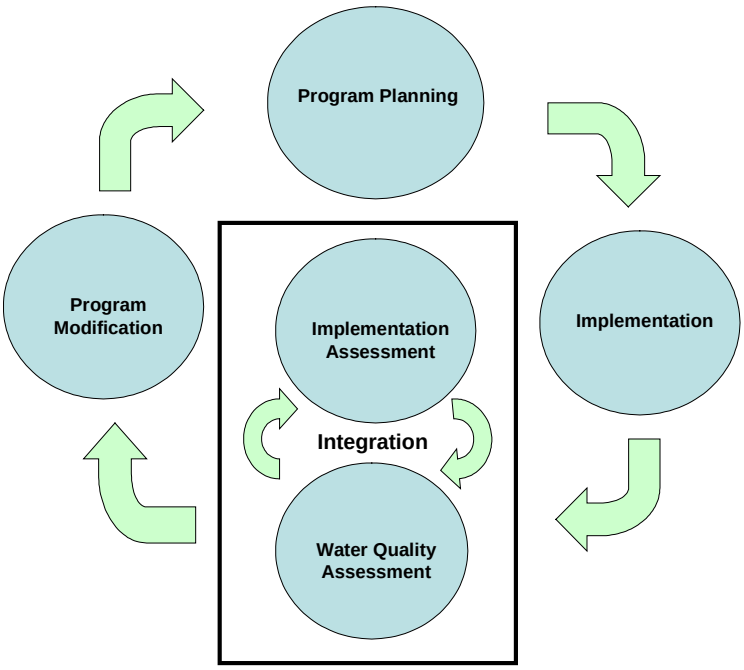

Figure 10-1. Iterative Process and Effectiveness Assessments Outcome Levels

Based on the program evaluation and experience in the implementation of the various Control Measures, the SWMP may need to be modified, revised, or amended periodically in order to respond to changing conditions or to incorporate more effective approaches. In addition, the County may also need to revise the SWMP in order to comply with regional/watershed-specific requirements or waste load allocations developed and approved pursuant to the TMDL process. Proposed revisions will be provided to the Regional Water Board as a part of the Annual Report submittal.

REPORTING

The County will coordinate with the City in developing standardized formats for all reports that are required pursuant to the stormwater Permit. This will include annual reports, fiscal analysis reports, and program effectiveness reports. Pursuant to the federal regulations, all work plans and reports will be signed and certified.

Annual Report

An annual report will be submitted in both electronic and hard copy to the Regional Water Board by **September 1** of every year. The purpose of the Annual Report is to document the status of the SWMP implementation, present results from activities implemented, provide a compilation of deliverables and milestones reached during the previous fiscal year (July 1 – June 30), and report on the overall status and effectiveness of the SWMP. Updates, improvements, or revisions to the SWMP may also be proposed in the Annual Report.

The Annual Report will include:

- An Executive Summary discussing the effectiveness of the SWMP in reducing stormwater pollution to the MEP;
- Summary of activities conducted by the County (including an up-to-date organizational chart) and a comparison of program implementation results to SWMP performance standards;
- Status of compliance with permit requirements including implementation dates for all time-specific deadlines. If the permit deadlines were not met, the County shall identify the reasons why the requirement was not met and how it will be met in the future, including projected implementation dates;
- Identification of BMPs and discussion of their effectiveness;
- Summary of monitoring data, including the identification of water quality improvements or degradation, and recommendations for improvements to the SWMP based on the monitoring results;
- Assessment of stormwater program with regard to applicable water quality standards, including the identification of water quality improvements or degradation;
- If the water quality data indicate that the discharges are causing or contributing to exceedances of applicable water quality standards, the report shall include a discussion of how the Permittees plan to comply;
- A summary of any Reports of Water Quality Exceedances (RWQEs) that have been completed throughout the year and a status update for those in progress;
- A summary of each water-quality based plan (Pathogen Plan, Pesticide Plan, etc.) that includes the data collected in the assessment, all supporting documentation for the evaluation of the data (graphs, charts, etc.), and documentation of the QA/QC procedures.
- Estimate of annual pollutant loads for each sampling station;
- Maps, photographs, and description of monitoring station locations;
- Effectiveness assessment for each program element. The assessment will build upon each consecutive year, identify any necessary modifications, and identify the primary questions that are being answered;
- Recommendations to improve the monitoring program, BMPs, Performance Standards, and the SWMP; and
- Operating data from all City or County pump stations as an appendix in electronic format only to assist in calculating flow volumes as needed.

Report of Waste Discharge

The municipal stormwater Permit expires on December 6, 2012. As a result, the County is required to submit a Report of Waste Discharge (ROWD) to the Board 180 days prior to its expiration (June 6, 2012). The ROWD serves as the application for the re-issuance of the Permit.

Implementation Schedule

Control Measure and Performance Standards	Type of Standard[1]	Implementation Schedule[2]																				Responsibility[3]						
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012				PW – Water Resources Div.	PW – Other Divisions	Capital Projects Div.	FM – Parks & Recreation	Comm. Dev. Dept.	Env. Health Dept.	County Counsel
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2							
Program Implementation																												
Submittal of work plan (by April 1 each year)	C				X								X				X				X	P	S	S	S	S	S	S
Evaluation/Assessment																												
Conduct effectiveness assessment strategy	E					X				X												P	S	S	S	S	S	S
Reporting																												
Review/revise standardized annual reporting format	C					X				X				X				X				P						
Submittal of annual report (by Sep 1 each year)	C					X				X				X				X				P	S	S	S	S	S	S
Submittal of ROWD	C																		X			P						

1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility

X = Performance Standard will be completed during this quarter.

= Performance standard will be completed on an ongoing basis or during the specified timeframe.

PW = Public Works Department

FM = Facilities Management Department

Resolution No. 08-0377

STOCKTON CITY COUNCIL

RESOLUTION AUTHORIZING THE CITY MANAGER TO EXECUTE A MEMORANDUM OF UNDERSTANDING BETWEEN CITY OF STOCKTON AND SAN JOAQUIN COUNTY PERTAINING TO STORMWATER PERMIT OBLIGATIONS

The City of Stockton and the County of San Joaquin entered into an agreement to jointly administer the National Pollutant Discharge Elimination System Permit issued by the California Regional Water Quality Control Board, Central Valley Region on December 6, 2007; and

The City and County have established Stormwater Management Programs to reduce pollutants entering waters of the State; and

The Memorandum of Understanding states that the parties will share program administration and costs required to comply with the National Pollutant Discharge Elimination System Stormwater Permit, where practical; now, therefore,

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

1. This action does not constitute a "project" under the California Environmental Quality Act, and is otherwise categorically exempt under the State of California Environmental Quality Act Guidelines, Article 19, Section 15301, Class 1.

2. The Memorandum of Understanding between the City of Stockton and the County of San Joaquin as Co-Permitees in National Pollutant Discharge Elimination System Permit is approved.

3. The City Manager is directed to execute a Memorandum of Understanding, in substantially the form as presented in Exhibit "A" attached hereto and incorporated herein by this reference.

4. The City Manager is authorized and directed to take whatever actions are appropriate to carry out the purpose and intent of this Resolution.

PASSED, APPROVED, AND ADOPTED SEP 16 2008

EDWARD J. CHAVEZ
Mayor of the City of Stockton

ATTEST:

KATHERINE GONG MEISSNER
City Clerk of the City of Stockton

City Atty:
Review
Date September 10, 2008

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Before the Board of Supervisors

County of San Joaquin, State of California

B-08- **1016**

MOTION: **Mow/Gutierrez/5**

BOARD ORDER APPROVING A MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF STOCKTON AND SAN JOAQUIN COUNTY AS NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM CO-PERMITTEES

THIS BOARD OF SUPERVISORS HEREBY approves the Memorandum of Understanding between the City of Stockton and San Joaquin County as National Pollutant Discharge Elimination System Co-Permittees; and

FURTHER, authorizes and directs the Chairman of the Board of Supervisors to sign the Memorandum of Understanding.

I HEREBY CERTIFY that the above order was passed and adopted on **9/16/08**, by the following vote of the Board of Supervisors, to wit:

AYES: **Ruhstaller, Ornellas, Gutierrez, Mow, Vogel**

NOES: **None**

ABSENT: **None**

ABSTAIN: **None**

LOIS M. SAHYOUN
Clerk of the Board of Supervisors
County of San Joaquin
State of California

Lois Sahyoun

CI-8H033-R3

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE CITY OF STOCKTON AND THE COUNTY OF SAN JOAQUIN
AS Co-PERMITEES
in
NATIONAL POLLUTANT DISCHARGE ELIMNATION SYSTEM PERMIT

This Memorandum of Understanding (MOU) is made and entered into this 16th day of Sept 2008, 2008, by and between the COUNTY of San Joaquin, a political subdivision of the State of California, (COUNTY) and the CITY of Stockton, a municipal corporation, (CITY).

WHEREAS, this National Pollutant Discharge Elimination System (NPDES) MOU is entered into by the CITY and COUNTY, collectively the hereinafter referred to as Permittees, to collaborate and to promote consistency in the administration and management of the National Pollutant Discharge Elimination System Permit (Permit) and Program;

WHEREAS, this MOU defines the coordination and collaboration of resources for regional monitoring, public outreach/education, and planning and coordination of other activities the Permittees are required to implement for the Permit and Program;

WHEREAS, Congress in 1987 amended Section 402 of the Federal Clean Water Act requiring the United States Environmental Protection Agency to establish permit regulations for storm water discharges;

WHEREAS the United States Environmental Protection Agency regulations designated the CITY as a municipality that was required to obtain a National Pollutant Discharge Elimination System Permit for discharge of storm water into the waters of the United States;

WHEREAS, the United States Environmental Protection has delegated to the State of California the authority to issue NPDES Permits and the State of California has given Regional Water Quality Control Boards the responsibility to issue NPDES Permits;

WHEREAS, the Central Valley Regional Water Quality Control Board granted the Permittees their first NPDES Permit (Order No. 95-035 CA0082597) in February 1995 to jointly manage the Stockton area urbanized. In October 2002 Permittees were granted a second Permit (Order No. R5-220-0181-CAS083470) through December 5, 2007. On December 6, 2007, Permittees were granted their current and third and current Permit (R5-2007-0173-CAS083470;

WHEREAS the Permittees have jurisdiction over and maintenance responsibilities for storm drains in the Stockton Urbanized Area and thereby have joint responsibilities and benefits under the Permit and are required to enter into this MOU as a condition of obtaining and continuing its Permit;

WHEREAS, this MOU supersedes the MOU between the CITY AND THE COUNTY dated January 10, 1995 and the Cost Sharing Agreement dated August 19, 1997; and

NOW, THEREFORE, the CITY and COUNTY agree as follows:

I. Filing Status

The Permittees will file the applications for future stormwater permits as co-Permittees. The CITY and COUNTY will each be a co-permittee. Each of the Permittees shall be entitled to review each other's applications and addendums to the applications at least thirty (30) days before the submission to the Regional Water Board and cooperatively expedite the finalization of the applications.

II. Term of MOU

This MOU shall commence upon signature acceptance and shall be effective through the termination date of the Permit (Order No. R5-2007-0173/NPDES No. CSA083470) unless extended by formal action of the CITY and COUNTY. Any change or amendments to this MOU are subject to Clause X. Amendment. Any termination to this MOU is subject Clause IX. Termination.

III. Delegation of Responsibilities:

Shared Responsibilities

A. CITY shall perform for the Permittees water quality monitoring required within the monitoring and reporting program and water quality based programs for Permit compliance including monitoring except the dry weather field screening Any consultants, contractors, and/or laboratories retained to conduct the monitoring and reporting shall be contracted by the CITY, subject to review and written authorization by the COUNTY Public Works Department of the budget and the scope of work in advance of entering in the contract/agreement. A copy of the executed contract/agreement will be provided to the COUNTY for information. The monitoring and reporting program and water based program documentation will be submitted to the COUNTY for its records.

B. CITY shall manage for the Permittees the data and information collected as a part of the water quality monitoring program and shall analyze the data for submittals required or requested by the Regional Water Board. Any consultants or contractors retained for data analysis or management services will be contract by the CITY, subject to review and written authorization by the COUNTY Public Works Department of the budget and the scope of work in advance of entering into the contract/agreement. A copy of the executed contract or agreement will be submitted to the COUNTY for its records/

C. Permitees shall work cooperatively to negotiate, develop, implement and update uniform criteria/guidance documents for the NPDES Program.

D. Permittees shall jointly cooperate to enforce storm water regulation compliance for areas where there is jurisdictional overlap or coexistence.

E. Permittees shall cooperatively and continuously evaluate the business practices, resources and efficiencies of joint responsibilities of the NPDES Program

Individual Responsibilities:

Each Permittee:

F. is solely responsible for compliance with the Permit within its respective jurisdictions.

G. is a legal entity and has the authority to develop, administer, implement, and enforce the NPDES program or the related within its own jurisdictions.

H. Is solely responsible for the records management required by the Permit or agencies records management requirements whichever is greater, except as noted in Clause III. B., above.

I. Shall prepare its respective annual work plans and operating budgets for each fiscal year (July 1 – June 30) for its individual responsibilities. A copy of the work plan and budget shall be exchanged between Permittees, upon request, for information purposes only.

J. Shall prepare and submit annual reports and any other information necessary for the individual implementation of the NPDES program to the Regional Water Board.

K. Shall perform the dry weather field screening for permit compliance within its respective jurisdictions and report the results and any follow up actions to the Regional Water Board as a part of the annual reports.

L. Shall manage its data and information required by the individual responsibilities of the Permit.

M. Shall maintain storm water infrastructure maps for its respective jurisdictions.

N. Shall implement the Illicit Discharge, Detection, and Elimination Program within its respective jurisdictions and develop, implement and enforce local codes and ordinances.

O. Shall implement a facility inspection Program within its respective jurisdictions for the storm waster infrastructure in accordance with the Permit and SWMP.

P. Shall cooperate in sharing information to effectuate best business practices. The Permittees shall continually evaluate the business practices and needs of the parties to maintain business efficiency.

Q. Shall prepare a Report of Waste Discharge as required in the Permit for its respective jurisdiction and individual responsibilities. A copy of the Report of Waste Discharge shall be provided to each Permittee as requested.

IV. Cost Sharing

Permittees shall discuss, negotiate and prepare an annual shared cost budget and scope of work at the beginning of each fiscal year (July 1-June 30). The shared costs shall include, but are not limited to, consultants, contractors, laboratory services, equipment, supplies, advertisements, events and printing. The Permittees' program administrative costs are not shared costs, unless otherwise determined by mutual written agreement after budget adoption by the Permittees and amended to the annual budget.

The following cost share percentage contribution algorithm shall be in effect from execution of this MOU through June 30, 2009 or extended by mutual written agreement. The cost share percentage contribution shall be applied to any and all shared costs within the annual shared budget or amended to the budget by mutual written agreement. The County shall calculate the cost share percentage contribution using the following algorithm:

[(Permittee Phase I Area by Acreage)/(Total Phase I Area by Acreage) + (Permittee Phase I Population/Total Phase I Population)]/2*100.

"Phase I Area by acreage" shall be based upon County generated GIS data and "Permittee Phase I Population in Phase I" jurisdiction shall be based upon current US Census data. The City shall review the percent contribution and concur in its application for invoicing.

Beginning July 1, 2009, unless extended by mutual written agreement as reference above, the cost share percentage contribution algorithm shall be based on mutually agreeable storm drain flow data as determined by land use for the year prior or other algorithm or other mutually agreed to algorithm by Permittees.

V. Invoicing

CITY shall invoice the COUNTY quarterly based upon the costs generated from Clause IV. Cost Sharing.

VI. Other Collaborative Arrangements for Compliance

Nothing in this MOU shall prevent the CITY and/or COUNTY from entering into agreements/MOUs with each other or with other parties to obtain to provide services related to implementation of the Permit or MOU obligations. Such service agreements do not relieve the CITY and/or COUNTY from their obligations under the Permit or this MOU. Obligations under this MOU will supersede any conflicting obligations of separate agreements.

VII. Indemnification

The Permittees shall indemnify, defend and hold harmless each other, its elected officials, officers and employees in connection with any claims, imposition of penalties or any enforcement or other actions, including, but not limited to those brought by federal, state or local agencies having regulatory jurisdiction over the subject matter of this MOU. Where any legal action is deemed necessary to enforce any provision of this MOU, the prevailing Permittee shall be entitled to receive from the other Permittee enumeration.

VIII. Precedence of State or Federal Guidelines or Laws

The terms of all applicable federal and state guidelines, as presently written or as changed during the life of this MOU are hereby incorporated by reference and made part of this MOU and take precedence over any inconsistent terms of this MOU. Inconsistencies between the terms of the Permit and final State or Federal regulations are not applicable unless mandated by court order.

IX. Termination

This MOU may be terminated by mutual written consent of both Permittees with 90 days advance notice. No term or provision hereof shall be deemed waived and no breach excused unless such waiver or consent shall be in writing and agreed to by both Permittees.

X. Amendments to the MOU

No Permittee can alter, revise or amend the MOU without mutual written consent by both parties. Amendments to the MOU shall be prepared and become an attachment to the MOU.

XI. Novation

This MOU shall replace the *Memorandum of Understanding for Filing as Co-Permittees for a National Pollutant Discharge Elimination System Permit* dated January 10, 1995 and the *Cost Sharing Agreement between the CITY of Stockton and the COUNTY of San Joaquin for the Joint CITY-COUNTY National Pollutant Discharge Elimination System Permit Program* dated August 19, 1997.

IN WITNESS THEREOF, this Memorandum of Understanding is executed based upon the date of the last signature applied hereto.

CITY OF STOCKTON

APPROVED AS TO FORM:

CITY ATTORNEY

Date: 10-3-08

CITY OF STOCKTON

By CITY MANAGER (CITY)

Date: 10/14/08

CITY OF STOCKTON

ATTEST:

CITY CLERK

Date: 10/15/08

SAN JOAQUIN COUNTY

APPROVED AS TO FORM:

Lawrence P. Meyers
DEPUTY COUNTY COUNSEL

RECOMMENDED FOR APPROVAL

Date: SEP 16 2008

For By PUBLIC WORKS DIRECTOR
Thomas R. Flinn

COUNTY OF SAN JOAQUIN

Chairman of the Board
Of Supervisors of San Joaquin COUNTY

OFFICE OF THE
COUNTY COUNSEL
COUNTY OF SAN JOAQUIN
COURTHOUSE, ROOM 711
222 EAST WEBER AVENUE
STOCKTON, CA 95202-2777
TELEPHONE 468-2980 (AREA CODE 209)
FAX 468-0315 (AREA CODE 209)

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SHANN S. KENNEDY

May 29, 2008

Ms. Pamela C. Creedon, Executive Officer
Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, California 95827

SUBJECT: LEGAL AUTHORITY TO IMPLEMENT AND ENFORCE THE REQUIREMENTS OF 40 CFR 122.26(d)(2)(i)(A-F), AND RWQCB ORDER R5-2007-0173

Dear Ms. Creedon:

The County of San Joaquin submits this certified Statement of Legal Authority in its capacity as a Permittee under RWQCB Order R5-2007-0173, section D7 (Order). This Statement is an update to the County's Certified Statement of Legal Authority dated September 29, 2003, and shall be incorporated into the San Joaquin County Management Plan dated June 6, 2008.

1. Legal Authority Statement

The undersigned County Counsel for the County of San Joaquin does hereby state that the County has or will timely obtain adequate legal authority to comply with the legal requirements imposed upon the County under RWQCB Order R5-2007-0173 consistent with the requirements set forth in the regulations to the Clean Water Act, 40 CFR [Code of Federal Regulations] 122.26(d)(2)(i)(A-F), and to the extent permitted by State and Federal law and subject to the limitations on municipal action under the California and United States.

2. List of Ordinances

Attached you will also find a description of the various County Ordinances related to urban runoff (Attachment A).

3. Enforceability

The County has and will maintain the legal authority under the Constitution and statutes of the State of California to enact and enforce these duly enacted Ordinances to control pollutant discharges from their MS4s. Such legal authority provides the following authorization to the County:

- To control contribution of pollutants in discharges of runoff associated with industrial and construction activity into MS4s, which covers the statewide general industrial or construction storm water permits, as well as to those sites that do not require permit coverage;
- To effectively prohibit identified illegal discharges;
- To prohibit and eliminate illicit connections to the MS4s;
- To prohibit the discharge of spills, dumping, or disposal of materials other than storm water to its MS4s;
- To use enforcement mechanisms to require compliance with the County storm water ordinance , permits, contract, or orders;
- To control contribution of pollutants from one portion of the shared MS4s to another portion of the storm sewer system through interagency agreements among County and other permit holders;
- To carry out all inspections, surveillance, and monitoring necessary to determine compliance and noncompliance with local ordinances and permits, including the prohibition on illicit discharges to the MS4s;
- To require the use of best management practices to prevent or reduce the discharge of pollutants from MS4s to the maximum extent practicable; and,
- To require that Treatment Control best management practices be properly operated and maintained to prevent the breeding of vectors.

The listed County Ordinances contain specific enforcement provisions and/or are enforceable under the generally applicable enforcement provisions of the County Ordinance Code, listed as follows:

- Section 1-2000 provides for punishment of all violations as a misdemeanor;
- Section 1-2004 provides for civil actions and public nuisance; and,
- Sections 5-10000 et seq., named the County Stormwater Management and Discharge Control , has a detailed enforcement program for violations related to stormwater.

4. Implementation and Challenge

Some of the Ordinances are implemented through permit programs and some are implemented as regulatory programs. Under each Ordinance, one or more County departments or department Directors, or designee, are authorized and directed in each Ordinance to take the actions contemplated by the Ordinance, for example, to consider evidence and make findings, to issue or deny permits, to impose conditions on projects, to inspect and, to take enforcement action.

The County Storm Water Management and Discharge Control Ordinance is the principle County Ordinance addressing urban runoff management. This Ordinance is regulatory and applies to all development projects and to all new and existing facilities in the County's NPDES permit area, whether or not a County permit of approval is required. The County Storm Water Management and Discharge Control Ordinance contains discharge prohibitions and BMP requirements. This Ordinance also authorizes the County to require the submission of stormwater pollution prevention plans.

Other County Ordinances require compliance with the County Storm Water management and Discharge Control Ordinance as a condition for issuance of a County permit. For example, the Public Works and Planning Departments require proof of compliance with the Water Quality Ordinance before discretionary approvals are given or recommended. These departments may also impose specific conditions of approval consistent with the Water Quality Ordinance.

All County Environmental Ordinances are also implemented in part through the application of the CEQA process to proposed projects.

Although proposed County Ordinances are not subject to appeals, they are subject to a public notice and comment process prior to enactment. Enacted Ordinances can be challenged by timely filing writs of mandate in Superior Court. The referendum and initiative process can also be used to challenge enacted Ordinances. The imposition of administrative penalties and fines under these Ordinances (where applicable) can be appealed to the courts. Trial court decisions to impose civil penalties or to grant injunctive or other relief can also be appealed.

5. Administrative and Legal Procedures

In addition to the above authority, the County has in place the following legal and administrative procedures to assist in enforcing the various urban runoff related Ordinances:

Administrative Remedies:

- Notice of Non-Compliance/Notice of Violation
- Administrative Compliance Orders
- Cease and Desist Orders

- Stop work orders (for work requiring a County permit)
- Administrative penalties
- Permit revocation or withdrawal

Nuisance Remedies:

- Infraction citations/prosecution
- Misdemeanor citations/prosecution (explicitly authorized for grading violations and storm water violations)
- Restitution

Equitable Remedies:

- Injunctive relief under State law
- Declaratory relief under State law

Other Civil Remedies:

- Federal Law Claims, e.g. CWA and RCRA Citizen Suits

Should you have any question or need any additional information, please do not hesitate to contact the undersigned.

Sincerely,

DAVID WOOTEN
County Counsel

c: Manuel Lopez, County Administrator
T.R. Finn, Director of Public Works
Steven Winkler, Deputy Director/Operations

ATTACHMENT A

Ordinance Code Section	Description
2-8003	Rules and Regulations applicable to Parks
	(r) washing items in waterway prohibited
4-1075	Dumping Debris in Waterways
	-no person shall dump debris into public waterways
5-3105	Prohibited Uses
	-(II) (a) through (g) no person shall place items in the storm drainage system
	-(III) no water from district can be used to run waste into gutters, etc.
5-6400-Et. Seq.	Prohibition on Discharges
	-no discharge to storm drainage system of waste causing danger to life, safety or nuisance, etc.
5-6414	Draining of Swimming Pools
	- pool water must be discharged into sanitary sewer
5-6900-Et. Seq.	Chapter 10 Enforcement and Appeal
	- enforcement, penalties and appeals for discharges found to be covered in Division 6
5-9102	Prohibitions
	- (b) discharge of sewage sludge or septage to drainage courses is prohibited
5-10000-Et. Seq.	County Storm Water Management and Discharge Control Ordinances
5-10004	Director of Public Works to Administer
5-10101-Et. Seq. 5-10102	Discharge Prohibitions: Pollutants, Swimming Pool Water, Waste Storage, Process Water
5-10103	Exceptions (as noted in Order R5-2002-1081)
5-10104	Compliance with 40 CFR Subchapter N
5-10105	Industrial Regulations
5-10107	Prohibition of Discharges that cause or contribute to a Violation of Order R5-2002-1081 and Penalties for Illegal Discharges
5-10108	Prohibition of Illicit Discharges and Connections
5-10109	Requires Reduction of Pollutants Discharged
5-10110	Requires Best Management Practices
5-10201	Requires Spill Prevention Plan
5-10202	Spill Notification
5-10301	Authority to Inspect, Sample and Photograph
5-10304	Civil Actions
5-10305	Civil Penalties
5-10307	Penalties
5-10310	Violations Deemed a Public Nuisance
5-10312	Administrative Enforcement Powers
5-10316	Emergency Orders and Abatement
5-10940	Cooperation with Other Programs
6-7002	It shall be unlawful to place items in a drainage ditch that will flow downstream to the damage and detriment of either private or public property
6-7009	Penalties for Violation of 6-7002
9-14103	Agriculture Excavation Standards, Development Standards, Erosion Control

Title: NPDES Illicit Discharge and Illegal Connection Management

Reference Document: SJ CO. SWMP 2008
Issuance/Effective Date: 11/21/08
Author (s): Justin Padilla, Engineer Asst. I

SWMP Section: 2-15
Revised Date: 11/21/08
Approved by: Maria Hinsey, Community Infrastructure Division

NPDES nonConstruction Illicit Discharge and Illegal Connection Investigation-Enforcement Management

Investigation/Inspection Procedures:

When a complaint or alleged violation is discovered or reported concerning an illicit discharge, illegal dumping, spills, or illegal connection, etc, a *Violation File* is initiated by the NPDES investigator. If the call, referral, or complaint is concerning a construction or industrial site, a note is made in the Hotline Tracking Log, referring the situation to the pertinent database regarding construction or industrial sites. The *Violation File* will typically contain an Illicit Discharge Hotline Incident Tracking Sheet (Complaint Form), a Chrono Log, correspondence, inspection reports, pictures, communications record with the violators, complainants, witnesses or their representatives, and other pertinent information pertaining to the complaint or alleged violation.

The following investigation/inspection procedures apply:

1. The NPDES investigator initiates a *Violation File*. The *Violation Files* are filed by an ID number assigned by water year, and the order in which the complaint is received. (ex. 0708-001) Paper copies are located in a designated filing cabinet within the Community Infrastructure Division (CID) Office. Electronic copies will be saved on the CID drive. The investigator conducts an investigation of the complaint or alleged violation within two (2) business days. For matters relating to illegal connection, the investigation may span up to 21 business days. A Complaint Form (Sample attached) is completed, pictures are taken, samples of materials may be taken, any witnesses or parties to the action are interviewed and any other evidence is collected to investigate the incident. As needed, the investigator may call other County Departments to assist with the incident, such as the Fire Department, Sheriff, Environmental Health, Emergency Services or other. The incident is also reported to the NPDES Program Manager.

2. The completed and dated Complaint Form, interview notes and other pertinent notes are filed inside the *Violation File*. Any photographs or materials will be dated and filed in the *Violation File*.

3. A chronology of the events is logged in the *Chrono Log* (Sample attached). The *Chrono Log* is filed inside of the front of Violation File.

4. All pertinent information relating to the incident and the enforcement is entered in the *Hotline Tracking Log (*Sample attached).

5. All incident sites within the Phase I boundary are recorded and labeled by address and ID number on the "Phase I Incident Sites" GIS map of San Joaquin County.

Progressive Enforcement Policy for Non-Construction Complaints and Alleged Violations:

San Joaquin County's Ordinance Title 5 – Health and Sanitation, Division 10 – Storm Water Management and Discharge Control, Chapter 4 Inspection and Enforcement provides the NPDES investigator the authority to investigate, inspect and enforce complaints and alleged violations of storm water management. The San Joaquin County Ordinances can be found at:

http://municipalcodes.lexisnexis.com/codes/sanjoquin web/

Pursuant to San Joaquin County's NPDES Permit and Storm Water Management Plan the following progressive enforcement shall be taken for all non-construction complaints and alleged violations.

1. First enforcement action is a verbal warning, if anyone is present during the time of inspection. The enforcement action and date of communication is entered into the *Hotline Tracking Log and the Chrono Log.*

   The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the *Hotline Tracking Log and Chrono Log* and any follow-up material filed in the *Violation File*. Once the matter is cleaned-up, updates are made to the *Hotline Tracking Log and Chrono Log*. Final notations are made in green font indicating the file is closed and the *Violation File* is closed.

2. Second progressive enforcement action is the issuance of a letter (**Warning Notice or Notice to Clean)**. This letter must be sent Certified Mail with return receipt. The Certified Mail receipt is stapled to the copy of the letter

and filed in the *Violation File*. Notation is made in the *Chrono Log and the Hotline Tracking Log* of the issuance of the Notice. The owner/violator will be given ten (10) days* from the mailing date to respond and to clean up the incident/violation. If an imminent hazard to life or property exists, a shorter time frame may be required. Should the letter be returned, the address must be changed and a new letter generated, sent out and copy retained in the *Violation File*. Updated entries must be made in the *Hotline Tracking Log* and *Chrono Log*.

The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the *Hotline Tracking Log and Chrono Log* and any follow-up material filed in the *Violation File*. Once the matter is clean-up a final inspection letter is sent to the owner/violator of the property, updates are made to the *Hotline Tracking Log and Chrono Log*. Final notations are made in green font indicating the file is closed and the *Violation File* is closed.

3. Third progressive enforcement action is issuance of a **Notice of Violation**. The Notice is sent Certified Mail return receipt. The Certified Mail receipt is stapled to the copy of the Notice and filed in the *Violation File*. Notation is made in the *Chrono Log and the Hotline Tracking Log* of the issuance of the Notice. The owner/violator is given twenty-one (21) days* from the mailing date to respond and to clean up the incident/violation. If an imminent hazard to life or property exists a shorter time frame may be required. Should the letter be returned, the address must be changed and a new letter generated, sent out and copy retained in the *Violation File*. Updated entries must be made in the *Hotline Tracking Log* and *Chrono Log*.

   The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the *Hotline Tracking Log and Chrono Log* and any follow-up material filed in the *Violation File*. Once the matter is clean-up a final inspection letter is sent to the owner/violator of the property, updates are made to the *Hotline Tracking Log and Chrono Log*. Final notations are made in green font indicating the file is closed and the *Violation File* is closed.

4. Fourth progressive enforcement action is a **referral letter to San Joaquin District Attorney and the California Regional Water Quality Control Board State** with copy to the owner/violator sent by Certified Mail. The Certified Mail receipt is stapled to the copy of the letter and action noted in the Chrono Log and Hotline Tracking Log and filed in the *Violation File*. Notation is made in the *Chrono Log and the Hotline Tracking Log* of the issuance of the referral letter. Final notations are made in red font indicating the file is

closed on our end and all matters have been referred to the proper authorities.

**Note*: For matters relating to illegal connections, the resolution by the owner/violator shall be made within a period of up to 180 days.

Attachments:

Complaint Form
Chrono Log
Hotline Tracking Log

Illicit Discharge Hotline Incident Tracking Sheet

Incident ID:

Responder Information	
Call taken by:	Call date:
Call time:	Precipitation (inches) in past 24-48 hrs:
Reporter Information	
Incident time:	Incident date:
Caller contact information (*optional*):	

Incident Location *(complete one or more below)*

Latitude and longitude:			
Stream address or outfall #:			
Closest street address:			
Nearby landmark:			
Primary Location Description	**Secondary Location Description:**		
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):	
Narrative description of location:			

Upland Problem Indicator Description

☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage
☐ Wash water, suds, etc.	☐ Other: _____	

Stream Corridor Problem Indicator Description

Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			
Narrative description of problem indicators:				
Suspected Violator (name, personal or vehicle description, license plate #, etc.):				

Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

CHRONOLOGICAL ORDER of EVENTS

DATE	EVENTS and REMARKS

ID #	SOURCE OF CALL	ALLEGED POLLUTANT	POLLUTANT FOUND	APN	OWNER NAME	SUSPECTED VIOLATOR	TELEPHONE
0506-001		food waste	food waste	097-410-46	Santiago's Concina Mexicana	Santiago's Concina Mexicana	
0506-002		sediment	sediment	086-640-31	Adelaide Castrence	Adelaide Castrence	
0506-003		sediment	sediment	157-140-29	Calwater	Calwater	
0506-004		oil, car batteries	oil, car batteries	005-190-32	Howard Ellis	Howard Ellis	368-6349
0506-005		unidentified chemical	NONE	097-140-57	Matthew Chapman	Matthew Chapman	
0506-006		oil	oil	171-100-16	Craig Sheely	Craig Sheely	
0607-001		sewage	NONE	248-090-17	Ryland Homes	Ryland Homes	
0607-002		sewage	sewage	117-060-48	Humiston, Steve & Juliana	Humiston, Steve & Juliana	
0607-003		sediment	sediment	055-320-34	Flag City LP	Flag City LP	
0607-004		oil	oil	105-170-51	Orlando, Sam & Marilyn	Orlando, Sam & Marilyn	
0708-001		sewage	sewage	059-140-38	Lomeli, Candelario	Lomeli, Canderlario	
0708-002		oil	NONE	015-180-54	Herrera, Maria	Herrera, Maria	
0708-003		sewage	sewage	119-261-24	Hadid, Zuhair	Hadid, Zuhair	
0809-001	hotline	hydraulic fluid	hydraulic fluid		Waste Management	Waste Management	
0809-002		trash	trash	111-020-24	Teagarden, Christopher	Cecelia Santiago	
0809-003	CoS	sediment	sediment	155-050-04	San Joaquin County	San Joaquin County	

HOTLINE TRACKING LOG

SITUS ADDRESS	City State Zip	MAILING ADDRESS	Verbal Warning	Notice to Clean	Warning Notice	Notice of Violation	DA Action	State Action
222 Lincoln Center	Stockton CA 95207				1/30/2006			
					5/4/2006			
5316 La Mirada Way	Stockton CA			3/2/2006	4/11/2006	4/28/2006	6/14/2006	
1341 S Oro	Stockton CA			2/28/2006				
				6/21/2006				
4777 E Jahant								
6603 Williamsburg Place	Stockton CA 95207							
1735 S Mariposa	Stockton CA			6/21/2006				
27705 S Leeanna Lane	Tracy							
2617 N Sanguinetti Road	Stockton CA				9/18/2006			
5899 W Banner St	Lodi CA 95242							
18754 St Rt 26	Linden, CA 95236	P O Box 1500	11/3/2006					
10968 St Rt 99 W Frontage Rd	Stockton, CA							
19177 Timothy Court	Woodbridge, CA 95258							
2256 Cherokee Rd	Stockton, CA							
Oak Knoll Avenue	Lockeford, CA							
2206 River Road	Stockton CA 95204							
1601 E Hazelton Avenue	Stockton CA 95202	1810 E Hazelton Avenue						

Final Insp.	
Resolved	NOTES
1/30/2006	
5/8/2006	
	Referred to David Irey
9/11/2006	
	Referred to Solid Waste
6/14/2006	No evidence of violation found.
7/27/2006	
9/25/2006	No violation found.
9/18/2006	
10/15/2006	
12/7/2006	
	Referred to Public health
	No violation found.
	Referred to Environmental Health
	Referred to Solid Waste

INCIDENT REPORT
SAN JOAQUIN COUNTY
STORM WATER MANAGEMENT PROGRAM

Type of Incident: Date _____

Spill ☐ Dumping ☐ HAZMAT ☐

Maintenance Request ☐ Other _____ ☐

Reporting Party:

Name _____ Anonymous ☐

Address _____

Phone _____

Location:

Name _____

Street _____

X- Street / Other _____

Description _____

_____

_____

_____

By: _____ Date: _____

Action: _____

_____

_____

_____

By: _____ Date: _____

Follow Up: _____

_____

_____

_____

_____

_____

By: _____ Date: _____

Follow Up: _____

_____

_____

_____

_____

_____

By: _____ Date: _____

San Joaquin County
Sanitary Sewer Overflow Response Plan

June, 2004

- For overflows in areas served by SJC-maintained sanitary sewer facilities, when arriving on-scene:
  1) Protect nearby storm drain inlets with rubber mats or other seal-oriented BMPs, even if waste has already entered storm drain system.
  2) Notify Stormwater Management Division (SWMD) of SSO.
  3) If waste has reached storm drain system, locate and shut off applicable storm drain outfall pumps.
  4) Address cause of SSO (blockage, etc.)
  5) Clean pavement surface/ affected catch basins with Hydrovac Truck.
  6) Remove storm drain inlet protection.
  7) If waste has entered storm drain system, flush line and pump out outfall sump with Hydrovac Truck.
  8) If outfall pump was turned off, turn it back on.
  9) Dispose of Hydrovac Truck waste in sanitary sewer, noting rough total of waste collected. Record total in Hydrovac Truck Log.

- For overflows in unincorporated areas served by other sanitary sewer agencies:
  1) Notify applicable sanitary sewer agency that SSO is occurring.
  2) Notify SWMD of SSO.
  3) If waste is likely to reach storm drain system, locate and shut off applicable storm drain outfall pumps.
  4) SWMD will follow up to verify clean-up by sanitary agency, and inform County Environmental Health if SSO is not addressed in a timely manner.
  5) SWMD will turn on outfall pumps that were shut off during the clean-up process.
  6) In areas served by non-County storm drainage providers, SWMD will work with storm drainage provider to prevent discharge of waste to surface waters.

SAN JOAQUIN COUNTY
OFFICE OF EMERGENCY SERVICES

HAZARDOUS MATERIALS
AREA PLAN

APPENDIX 11 - OIL SPILLS

JUNE 2003

TABLE OF CONTENTS

SECTION **PAGE**

ANNEX A - INTRODUCTION A-1

APPENDIX A.I. AUTHORITY A-2
APPENDIX A.II. DEFINITIONS AND ACRONYMS A-5
APPENDIX A.III. PURPOSE A-7
APPENDIX A.IV. GEOGAPHIC BOUNDARIES A-9
APPENDIX A.V. RESPONSE SYSTEM AND POLICIES A-10
TAB A. NATIONAL RESPONSE SYSTEM - Not required A-10
TAB B. NATIONAL RESPONSE POLICY - Not required A-10
TAB C. STATE RESPONSE SYSTEM - Not required A-10
TAB D. STATE RESPONSE POLICY - No required A-10
TAB E. LOCAL RESPONSE SYSTEM A-11
TAB F. LOCAL RESPONSE POLICY A-13
TAB G. RESPONSIBLE PARTY RESPONSE POLICY A-14
TAB H. ROLE OF THE ON-SCENE COORDINATOR A-15

ANNEX B - ORGANIZATION B-1

APPENDIX B.I. PLANNING ORGANIZATION B-2
TAB A. NATIONAL RESPONSE TEAM - Not Required B-2
TAB B. REGIONAL RESPONSE TEAM - Not required B-2
TAB C. AREA COMMITTEE B-3
APPENDIX B.II. RESPONSE ORGANIZATION B-5
TAB B. REGIONAL AND STATEWIDE RESPONSE B-9
APPENDIX B.III. INCIDENT RESPONSE PROVISIONS B-10

ANNEX C - OPERATIONAL ADMINISTRATION C-1

APPENDIX C.I. SPILL FUNDING PROCEDURES C-2
TAB A. DOCUMENTATION AND COST RECOVERY PROCEDURES C-2
TAB B. OSC ACCESS TO THE FUND - Not required C-3
TAB C. STATE ACCESS TO THE FUND - Not required C-3
TAB D. DAMAGE ASSESSMENT PROCEDURES - Not required C-3
TAB E. LEAD ADMINISTRATIVE TRUSTEE ACCESS TO THE FUND - Not required C-3
TAB F. LOCAL ACCESS TO STATE FUNDS C-4
APPENDIX C.II. REQUIRED LETTERS AND REPORTS C-5
TAB A. LETTERS – Not required C-5
TAB B. OSC REPORTS – Not required C-5
TAB C. POLLUTION REPORTS – POLREPS C-6
TAB D. POLLUTION INVESTIGATION - not required C-7

ANNEX D - PLAN REVIEW D-1

APPENDIX D.I. REVISION/UPDATE REQUIREMENTS D-2
APPENDIX D.II. EXERCISES/DRILLS D-5
APPENDIX D.III. INCIDENT CRITIQUE AND FOLLOW-UP D-6

ANNEX E - AREA ASSESSMENTS E-1

APPENDIX E.I. AREA OF RESPONSIBILITY – NOT REQUIRED E-2
APPENDIX E.II. AREA COMMITTEE ORGANIZATION – NOT REQUIRED E-2
TAB A. AREA COMMITTEE MEMBERS – Not required E-2
TAB B. SUBCOMMITTEES AND MEMBERS – Not required E-2
APPENDIX E.III. AREA SPILL HISTORY E-3

APPENDIX E.IV. STATEGIES – NOT REQUIRED E-4
APPENDIX E.V. SENSITIVE AREAS E-5
TAB A. ENVIRONMENTALLY SENSITIVE AREAS E-5
TAB B. ECONOMICALLY SENSITIVE AREAS E-6
APPENDIX E.VI. DISPOSAL E-7

ANNEX F - SUMMARY OF AREA RESOURCES F-1

APPENDIX F.I. EQUIPMENT F-2
TAB B. BOOM SYSTEMS F-3
TAB C. PUBLIC WORKS/MUNICIPAL UTILITIES F-3
TAB D. SKIMMERS F-3
TAB E. BOATS F-3
TAB F. BARGES/STORAGE F-3
TAB G. VACUUM TRUCKS F-3
TAB H. SORBENTS F-3
TAB I. PORTABLE PUMPS F-3
TAB J. CARGO TRANSFER PUMPS F-3
TAB K. COMMUNICATIONS EQUIPMENT F-3
TAB L. ELECTRICAL F-4
TAB M. DISPERSANTS F-4
TAB N. MOBILE COMMAND POST F-4
APPENDIX F.II. LOGISTICS F-5
APPENDIX F.III. PERSONNEL AND INFORMATION RESOURCES F-11
TAB A. COAST GUARD MSO PERSONNEL F-11
TAB B. POLICE DEPARTMENTS F-11
TAB C. FIRE DEPARTMENTS F-11
TAB D. HOSPITALS F-11
TAB E. PORT AUTHORITY/HARBOR MASTGERS F-11
TAB F. MARINE PILOTS ASSOCIATION F-11
TAB G. SALVAGE COMPANIES F-11
TAB H. STATE EVNIRONMENTAL AGENCIES F-11
TAB I. LOCAL ENVIRONMENTAL AGENCIES F-11
TAB J. LABORATORIES F-11
TAB K. WATER INTAKE FACILITIES F-11
TAB L. ENVIRONMENTAL INTEREST GROUPS F-12
TAB M. AIRPORTS AND AIRCRAFT RENTAL F-12
TAB N. TRUCKING COMPANIES/CAR RENTALS F-12
TAB O. NOAA WEATHER SERVICE F-12
TAB P. MEDIA F-12
TAB Q. VOLUNTEER ORGANIZATIONS F-12
TAB R. NATURAL RESOURCE TRUSTEES F-12
TAB S. LOCAL EMERGENCY MANAGERS F-12
TAB T. FISHING FLEETS F-12
APPENDIX F.IV. SPECIAL FORCES F-13
TAB A. USCG NSFCC F-13
TAB B. PIAT F-13
TAB C. USCG DRG AND DRAT F-13
TAB D. U.S. NAVY F-13
TAB E. SSC F-13
TAB F. ERT F-13
TAB G. ATSDR F-13
TAB H. FEDERAL F-13
TAB I. STATE F-13
TAB J. LOCAL F-13

ANNEX G - CHEMICAL COUNTERMEASURES G-1

ANNEX H - HEALTH AND SAFETY H-1

APPENDIX H.I. SITE SAFETY PLAN H-2
APPENDIX H.II. RESPIRATORY PROTECTION PLAN H-4
APPENDIX H.III. REQUIRED SAFETY TRAINING H-5

ANNEX I - SCENARIO DEVELOPMENT I-1

APPENDIX I.I. WORST CASE DISCHARGE – NOT REQUIRED I-1
APPENDIX I.II. MAXIMUM MOST PROBABLE DISCHARGE – NOT REQUIRED I-1
APPENDIX I.III. MOST PROBABLE DISCHARGE – NOT REQUIRED I-1

ANNEX J - OPERATIONS J-1

APPENDIX J.I. EMERGENCY NOTIFICATION LIST J-2
APPENDIX J.II. CHECK-OFF LIST J-5
TAB A. NOTIFICATION OF SPILL INCIDENT – Not required J-5
TAB B. INITIAL RESPONSE – Not required J-5
TAB C. RESPONSE STRATEGY – Not required J-5
TAB D. CONTAINMENT AND CLEANUP - Not Required J-5
TAB E. REMOVAL AND WASTE DISPOSAL – Not required J-5
TAB F. SECURE OPERATIONS – Not required J-5
TAB G. COST RECOVERY/DOCUMENTATION – Not required J-5
TAB H. PUBLIC INFORMATION – Not required J-5
TAB I. AIR OPS/AIR SAFETY – Not required J-5
TAB J. PORT TRAFFIC CONTROL – Not required J-5
TAB K. COMMUNICATIONS – Not required J-5
TAB L. FIRE FIGHTING – Not required J-5
TAB M. SALVAGE – Not required J-5
TAB N. WILDLIFE RESCUE PLAN – Not required J-5
TAB O. VOLUNTEERS – Not required J-5

ANNEX K - APPLICABLE MEMORANDUMS OF UNDERSTANDING/AGREEMENT K-1

ANNEX L - PUBLIC AFFAIRS L-1

ANNEX M - ATTACHMENTS M-1

ANNEX A - INTRODUCTION

(§2720 H&S)

APPENDIX A.I. AUTHORITY

A.I.1 LOCAL ADMINISTERING AGENCY

The local Administering Agency for the Hazardous Materials Management Plan Program is the San Joaquin County Office of Emergency Services (OES). The Office of Emergency Services is a Participating Agency under the County Certified Unified Program Agency. Under this program, businesses must prepare emergency plans for hazardous materials incidents, train employees, and make proper notifications during incidents. Administering Agency staff reviews plans, training documents, and general safety conditions during routine inspections.

Other agencies and jurisdictions providing oil spill prevention activities including:

- Fire departments and/or Fire Warden (fire code regulations)
- Regional Air Pollution District (air pollution regulations)
- Environmental Health Division (underground tank and waste handler programs)
- Community Development Department (planning and building codes)

In addition, the Environmental Prosecutions Unit of the District Attorney's Office conducts an integrated enforcement program through the San Joaquin County Toxic Enforcement Strike Force. This enhances both compliance and preparedness among handlers of hazardous materials

A.I.2 LOCAL ORDINANCE OR POLICY

(1600)

Motor Vehicle Accident Spill Policy, County of San Joaquin Toxic Enforcement Strike Force

A.I.3 CALIFORNIA CODES AND REGULATIONS

§25500, Article 1, Chapter 6.95, Division 20, Health and Safety Code

§25403, Article 1, Chapter 6.95, Division 20, Health and Safety Code

§25404.1(b)(1), Chapter 6.11, Division 20, Health and Safety Code

§25185, Article 1, Chapter 6.95, Division 20, Health and Safety Code

§25507, Article 1, Chapter 6.95, Division 20, Health and Safety Code

§25508, Article 1, Chapter 6.95, Division 20, Health and Safety Code

§25531, Article 1, Chapter 6.95, Division 20, Health and Safety Code

101085, Article 2, Chapter 2, Part 3, Division 101, Health and Safety Code

§2720, Article 3, Chapter 2, Title 19, California Code of Regulations

§852.60-852.65,

§852.62.2, Article 2, Chapter 5, Subdivision 4, Division 1, Title 14, Code of Regulations

§2735.1, Article 1, Chapter 4.5, Division 2, Title 19, California Code of Regulations

§5192(q)(6), Article 109, Chapter 4, Division 1, Title 8, California Code of Regulations6

§5192(q)(3)(a), Article 109, Chapter 4, Division 1, Title 8, California Code of Regulations

§5192(l)(6) and (7), Article 109, Chapter 4, Division 1, Title 8, California Code of Regulations

§38132, Article 2, Chapter 4, Part 23, Division 3, Title 2, Education Code

§409.5, Title 11, Part 1, California Penal Code

Natural Disaster Assistance Act, as amended: §8680 through 8692, Article 1-5, Chapter 7.5, Division 1, Title 2, California Government Code

§8607, Article 9.5, Chapter 7, Division 2, Title 2, California Government Code

FIRESCOPE Incident Command System (ICS) Module HM 120-1. Section IV

§36, 133, 135, Harbors & Navigation Code

A.I.4 FEDERAL CODES AND REGULATIONS

29 CFR 1910.120

29 CFR 1910.120(q)(6)

29 CFR 1910.120(q)(11)

29 CFR 1910.120(l)(1)(i)

29 CFR 1910.120(p)(8)(i)

29 CFR 1910.120(q)(3)(i)

Robert T. Stafford Disaster Relief and Emergency Act, Public Law 93-288, as amended.

Title 44, Code of Federal Regulations, Part 206

APPENDIX A.II. DEFINITIONS AND ACRONYMS

A.II.1 WATERS OF LEGAL DELTA

Marine Waters: If an oil spill threatens "marine waters" in the Legal Delta, then an OSPR/USCG Unified Command may be implemented. OSPR is only a recognized Incident Commander if the spill is 42 gallons or more.[1]

Waters of the state: an oil spill threatens, but not marine waters, then the local Incident Commander may continue through clean up until relieved by the State agency Coordinator.[2]

A.II.2 PHASES OF INCIDENT

(4460)

A.II.2.1 Initial Response Phase

(3260)

Once an oil release occurs, or threatens to occur, the response system is initiated under this plan. First response agencies (e.g., fire, law enforcement, medical) initiate mitigation efforts. Their responsibility includes deciding whether an oil spill is involved, protecting responders, and mobilizing appropriate backup resources. They also take initial steps to protect the public through rescue, area isolation or evacuations, and containment actions that do not present a high exposure risk to first responders.

See Appendix 13-1

A.II.2.2 Control and Stabilization Phase

(4520)

First responders will mobilize appropriate resources that can undertake specialized activities such as public health protection and monitoring, entry into contaminated zones, hazard identification and containment, and investigation. The County is presently able to support on-scene activities, if warranted, with resource and command coordination capabilities at local emergency operations centers.

A.II.2.3 Clean up and Recovery Phase

---

[1] x8670.28 (a) (1), Article 5, Chapter 7.4, Division 1, Title 2, California Government Code

[2] x320, p. 12, Oil Spill Contingency Plan, State of California, 1983.

(4530)

Once the incident is controlled, the response system is prepared to shift to long-term mitigation activities. The San Joaquin County Environmental Health Division is responsible for monitoring cleanup, coordinating investigations, undertaking exposure monitoring and follow up, and preparing necessary mitigation reports and documentation. The District Attorney's Office will coordinate efforts to establish liability for the incident.

Delta: If waterways, then state and/or federal agencies will provide these actions. State Fish and Game, Department of Water Resources, and Water Quality Control Board; along with Coast Guard share this responsibility.

- See Agency Responsibility table in Section 12.

A.II.2.4 Response Termination Phase

(4580)

An incident will be terminated (sudden) or be suspended (scaled down). Each of these requires different demobilization approaches. The decision should be based on advise of the Safety Officer, and Command Staff.

- Priorities of release may be different.

Coordination and organization may be more or less difficult depending on sudden termination or scaled down operation.

APPENDIX A.III. PURPOSE

A.III.1 ADMINISTRATIVE OBJECTIVE

Meet minimum State and U.S. Coast Guard requirements for the development of oil response procedures and capabilities. [3]/

A.III.2 OPERATIONAL OBJECTIVES

The overall goal of these oil spill response procedures is to take **initial** steps to protect public health, prevent environmental damage, and assist appropriate state and federal agencies in ongoing response and recovery of oil spills. These procedures have three objectives:

1. Maintain response capabilities to **initially** contain and control releases and mitigate their impact on the public and environment.

2. Maintain the capability to oversee long-term effects on public.

3. Ensure that the efforts of all jurisdictions and agencies are effectively integrated.

A.III.3 PREVENTATIVE OBJECTIVE

A primary objective is the prevention of incidents in the first place. County prevention activities include a combination of inspections and regulatory oversight, training courses, and enforcement actions. A primary tool for accomplishing prevention is enforcement of State and Federal statutory requirements. [4]/

A.III.4 GENERAL

(4330)

This appendix describes the San Joaquin Operational Area (OA) oil spill response system according to provided guidance or statutory requirements.[5] / A checklist of minimum requirements has been provided to assure an adequate plan.[6]/ The OA jurisdictions have specific procedures and authorities for hazardous materials response in their individual operational plans.

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[3] §25500, Article 1, Chapter 6.95, Division 20, Health and Safety Code

[4] §25500, Article 1, Chapter 6.95, Division 20, Health and Safety Code

[5] §8574.7, Article 3.5, Chapter 7, Title 2, California Government Code

[6]. §8670.35, Article 5, Chapter 7.4, Title 2, California Government Code. §852.62.2, Article 2, Subchapter 1, Chapter 5, Subdivision 4, Division 1, Title 14, California Code of Regulations.

This appendix does not supersede those plans or policies but instead summarizes the common ideas and capabilities contained in the individual operational plans.

San Joaquin County organizes and structures hazardous material emergency response according to FIRESCOPE, Fish & Game, Coast Guard, and SEMS guidance. [7]/ Section 4 of this document describes how the FIRESCOPE system is applied and adapted to oil spill incidents within the San Joaquin OA response jurisdiction.

[7] §8608, Article 9.7, Chapter 7, Division 1, Title 2, Government Code; Incident Command System (ICS) Module HM120 - **Fi**refighting **RES**ources of **C**alifornia **O**rganized For **P**otential **E**mergencies

APPENDIX A.IV. GEOGAPHIC BOUNDARIES
(1410)

This plan is limited to response within the San Joaquin OA geographical boundaries. Other surrounding OA jurisdictions did not opt to participate in regional planning.

Regionally, oil spill response planning is targeted for "marine waters"

> **"Marine waters"**: means those waters subject to tidal influence, except for waters in the Sacramento-San Joaquin Delta upstream from a line running north and south through the point where Contra Costa, Sacramento, and Solano Counties meet; [8]/
>
> **Includes:** the waterways used for waterborne commercial vessel traffic to the Port of Stockton and the Port of Sacramento. [9]/

[8] x8670.3(i), Article 1, Chapter 7.4, Division 1, Title 2, California Government Code

[9] x8670.28 (a) (1), Article 5, Chapter 7.4, Division 1, Title 2, California Government Code

APPENDIX A.V. RESPONSE SYSTEM AND POLICIES

TAB A. NATIONAL RESPONSE SYSTEM - Not required

TAB B. NATIONAL RESPONSE POLICY - Not required

TAB C. STATE RESPONSE SYSTEM - Not required

TAB D. STATE RESPONSE POLICY - No required

TAB E. LOCAL RESPONSE SYSTEM

Multiple documents describe the San Joaquin Operational Area response system, procedures and processes. Specific procedures for each jurisdiction are listed since agencies will need to follow Area Plan and local procedures. Some of these documents are contained in the appendices of this document and others are referenced only.

In some cases a locally based State agency could be Incident Commander. This would still be looked as a “local response.” If, instead, an incident overwhelms local capabilities, or is forecasted to deplete available local resources, the operational area may request a "State" response to look to the 11-county region (OES Region IV), or statewide for assistance.

TAB E.1 EMERGENCY OPERATIONS PLANS

1. City of Escalon Emergency Operations Plan
2. City of Lathrop Emergency Operations Plan
3. City of Lodi Emergency Operations Plan
4. City of Manteca Emergency Operations Plan
5. City of Ripon Emergency Operations Plan
6. City of Stockton Emergency Operations Plan
7. City of Tracy Emergency Operations Plan
8. San Joaquin County Emergency Operations Plan
9. San Joaquin Operational Area Emergency Operations Center Procedures
10. San Francisco Oil Spill Prevention and Response Plan

TAB E.2 JOINT TEAM PROCEDURES

1. Joint Hazardous Materials Team Operational Guidelines, Procedures, and Equipment Manual.
2. State of California Hazardous Materials Incident Contingency Plan

TAB E.3 COMMUNICATIONS CENTERS

1. FCC EAS Plan; Sacramento-Sierra Emergency Area
2. San Joaquin Operational Area Multi-Agency Coordination System Procedures
3. County of San Joaquin Sheriff's Communications Center Procedures
4. City of Stockton Fire Department Communications Center Procedures

TAB F. LOCAL RESPONSE POLICY

San Joaquin County organizes and structures hazardous material emergency response according to FIRESCOPE, Fish & Game, Coast Guard, and SEMS guidance. [10]/ Section 4 of this document describes how the FIRESCOPE system is applied and adapted to oil spill incidents within the San Joaquin OA response jurisdiction.

[10] §8608, Article 9.7, Chapter 7, Division 1, Title 2, Government Code; Incident Command System (ICS) Module HM120 - **Fi**refighting **RES**ources of **C**alifornia **O**rganized For **P**otential **E**mergencies

TAB G. RESPONSIBLE PARTY RESPONSE POLICY

(2213)

San Joaquin Area Plan stressing involving a responsible party into the Command due to funding of overall response, and knowledge and resources available to public sector responders.

See also ANNEX M – ATTACHMENT 12

TAB H. ROLE OF THE ON-SCENE COORDINATOR

Within the San Joaquin Operational Area there are federal jurisdictions involving water conveyance systems (canals and San Joaquin Delta) military bases and other institutions. Responses to non-staffed federal facilities such as the Delta-Mendota Canal will involve an initial response by the local agencies with subsequent notification to the Federal Authority.

TAB H.1 FEDERAL ON-SCENE COORDINATOR –OSC

Local responders will also initially respond to oil spills in the Delta. An incident not under the responsibility of a private party, or spills that are threats to persons or environment, will require immediate notification of the State Fish & Game (OSPR), and a Federal On-Scene Coordinator (OSC) to manage the incident. This can be United States Coast Guard, Environmental Protection Agency, or Department of Defense. Initial notification could be made through the United States Coast Guard. [11]/ Telephone numbers for federal agencies are available from the San Joaquin County Office of Emergency Services.

TAB H.2 FEDERAL FIXED SITES

Response to military bases and other federal fixed facilities will be dictated by the potential threat to the public and/or environment. Federal resources at the site will make initial response with local responders notified to help manage the incident. In a stable incident, mitigation and cleanup will be left to the federal agency with responsibility for that site.

TAB H.I STANDARD RESPONSE STRUCTURE - Not required

TAB H.II SONS RESPONSE STRUCTURE - Not required

[11] Oil & Hazardous Substance, Federal Pollution Contingency Plan, Annex I, pp.1103

ANNEX B - ORGANIZATION

APPENDIX B.I. PLANNING ORGANIZATION

TAB A. NATIONAL RESPONSE TEAM - Not Required

TAB B. REGIONAL RESPONSE TEAM - Not required

TAB C. AREA COMMITTEE

TAB C.1 COMMITMENT AND APPROVALS

Formal approval is obtained during the preparation and approval process for some of these documents. Their governing board, or designee approves local plans and procedures that are not multi-jurisdictional.

TAB C.1.1 *Joint Hazardous Materials Team Agreement*

This agreement requires signatory jurisdictions follow team policies and the Area Plan. Jurisdictions include: County of San Joaquin, Cities of Stockton, Lodi, Tracy and Manteca, California Department of Transportation, and signatory rural fire districts.

TAB C.2 INDUSTRY COORDINATION

An emergency plan is required to be developed by an employer as defined. This plan is to address emergency response at uncontrolled oil spills by employees. [12]/ An employer response plan is also required under the Federal Resource Conservation and Recovery Act of 1976 (RCRA). [13]/

These statutes encompass the employers' responsibilities for the response plan, elements for the plan and procedures for handling emergency incidents. The plan is also to address how the private business employer will interact with the public sector emergency responder.

TAB C.3 COORDINATION BETWEEN AGENCIES
(4230)

A signature sheet is included in the Joint Team Polices, signed by participating agencies. Area Plan does not have a signature page.

TAB C.3.1 *Emergency Services Council*

General emergency response coordination of jurisdictions within the County occurs through the San Joaquin County Emergency Services Council. This Council meets periodically for review and approval of disaster and emergency plans. The Council establishes working groups to address specific issues such as hazardous materials. A

[12] 29 CFR 1910.120 (l)(1)(i)
[13] 29 CFR 1910.120 (p) (8)(i)

copy of the description and membership of the Emergency Services Council is available in the County Office of Emergency Services.

TAB C.3.2 *Fire Chiefs' Association Special Operations Committee*

This multi-disciplinary standing committee does emergency planning and coordinating tasks regarding hazardous materials, Urban Search & Rescue and other issues.

TAB C.3.3 *San Joaquin County Toxic Enforcement Strike Force*

The San Joaquin County Office of the District Attorney conducts monthly meetings providing an open forum for any agency in the operational area to discuss current issues concerning hazardous materials or wastes enforcement and strategies for obtaining compliance with current regulations. Some agencies that participate in these meetings include the San Joaquin County Office of Emergency Services, San Joaquin County Environmental Health Division (CUPA), California Department of Fish and Game, the Regional Water Quality Control Board, the San Joaquin County Sheriff's Office, several municipal utility districts, the San Joaquin County Agricultural Commissioner's Office, and many others.

TAB C.3.4 *Joint Team Steering Committee*

Meeting monthly, this steering committee reviews changes in policies, procedures, and other response related issues. Several sub-committees have been formed to focus on specific issues such as equipment and training.

TAB C.3.5 *Weapons of Mass Destruction Steering Committee*

This committee meets monthly-to-quarterly, depending on pending issues, to coordinate the implementation of standardized methods to the response of chemical or biological incidents. These procedures or equipment purchases are reviewed against the hazardous materials planning at attempt smooth transition from an oil spill incident to a WMD event.

APPENDIX B.II. RESPONSE ORGANIZATION

B.II.1 LOCAL INCIDENT COMMAND SYSTEM

The San Joaquin Operational Area response system is based on the Incident Command System model as developed under Standardized Emergency Management System (SEMS), FIRESCOPE, and the National Wildfire Coordinating group. Under this system, an San Joaquin Operational Area specific structure is in place called the "Standardized ICS Structure for Hazardous Materials Incidents."[14]

Most emergency response jurisdictions, including special districts, cities, and County of San Joaquin, have adopted SEMS, and have signed an Operational Area Agreement that uses SEMS as it's base management structure at field, local EOC, Operational Area MACS, and Area Command levels.

B.II.1.1 Multi-Agency Coordination (MAC) GROUP

(2223.1)

The Operational Area EOC functions as a MAC Group to area jurisdictions. Two primary tasks are resource acquiring/dispersal, and information flow. If local resources are inadequate, the San Joaquin County Office of Emergency Services, serving as the Operational Area Multi-Agency Coordination (MAC) Group, and the local mutual aid coordinators will access additional resources through mutual aid agreements.

B.II.2 EMERGENCY PERSONNEL ROLES, AUTHORITIES AND RESPONSIBILITIES

(2200)

Agency task descriptions are intended to ensure proper role definition, prevent duplication or failure to undertake needed actions, and to improve coordination among multiple responding agencies.

Local agencies and locally based state agencies with legal or procedural responsibilities will fill the appropriate positions of the standard ICS structure. Duties and responsibilities for each position are clearly identified with references to specific policies and/or procedures. Some of these detailed procedures are in the Appendix of this plan.

See ANNEX M - ATTACHMENT 12

[14] CFR 1910.120(q)(3)(11)

B.II.2.1 Incident Command
(2210)

An Incident Commander, or Unified Incident Command, will be established at all incidents. Incident management authority is established by regulation, ordinance, jurisdictional establishment, financial, policy, or written agreement.

See "Incident Command Authority" Table, ANNEX M - ATTACHMENT 12.

Where Incident Command is unclear, or where the incident command agency is not present, first response agencies will identify an Incident Commander or will establish a unified command.

B.II.3 LOCAL RESPONSE COORDINATOR – INITIAL INCIDENT COMMANDER
(2223.1.6)

Initial Incident Commander: If a local agency is the initial Incident Commander, they will involve public agencies and a network of businesses from the private sector for emergency response. [15]/ Incident management and mitigation will depend on the size of the incident and the capabilities of the local responders. The local Commander(s) will be selected based on the Incident Command table. See 3.13.3 - Transfer of Command.

Unified Command: The state and federal agencies may form a Unified Command, if determined appropriate, local agencies could become a member, based on the Incident Command table. See Appendix 12-1

Assisting Agencies: Specific pre-determined roles for selected agencies have been developed and distributed to agencies. This is to keep span of control of various local, state, and federal agencies assigned various tasks in an oil spill.

B.II.3.1 Transfer of Command
(2210,4450)

Incident Command may be transferred to another agency or a Unified Command of multiple agencies when jurisdiction or responsibility for the incident changes.

California Fish & Game and/or the US Coast Guard will take the Incident Command responsibility for oil spills once on scene. An incident could also include the Environmental Protection Agency (EPA) if designated boundaries lines are overlapped. Some conditions must be meet before Fish & Game has a Command role.

---

[15] Public agencies can include fire, law, emergency medical service, public works, special districts, utilities, and environmental health services. Some may be locally based state and federal agencies.

- See Incident Command table in ANNEX M - ATTACHMENT 12.

B.II.3.2 Local Government Representative

(2223.1.6)

Once Command is turned over to state and federal jurisdiction, and no local agency is part of the single or unified command, then each local jurisdiction, as per ICS standards, is to identify their Agency Representative to the Command position. There is no single Local Government Representative that has authority over others. San Joaquin OES can assist in local coordination.

If OSPR, USCG, or EPA is determined to be the Incident Commander, then each local agency will assign a Agency Representative to work with the Command Staff.

B.II.3.3 Operational Area

(2223.1.2)

Multi-Agency Coordination System (MACS): The Office of Emergency Services implements the Operational Area Multi-Agency Coordination System (MACS) to assist in intelligence sharing, resource management, and jurisdictional coordination. This function is normally performed in the EOC. This center is equipped with various radio, telephone, and intra/internet systems to ensure communications with incident commands and jurisdictional emergency operations centers.

Disaster Welfare Inquiries: The EOC can operate a center for collecting information on victims and distributing this to involved emergency medical agencies, the Incident Command staff, and the relatives of victims. The local Red Cross staffs the Disaster Welfare Inquiry Team in the EOC that provides this function. [16]/ Additional personnel from Mental Health, the Coroner's Office, or bilingual services may also be involved. Cities may elect to do this function themselves.

Environmental Health Division, Public Health Services: This agency serves as the Certified Unified Program Agency (CUPA) for the County and is generally responsible for coordinating with local, state and federal agencies with cleanup responsibilities and authorities and determination of public health risks.

B.II.3.4 Local Emergency Proclamations and Declarations

[16] Details of this are in the Memorandum of Understanding between the American Red Cross and San Joaquin County and the County Multi-Casualty Incident Plan

An incident may or may not require a “Proclamation of Local Emergency” by a designated official with one of the cities or the County (special districts cannot proclaim an emergency). The Local Health Officer may issue a “Declaration of a Local Health Emergency” if emergency measures are needed to prevent a serious threat to public health. [17]/

Protocols for making such proclamations or declarations will be consistent with the State Emergency Plan and Government Code. [18]/ Access to State assistance available under a proclamation or declaration may be through the Response Information Management System (RIMS).

[17] §8630, Article 14, Chapter 7, Division 1, Title 2, California Government Code
- 62 Ops.Atty.Gen. 710, 11-16-79
- §101085, Article 2, Chapter 2, Part 3, Division 101, Health and Safety Code

[18] §8607, Article 9.5, Chapter 7, Division 2, Title 2, California Government Code

TAB B. REGIONAL AND STATEWIDE RESPONSE

In some cases a locally based State agency could be Incident Commander. This would still be looked as a “local response.” If, instead, an incident overwhelms local capabilities, or is forecasted to deplete available local resources, the operational area may request a "State" response to look to the 11-county region (OES Region IV), or statewide for assistance.

APPENDIX B.III. INCIDENT RESPONSE PROVISIONS

B.III.1 SPECIFIC ICS LANGUAGE TO BE INCLUDED IN THE PLAN

(1561.15, 7240)

All plans and procedures will incorporate approved SEMS ICS language. Position titles and structures developed by the Operational Area will adhere to SEMS ICS theory and place the task to most appropriate supervisor.

B.III.2 PROVISIONS TO INTEGRATE LOCAL ICS WITH STATE ICS

State and federal representatives will be assigned to appropriate functions if the incident is a local responsibility. An agency assignment table was developed to show where state and federal agencies would work within a single ICS structure. An attempt is made to integrate all levels of government into a single structure. In addition, the federal ICS structure, and used by California Fish and Game, is attached to guide local agencies how to integrate when a local commander is not organizing an oil spill incident.

B.III.2.1 Interface with State/Federal System (Responsibility Matrix)

(1511.15, 3260, 7240)

This matrix identifies agencies assigned to fill specific roles in the OA standardized ICS Organization Chart. The detailed position duty statements included in this plan further define specific ICS positions shown on the matrix.

Agencies shown, as having primary responsibility for an ICS function will fill those functional positions if sufficient personnel are available. Agencies with secondary responsibility for a function will fill those functional positions that the primary agency cannot fill with qualified personnel.

See ANNEX M -APPENDIX 12.

B.III.3 PROVISIONS FOR PRE-EMERGENCY PLANNING AND COORDINATION AMONG RESPONSE PERSONNEL

Coordination with industry occurs during fire inspections, administering agency inspections, and individual contacts. Site specific planning and coordination for response to an oil spill incident occurs at the city and special district level. Coordination between agencies is through a series of committees, sub-committees, and governing over-site bodies.

B.III.3.1 Communications Planning Committee

San Joaquin County is served by a 9-1-1 system of seven Public Safety Answering Points (PSAP). The public to report oil spill incidents uses this system. The California Highway Patrol handles reports made with cellular telephones.

A countywide committee has been established to oversee ability of multiple agencies to inter-connect. This effort has been on-going since 1983, but has made major efforts before 2000 rollover, and for terrorism preparedness efforts.

ANNEX C - OPERATIONAL ADMINISTRATION

APPENDIX C.I. SPILL FUNDING PROCEDURES

TAB A. DOCUMENTATION AND COST RECOVERY PROCEDURES

TAB A.1 DOCUMENTATION

Incident Commander agency is responsible for all documentation of the incident. Each ICS Section, as part of ICS Unit Leader Responsibilities, is required to maintain unit records, including a Unit/Activity Log (ICS Form 214).

TAB A.2 ACCESS TO REIMBURSEMENT OPTIONS

The Operational Area EOC, or the County Office of Emergency Services, acting in its coordinating role will assist local agencies to access federal and state disaster assistance programs. [19]/ A few of these programs focus specifically with hazardous material incidents.

TAB A.3 COST RECOVERY FROM RESPONSIBLE PARTIES

Planning/Intelligence Section should package up all documentation so that the Incident Commanders' agency can pursue any reimbursement programs. The responsible party or business will have the "cradle to grave" focus for any claims. If responding or helping agency needs records, then a copy should be provided.

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[19] Robert T. Stafford Disaster Relief and Emergency Act, Public Law 93-288, as amended.

Title 44, Code of Federal Regulations, Part 206.

Natural Disaster Assistance Act, as amended: §8680 through 8692, Article 1-5, Chapter 7.5, Division 1, Title 2, California Government Code.

Title 19, California Code of Regulations, Sub-chapter 5, Natural Disaster Assistance Act.

TAB B. OSC ACCESS TO THE FUND - Not required

TAB C. STATE ACCESS TO THE FUND - Not required

TAB D. DAMAGE ASSESSMENT PROCEDURES - Not required

TAB E. LEAD ADMINISTRATIVE TRUSTEE ACCESS TO THE FUND - Not required

TAB F. LOCAL ACCESS TO STATE FUNDS

(6420)

The Incident Commander is financially responsible for decisions made to handle the incident. However, certain funds are available for specific aspects of the oil spill mitigation.

> Area Plan - Appendix 6, provides details on obtaining local, state, and federal funds for cleanup activities.

Funding for removal of hazardous wastes from spills or including roadside and off highway abandonment is available from the Department of Toxic Substances Control (DTSC). However, some petroleum materials are not funded.

> Area Plan - Appendix 4, contains guidance documents describing criteria and processes for accessing the Emergency Reserve Account (ERA).

APPENDIX C.II. REQUIRED LETTERS AND REPORTS

TAB A. LETTERS – Not required

TAB B. OSC REPORTS – Not required

TAB C. POLLUTION REPORTS – POLREPS

C.II.1 HAZARDOUS MATERIALS INCIDENT REPORTS

It is the responsibility of the agency or business making notification to the State Warning Center.

Oil spills in the San Joaquin Operational Area that result in ground, water, and air contamination, or incidents resulting in human death or injury, will be reported to the State of California. The State Warning Center must receive a verbal incident report. An exception is of motor vehicle fluid spills of less than 40 gallons on roadway, sewage overflows, and leaks in low-pressure fuel lines to residential properties. [20]/

The Office of Emergency Services duty officer can perform this notification. But if OES does not respond or is not notified, it remains the responsibility of the owner/operator or designated agent, city, special district, or public entity to complete notification of the State Warning Center. [21]/

[20] Motor Vehicle Accident Spill Policy, County of San Joaquin Toxic Enforcement Strike Force.

[21] See attached "Notification Flow Decision Tree" from the California Hazardous Material Incident Contingency Plan.

TAB D. POLLUTION INVESTIGATION - not required

ANNEX D - PLAN REVIEW

APPENDIX D.I. REVISION/UPDATE REQUIREMENTS

D.I.1 GENERAL

The County of San Joaquin has established a prevention program as part of its response system. In addition, ongoing preplanning occurs to address the diverse capabilities needed for effective response if an incident does occur. Cities and special districts participate in this effort through the organizations identified below. Facility preplanning occurs at the fire district level. The County Office of Emergency Services conducts countywide programs for enhancing business preparedness through inspections, training, and review of business Hazardous Materials Management Plans.

D.I.2 COMMITMENT AND APPROVALS

Formal approval is obtained during the preparation and approval process for some of these documents. Their governing board, or designee approves local plans and procedures that are not multi-jurisdictional.

D.I.2.1 Joint Hazardous Materials Team Agreement

This agreement requires signature jurisdictions to follow Area Plan and any appendix. Current jurisdictions include: County of San Joaquin, Cities of Stockton, Lodi, Tracy and Manteca, California Department of Transportation, and signatory rural fire districts.

D.I.3 APPENDIX UPDATE AND IMPLEMENTATION

(2721)

This Appendix is revised and updated on an ongoing basis 3-year cycle. The Joint Team Policy, a major reference document is on a yearly cycle because of the number of responses that occur in the county and modifications on techniques teams use.

D.I.4 OIL SPILL PLAN RELATIONSHIP TO OTHER PLANS

Integration: The efforts of all jurisdictions and agencies of the County will include enhancing their ability to integrate all involved agencies and jurisdictions into a unified organization that will implement the above-standardized system. Joint preplanning activities will include setting up structures and policies to ensure that that integration occurs.

D.I.5 BUSINESS PLAN/DATABASE INFORMATION

Emergency plan and inventory information can now be transferred electronically from businesses to the Office of Emergency Services. Distribution of this information to responders and field personnel is through the Office of Emergency Services web site, which can be used for immediate viewing of data or download of fire district specific records. This system for gathering and distributing information on business and risk management plans greatly enhances the quality of plans and reduces workload.

Businesses are currently reminded to update plans and inventories on an annual basis although changes are received year round. Public safety agencies can access data on a dedicated web server and must obtain that capability to participate in the program.

D.I.5.1 Integrating Business Information into Oil Spill Procedures

Strategic response planning is accomplished by incorporating information from the business emergency and risk management plans into this Appendix. For instance, facilities with large quantities of petroleum products may become candidates for a large-scale exercise of this Appendix.

D.I.6 ASSURING BUSINESS PLAN ACCURACY, AND PRE-INCIDENT SURVEYS

As Administering Agency, the County Office of Emergency Services conducts activities to enhance business preparedness under State statutes. [22]/ These include identification of businesses using 55 gallons or more of a petroleum product for regulation. [23]/ They also include review of mandated business emergency plans with the specific goal of preventing or minimizing incidents. Business inspections include safety comments and confirmation of inventories, training documentation, and business plans. Preplanning for specific facilities is not performed during inspections.

D.I.6.1 Fire Department Access to Program Data

OES inspection forms are currently forwarded to the fire departments to assist with site preplanning. In addition, business plans with inventories, site maps, and specific response information is available to fire departments for use. Local jurisdictions develop site-specific response preplans using the information gathered by the Administering Agency.

Fire districts are provided with lists of businesses handling hazardous materials so they can identify fixed potential hazards for additional planning.

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[22] §25500, Article 1, Chapter 6.95, Division 20, Health and Safety Code
[23] §25508 and §25185, Article 1, Chapter 6.95, Division 20, Health and Safety Code

D.I.7 AREA PLAN CHECKLIST

(4330)

Three programs that have criteria for developing Area Plan content are followed to enhance development during update cycles. The three are under the Health & Safety Code for Area Plan development, the Fish & Game, and U.S. Coast Guard S.F. Bay plan index for development of oil spill plans.

D.I.8 SAN FRANCISCO OIL SPILL PREVENTION AND RESPONSE PLAN

(1000)

This document outlines how the US Coast Guard intends to respond to oil spills in the Bay and Delta. Sections of this San Joaquin OA plan will show corresponding section numbers for ease of reviewing response procedures.

APPENDIX D.II. EXERCISES/DRILLS

D.II.1 DRILL PARTICIPATION PROCEDURES

Periodic drills or exercises will be scheduled to enhance training and test procedures. Drills will be aimed at skill learning or testing of an individual or equipment. Exercises will be aimed at evaluating procedures. There are four types of exercises: orientation, tabletop, functional, and full scale.

D.II.1.1 Table Top Exercises

The Operational Area and its jurisdictions hold periodic table top exercises to review changes or additions to procedures. Such exercises focus on the (field) command post, departmental operations center (DOC) or emergency operations center (EOC).

Pre-established Incident Command Teams may conduct a tabletop exercise to test how an oil spill incident should be managed, e.g., change of command, decision-making, closing an area, evacuation planning, and containment procedures.

D.II.1.2 Hospital Drills

Hospitals are required to do two emergency drills a year, one internal drill without other facilities involved and the other as part of an operational area wide event. These drills test procedures in the Region IV Multi-Casualty Plan as well as internal facility procedures.

Some hospitals focus on receiving victims exposed to hazardous materials during these drills. The “Joint Team” also annually schedules several joint exercises with medical facilities to test joint operations. This gives the team and the facility an opportunity to test procedures for notification, decontamination, treatment, receiving advice from off-site centers, e.g., poison control, Centers for Disease Control, National Response Center and coordination with the Control Facility.

D.II.1.3 Facility Drills

The Joint Team schedules a minimum of three drills a year at businesses that handle hazardous materials. This allows for skills testing of personnel, supplies, and equipment in a realistic environment. The drill also allows the team to become familiar with plans and layout of potential incident sites in the County.

APPENDIX D.III. INCIDENT CRITIQUE AND FOLLOW-UP

D.III.1 POST INCIDENT ANALYSIS

Routine incidents in the Operational Area responders will follow the guidelines in Section 21 of the Joint Hazardous Materials Response Team Policies and Procedures Manual under Incident Critique. Critiques usually follow incident termination when all responders are present and the incident events are quickly recalled.

In large or long-term incidents such critiques are not always feasible or practical. In these situations, the Hazardous Materials Group Supervisor will need to schedule a time and meeting place to conduct a critique. These should be within 30 days of the incident while memories of events are still fresh.

Critiques from major disasters are scheduled sometime after the incident. These incidents require a significant recovery period to restore normal activities, and many responders are too involved to attend. Critiques are often difficult to employ. However, some post incident analysis is required by SEMS law and usually conducted with 10 days of demobilization of the event. A common practice for such events is conducting some type of brief critique during the daily action plan meeting, but not supersede an in depth analysis.

D.III.2 COMMUNITY CRITIQUES

A debriefing or public comment session had, in the past, helped response agencies and the community understand what, why, how certain events or actions happened. Though it can be difficult or stressful, this is very beneficial to learn how to advise or interact with the community. The recovery steps can be the most expensive and emotionally trying for all involved.

Emergency and recovery plans should be reviewed and revised based on the issues brought up in the agency and community reviews. Also, enhancing warning systems should be considered to fill shortfalls.

ANNEX E - AREA ASSESSMENTS

APPENDIX E.I. AREA OF RESPONSIBILITY – Not required

APPENDIX E.II. AREA COMMITTEE ORGANIZATION – Not required

TAB A. AREA COMMITTEE MEMBERS – Not required

TAB B. SUBCOMMITTEES AND MEMBERS – Not required

SEE ANNEX B
APPENDIX I
PLANNING ORGANIZATION

APPENDIX E.III. AREA SPILL HISTORY

E.III.1 BUSINESS HAZARDOUS MATERIALS DISCLOSURE INFORMATION

San Joaquin County Office of Emergency Services is the Administering Agency (AA) for the carrying out of Chapter 6.95. [24]/ Approximately 2,000 businesses are currently maintained on the system with business information and chemical inventories.

E.III.2 DATA MANAGEMENT SYSTEM

Data management system for the County's business plans is a database containing requirements for both the business plan, [25]/ and the Risk Management Program. [26]/ The program allows the user to print predetermined scripts for most commonly requested information or allowing programming for specific report information.

These business plan records are continually updated either manually from mailed hard copy plans, or through an Office of Emergency Services web site. Response agencies can also receive information by downloading the data.

OES response staff updates weekly portable computers with all business plan files, the Emergency Telephone Directory, and past hazardous materials incident reports. Consequently, all business plans and chemical inventory information are directly available to responders upon the arrival of the Office of Emergency Services vehicle.

E.III.3 DELTA RESPONSE DATABASE

A database for this plan has been developed. Each site is identified as a response resource or a potential hazard location for spills. Some locations could be noted for both categories. If a hazard site, then additional criteria, as needed in Section 10, can be entered. Searches can be made using multiple criteria.

E.III.4 HAZARDOUS MATERIAL INCIDENT FILE DATABASE

San Joaquin County OES established a database to track all reported hazardous materials incidents. An incident is entered even though found a "non hazardous material" situation.

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[24] §Article 1 & 2, Chapter 6.95, Division 20, Health and Safety Code
[25] §25503, Article 1, Chapter 6.95, Division 20, Health and Safety Code
[26] §25531 Article 2, Chapter 6.95, Division 20, Health and Safety Code

APPENDIX E.IV. STATEGIES – Not required

APPENDIX E.V. SENSITIVE AREAS

TAB A. ENVIRONMENTALLY SENSITIVE AREAS

TAB A.1 AREAS WHERE SPILLS AREA MOST LIKELY TO OCCUR AND ANY IMPORTANT NATURAL RESOURCES WHICH MAY BE IMPACTED BY AN OIL SPILL.

See Response Database

TAB A.2 LOCALLY SIGNIFICANT NATURAL RESOURCE AREAS

The most environmentally sensitive areas of San Joaquin County include the areas in proximity to the Stanislaus, Calaveras, San Joaquin, and Mokelumne Rivers and their tributaries as well as the legally defined Sacramento-San Joaquin Delta. The Delta has direct coastal access as the waters flow through the San Francisco Bay into the Pacific Ocean.

All agencies take additional precautions for incidents that occur in sensitive areas because of the inherent mobility potential for spills in waterways and the subsequent widespread threat to wildlife and water supplies.

TAB A.3 CONTROL STRUCTURES IN TIDALLY INFLUENCED AREAS (9973)

TAB A.3.1 *Cross-Channel Gate*

The Delta has only one control structure affecting this county, the Cross-Channel Gate in Walnut Grove. The U.S. Bureau of Reclamation notifies San Joaquin OES whenever the gates are opened or closed. In time of a spill, this could delay oil spill material from flowing into the county.

TAB A.3.2 *Woodbridge Dam*

Woodbridge Irrigation District maintains a small dam in the town of Woodbridge. This structure could contain, or delay oil spills from upstream entering into the Delta. A delay could allow response agencies to attempt containment or removal.

TAB B. ECONOMICALLY SENSITIVE AREAS

TAB B.1 AREAS WERE SPILLS ARE MOST LIKELY TO OCCUR AND ANY IMPORTANT ECONOMIC RESOURCES WHICH MAY BE IMPACTED BY AN OIL SPILL.

See Response Database

TAB B.2 LOCALLY SIGNIFICANT AREAS WHICH MAY REQUIRE CLOSURE OR OTHER EMERGENCY MEASURES

See Response Database

TAB B.2.1 *Recreational areas*

i. Boating areas
ii. Parks
iii. River or Slough mouths

TAB B.2.2 *Commercial*

iv. Port of Stockton
v. Cross-Channel Gates (Walnut Grove)

TAB B.3 STRUCTURES LOCATED IN MARINE WATERS

See Response Database

TAB B.4 PRIORITIZE FACILITIES, COMMERCIAL INTEREST AREAS, AND PUBLIC/PRIVATE RECREATIONAL AREAS WHICH MAY BE SIGNIFICANTLY IMPACTED BY AN OIL SPILL, INCLUDING:

TAB B.4.1 *Facility Prioritization*

See Response Database

TAB B.4.2 *Economic Resources Prioritization*

See Response Database

APPENDIX E.VI. DISPOSAL

(4540, 5406, 9932.2)

Jurisdictions are responsible for maintaining procedures and funds for obtaining emergency clean up contractors. The Environmental Health Division maintains lists of available contractors for use by all agencies. The County Office of Emergency Services handles contractor services for the County jurisdiction. Contractors are normally obtained through a telephone bid process.

E.VI.1 AVAILABLE DISPOSAL SITES

There are no full service hazardous waste facilities in San Joaquin County. Waste removal businesses transport material out-of-county after pick up. There are several options for small quantity waste for emergency response agencies.

California Department of Transportation: provides a temporary storage facility for short term storage of small quantities of low risk waste in return for Joint Hazardous Materials Team response to spills on their jurisdiction.

San Joaquin County Solid Waste Division: Maintains a paint, oil, and battery recycle center at their Harney Lane Disposal site. They also are developing a permanent hazardous waste disposal site at the Stockton Metropolitan Airport. This will only be for small volume household disposal.

ANNEX F - SUMMARY OF AREA RESOURCES

PRIVATE SECTOR

The San Joaquin County Department of Purchasing and Support Services maintain a comprehensive resource directory. The directory contains an alpha listing of vendors for supplies and equipment. Some vendor contacts are maintained on the Operational Area (internet) web site for community use in obtaining disaster supplies (e.g., sand, sandbags, survival supplies, emergency radios).

PUBLIC SECTOR

The Office of Emergency Services maintains a computer database directory with contacts for local, State, and federal agencies. This directory is available on a 24-hour basis. The various mutual aid coordinators keep agency contacts for their specific discipline. If a resource request does not fall within an established mutual aid system, the Operational Area Logistics Section has access to this resource lists to locate the appropriate agency that can provide the resource.

APPENDIX F.I. EQUIPMENT

F.I.1 EMERGENCY RESPONSE EQUIPMENT INVENTORY, LOCATION, AND CONTACT AGENCY TO DEPLOY EQUIPMENT

A Delta Response Database is maintained to track resources available to respond to hazardous materials incidents within the Delta region. This data is designated as a "Resources" or "Hazard" site. Some hazard sites, such as marinas, also have a limited supply of containment supplies. The data can be sorted by Planning Zone, Hazard, Resource, or searcher determined criteria.

F.I.2 PROCEDURES TO ENSURE THE COMMITMENT OF OIL SPILL RESPONSE RESOURCES

F.I.2.1 California Master Mutual Aid Agreement

Public safety agencies provide mutual aid to other jurisdictions under the provisions of the California Master Mutual Aid Agreement. The State Office of Emergency Services has the responsibility for extending hazardous materials technical functions mutual aid between other counties within the context of the Master Mutual Aid Agreement.

F.I.2.2 San Joaquin County Fire Service Mutual Aid Agreement

A separate mutual aid agreement exists between the County fire districts. A copy of existing mutual aid agreements can be found in the San Joaquin County Emergency Operations Plan. These agreements, along with other response agreements, ensure that any jurisdiction can obtain personnel to fill all positions of the pre-established County Incident Command System structure for hazardous material incidents. See Appendix 12-1 for details.

F.I.2.3 Hazardous Materials Technical Functions Mutual Aid

Many jurisdictions maintain personnel trained and equipped to perform the specialized entry and mitigation positions included in the "Hazardous Materials Group" function of the standardized Incident Command System response structure. [27]/ Several of these agencies maintain specialized equipment and vehicles and are signatories to the "Agreement for Hazardous Materials Team within San Joaquin County."

A copy of the agreement is included in Area Plan – Appendix 12-7.

[27] FIRESCOPE, Hazardous Materials Module-ICS-HM-120-1

F.I.2.4 Out of County Agreements

San Joaquin County does have a special mutual aid agreement in place with Stanislaus County. Systems and provisions do exist for traditional mutual aid to other counties and jurisdictions under the Master Mutual Aid Agreement.

TAB B. BOOM SYSTEMS

TAB C. PUBLIC WORKS/MUNICIPAL UTILITIES

County and City Public Works, and Municipal Utility Departments in the Operational Area can assist hazardous materials operations by shutting down water lines, closing storm drains and sewer lines. They also are a resource for heavy equipment, sand/absorbent, and drainage materials to use on defensive operations such as dike large spills. During evacuations or area closures, these agencies provide barricades, electronic directional signs, and road signs.

TAB D. SKIMMERS

TAB E. BOATS

TAB F. BARGES/STORAGE

TAB G. VACUUM TRUCKS

TAB H. SORBENTS

TAB I. PORTABLE PUMPS

TAB J. CARGO TRANSFER PUMPS

TAB K. COMMUNICATIONS EQUIPMENT

The Operational Area has several caches of radios and cell phones throughout the area. Cities, special districts, or the County government owns some.

See ANNEX M – APPENDIX 9.

TAB L. ELECTRICAL

TAB M. DISPERSANTS

TAB N. MOBILE COMMAND POST

There are numerous mobile support units that can establish a command post operated by special districts, cities, and the County. Access is made through the County Sheriff 24-hr dispatch center. A detailed manual is being updated and will issued to selected dispatch centers by December 2003.

APPENDIX F.II. LOGISTICS

F.II.1 COORDINATED COMMUNICATIONS PROCEDURES (5340)

On-Scene Communications: The Incident Commander is responsible for coordinating communications during an emergency. A Communications Unit Leader could be assigned to perform this function by developing an incident communications plan to manage radio and telephone operations. CALCORD, a State radio frequency designated for multi agency on-scene coordination, can be used for establishing a common command channel for local and outside agencies. Local, state, and federal frequencies in portable radio caches and various mobile support units in the County are available through the mutual aid system.

F.II.1.1 Radio Communications Plan

Appendix 5 contains the Joint Hazardous Materials Team Communication Plan (JHTCP) describing agency call signs, command net, tactical net and HAZMAT group channels. Also, Appendix #1 of this JHTCP contains the San Joaquin Operational Area dispatch contacts, also known as a PSAP.

See ANNEX M - APPENDIX 9.

F.II.1.2 Radio Frequencies

Radio Frequency Capabilities: The Operational Area EOC can talk over multiple channels with fire, law, public works, and other agencies within the cities of the Operational Area. In addition, all OES response vehicles have two-way radios with the same frequencies and capabilities.

The Operational Area Satellite Information System (OASIS): and the State Local Government Radio System is available for communications with the State and surrounding counties.

Computer Paging System: Most communication centers are equipped with computers to send computerized messages to a network of key individuals necessary to begin and coordinate response activities from a small single agency response to a large multi-agency response. Several hazardous material responders also programmed portable computers to send messages from the incident site.

Cellular Phone Capabilities: All hazardous material emergency vehicles are equipped with cellular telephones. Duty Officers and supervisors of the Office of Emergency Services carry cellular telephones as a back up to the vehicle mounted equipment. Equipment in some OES vehicles can also connect to paging and Internet services via cellular telephone.

F.II.1.3 Alternate Means of Communications

The County and some cities maintain a Radio Amateur Civil Emergency Service (R.A.C.E.S.) program for supplementing normal communications. An Incident Commander can request this service through the Office of Emergency Services. RACES operators are volunteers covered under the State Disaster Service Worker program.

F.II.2 LOCATIONS FOR COMMUNICATIONS SYSTEMS AND OPERATIONS

Throughout the Operational Area, agencies have designated locations to be utilized by any public safety discipline for an emergency response, or recovery operations. These are designated with SEMS terms.

F.II.2.1 Operational Area - Emergency Operations Center (EOC)
(5413)

The Operational Area EOC is on the sixth floor of the County Courthouse in downtown Stockton, with two alternate sites. This facility maintains telephone banks, radios, computers, and stationary, fax machines for supporting Operational Area functions. The Emergency Operations Center is divided into incident management, planning/intelligence, logistics, and Finance. The center contains several separate briefing/conference rooms. Procedural binders and documents are available for managing all aspects of these functions.

In developing the OA level during a 1993 State OES granted OASIS project, a Steering Committee decided there should be no Operations Section since no tactical responsibility is conducted, only information flow (Planning/Intelligence) and resource acquisition and dispersal (Logistics).

F.II.2.2 City Emergency Operations Centers
(5413)

All the cities in the Operational Area have designated a facility to serve as their Emergency Operations Center. These facilities have been tested during exercises or actual events. The Operational Area periodically exercises with one or more of the cities to test coordinating procedures between Emergency Operations Centers.

Only the County Sheriff has a dedicated Department Operations Center (DOC) to support specific law enforcement incidents. The Sheriff is the designated law enforcement mutual aid coordinator. The Operational Area has selected the Sheriff headquarters facility as an alternate Emergency Operations Center. This is in a separate area than their DOC.

F.II.3 FIREFIGHTING CAPABILITIES

See F.III.TAB C

F.II.4 POTENTIAL STAGING AREA SITES FOR RESPONSE EQUIPMENT

A facility for temporary locating resources that must be ready to respond within three (3) minutes. There are not pre-designated Staging Areas in the Operational Area. These are established at time of incident.

F.II.4.1 Mobilization Centers

This facility is for resources assigned to the Operational Area, or a nearby event, but has not been dispersed to a specific incident.

See ANNEX M - APPENDIX 2.

F.II.4.2 Rendezvous Points

These sites are for quick assembly of resources prior to driving to an incident. Though originally developed for "out of county" responses, these sites are also suited for "in county" responses.

See ANNEX M - APPENDIX 3.

F.II.4.3 Casualty Collection Points/Field Treatment Sites

The primary centralized location within the Operational Area is the Stockton Metropolitan Airport. This serves both as a Casualty Collection Point (CCP) or a Field Treatment Site (FTS). The location is capable of landing and take-offs of the largest military aircraft.

CCP – Established to receive or disperse casualties into or out of San Joaquin County. Only site pre-decided currently is at the Stockton Metro Airport.

FTS – To triage, stabilize, or treat casualties to be dispersed to area hospitals.

F.II.5 ACCOMMODATIONS CONTACT PERSON, AND ACCOMMODATIONS

The Logistics Section's Supply Unit is responsible for locating facilities for lodging response personnel. A position, Facilities Manager, would decide the needs and work with other Logistics staff to establish the sites. This could be either hotel/motel businesses, government facilities such as schools, or establishing camps.

No lists have been developed, however an annually updated listing of schools is provided. Hotel/motels can be found in the telephone book. Camps could be established through Parks & Recreation departments or using one of the mobilization center locations.

F.II.6 LOCAL OR NEARBY AIRPORTS

There are several large and numerous small airstrips that can be used for spill response or recovery. Stockton Metro Airport is capable to landing and takes off of the largest aircraft. Lodi and Tracy have small local strips with variety of services. Many uncontrolled private strips used for agricultural or recreational purposes have been identified on a map.

See ANNEX M - APPENDIX 4.

F.II.7 POTENTIAL TEMPORARY HAZARDOUS WASTE STORAGE SITES AND PROCEDURES FOR SECURING NECCESARY PERMITS OR VARIANCES

F.II.8 COASTAL ACCESS AREAS

The Delta flows into the Bay through the Sacramento River, thus all water access points into the San Joaquin/Sacramento River and Legal Delta have access to the coast. There are many private and public access points. These range from marina boat launches, parks access points, or manual launching off levee banks or residential or business docks

The Delta Response Database allows searching for sites by name or planning area.

F.II.9 LOCAL GOVERNMENT REPRESENTATIVE WITH INFO ON

F.II.9.1 Volunteer Response Groups

San Joaquin County does not have an active disaster volunteer program; volunteers that spontaneously offer their help in the wake of a disaster, sometimes termed “convergent volunteers.”

Several groups are available for assisting an oil spill response that local government agencies currently recognize. The San Joaquin County OES maintains an up-to-date computerized Emergency Phone Directory of personnel resources to obtain.

(a) RACES

(5340)

Radio Amateur Civil Emergency Services (RACES), is a Federal Communications Commission established organization, and registered through city, county, or state governments with established Disaster Council. City of Manteca, City of Tracy, and the County have a RACES group.

These non-paid volunteers can establish alternate communications networks through a myriad of radio, television, and satellite links.

(b) Citizen Law Enforcement

Some agencies have programs, primarily for retirees, or other citizens, to assist them with low risk tasks. These tasks could be traffic control, searches, and documentation. These are known by such acronyms as S.T.A.R.S., or V.I.P.S. In addition, some agencies have Explorer Post cadets.

(c) Volunteer Connection

An Internet based private service to bring non-profit agencies together with volunteers. The volunteer enters their Area Code and select the city that they wish to help, then a list of non-profit agencies appears with contact information.

(d) American Red Cross

The San Joaquin Chapter of American Red Cross responds to incidents throughout the OA, including cities upon request. Each city is different as to the primary or secondary assignment tasked to ARC, as some tasked a city department to manage shelter operations with support by ARC or Salvation Army.

F.II.9.2 Animal Rescue/Recovery Groups

(a) Rescue

There are no recognized animal rescue groups within the county. Though some groups can assist in retrieving threatened pets and livestock.

(b) Shelter

Red Cross, Salvation Army, and most shelter agencies do not care for animals. Several animal rescue and assistance agencies offer to care and shelter pets and livestock during an evacuation. The County Animal Control has developed an animal control mutual aid plan for coordinating government and private resources.

F.II.9.3 Local Media/Public Info Contacts

There is a loosely organized Information Officer association of special district, city, and county personnel. Several business staff, such as PG&E also is included. The intent of this group is to share pre-event status, training, and understanding of emergency operations.

A list of contact information is provided to each other so they can share resources during emergencies.

APPENDIX F.III. PERSONNEL AND INFORMATION RESOURCES

TAB A. COAST GUARD MSO PERSONNEL

TAB B. POLICE DEPARTMENTS

Area law enforcement agencies have formed a San Joaquin Metropolitan Bomb Team, which includes several agencies outside of the Operational Area. Training includes the wearing of Level B protective equipment for working in contaminated environments.

TAB C. FIRE DEPARTMENTS

City and rural fire departments are equipped to the level that meets the needs of their jurisdictions. Most have Operations Level hazardous materials training. For ICS agencies strive to reach a minimum of ICS-200, and most personnel to ICS-300.

Under a San Joaquin County Fire Mutual Aid Agreement, both city and special district fire jurisdictions can manage most incidents without requesting assistance at the Region IV or State level.

Stockton Fire Department staffs a tugboat size fire boat owned and operated by Port of Stockton. The Port also provides the pilot. This unit has ability of multi-nozzle water application.

Woodbridge Fire District operates a small fireboat with limited firefighting equipment. This unit does provide an ability to transport small amounts of personnel and equipment to an incident.

TAB D. HOSPITALS

TAB E. PORT AUTHORITY/HARBOR MASTGERS

TAB F. MARINE PILOTS ASSOCIATION

TAB G. SALVAGE COMPANIES

TAB H. STATE EVNIRONMENTAL AGENCIES

TAB I. LOCAL ENVIRONMENTAL AGENCIES

TAB J. LABORATORIES

TAB K. WATER INTAKE FACILITIES

TAB L. ENVIRONMENTAL INTEREST GROUPS

TAB M. AIRPORTS AND AIRCRAFT RENTAL

TAB N. TRUCKING COMPANIES/CAR RENTALS

TAB O. NOAA WEATHER SERVICE

TAB P. MEDIA

A current list of local media contacts are also found in the OES Duty Officer database. The list is divided by media type: Print, Radio, and Television. Within each category, the contact business is sorted by "call sign" (e.g. KWG, KCBS, KOVR-13).

TAB Q. VOLUNTEER ORGANIZATIONS

TAB R. NATURAL RESOURCE TRUSTEES

TAB S. LOCAL EMERGENCY MANAGERS

TAB T. FISHING FLEETS

APPENDIX F.IV. SPECIAL FORCES

TAB A. USCG NSFCC

TAB B. PIAT

TAB C. USCG DRG AND DRAT

TAB D. U.S. NAVY

TAB E. SSC

TAB F. ERT

TAB G. ATSDR

TAB H. FEDERAL

TAB I. STATE

TAB J. LOCAL

TAB J.1 HAZARDOUS MATERIALS TEAMS

The Operational Area has three (3) hazardous material response vehicles maintained by the Stockton City Fire Department, Lodi City Fire Department, and San Joaquin County Office of Emergency Services. Hazardous materials technicians and specialists are supplied by daily shift personnel for fire departments that are signatory to the Joint Hazardous Materials Team Agreement and the hazardous material specialists in the Office of Emergency Services.

Personnel and equipment call-out is performed under procedures contained in the San Joaquin Joint Hazardous Materials Team Policies and Procedures Manual. There are currently over 50 individuals in the Operational Area trained to these levels and can respond.

Each hazardous materials response unit carries chemical protective suits, testing equipment, containment equipment, support gear, and equipment and communications equipment. There is also a network of support vehicles and equipment with fire departments that have entered with the agreement to become part of the joint team.

Other equipment available includes a trailer mounted mass decontamination tent and several mobile command posts. Any or all of this equipment is available for an incident if the need arises. See attached equipment inventory for the Office of Emergency Services response vehicle.

ANNEX G - CHEMICAL COUNTERMEASURES

NOT REQUIRED

ANNEX H - HEALTH AND SAFETY

APPENDIX H.I. SITE SAFETY PLAN

H.I.1 APPROACH, RECOGNITION, AND EVALUATION

Most local, state, and federal agencies based in the county provide an Awareness hazardous material level course (see Section 5 – Training) to personnel that may come upon a release or threatened release. This course covers minimal recognition, some evaluation of material, and strong on initial notification. But not approach.

H.I.1.1 Approach and Evaluation

Approach (or entry), and evaluation is for only the highest level of training. Higher levels of training deal with evaluation. Team policies describe how a member of the countywide team would approach and evaluate an unknown material, or the threat of a release.

See Joint Team Policy, Section 9

H.I.1.2 Identifying Release and Impacts

Though the above section covers type of release, responsibility to determine the hazards and impact is shared between the Assistant Safety Officer and Environmental Health Group.

See protocols in Joint Team Policy, Section 14.

H.I.2 PERSONAL PROTECTIVE EQUIPMENT AND EMERGENCY EQUIPMENT GUIDELINES

Joint Team Policy describes process to select appropriate equipment to protect responders for containment and cleanup.

See Joint Team Policy, Section 15

H.I.3 MONITORING AND DECONTAMINATION GUIDELINES

Guidelines for conducting decontamination and facility protection actions can be found in the Joint HAZMAT Team (JHT) Policy. These decontamination protocols identify equipment, procedures, and responsibilities for incidents ranging from a very small routine incident to very complex multi-casualty incidents.

H.I.3.1 Monitoring

See Joint Team Policies, Section 6, Medical Surveillance Policy.

H.I.3.2 Decontamination

- See Joint Team Polices, Section 16, Decontamination procedures
- See Joint Team Policies, Section §17, Mass decontamination for non-responders.

APPENDIX H.II. RESPIRATORY PROTECTION PLAN

See Joint Team Policies; Section 13 “PERSONAL PROTECTIVE PROTOCOLS

APPENDIX H.III. REQUIRED SAFETY TRAINING

H.III.1 EMERGENCY PERSONNEL TRAINING PROVISIONS

First responders will be trained according to regulations for hazardous material response. [28]/ Most agencies in the County have interpreted these regulations as requiring training to the "First Responder, Operational Level" shown in the Federal regulations. Provision of hazardous materials training is coordinated through the Fire Chiefs' Association Training Committee and other joint public agency training bodies.

Awareness – "Witness and Discover"

Operational – "Dispatch, on-site, and conduct any action" for protection of life, property, and environment"

See ANNEX M - ATTACHMENT 1

H.III.2 TRAINING DOCUMENTATION PROVISIONS

In the San Joaquin Joint Hazardous Materials Team Agreement, there is a provision for the establishment of a Hazardous Materials Bureau to coordinate and track training of agreement participants. This bureau centralizes and monitors training records and medical surveillance records for all members of the Joint Hazardous Materials Team. The bureau's priority is to maintain in current training and medical surveillance status the members of the Joint Hazardous Materials Team that will fill the Hazardous Materials Group positions.

The Hazardous Materials Bureau also coordinates a yearly training schedule for joint team classes, refresher training, drills, and exercises. The bureau also will coordinate training courses for first responders as possible with given resources and will keep training records on attendees at Bureau sponsored courses or drills. Training schedules and information can be obtained from the County Office of Emergency Services.

H.III.3 OTHER APPLICABLE FEDERAL/STATE TRAINING REQUIREMENTS

H.III.3.1 Business Training

State law requires training of business employees on their facility emergency plan. The Office of Emergency Services conducts a program of training courses available to businesses. OES sends training course schedules to businesses in the Chapter 6.95 program.

[28] §5192(q)(6), Article 109, Chapter 4, Division 1, Title 8, California Code of Regulations [29 CFR 1910.120]..6

[29]/ Businesses may also use other training sources or conduct in-house training. The Office of Emergency Services does review business-training records during its inspections of regulated businesses.

[29] §25500, Article 1, Chapter 6.95, Division 20, Health and Safety Code

ANNEX I - SCENARIO DEVELOPMENT

APPENDIX I.I. **WORST CASE DISCHARGE –** Not required

APPENDIX I.II. **MAXIMUM MOST PROBABLE DISCHARGE –** Not required

APPENDIX I.III. **MOST PROBABLE DISCHARGE –** Not required

ANNEX J - OPERATIONS

APPENDIX J.I. EMERGENCY NOTIFICATION LIST

J.I.1 PRIMARY PERSON TO INITIATE SPILL RESPONSE OPERATIONS

Activation and deactivation of emergency responders are conducted under the standard protocol for ICS management.

J.I.2 FEDERAL, STATE, AND LOCAL ORGANIZATIONS AND AGENCIES CONTACT LIST

Due to continual changes, no phone numbers are in this plan. PSAPS, Sheriff Communication Center, and OES Duty Officers maintain contacts.

J.I.3 LIST OF LOCAL EMERGENCY RESPONSE PERSONNEL

See ANNEX F-1 comments on responder database.

The San Joaquin Joint Hazardous Materials Team Polices and Procedures Manual outlines activation and deactivation procedures for hazardous materials incidents.

See ANNEX M – APPENDIX 11 - "San Joaquin Joint Hazardous Materials Response Team Call Out Procedures"

J.I.4 LOCAL RESPONSE COORDINATOR TO COORDINATE AND DIRECT RESPONSE OPERATIONS

See ANNEX F-1 comments on responder database.

J.I.5 PROVISIONS TO INITIATE NOTIFICATION

J.I.5.1 Responsible Parties

The employer's senior staff member is required to establish an incident command system when an incident occurs pending arrival of first responders. [30]/ However, notifications cannot be delayed. Individuals, businesses, or public agencies responsible for oil spills released are legally required to notify:

[30] §5192(q)(3)(a), California Code of Regulations [29 CFR 1910.120 (q)(3)(i)]

J.I.5.2 Required Notifications:

- Local emergency response agencies, 9-1-1
- Local Administering Agency (San Joaquin County OES), 468-4400
- California Office of Emergency Services Warning Center, 1-800-852-7550 [31]/

- National Response Center, if spill meets Reportable Quantity, 1-800-424-8802

J.I.5.3 Public Safety Agencies

First response public safety agencies are responsible for establishing an "Incident Command" at oil spill incidents. This Incident Commander is responsible for determining what resources are needed to control the incident and for initiating necessary resource and legal notifications. Normally, this will be done through a public safety access point.

Public Safety Answering Points (PSAP): PSAPs are responsible for notifying first response public safety agencies of incidents reported by the public or a business. PSAP dispatchers can contact duty officers of the Office of Emergency Services, the Environmental Health Division, and the District Attorney's Office through the Sheriff's Communications Center.

PSAP dispatchers should maintain telephone numbers for notifying the local Red Cross, Agricultural Commissioner's Office, Public Utilities, local Public Works agencies, and the State Warning Center. The Sheriff's Communications Center and the Stockton Fire Department Communications Center will, in addition, maintain the call-out procedures for the San Joaquin Joint Hazardous Material Team.

See ANNEX M - APPENDIX 11.

San Joaquin County Sheriff's Communications Center: This dispatch center has direct responsibility for notification of the on-call duty officer for the Office of Emergency Services, the Environmental Health Division, and the District Attorney's Office. Any public safety agency can use this center for contacting those resources.

San Joaquin County Office of Emergency Services: This agency serves as the County "Administering Agency" for release notifications. This agency will help, upon request, with notifications of local agencies regarding oil spill incidents to meet legal or resource needs. OES staff will also notify the members of the Emergency Services Council, the State Warning Center, and local, state and federal agencies with responsibilities or response capabilities needed by the Incident Commander.

Emergency Medical Services: Where there are multiple victims potentially involved, contaminated or not, the individual serving as Multi-Casualty Branch Director or Medical Group Supervisor at the scene will notify the Control Facility (San Joaquin General Hospital) via appropriate radio channels. This facility will notify all potentially involved

[31] §25507, Article 1, Chapter 6.95, Division 20, Health and Safety Code

medical or health facilities and the Regional Poison Control Center through its blast conference call system or the VHF Area MEDNET radio channel.

State Warning Center: 3rd required notification point for any hazardous materials related incident. This warning center is required to notify the Fish & Game Oil Spill Administrator if a reported incident is in marine waters, and is at least 42 gallons.[32]

[32] x160, p. 5, Oil Spill Contingency Plan, State of California, 1983. x8670.25.5, Article 4, Chapter 7.4, Division 1, Title 2, California Government Code

APPENDIX J.II. CHECK-OFF LIST

SEMS ICS has standardized checklists for all positions within the generic system. This includes Hazardous Materials positions. Area Plan - Appendix 4, additional tasks have been developed for ICS positions to consider that are specific to this Operational Area.

Checklists have also been developed for Operational Area EOC positions to assist in coordination of area events. If more than one jurisdiction is involved, Area Command procedures have been developed to resolve conflicting incident command objectives

TAB A. NOTIFICATION OF SPILL INCIDENT – Not required

TAB B. INITIAL RESPONSE – Not required

TAB C. RESPONSE STRATEGY – Not required

TAB D. CONTAINMENT AND CLEANUP - Not Required

TAB E. REMOVAL AND WASTE DISPOSAL – Not required

TAB F. SECURE OPERATIONS – Not required

TAB G. COST RECOVERY/DOCUMENTATION – Not required

TAB H. PUBLIC INFORMATION – Not required

TAB I. AIR OPS/AIR SAFETY – Not required

TAB J. PORT TRAFFIC CONTROL – Not required

TAB K. COMMUNICATIONS – Not required

TAB L. FIRE FIGHTING – Not required

TAB M. SALVAGE – Not required

TAB N. WILDLIFE RESCUE PLAN – Not required

TAB O. VOLUNTEERS – Not required

ANNEX K - APPLICABLE MEMORANDUMS OF UNDERSTANDING/AGREEMENT

- **Hazardous Materials Team Agreement** – See Area Plan, Appendix 7
- **San Joaquin Operational Area Agreement** – Copy at San Joaquin County OES
- **Mutual Day-to-Day Fire Protection Aid Agreement** – See San Joaquin County Multi-Hazard Emergency Plan, Section 12

ANNEX L - PUBLIC AFFAIRS

See San Joaquin Operational Area Hazard Area Plan – Section 6

See San Joaquin County Emergency Plan - Section 7

ANNEX M - ATTACHMENTS

1. San Joaquin Operational Area Training Schedule
2. San Joaquin Operational Area Mobilization Area map
3. Rendezvous Points For Out of County Mutual Aid Response map
4. Local airports, from San Joaquin County General Plan 2010 map
5. Federal EPA/USCG map
6. Legal Delta map
7. Marine Waters map
8. Oil Spill Hazard & Resource maps (North, Central, South)
9. Communications
    a. Portable Equipment
    b. Joint Team Frequency Plan
10. Notification Procedures
11. Hazardous Materials Joint Team Call Out Procedures
12. Responsibility Tables
    a. Organizational Charts (local and USCG)
    b. Agency Roles and Responsibilities

Illicit Discharge Hotline Incident Tracking Sheet

Incident ID:

Responder Information	
Call taken by:	Call date:
Call time:	Precipitation (inches) in past 24-48 hrs:
Reporter Information	
Incident time:	Incident date:
Caller contact information (*optional*):	

Incident Location *(complete one or more below)*

Latitude and longitude:			
Stream address or outfall #:			
Closest street address:			
Nearby landmark:			
Primary Location Description	**Secondary Location Description:**		
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):	
Narrative description of location:			

Upland Problem Indicator Description

☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage
☐ Wash water, suds, etc.	☐ Other: _____	

Stream Corridor Problem Indicator Description

Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			
Narrative description of problem indicators:				
Suspected Violator (name, personal or vehicle description, license plate #, etc.):				

Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

of this division which shall remain in effect, and to its end, it is hereby declared that the provisions of this division are severable. (Ord. 3922 § 1 (part), 1997)

DIVISION 10. STORM WATER MANAGEMENT AND DISCHARGE CONTROL

CHAPTER 1

GENERAL

Sections:

5-10000	**Title.**
5-10001	**Purpose and Intent.**
5-10002	**Applicability.**
5-10003	**Definitions.**
5-10004	**Responsibility for Administration.**
5-10005	**Construction and Application.**

5-10000 TITLE.

This chapter shall be known as the County Storm Water Management and Discharge Control Ordinance. (Ord. 3966 § 1 (part), 1998)

5-10001 PURPOSE AND INTENT.

This establishes uniform requirement for protection and enhancement of the water quality of waters of San Joaquin County, the State of California and the United States in a manner consistent with the Federal Clean Water Act (CWA).

This chapter is established to protect the health, safety and general welfare of San Joaquin County citizens by establishing requirements for:

(a) Operating and maintaining certain storm water systems.

(b) Eliminating non-storm water discharge to certain storm water facilities.

(c) Controlling the accidental or intentional dumping of materials other than storm water into certain storm water facilities.

(d) Reducing pollutants in storm water by establishing Best Management Practices (BMPs) and through the use of the best available technologies. (Ord. 3966 § 1 (part), 1998)

5-10002 APPLICABILITY.

This chapter is applicable to all lands, public and private, within the boundaries of the San Joaquin County National Pollutant Discharge Elimination System (NPDES) Permit area, which boundary is coterminous with County Service Area No. 54 (CSA 54) and all storm drainage systems which serve the lands within CSA 54, and any future areas annexed to CSA 54. (Ord. 3966 § 1 (part), 1998)

5-10003 DEFINITIONS.

(a) The following words, when used in this chapter, shall have the meanings as ascribed below:

(1) Act. The Federal Water Pollution Control Act, including any amendments thereto, referred to as the CWA.

(2) Approval Authority. The State of California Central Valley Regional Water Quality Control Board (Region 5) (RWQCB).

(3) Authorized Enforcement Officer. The Director of Public Works and those individuals designated by the Director to enforce the provisions of this chapter.

(4) Authorized Representative of Industrial Activity. An authorized representative of an industrial user may include, but is not limited to, the following persons:

(A) A principal executive officer of at least the level of vice president, if the industrial user is a corporation;

(B) A general partner or proprietor if the industrial user is a partnership of proprietorship, respectively; or

(C) A duly authorized representative of the individual designated above if such representative is responsible for the overall operation of the facility from which the discharge originates.

(5) Best Management Practices. Any program, technology, process, siting criteria, operating method, measure, device, schedule of activities, prohibition, practice (including, but not limited to, general housekeeping practices and pollution prevention practices), procedure or other management policy which controls, prevents, removes, or reduces the discharge of pollutants directly or indirectly to "waters of the United States." BMPs also include plans addressing the treatment requirements, operating procedures, design specifications, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

(6) California General Construction Activities Storm Water Permit. The general permit as adopted by the California State Water Resource Control Board for the permitting of storm water discharges associated with construction activities.

(7) California General Industrial Activities Storm Water Permit. The general permit as adopted by the California State Water Resource Control Board for the permitting of storm water discharges associated with given industrial activities.

(8) Certificate of Exemption (COE). Written notification from the County certifying that a discharger has developed and implemented an effective Storm Water Pollution Prevention Plan and is exempted from sampling requirements.

(9) CFR. Code of Federal Regulations.

(10) Collection System. The combined pipes, conduits, maintenance holes, and other structures either above or underground, primarily used to convey storm water.

(11) Commercial Customer Class. Includes all land use parcels not identified in the Residential Class, Industrial Class and Institutional Class.

(12) Composite Sample. The sample resulting from a combination of individual samples taken at selected intervals based on increments of flow or time.

(13) Condition of Acceptance (COA). Written notification from the control authority indicating the conditional acceptance of an industry's or other designated facility's storm water discharge to the County storm drainage system.

(14) Control Authority. The Director of San Joaquin County or the Director's duly appointed representative.

(15) Cooling Water. The water discharged from any uses such as air conditioning, cooling, or refrigeration, or to which the only pollutant added is heat.

(16) Co-permittees. Co-applicants on an NPDES application.

(17) County Storm Drainage System. Includes, but is not limited to, those facilities owned and operated by San Joaquin County and Reclamation District 1614 through which storm water may be conveyed to the waters of the United States, including flood control channels and roads with drainage systems, public streets, catch basins, curbs, gutters, ditches, man made channel storm drains, conduits, pumping plants, detention facilities and other appurtenances which carry, collect, pump and/or dispose of storm water, surface water, groundwater, roof runoff or other unpolluted water.

(18) Density Development Factor. The average percent impervious coverage for parcels in a given custom class.

(19) Director. The Director of Public Works of San Joaquin County.

(20) Discharge of Pollutant. (I) Any addition of any pollutant to waters of the State from any point source, or (II) any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft.

(21) Facility. Any nonresidential premises.

(22) Illicit Discharge. Any discharge to the County storm drainage system that is not composed entirely of storm water, except discharges pursuant to an NPDES Permit, and discharges expressly exempted elsewhere in this chapter.

(23) Illegal Discharge. Any act which knowingly introduces pollutants to the County Storm Drainage System.

(24) Impervious Area. The portion of a parcel which is covered by pavement or contains other hard surfaces such as concrete walkways, buildings, roofs, etc., which causes or facilitates storm water runoff.

(25) Industrial Activity. Any activity that involves manufacturing, processing, or raw materials storage areas. Further definition of activities covered is given in 40 CFR Section 122.26(b).

(26) Inspector. An authorized enforcement officer as defined above.

(27) Institutional Customer Class. Includes private/public schools, junior colleges, colleges/universities, cemeteries, hospitals (not in commercially zoned property), garden and agriculturally zoned property, and public land agencies.

(28) Level 1 Priority—Industrial Facilities. Municipal landfills, hazardous waste treatment, disposal, and recovery facilities, industrial facilities that are subject to Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and industrial facilities that the municipal permit applicant determines are contributing a substantial pollutant loading to the municipal storm sewer system.

(29) National Pollution Discharge Elimination System Permit. A permit issued by the approval authority pursuant to the Act which authorizes discharges to the waters of the State from the County storm drainage system.

(30) Nonresidential Customer Class. Includes all other nonresidential classes of land use identified in the County Planning Title, further classified as commercial, industrial and institutional for storm water purposes.

(31) Non-Storm Water Discharge. Any discharge that is not entirely composed of storm water.

(32) Notice of Intent (NOI). The formal notification to the State Water Resources Control Board by the applicant that either a construction or industrial activity will occur in compliance with the conditions of the general permit and thereby commits the applicant to prepare and implement a Storm Water Pollution Prevention Plan.

(33) Outfall. The point at which the County storm drainage system discharges to the waters of the State.

(34) Person. Any natural person, corporation, or association or other entity.

(35) Point of Discharge. The point at which any private drainage, concentrated, or sheet flow enters the County storm drainage system.

(36) Pollutant. Dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water.

(37) Premises. Any building, lot, parcel, real estate, or land or portion of land, whether improved or unimproved, including adjacent sidewalks and parking strips or other surface area which is capable of contributing runoff to the County storm drainage system.

(38) Priority Industrial Facility (PIF). An industry required to file an NOI in accordance with the California General Industrial Activities Storm Water Permit.

(39) Residential Customer Class. Includes all single-family, two-family, apartments and townhouse land use parcels identified in the County Planning Title.

(40) Standard Industrial Classification. The standardized classification of all industrial users by their primary processes, products, or services as set forth in the Standard Industrial Classification Manual issued by the Executive Office of the President of the United States, Office of Management and Budget, in effect at the time of adoption of the ordinance codified in this division and as amended from time to time thereafter.

(41) State. The State of California.

(42) Storm Water. Storm water runoff, snow melt runoff and surface runoff and drainage.

(43) Storm Water Pollution Prevention Plan (SWPPP). The report required by the control authority of storm water dischargers, which sets forth the site map, identifies the activities that have the potential to pollute storm water which may enter the County storm drainage system and describes the proposed BMPs to be implemented by the discharger.

(44) User. Any person who contributes, causes, or permits the contribution of storm water to the County storm drainage system.

(45) Unpolluted Water. Water to which no pollutant has been intentionally or accidentally introduced so as to render such water unacceptable to the County for disposal to storm or natural drainages or directly to surface waters.

(46) User Classification. A classification of user based on the Standard Industrial Classification Manual issued by the Executive Office of the President of the United States, Office of Management and Budget, in effect at the time of adoption of the ordinance codified in this division and as amended from time to time thereafter.

(47) Waters of the State. All streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the State or any portion thereof.

(b) Any terms defined in the CWA and any Acts amendatory thereof or supplementary thereto, and/or defined in the regulations for the storm water discharge

permitting program issued by the Environmental Protection Agency on November 16, 1990, and as thereafter amended from time to time and which are not specifically defined in subsection (a) of this section shall, when used in this chapter, have the same meaning as set forth in said act or regulation. (Ord. 3966 § 1 (part), 1998)

5-10004 RESPONSIBILITY FOR ADMINISTRATION.

This chapter shall be administered by the Director of Public Works of the County of San Joaquin. (Ord. 3966 § 1 (part), 1998)

5-10005 CONSTRUCTION AND APPLICATION.

The rules and regulations set forth in this chapter shall be construed in a manner consistent with and shall in no way be construed in such a manner so as to diminish the authority of the requirements of the Federal Water Pollution Control Act and any amendments thereto, referred to as the CWA and any amendments or supplements thereto and its applicable implementing regulations; the County NPDES Permit and any amendment, revision, or reissuance thereof; and all other provisions contained in the Ordinance Code of San Joaquin County. (Ord. 3966 § 1 (part), 1998)

CHAPTER 2

DISCHARGE REGULATIONS

Sections:

5-10101	**General Discharge Prohibitions.**
5-10102	**Additional Discharge Prohibition.**
5-10103	**Discharges Exempt from the General Prohibition.**
5-10104	**National Categorical Storm Water Effluent Limitations.**
5-10105	**Industrial Condition of Acceptance (COA).**
5-10106	**Certificate of Exemption (COE).**
5-10107	**Discharge in Violation of Permit.**
5-10108	**Illicit Discharge and Illicit Connections.**
5-10109	**Reduction of Pollutants in Storm Water.**
5-10110	**Best Management Practices; Industrial Users and New Development and Redevelopments.**

5-10101 GENERAL DISCHARGE PROHIBITIONS.

No person shall permit or cause the discharge of any wastewater, pollutant, substance or material of any kind into the County storm drainage system which interferes with the operation or performance of the County storm drainage system or which violates any condition of the County NPDES Permit or any other Federal, State, or local regulation. (Ord. 3966 § 1 (part), 1998)

5-10102 ADDITIONAL DISCHARGE PROHIBITION.

No person shall permit or cause the discharge of any of the following substances to the County storm drainage system.

(a) Any substance which will cause the County to violate its NPDES Permit, its State Storm Water Permit or any applicable receiving water quality standards.

(b) Swimming pool water, in areas not served by sanitary sewers filtered, dechlorinated swimming pool water may be discharged to the storm water sewer.

(c) Pollutants in excess of the amount that the Director has determined can be removed to the maximum extent practicable.

Wastes prohibited by this section shall not be stored in such a manner that they could be discharged to the County storm drainage system either directly or indirectly. All floor drains located in process or material storage areas shall not discharge to the County storm drainage

system. Floor drains shall be connected to a sanitary sewer system with pretreatment facilities as required by operator of the sanitary sewer system and the San Joaquin County Health Department or to a waste recovery/storage system approved by the San Joaquin County Health Department. (Ord. 3966 § 1 (part), 1998)

5-10103 DISCHARGES EXEMPT FROM THE GENERAL PROHIBITION.

(a) The general discharge prohibitions shall not apply to any discharge regulated under a separate NPDES Permit issued to a discharger in accordance with provisions of the Clean Water Act provided that such discharge is in compliance with all requirements of the Permit and all other applicable laws and regulations.

(b) Discharge from the following activities shall be allowed unless such discharges are identified by the control authority as sources of pollutants to waters of the United States:

(1) Water line flushing and other discharges from potable water sources.

(2) Landscape and lawn watering.

(3) Diverted stream flows or rising groundwater.

(4) Uncontaminated groundwater, infiltration to separate storm sewers.

(5) Uncontaminated pumped groundwater.

(6) Water from foundation and footing drains, crawl space pumps and air conditioning condensation.

(7) Spring water or flow from riparian habitats and wetlands.

(8) Individual residential car washing.

(9) Street wash water.

(10) Flows from fire fighting, unless identified as significant sources of pollutants.

(c) Discharges of water originating from a public water system are also subject to the provisions of any County Water Conservation Ordinance, rule or regulation. (Ord. 3966 § 1 (part), 1998)

5-10104 NATIONAL CATEGORICAL STORM WATER EFFLUENT LIMITATIONS.

All users listed in 40 CFR, Subchapter N, shall comply with the effluent limitation guidelines as set forth therein, except where the Director has adopted a more stringent effluent limitation for a pollutant, then the more stringent limitation shall apply. When the County limit is more stringent than the Federal limit, the Director shall notify all known users affected by the standard. (Ord. 3966 § 1 (part), 1998)

5-10105 INDUSTRIAL CONDITION OF ACCEPTANCE (COA).

All users identified in the Level 1 PIF which discharge or propose to discharge to any County storm drainage system shall obtain a COA from the control authority. Applications for a COA shall be made to the County of San Joaquin Department of Public Works.

(a) COA may be issued for a specified time period, not to exceed five (5) years, or may expire on a specific date as stated in the COA. The COA may be modified by the County prior to its expiration when just cause exists. The user shall be notified of any new or proposed changes in the terms of the COA at least thirty (30) days prior to the effective date of any change. The Director may allow a reasonable time schedule for compliance with any changed or new conditions.

(b) A Condition of Acceptance issued to a user shall specify, in detail, the requirements for self monitoring, sampling, reporting, notification and record keeping for the user. It shall also state any applicable Federal, State, and local effluent limitation and the administrative, civil, and criminal penalties which may be pursued in case of noncompliance. Nothing in this section shall preclude the County from imposing other penalties allowed by law. (Ord. 3966 § 1 (part), 1998)

5-10106 CERTIFICATE OF EXEMPTION (COE).

The Director may issue a COE from the annual sampling requirements of the California General Industrial Permit to any user upon application. If an industry can demonstrate that it has implemented BMPs and has eliminated onsite risks of storm water pollution, that industry may be granted an exemption from sampling. The specific criteria for exemption will be developed by the County and approved by the RWQCB prior to implementation of the program. The filing or granting of a COE shall not relieve the user from its obligation to comply with the following conditions at the time application is made:

(a) The user shall develop and implement an effective SWPPP and identify and implement appropriate BMPs for the facility.

(b) The user shall make available monitoring data sufficient to substantiate the effectiveness of the BMPs.

(c) The user shall meet all requirements of the general permit including certifications regarding elimination of illicit connections.

Users requesting a COE must submit their NOI and SWPPP to the Department of Public Works with supporting data as appropriate. Applications shall be submitted by July 1 of the year preceding the year for which the exemption is being requested. Applications to renew/

extend COE made by the same user for the same use covered by the previously granted COE, shall be requested in writing and consist of (I) visual monitoring and annual inspection reports, (II) revisions to the SWPPP, (III) annual report to RWQCB and (IV) any supplemental data deemed appropriate to support the application, unless otherwise requested by the County.

Certificates of Exemption are issued to a specific user for a specific site, not to exceed five (5) years in duration. A certificate shall not be reassigned, transferred, or sold to a new owner, new user, different premises, or a new or changed operation, and shall not extend to an increase in usage, discharge, or operations by an existing user without the written approval of the County. Any succeeding owner or user shall apply for a sampling exemption certificate sixty (60) days prior to change of ownership or the exemption shall expire. (Ord. 3966 § 1 (part), 1998)

5-10107 DISCHARGE IN VIOLATION OF PERMIT.

Any discharge which would result in or contribute to a violation of the County's NPDES permit or any amendment, revision, or reissuance thereof, either separately considered or when combined with other discharges, is prohibited. Liability for any such discharge shall be the responsibility of the person(s) causing or responsible for the discharge, and such person(s) shall defend, indemnify, and hold harmless the County against any claim, expense, liability, or payment for injury or damage to any person or property and shall defend, indemnify, and hold harmless the County in any administrative or judicial enforcement or any legal action resulting from such discharge. (Ord. 3966 § 1 (part), 1998)

5-10108 ILLICIT DISCHARGE AND ILLICIT CONNECTIONS.

Pursuant to 40 Code of Federal Regulations 122.26(d)(2)(iv)(B) and this division, it shall be unlawful for any person to establish, use, maintain, or continue illicit drainage connections to the County storm drainage system, and to commence or continue any illicit discharges to the County storm drainage system. This prohibition shall apply to connections in existence at the time of the adoption of the ordinance codified in this division, irrespective of whether such connection was made under a permit or other authorization or whether permissible under the laws or practices applicable or prevailing at the time the connection was made. At the time of final adoption of the ordinance codified in this division, any user who maintains an illicit connection shall, within thirty (30) days from the effective date of the ordinance codified in this division, disconnect and discontinue use of said connection. (Ord. 3966 § 1 (part), 1998)

5-10109 REDUCTION OF POLLUTANTS IN STORM WATER.

Any person engaged in activities which will or may result in pollutants entering the County storm drainage system shall undertake all practicable measures to reduce the introduction of such pollutants. Examples of such activities include, but are not limited to, ownership and use of facilities such as parking lots, gasoline stations, industrial facilities, stores fronting streets, etc. With regard to such activities, the following minimum requirements shall apply:

(a) Littering. No person shall throw, deposit, leave, maintain, keep, or permit to be thrown, deposited, placed, or left, any refuse, rubbish, garbage, or other discarded or abandoned objects, articles, and accumulations, in or upon any street, alley, sidewalk, storm drain, inlet, catch basin, conduit, fountain, pond, lake, stream, or any other body of water in any park within the County of San Joaquin, or any other drainage structures, business place, or upon any public or private plot of land in the County, so that the same might be or become a pollutant. This section shall not apply to the storing of such potential pollutants in containers or in lawfully established waste disposal facilities, or the placement of leaves in accordance with rules and regulations established for the annual leaf pick up program in areas served by the program.

(b) Owners and Operators of Parking Lots and Similar Structures. Persons owning or operating a paved parking lot, gas station pavement, paved private street or road, or similar structure, shall clean those structures as frequently and thoroughly as practicable in a manner that minimizes the discharge of pollutants to the County storm drainage system. (Ord. 3966 § 1 (part), 1998)

5-10110 BEST MANAGEMENT PRACTICES; INDUSTRIAL USERS AND NEW DEVELOPMENTS AND REDEVELOPMENTS.

(a) The Director may adopt regulations establishing controls (I) on the volume and rate of storm water runoff for each industrial discharger, discharger associated with construction activity, or other discharger, described in any general Storm Water Permit addressing such discharges, as may be adopted by the United States Environmental Protection Agency, the State Water Resources Control Board, or the California Regional Water Quality Control Board, Central Valley Region, or (II) for discharges from new developments and redevelopments as may be appro-

priate to minimize the discharge and transport of pollutants. The Director may require any developer or construction contractor performing work in the County to submit a Storm Water Pollution Prevention Plan prior to final map approval by the County or prior to issuance of a building permit by the County, whichever first occurs.

(b) Where Best Management Practice guidelines or requirements have been adopted by any Federal, State, regional, County, and/or city agency, for any activity, operation, or facility which may cause or contribute to storm water pollution or contamination, illicit discharges, and/or discharges of non-storm water to the storm water system, every person undertaking such activity or operation, or owning or operating such facility, shall comply with such guidelines or requirements as may be identified by the Director.

(c) Any person who is required to obtain a NPDES Permit or is required to file a NOI for coverage under a general Storm Water Permit, as may be adopted by the United States Environmental Protection Agency, the State Water Resources Control Board, or the RWQCB, Central Valley Region, shall provide a copy of any application, permit, SWPPP, or other documentation to the Director. (Ord. 3966 § 1 (part), 1998)

CHAPTER 3

SPILLS

Sections:

5-10201 **Spill Prevention Plan.**
5-10202 **Spill Notification.**

5-10201 SPILL PREVENTION PLAN.

Each user shall provide protection from spills of prohibited materials or other substances regulated by this chapter. The methods, procedures, mechanisms and facilities established and utilized for the purpose of preventing accidental discharges or spills of materials with pollution potential shall be provided and maintained at the owner's or user's own cost and expense. Level I PIF shall submit a SWPPP to the County. The SWPPP shall outline the user's spill prevention and response procedure, describe the nature and location of any chemicals stored on the user's premises, and shall contain procedures for immediately notifying the County and preventing adverse impacts of any discharge of such chemicals, substances, or materials.

Review and acceptance by the County of such plans and operating procedures shall not relieve the user from the responsibility to modify the user's facility as necessary to meet the requirements of this chapter. (Ord. 3966 § 1 (part), 1998)

5-10202 SPILL NOTIFICATION.

It shall be the responsibility of Level I Priority Industrial Facilities to immediately notify the appropriate authorities of the incident of accidental discharge or spill by telephoning 911, the local Police, Sheriff or Highway Patrol, the local Fire Department, the County Office of Emergency Services, the County Environmental Health Division, or the County Department of Public Works as may be appropriate for the type of spill and the risks associated with the material spilled. Notification shall include identification of the location of the discharge, the type of concentration and volume of waste and corrective actions taken and/or anticipated.

Within five (5) days following an accidental discharge or spill, the user shall submit to the Department of Public Works a detailed written report describing the cause of the discharge and the measures to be taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage, or other liability which may be incurred as a result of damage to the County, fish kills, or any other damage to person or property; nor shall such notification relieve the

user of any fines, civil penalties, or other liabilities which may be imposed by this chapter or other applicable law.

A notice advising employees who to call in the event of an accidental discharge or spill shall be posted on the user's bulletin board or other prominent place. Employers shall provide spill prevention and response training for all employees who may be involved with an accidental discharge or spill incident.

All persons in charge of a facility or responsible for emergency response for a facility shall have a personal responsibility to train facility personnel and maintain notification procedures to assure immediate notification is provided to the County of any suspected, confirmed or unconfirmed release of material, pollutants, or waste creating a risk of discharge into the County storm drainage system and such persons shall forever be held personally liable for failure to do so.

As soon as any person in charge of a facility or responsible for emergency response for a facility has knowledge of any suspected, confirmed or unconfirmed release of materials, pollutants, or waste which may result in pollutants or non-storm water discharge entering the County storm drainage system, such person shall take all necessary steps to ensure the discovery and containment and clean up of such release and shall notify the appropriate authorities of the incident of accidental discharge or spill by telephoning 911, the local Police, Sheriff or Highway Patrol, the local Fire Department, the County Office of Emergency Services, the County Environmental Health Division, or the County Department of Public Works as may be appropriate for the type of spill and the risks associated with the material spilled and shall confirm the notification by written correspondence to the Director of San Joaquin County. (Ord. 3966 § 1 (part), 1998)

CHAPTER 4

INSPECTION AND ENFORCEMENT

Sections:

5-10301	**Authority to Inspect, Sample and Photograph.**
5-10302	**Acts Potentially Resulting in Violation of the Federal Clean Water Act and/or Porter-Cologne Act.**
5-10303	**Legal Actions.**
5-10304	**Civil Actions.**
5-10305	**Civil Penalties.**
5-10306	**Unlawful Actions.**
5-10307	**Penalties.**
5-10308	**Continuing Violation.**
5-10309	**Concealment.**
5-10310	**Violations Deemed a Public Nuisance.**
5-10311	**Discharge of Duties.**
5-10312	**Administrative Enforcement Powers.**
5-10313	**Reserved.**
5-10314	**Appeal.**
5-10315	**California Code of Civil Procedure Section 1094.6.**
5-10316	**Emergency Orders and Abatements and Appeals Therefrom.**
5-10317	**Appeal Procedure.**
5-10318	**Enforcement Response Plan.**
5-10319	**Remedies Not Exclusive.**
5-10320	**Disclaimer of Liability.**

5-10301 AUTHORITY TO INSPECT, SAMPLE AND PHOTOGRAPH.

For the purpose of verifying compliance with this section, the Director and/or the Director's designated representative may use samples collected from any trench, sump, pipe or other device which directs or conveys storm water to the County storm drainage system. The above samples may be collected at the source of discharge prior to the dilution with any other streams.

Whenever necessary to make an inspection to enforce any of the provisions of this division, or whenever an authorized enforcement officer has reasonable cause to believe that there exists in any building or upon any premises any condition which constitutes a violation of the provisions of this division, the officer may enter such building or premises at all reasonable times to inspect the same or perform any duty imposed upon the officer by this chapter; provided that (I) if such building or premises

be occupied, he or she shall first present proper credentials and obtain consent to enter; and (II) if such building or premises be unoccupied, he or she shall first make a reasonable effort to locate the owner or other persons having charge or control of the building or premises and request entry. When requesting consent to enter a building or premises pursuant to this section, the enforcement officer shall inform the property owner or occupant that he or she has the right to refuse entry and that in the event such entry is refused, issuance of an inspection warrant by a duly authorized magistrate may be sought. If the owner and/or occupant refuses entry after such request has been made, the officer is hereby empowered to seek assistance from any court of competent jurisdiction in obtaining such entry.

Routine or area inspections shall be based upon such reasonable selection processes as may be deemed necessary to carry out the objectives of this division, including, but not limited to, random sampling and/or sampling in areas with evidence of storm water contamination, illicit discharges, discharge of non-storm water to the storm water system, or similar factors.

Inspectors may, in the course of their inspection, photograph any condition on the premises thought by the inspector to possibly constitute a violation of this chapter or any local, State, or Federal law and any mechanism, apparatus, means or method thought to contribute to or facilitate the suspected violation.

Upon the written request of the Environmental Protection Agency or State or local government agencies charged with regulatory jurisdiction, all photographs taken in accordance with this chapter shall be made available to such agencies consistent with applicable law. Such photographs may also be made available to the public or other nongovernmental agencies unless the user specifically requests and is able to demonstrate to the satisfaction of the County that the photographs should be considered confidential in that, if released, they would divulge information, processes, or methods of production entitled to protection as trade secrets of the user.

With the consent of the owner or occupant or pursuant to a search warrant, any authorized enforcement officer may establish on any property such devices as are necessary to conduct sampling or metering operations. During all inspections as provided herein, the officer may take any samples deemed necessary to aid in the pursuit of the inquiry or in the recordation of the activities on site.

Any authorized enforcement officer may request that any person engaged in any activity and/or owning or operating any facility which may cause or contribute to storm water pollution or contamination, illicit discharges, and/or discharge of non-storm water to the storm water system, undertake such monitoring activities and/or analyses and furnish such reports as the officer may deem reasonably necessary to comply with the purpose and intent of this chapter. The burden, including costs, of these activities, analyses and reports, incurred in complying with said request shall be borne by the property owner or operator of the facility or activity for which testing and monitoring has been requested. (Ord. 3966 § 1 (part), 1998)

5-10302 ACTS POTENTIALLY RESULTING IN VIOLATION OF THE FEDERAL CLEAN WATER ACT AND/OR PORTER-COLOGNE ACT.

Violation of any provision of this division may also violate provisions of the Federal Clean Water Act and/or Porter-Cologne Act and may be subject to the sanctions of those Acts. (Ord. 3966 § 1 (part), 1998)

5-10303 LEGAL ACTIONS.

If any person discharges pollutants into the County storm drainage system contrary to the provisions of this chapter, Federal or State pretreatment standards or requirements, or any order of the County or any other local governmental agency having regulatory jurisdiction, or otherwise commits any violation contrary to any of the provisions of this chapter, the County may commence an action for appropriate legal, equitable, or injunctive relief. (Ord. 3966 § 1 (part), 1998)

5-10304 CIVIL ACTIONS.

In addition to any other remedies provided in this chapter, any violation of the provisions of this chapter may be enforced by civil action brought by the County. In any such action, the County may seek any or all of the following remedies:

(a) Injunctive relief;

(b) Assessment against the violator for the costs of any investigation, inspection, or monitoring survey which led to the discovery of the violation, and for the reasonable costs incurred in preparing and prosecuting the legal action as a result of violations of this chapter;

(c) Recovery for costs incurred in removing, correcting, terminating, or preventing adverse effects resulting or likely to result from the violation;

(d) Compensatory damages for loss or destruction to water quality, wildlife, fish and aquatic life; and/or

(e) Such other relief as the court may authorize.

Assessments under this subsection shall be paid to the County to be used exclusively for costs associated with monitoring and establishing storm water discharge pollu-

tion control systems and/or implementing or enforcing the provisions of this chapter. (Ord. 3966 § 1 (part), 1998)

5-10305 CIVIL PENALTIES.

Any person who violates any provision of this chapter, who discharges or causes pollution, or who violates any cease and desist order, State or national law or regulation, or any other order of the Director shall be civilly liable to the County in a sum not to exceed twenty-five thousand dollars ($25,000.00) per violation per day. In addition, the County may require the user to pay any excess costs to the County for supplementary treatment systems, facilities, or operations needed as a result of allowing the entry of such discharges into the storm water system.

The County may petition the Superior Court of San Joaquin County to impose, assess and collect any sums levied pursuant to this chapter and Sections 54725, 54739 and 54740, et seq. of the California Government Code.

Notwithstanding any other provision of law, all civil penalties imposed by the court pursuant to this paragraph shall be distributed to the County. Remedies imposed pursuant to this section are in addition to and do not supersede or limit any and all other administrative, civil, or criminal remedies available at law. (Ord. 3966 § 1 (part), 1998)

5-10306 UNLAWFUL ACTIONS.

It shall be unlawful for any person or entity to intentionally or negligently fail to comply with or violate any provisions of this chapter or any State or Federal regulation regulating storm water discharge requirements or standards issued pursuant to this chapter or by the State, Federal, or other local governmental agency having jurisdictional authority with regard to storm water discharges.

Unless otherwise specified by this chapter, the violation of any provision of this chapter, or failure to comply with any of the mandatory requirements of this chapter shall constitute a misdemeanor; except that, notwithstanding any other provisions of this chapter, any such violation constituting a misdemeanor under this chapter may, at the discretion of the County, be charged and prosecuted as an infraction. (Ord. 3966 § 1 (part), 1998)

5-10307 PENALTIES.

Upon conviction of a misdemeanor, a person shall be subject to payment of a fine, or imprisonment, or both, in accordance with the provisions of California Penal Code Section 19.

Upon conviction of an infraction, a person shall be subject to payment of a fine in accordance with the provisions of California Government Code Section 25132. (Ord. 3966 § 1 (part), 1998)

5-10308 CONTINUING VIOLATION.

A person, firm, corporation, or organization may be deemed guilty of a separate offense for each and every day during any portion of which a violation of this chapter is committed, continued, or permitted by the person, firm, corporation, or organization and shall be punishable accordingly as herein provided. (Ord. 3966 § 1 (part), 1998)

5-10309 CONCEALMENT.

It shall be unlawful to conceal a violation of this chapter. Any person who causes, permits, aids, or abets the occurrence of a violation of any provision of this chapter shall be deemed to have committed the violation of concealment proscribed under this section. A violation of this section shall constitute a misdemeanor. (Ord. 3966 § 1 (part), 1998)

5-10310 VIOLATIONS DEEMED A PUBLIC NUISANCE.

In addition to the penalties hereinbefore provided, any condition caused or permitted to exist in violation of any of the provisions of this chapter is hereby deemed a threat to the public health, safety and welfare, and is hereby declared to be a public nuisance, and may be abated and/or restored by the County initiating a civil action in a court of competent jurisdiction and obtaining a court order authorizing the County to abate, enjoin, or otherwise compel the cessation of such nuisance.

Where a court order authorizing the County to abate the public nuisance has been issued and the County incurs costs in carrying out such abatement, the cost of such abatement shall be borne by the owner of the property and the cost thereof shall be invoiced to the owner of the property. If the invoice is not paid within sixty (60) days, a lien may be placed upon and against the property.

If the County prevails in any administrative, civil, or criminal proceeding initiated under this chapter, the County shall be entitled to seek reimbursement for all costs incurred in connection with said proceeding. Such reimbursable costs may include, but are not limited to, the costs of investigation, administrative overhead, out-of-pocket expenses, costs of administrative hearings or costs of suit and reasonable attorney fees. (Ord. 3966 § 1 (part), 1998)

5-10311 DISCHARGE OF DUTIES.

It is the intent of the Board of Supervisors that the immunities prescribed in Section 836.5 of the Penal Code which apply to public officers or employees in the discharge of their duties within the course and scope of their employment shall apply to all actions taken by said public officers or other County employees in discharging their duties in accordance with this chapter. (Ord. 3966 § 1 (part), 1998)

5-10312 ADMINISTRATIVE ENFORCEMENT POWERS.

In addition to the other enforcement powers and remedies established by this chapter, any authorized enforcement officer has the authority to utilize the following administrative remedies:

(a) Cease and Desist Orders. When an authorized enforcement officer finds that a discharge has taken place or is likely to take place in violation of this chapter, the officer may issue an order to cease and desist such discharge or the practices or operations likely to cause such discharge and may direct that person(s) responsible for such discharge, practices, or operations (I) comply with the requirement, (II) comply with a time schedule for compliance and (III) take appropriate remedial or preventive action to prevent the violation from recurring.

(b) Notice to Clean. Whenever an authorized enforcement officer finds any oil, earth dirt, grass, weeds, dead trees, tin cans, rubbish, refuse, waste, or any other material of any kind, in or upon the sidewalk abutting or adjoining any parcel of land, or upon any parcel of land or grounds, which may result in an increase in pollutants entering the County storm drainage system or a non-storm water discharge to the County storm drainage system, he or she may give written notice to the owner, operator, or other person having legal responsibility for the premises or facility to remove such oil, earth dirt, grass, weeds, dead trees, tin cans, rubbish, refuse, waste, or other material. The enforcement officer shall specify in said notice the time allotted for compliance and the recipient of such notice shall undertake the activities necessary to abate said condition within the period of time specified.

In the event the owner or operator of a facility fails to conduct the required activities as described in the notice, the authorized enforcement officer may cause such required activities as described in the notice and the cost thereof shall be invoiced to the owner of the property. If the invoice is not paid within sixty (60) days, a lien may be placed upon and against the property. (Ord. 3966 § 1 (part), 1998)

5-10313 RESERVED.

5-10314 APPEAL.

Any person, firm, corporation, or organization affected by a decision, action, or determination, including suspension, revocation, refusal, termination, or cease and desist orders, issued by the Director, interpreting or implementing the provisions of this chapter or in any permit issued herein, may file with the Director a written request for reconsideration within ten (10) days of such decision, action, or determination, setting forth in detail the facts supporting the user's request for reconsideration in accordance with the provision of Section 5-10317.

Any person aggrieved by the action of the Director may appeal said decision in accordance with the procedures set forth in Section 5-10317. (Ord. 3966 § 1 (part), 1998)

5-10315 CALIFORNIA CODE OF CIVIL PROCEDURE SECTION 1094.6.

The provisions of Section 1094.6 of the California Code of Civil Procedure are applicable to judicial review of County decisions pursuant to this chapter. (Ord. 3966 § 1 (part), 1998)

5-10316 EMERGENCY ORDERS AND ABATEMENTS AND APPEALS THEREFROM.

The Director may order the abatement of any discharge from any source to the County storm drainage system when, in the opinion of the Director or the Director's designated representative, the discharge causes or threatens to cause a condition which presents an imminent danger to the public health, safety, welfare, or the environment or a violation of the County's NPDES Permit or the Ordinance Code of San Joaquin County.

Said situation shall be abated by service of a notice and order to abate upon the person responsible for said discharge or the owner of said building or property. Said notice and order shall set forth the time period for abatement of the conditions and it shall be unlawful for any person so notified to fail to obey or correct such conditions within the time period specified in the order.

If said situation is not abated within the specified time period, the County may perform or cause to be performed such work as shall be necessary to attain proper abatement. In emergency situations, where the property owner or occupant is unavailable and time constraints are such that service of a notice and order to abate cannot be affected without presenting an immediate danger to the public health or safety, the County may perform or cause

to be performed such work as shall be necessary to abate the threat of danger to the public.

Any cost incurred by the County incidental to such work shall be an assessment upon the property or premises affected and shall be collected on the tax rolls in the same manner, by the same person, and at the same time, together with or not separate, from the general taxes.

Any person alleging to have been aggrieved by any emergency action taken by the County pursuant to this section may appeal the propriety of the County's action by filing a written notice of appeal with the Director within ten (10) days of the emergency abatement. (Ord. 3966 § 1 (part), 1998)

5-10317 APPEAL PROCEDURE.

An action pursuant to this chapter may be appealed in accordance with the provisions of this section. Unless otherwise specified, appeals shall be filed within ten (10) days of the date of action. If the end of the appeal period falls on a non-business day, the appeal period shall be extended to include the next business day.

Unless otherwise specified by law, decisions made by any authorized representative of the Director may be appealed to the Director. Decisions of the Director may be appealed to the Board of Supervisors.

The appeal shall include, at a minimum, the following:

(a) A written statement specifying the basis of the appeal by citing the specific abuse of discretion by the Review Authority; and

(b) A fee, as specified by resolution of the Board of Supervisors.

The appeal body shall consider only those items cited in the appeal. In its deliberation, it may use the record and any additional evidence relative to the application and confirm, reverse or modify the appealed action based upon its interpretation of the findings required and the evidence submitted. (Ord. 3966 § 1 (part), 1998)

5-10318 ENFORCEMENT RESPONSE PLAN.

The Director of Public Works or the Director's designated representative may respond to violations of this chapter through development of an Enforcement Response Plan and place it on file with the Department of Public Works. (Ord. 3966 § 1 (part), 1998)

5-10319 REMEDIES NOT EXCLUSIVE.

Remedies under this chapter are in addition to and do not supersede or limit any and all other remedies, civil or criminal. The remedies provided for herein shall be cumulative and not exclusive. (Ord. 3966 § 1 (part), 1998)

5-10320 DISCLAIMER OF LIABILITY.

The degree of protection required by this division is considered reasonable for regulatory purposes and is based on scientific, engineering and other relevant technical considerations. The standards set forth herein are minimum standards and this division does not imply that compliance will ensure that there will be no unauthorized discharge of pollutants into the waters of the United States. This division shall not create liability on the part of the County or any officer or employee thereof for any damages that result from reliance on this division or any administrative decision lawfully made thereunder. (Ord. 3966 § 1 (part), 1998)

CHAPTER 5

COORDINATION WITH OTHER PROGRAMS

Sections:

5-10401	**Notification of Intent and Compliance with General Permits.**
5-10402	**Coordination with Hazardous Materials Inventory and Response Program.**
5-10403	**Reserved.**
5-10404	**Confidential Information.**
5-10405	**Special Agreements.**

5-10401 NOTIFICATION OF INTENT AND COMPLIANCE WITH GENERAL PERMITS.

Each industrial discharger described in any general Storm Water Permit addressing such discharges, as may be adopted by the United States Environmental Protection Agency, the State Water Resources Control Board, or the State of California Central Valley Regional Water Quality Control Board (Region 5), Central Valley Region, the city of Stockton, or San Joaquin County shall provide Notice of Intent to comply with, and undertake all other activities required by any general Storm Water Permit applicable to such discharges. Furthermore, each discharger identified in an individual NPDES Permit relating to storm water discharges shall comply with and undertake all activities required by such Permit. Notice shall be given, as prescribed in such General Permit, with a copy to the San Joaquin County Department of Public Works. (Ord. 3966 § 1 (part), 1998)

5-10402 COORDINATION WITH HAZARDOUS MATERIALS INVENTORY AND RESPONSE PROGRAM.

Following the adoption of the ordinance codified in this division, the first revision of the business plan for any facility subject to the County's hazardous materials inventory and response program shall include sections which address the elimination of any or all illicit connections, prohibition of all illicit discharges, inspection compliance procedures to assure the success of the program and the general requirement to reduce storm water pollutants to the maximum extent practicable. (Ord. 3966 § 1 (part), 1998)

5-10403 RESERVED.

5-10404 CONFIDENTIAL INFORMATION.

Information and data on a user obtained from reports, questionnaires, permit applications, permits and monitoring programs, and from inspections shall be made available to the EPA, State agencies, and other local governmental agencies consistent with applicable law. Such information and data shall also be made available to the public or other nongovernmental agencies unless the user specifically requests and is able to demonstrate to the satisfaction of the County that the release of such information would divulge information, processes, or methods of production entitled to protection as trade secrets of the user. However, in no event shall storm water constituents and characteristics be recognized as confidential information.

Information accepted by the County as confidential shall not be transmitted without the approval of County Counsel. Furthermore, when requested by the person furnishing a report for uses related to this chapter, the NPDES Permit, State General Industrial Storm Water Permit and/or State General Construction Activity Water Permit, the portions of a report which might disclose trade secrets or secret processes shall not be made available when requested by the public or nongovernmental agencies. However, such portions of such reports shall be made available to the EPA, State agencies, or local governmental agencies upon the written request of such agency consistent with applicable law. (Ord. 3966 § 1 (part), 1998)

5-10405 SPECIAL AGREEMENTS.

Special agreements and arrangements, to develop a compliance plan, between the County of San Joaquin and any persons or agencies may be established when, in the opinion of the County, unusual or extraordinary circumstances, compel special terms and conditions. However, in no event shall any such agreement authorize the violation or waiver of applicable standards or requirements as delineated in the County's National Pollution Discharge Elimination System Permit. (Ord. 3966 § 1 (part), 1998)

Storm Water Management Plan

Attachment

6

DIVISION 14

GRADING AND EXCAVATION PROVISIONS

CHAPTER 9-1400

GRADING AND EXCAVATION PROVISIONS: INTENT AND ORGANIZATION

Sections:

9-1400.1 Title and Intent.
9-1400.2 Organization.

9-1400.1 TITLE AND INTENT.

Division 14 constitutes the Grading and Excavation Provisions. The intent of this Division is to provide standards for grading and excavations on private property for agricultural leveling, quarry mining, and grading related to development within the unincorporated area of San Joaquin County.
(Ord. 3675)

9-1400.2 ORGANIZATION.

Division 14 consists of the following Chapters:

(a) 9-1400 Grading and Excavation Provisions: Intent and Organization;

(b) 9-1405 Grading and Excavation Requirements;

(c) 9-1410 Agricultural Excavation Standards;

(d) 9-1415 Quarry Excavation Standards.

(Ord. 3675)

CHAPTER 9-1405

GRADING AND EXCAVATION REQUIREMENTS

Sections:

9-1405.1 Intent.
9-1405.2 Grading or Excavation Permit Required.
9-1405.3 Exemptions.
9-1405.4 General Requirements.
9-1405.5 Removal from Site.
9-1405.6 Water Obstruction.
9-1405.7 Levee Work.
9-1405.8 Administration.

9-1405.1 INTENT.

The intent of this Chapter is to regulate grading and excavations related to development projects.
(Ord. 3675)

9-1405.2 GRADING OR EXCAVATION PERMIT REQUIRED.

Except for the specific exemptions listed hereinafter, no person shall do, or permit to be done, any grading or excavation without a valid grading permit obtained from the Building Inspection Division.
(Ord. 3675, 3715)

9-1405.3 EXEMPTIONS.

The following grading may be done without obtaining a grading permit as required by this Title. Exemption from the requirement of a grading permit shall not be deemed to be permission to violate any provision of this Title.

(a) Minor projects which have cuts or fills, and which meet all of the following:

(1) Involve the removal, plowing under, or burial of less than ten thousand (10,000) square feet of vegetation on slopes eight percent (8%) or greater, or any amount of vegetation on slopes less than eight percent (8%);

(2) Do not create unstable or erodible slopes;

(3) Do not encroach onto sewage disposal systems or areas;

(4) The cut is either

(A) Less than two (2) feet in depth, or

(B) The cut does not create a slope greater than five (5) feet in height and steeper than one and one-half (1 1/2) horizontal to one (1) vertical;

(5) The fill is either

(A) Less than one (1) foot in depth and placed on natural terrain with a slope flatter than five (5) horizontal to one (1) vertical, or

(B) Less than three (3) feet in depth, not intended to support structures, which does not exceed fifty (50) cubic yards on any one (1) lot and does not obstruct a drainage course.

(b) Excavations in connection with a swimming pool or structural foundation authorized by a valid building permit.

(c) Trenching and grading incidental to the construction or installation of permitted underground pipe lines, underground storage tanks, septic tank disposal fields, conduits, electrical or communication facilities, and drilling or excavation for permitted wells or post holes.

(d) Excavations less than one hundred fifty (150) cubic yards for soil or geological investigations by a Geotechnical Engineer or Engineering Geologist.

(e) Grading in accordance with the plan incorporated in an approved Quarry Excavation Permit per Section 9-854, Quarry Excavation Permits, an approved Agricultural Excavation Permit per Section 9-851, or an approved Use Permit for a sanitary landfill per Section 9-821, Use Permits.

(f) Excavations for drainage or sedimentation ponds that are included as portions of other ministerial or discretionary development projects under the provisions of this Title.

(g) Grading or excavations within County rights-of-way or easements for which an encroachment permit has been issued under provisions of Section 9-1145.2.

(h) Maintenance of existing firebreaks and roads to keep the firebreak or road substantially in its original condition.

(i) Routine cemetery excavations and fills.

(j) Performance of emergency work necessary to protect life or property when an urgent necessity arises. The person performing such emergency work shall notify the Building Official promptly of the problem and work required and shall apply for a permit within ten (10) calendar days after commencing said work.

(k) Other exceptions as provided in appendix Chapter 70 of the Uniform Building Code.

(Ord. 3675; 3715; Ord. 3832 § 42, 1995)

9-1405.4 GENERAL REQUIREMENTS.

Except as modified by this Chapter, Chapter 70 of the Uniform Building Code as adopted by reference by the Board shall govern grading and excavation operations.

(Ord. 3715)

9-1405.5 REMOVAL FROM SITE.

Except as specifically provided for by one of the following, no person shall do, or permit to be done, any grading in such a manner that any quantities of dirt, soil, rock, gravel, or sand is removed from the site.

(a) Removal when done with an approved surface mining Quarry Excavation Permit per Section 9-854, Quarry Excavation Permits.

(b) Removal when done with an approved Agricultural Excavation Permit per Section 9-851, Agricultural Permits.

(c) Removal when done with an approved Use Permit for a sanitary landfill per Section 9-821, Use Permits.

(d) Removal of material related to situations listed under Section 9-1405.3, Exemptions.

(e) Removal from a development project of incidental excess material during site grading that is done with an approved grading or building permit.

(f) Removal, by governmental agency, of material donated to the governmental agency for use in governmental projects; material must have been previously stockpiled for a minimum period of eighteen (18) months. Removal shall be subject to Site Approval.

(g) Grading done by or under the supervision or construction control of a public agency of an excavation within that agency's boundaries. The agency shall assume full responsibility for ensuring that the work is done in compliance with this Title, the San Joaquin Valley Unified Air Pollution Control District's Regulation VIII (Fugitive Dust Prohibitions), and the Surface Mining and Reclamation Act. Excess soil material must be used solely for projects owned or controlled by the public agency and which are within the agency's boundary and within San Joaquin County.

(Ord. 3675; 3715; Ord. 3872 § 2, 1996)

9-1405.6 WATER OBSTRUCTION.

No person shall do or permit to be done any grading which may obstruct, impede, or interfere with the natural flow of storm waters, whether such waters are unconfined upon the surface of the land or confined within land depressions or natural drainage ways, unimproved channels or watercourses, or improved ditches, channels, or conduits, in such manner as to cause flooding where it would not otherwise occur, aggravate any existing flooding condition, or cause accelerated erosion except where said grading is in accordance with all applicable laws, including but not limited to these permit requirements.

(Ord. 3675)

9-1405.7 LEVEE WORK.

No person shall excavate or remove any material from or otherwise alter any levee required for any waterway, water body, or local drainage control without prior approval of the agency responsible for the maintenance of the levee.

(Ord. 3675)

9-1405.8 ADMINISTRATION.

This Chapter shall be administered by the Director. In subdivisions, the grading plans shall be approved by the Department of Public Works. The rough and finish grading of the lots will be inspected by the Department of Public Works. For development projects that require a discretionary permit, the grading permit will not be issued until the discretionary permit is approved.

(Ord. 3675; 3715; Ord. 3843 § 20, 1995)

CHAPTER 9-1410

AGRICULTURAL EXCAVATION STANDARDS

Sections:

9-1410.1	**Intent.**
9-1410.2	**Applicability.**
9-1410.3	**Development Standards.**
9-1410.4	**Surface Mining and Reclamation Act.**

9-1410.1 INTENT.

The intent of this Chapter is to provide standards for removing excess material from agricultural property for agricultural purposes.
(Ord. 3675)

9-1410.2 APPLICABILITY.

The provisions of this Chapter shall apply only if the amount of material being removed is limited to that which is required to increase the agricultural viability of the property.
(Ord. 3715)

9-1410.3 DEVELOPMENT STANDARDS.

The following development standards shall apply to any agricultural excavation permit approved under the provisions of this Title:

(a) **Private Roads.** All private roads involved in an excavation shall be maintained so as to control the creation of dust;

(b) **Final Grade.** The final grade shall:

(1) Not result in disruption of the flow of drainage water from the property or adjoining properties;

(2) Not adversely affect the irrigability of the property or surrounding properties. If the property is within an irrigation district, the final grade shall be limited to that elevation which is necessary to provide gravity irrigation to the property. This determination may be made by the irrigation district;

(3) Not adversely affect the relation of the water table to the surface of the land;

(4) Have an average elevation no less than the average elevation of the natural grade of the surrounding land. The average elevation of the natural or existing grade shall be the average elevation of all land one hundred (100) feet from the perimeter of the proposed excavation, excluding any portion of the perimeter adjacent to a river, riverbank, levee, public road, railroad, canal, pipeline, or other similar uses or rights-of-way;

(c) **Waterways.** A berm or other improvements may be required adjacent to any waterway, including underground facilities, which adjoins the excavation. The heights, setback, and slope of the berm shall be based on recommendation of the agency responsible for the maintenance of the waterway or the Department of Public Works;

(d) **Hours of Operation.** Excavation operations shall not be carried on during the hours from 9:00 p.m. through 5:00 a.m., except during periods of declared national, state, or local emergency. Said hours shall be based on either Pacific Standard Time or Pacific Daylight Saving Time, whichever is legally in effect. The hours of operation may be modified by the Review Authority based upon the excavation's potential effect on surrounding land uses;

(e) **Lighting.** Any night lighting established on the property shall be arranged and controlled so as not to illuminate public rights-of-way or adjacent properties;

(f) **Emissions.** All emissions shall be subject to the rules and regulations of the San Joaquin County Air Pollution Control District;

(g) **Replacement of Topsoil.** During the excavation, the topsoil shall be set aside. Upon completion of an excavation, the topsoil shall be replaced and the site leveled in conformance with the approved Grading Plan, approved by the Review Authority. Replacement of topsoil may be waived by the Review Authority if the soils report indicates the replacement of the topsoil will not enhance the agricultural suitability of the property;

(h) **Weed Control.** If noxious weeds are on the site, operations shall be in accordance with instructions from the Agricultural Commissioner of San Joaquin County;

(i) **Health Considerations.** Excavations shall not cause health or sanitary hazards and shall not create conditions which will cause the breeding or increase of mosquitos, rodents, or other pests;

(j) **Commencement of Work.** A written notification of work schedules shall be provided to the County by the applicant prior to initiating any grading or excavation;

(k) **Certification of Compliance.** At the completion of the grading, the applicant shall have a registered civil engineer or licensed land surveyor compare the excavation's final elevations with the approved permit. The engineer or surveyor shall submit a certified, written finding to the Building Official which states and documents the compliance or noncompliance of the excavation with the approved permit. If the project conforms with the approved permit, the Review Authority shall accept the certification and either notify the applicant that the stockpiled material may be removed or release the required performance guarantee, as specified in Subsection (p);

(l) **Time Limitation.** The time limit shall be based upon the characteristics of the proposal, including, but not limited to, the quantity of material to be removed and the applicant's time schedule and phasing plan. Specific time limitation may be required for individual phases of the excavation;

(m) **Erosion Control.** Protective vegetative planting, silt screen dams, or other approved methods shall be required where necessary for the control of erosion. An erosion and sediment control plan approved by Development Services Division shall be part of the reclamation plan;

(n) **Excavation/Reclamation Schedule.** The reclamation plan (as required in Section 9-851.3) shall show the phases of excavation. Reclamation on one (1) phase of an excavation shall be initiated prior to the start of the next excavation phase. The final reclamation of any phase of excavation shall be completed within two (2) years of the commencement of the reclamation process. Excavation shall be limited so that at any point of time a maximum of one (1) phase is being reclaimed while one (1) phase is being excavated;

(o) **Annual Inspection Reports.** The applicant shall pay a fee to the County of San Joaquin to cover the cost of annual inspections of the excavation to ensure compliance with the conditions of the permit and the reclamation plan. The County may use professional services as provided for in Section 9-240.11. The consultant shall be selected by San Joaquin County. Upon completion of the annual inspection, the person in charge of the mining operation shall submit to the State Geologist and the County a report which shall contain all the information as required by Section 2207 of the Public Resources Code. Additional inspections may be conducted, but the cost of additional inspections shall be paid for by the applicant only if noncompliance with the conditions of the Agricultural Excavation Permit or the reclamation plan is found;

(p) **Performance Guarantee.** In order to ensure reclamation of the site, compliance with conditions of approval, and compliance with County and State mining regulations, the applicant shall provide performance guarantees as a condition of the issuance of the Agricultural Excavation Permit. The amount and form of the guarantee shall be subject to annual review and approval by the County and the State, and the amount shall be adequate to ensure reclamation of disturbed land and/or land to be disturbed during a given phase. The annual review of the financial guarantee shall be coordinated with the annual inspection and approval of successive reclamation security so that the guarantee includes the amount of disturbed land plus the amount of land estimated to be disturbed during the next twelve (12) months, less the amount of land previously determined by Development Services Division annual inspection to have been reclaimed. The performance guarantee shall be in the form of either: 1) a surety bond, 2) a trust fund with the lead agency, or 3) an irrevocable letter of credit. Any interest accrued in a trust fund shall stay with the trust fund account. The financial guarantee shall be payable to "San Joaquin County or the Department of Conservation" under the applicable provisions of the County and the State mining regulations. The financial guarantee shall be callable by the County or the State under the following circumstances:

(1) The applicant causes the excavation to become idle (as defined in Section 9-110) without an approved interim management plan;

(2) The applicant files for bankruptcy;

(3) The County or State determines on the basis of annual inspections and reports that the applicant has not maintained substantial compliance with the approved permit;

(4) There arises an occurrence or circumstance which, in the opinion of the County or State, jeopardizes the site reclamation; or

(5) The State makes one (1) or more of the findings specified in Section 2774.4(a) of the State Public Resources Code.

In any instance that the County or State makes the demand for partial or full tender of the financial guarantee of performance, the County and/or State may use all or any portion of the financial guarantee to reclaim the site and to recover its administrative costs associated therewith;

(q) **Enforcement.** Except as otherwise provided in State Mining Regulations, the County shall have authority to enforce provisions of the Surface Mining and Reclamation Act. The County may exercise all enforcement regulations available under the County Development Title and the State Public Resources Code. Such enforcement measures include charging the applicant the costs of administering an enforcement action. The basis for charging fees for an enforcement action shall be a time and materials compensation.

(r) **Quantity Limitation.** Excavation of more than one hundred thousand (100,000) yards of material shall require a Quarry Excavation Permit. Successive agricultural excavations on the same parcel exceeding a total of one hundred thousand (100,000) yards of material over a period of less than twenty (20) years shall not be permitted. Excavations prior to January 25, 2005 shall not be included in the calculation of the amount of material excavated.

(Ord. 3675; 3715; Ord. 4241 § 6, 2005)

9-1410.4 SURFACE MINING AND RECLAMATION ACT.

Approved Agricultural Excavation Permits shall be subject to the regulations adopted by the State Mining and Geology Board as authorized by the California Surface Mining and Reclamation Act (SMARA) of 1975 (Public Resource Code Section 2710 et seq.), as amended; Public Resource Code Section 2207; and the California Code of Regulations adopted pursuant thereto (Title 14, 3500 et seq.).
(Ord. 4241 § 7, 2005)

CHAPTER 9-1415

QUARRY EXCAVATION STANDARDS

Sections:

9-1415.1	**Intent.**
9-1415.2	**Surface Mining And Reclamation Act.**
9-1415.3	**Development Standards.**

9-1415.1 INTENT.

The intent of this Chapter is to provide standards for the extraction of mineral resources.
(Ord. 3675)

9-1415.2 SURFACE MINING AND RECLAMATION ACT.

Approved Quarry Excavation Permits shall be subject to the regulations adopted by the State Mining and Geology Board as authorized by the California Surface Mining and Reclamation Act (SMARA) of 1975 (Public Resource Code Section 2710 et seq.), as amended; Public Resource Code Section 2207; and the California Code of Regulations adopted pursuant thereto (Title 14, 3500 et seq.).
(Ord. 3715, 3788)

9-1415.3 DEVELOPMENT STANDARDS.

Any Quarry Excavation Permit approved under the provisions of this Title shall be subject to the following standards:

(a) **Permitted Accessory Uses.** Quarry excavations may include the use of equipment, structures, and facilities necessary or convenient for the extraction, processing, storage, and transport of materials, including, but not limited to:

(1) Separation plants;
(2) Rock crushers;
(3) Concrete batching plants;
(4) Asphalt batching plants; and
(5) Recycling facilities that recycle material into asphalt concrete, Portland cement concrete, aggregate base, sand, gravel, fill dirt, or other products that are determined by the Director to be common to the aggregate industry.

Permitted Accessory Uses shall not be initiated unless approved by the Review Authority as a part of a new Quarry Excavation Permit or separately approved by the Director as an addition to a previously approved Quarry Excavation Permit. The Director shall require the applicant to submit an Improvement Plan, as provided in Chapter 9-884, with fees as specified by resolution of the Board of Supervisors, in order to secure approval for the permitted accessory use.

(b) **Stockpiling.** No stockpiled soil or material shall be placed closer than twenty-five (25) feet to a property boundary except as provided for in Subsection (m);

(c) **Private Roads.** All private roads involved in an excavation shall be maintained so as to control the creation of dust. The first one hundred (100) feet of any private road on the property which intersects with a publicly maintained road shall be surfaced in a manner approved by the Director. Traffic-control and warning signs shall be installed, if required, at such intersection. The placement and size of these signs shall be approved by the Director of Public Works;

(d) **Erosion Control.** Protective vegetative planting, silt screen dams, or other approved methods shall be required where necessary for the control of erosion. An erosion and sediment control plan approved by Development Services Division shall be part of the reclamation plan;

(e) **Performance Standards.** Standards contained in Chapter 9-1025 shall be met unless otherwise modified by conditions of the Quarry Excavation Permit;

(f) **Hours of Operation.**

(1) Normal Hours. Plant operations shall normally be carried on during the hours from 5:00 a.m. and 9:00 p.m.

(2) Time Zone. Said hours shall be based on either Pacific Standard Time or Pacific Daylight Savings Time, whichever is legally in effect.

(3) Exceptions. Exceptions may be made:

(A) For periods of declared national, state, or County emergency, or

(B) If a finding can be made by the Review Authority that the longer hours of operation will not cause a nuisance in the case of a specific quarry excavation.

(4) Extension of Hours. Normal operating hours may be extended if the Director of the Community Development Department determines that the extended

hours of operation are necessary to meet the operational need of a specific project, provided:

(A) Any request for extension in the hours of operations shall be made in writing to the Director of the Community Development Department and include:

(i) The reason for the extended hours of operation,

(ii) The hours of extended operation and the day the extended operations are to commence and terminate, and

(iii) A copy of the bid specifications, contract terms, or other similar applicable documents, if applicable.

(B) The request shall be approved or disapproved by the Director of the Community Development Department within three (3) business days following the day on which the request is filed.

(i) If approved, the Director may impose conditions on the extended hours which are appropriate to reduce disturbance to the public or residents in the area of the quarry.

(ii) Notice of the approval and conditions shall be sent to all property owners in the area.

(C) The applicant shall reimburse the Community Development Department for all costs associated with the request.

(g) **Replacement of Topsoil.** In agricultural areas, the topsoil shall be set aside, and upon completion of an excavation, the topsoil shall be replaced and the site leveled in conformance with the excavation permit. This requirement may be waived if the property is to be rehabilitated for a use other than agriculture which is consistent with the General Plan, or if a soils report indicates the replacement of the topsoil will not enhance the agricultural suitability of the property. In such cases, the topsoil may be removed from the site;

(h) **Weed Control.** If noxious weeds are on the site, operations shall be in accordance with instructions from the Agricultural Commissioner of San Joaquin County;

(i) **Health Considerations.** Quarry excavations shall:

(1) Not cause health or sanitary hazards and shall not crate conditions which will cause the breeding or increase of mosquitos, rodents, or other pests.

(2) Provide an approved potable water supply for all employees.

(3) Provide approved toilets for all employees (chemical toilets are acceptable).

(4) Provide handwashing facilities on or near the approved toilets;

(j) **Setbacks.** No excavation shall take place within twenty-five (25) feet of any property line or right-of-way (nor within the allowed slopes adjacent to said twenty-five (25) foot setback), unless the elevation prior to excavation is more than that of the abutting property, in which case the elevation within said twenty-five (25) foot setback shall at no time be less than that of the abutting property, at the property line;

(k) **Slopes.** The following provisions do not apply to temporary interior cut slopes (i.e., working slopes that do not fall within any of the criteria listed below). Temporary interior cut slopes shall comply with the Cal OSHA Code of Regulations and/or the Federal OSHA Code of Regulations as applicable.

(1) Terracing Required. All slopes over fifty (50) feet in height shall be terraced with a maximum vertical distance between terraces of fifty (50) feet. Each terrace or bench shall be a minimum of twelve (12) feet wide.

(2) Terrace Drainage. Drainage plans with calculations shall be submitted for approval to Development Services Division for all terraces as part of the Reclamation Plan.

Terraces for reclaimed final slopes shall be sloped back towards the fill and be designed such that runoff is directed to collection points where it can enter catch basins and be conveyed via pipes or other acceptable conveyance to the toe of slope. The spacing of collection points shall be no greater than 1,500 feet, with each reclaimed final slope face that has terracing shall have a minimum of one (1) down drain. The method of transporting the water along the flow line of the terrace to the down drain, so as to prevent erosion and possible slope failure, shall be approved by the Development Services Division.

The method of drainage of terraces for temporary slopes at setback lines shall be submitted to Development Services division for approval.

(3) Slope Modification Requirement. The Review Authority may require slopes flatter than those specified below for safety or aesthetic purposes if the proximity of residential and other urban uses, waterways or roads, the instability of materials, or the surrounding terrain so warrants.

If after one (1) year or more of extraction the approved slope does not remain stable, the Review Authority shall have the authority to reduce the slope or require other appropriate measures in the immediate area and other areas as deemed necessary in order to correct the condition as well as require the operator to correct the deteriorated slope.

(4) Slope Stability Factors of Safety. When required in this Title to provide site-specific geologic and

engineering slope stability analysis, the following minimum slope stability factors of safety shall apply:

(A) A minimum factor of safety of 1.5 against static deep seated failure.

(B) A minimum factor of safety of 1.5 against static surficial failure.

(C) A minimum factor of safety of 1.1 against seismic failure;

(5) Temporary Cut Slopes at Setback Lines. Temporary cut slopes (i.e., for limited periods of time, slopes that are in the process of extraction prior to being backfilled) at setback lines shall not exceed one (1) foot horizontal to one (1) foot vertical, except that temporary cut slopes at setback lines to a maximum of one half (1/2) of a foot horizontal to one (1) foot vertical may be maintained if site-specific geologic and engineering analysis demonstrate through a slope stability analysis that the proposed temporary cut slopes will have a minimum slope stability factor of safety as required in Section 9-1415.3(k)(4). However, in the event that there are existing structures on the adjacent property (or the immediate potential for structures on the adjacent property), the excavation shall at not time be closer to the property line than a line projected on a slope of one (1) to one (1) from the property line to the toe of slope.

(6) Final Slopes. Final cut and/or fill slopes shall not exceed two (2) feet horizontal to one (1) foot vertical, except as specified below:

(A) Final slopes to a maximum of one and one-half (1 1/2) feet horizontal to one (1) foot vertical may be maintained when site-specific geologic and engineering analysis demonstrate through a slope stability analysis that the proposed final slopes will have a minimum slope stability factor of safety as required in Section 9-1415.2(k)(4), while demonstrating suitability for the proposed end use and protecting against erosion (by means of revegetation or other methods approved by Development Services Division).

(B) Final slopes to a maximum of one (1) horizontal foot to one (1) foot vertical may be maintained under water (beginning five (5) feet below the lowest water table on the property experienced in the preceding three (3) years) when site-specific geologic and engineering analysis demonstrate through a slope stability analysis that the proposed saturated slopes will have a minimum slope stability factor of safety as required in Section 9-1415.2(k)(4);

(7) Fill Slopes. Fill slopes shall be constructed consistent with recommendations from a qualified civil/geotechnical engineer based upon site-specific geologic conditions;

(l) **Fencing.** Fencing four (4) feet in height consisting of not less than three (3) strands of barbed wire, or an approved equivalent, shall be placed around the excavation area where slopes steeper than two (2) feet horizontal to one (1) foot vertical are maintained. Six (6) foot high security fencing or an approved equivalent shall be required where slopes steeper than two (2) feet horizontal to one (1) foot vertical are created, if the proximity of such slopes to residential uses or other uses involving a concentration of people so warrants;

(m) **Screening and Landscaping.** Where an open pit operation is visible from a public road right-of-way or property zoned or shown on the General Plan for residential development, screening consistent with Chapter 9-1020 is required;

The Review Authority may approve the use of a landscaped berm to screen the pit provided that an adequate setback for maintenance is provided and sight distance at road intersections is not impaired;

(n) **Ponding.** All water utilized in the plant operation shall be disposed of behind a closed dike unless an alternative method is approved by the Review Authority;

(o) **Excavation/Reclamation Schedule.** The reclamation plan (as required in Section 9-854) shall show the phases of excavation. Reclamation on one phase of an excavation shall be initiated prior to the start of the next excavation phase. The final reclamation of any phase of excavation shall be completed within two (2) years of the commencement of the reclamation process. Excavation shall be limited so that at any point of time a maximum of one phase is being reclaimed while one phase is being excavated;

(p) **Time Limitation.** The Review Authority may place a time limit on the Quarry Excavation Permit or any phase of the Permit. Absent any specific time limitation, the Quarry Excavation Permit shall remain in effect as long as the excavation continues in compliance with the approved Permit.

(q) **Annual Inspection Reports.** The applicant shall pay a fee to the County of San Joaquin to cover the cost of annual inspections of the excavation to ensure compliance with the conditions of the permit and the reclamation plan. The County may use professional services as provided for in Section 9-240.11. The consultant shall be selected by San Joaquin County. Upon completion of the annual inspection, the person in charge of the mining operation shall submit to the State Geologist and the County a report which shall contain all the information as required by Section 2207 of the Public Resources Code. Additional inspections may be conducted, but the cost of additional inspections shall be paid for by the applicant only if non-

	Procedure ID: IC4-14.01

Title: NPDES Industrial & Commercial Violations Investigation Inspection Policy and Procedures and Progressive Enforcement Policy

Reference Document: SJ CO. SWMP 2008 **SWMP Section:** 5-14
Issuance/Effective Date: 3/6/09 **Revised Date:**
Authors: Justin Padilla, Engineering Asst. I
Approved by:

NPDES Industrial & Commercial Investigation-Enforcement Management

Investigation/Inspection Procedures:

If a violation is reported, or is witnessed during a routine inspection, a file is initiated by the NPDES investigator. The file will typically contain a copy of the NPDES Permit, if on file, correspondence, inspection reports, photographs, communications record with the violators, complainants, witnesses or their representatives, and other pertinent information.

The following investigation/inspection procedures apply:

1. The NPDES investigator initiates a file. The files are are located in a designated filing cabinet within the CID office. Phase I Files are kept together in blue folders. Phase II Files are kept together in green folders. Electronic copies of photos and notices will be saved on the CID server drive. The investigator conducts an investigation of the site. Pictures are taken, inspections forms are filled, violations may be noted, samples of materials may be taken, any witnesses or parties to the action may be interviewed and any other evidence collected to investigate any incident. As needed, the investigator may call other County departments to assist with the incident such as the Fire Department, Sheriff, Environmental Health or Emergency Services. The incident is also reported to the NPDES Program Manager.

2. A chronology of the events is logged in the *Chrono Log* (Sample attached). The *Chrono Log* is filed inside of the front of violation File.

3. All pertinent information relating to the enforcement is entered in the corresponding Inventory and/or Log. Once the matter is addressed a final inspection is made, updates are made to the file and Chrono Log. Final notations are made in green font indicating the file is closed and the violation file is closed.

Progressive Enforcement Policy for Complaints/Alleged Violations:

San Joaquin County's Ordinance Title 5 – Health and Sanitation, Division 10 – Storm Water Management and Discharge Control, Chapter 4 Inspection and Enforcement provides the NPDES investigator the authority to investigate, inspect and enforce complaints and alleged violations of storm water management. San Joaquin County Ordinances can be found at:

http://municipalcodes.lexisnexis.com/codes/sanjoaquinweb

Pursuant to San Joaquin County's NPDES Permit and Stormwater Management Plan, the following progressive enforcement shall be taken for Industrial and Commercial sites.

1. First enforcement action is a verbal warning, if anyone is present during the time of inspection. The enforcement action and date of communication is entered into the violation file and Chrono Log.

   The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the violation file and Chrono Log and any follow-up material filed in the violation file. Once the matter is cleaned-up, updates are made to the violation file and Chrono Log.

2. Second progressive enforcement action is the issuance of a letter (**Warning Notice or Notice to Clean)**. This letter must be sent Certified Mail with return receipt. The Certified Mail receipt is stapled to the copy of the letter and filed in the violation file. Notation is made in the violation file and Chrono Log of the issuance of the Notice. The owner/violator will be given ten (10) days from the mailing date to respond and to clean up the incident/violation. If an imminent hazard to life or property exists, a shorter time frame may be required. Should the letter be returned, the address must be changed and a new letter generated, sent out and copy retained in the violation file Updated entries must be made in the violation file and Chrono Log.

   The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the violation file and Chrono Log and any follow-up material filed in the violation file.

3. Third progressive enforcement action is issuance of a **Notice of Violation**. The Notice is sent Certified Mail return receipt. The Certified Mail receipt is stapled to the copy of the Notice and filed in the violation file. Notation is made in the violation file and Chrono Log of the issuance of the Notice. The owner/violator is given twenty-one (21) days from the mailing date to respond and to clean up the incident/violation. If an imminent hazard to life or property

exists a shorter time frame may be required. Should the letter be returned, the address must be changed and a new letter generated, sent out and copy retained in the violation file Updated entries must be made in the violation file and Chrono Log.

The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the violation file and Chrono Log and any follow-up material filed in the violation file.

4. Fourth progressive enforcement as stipulated under San Joaquin County Ordinance 5-10312 ADMINISTRATIVE ENFORCEMENT, the NPDES investigator may issue an *Order to Cease and Desist* a discharge, practice, operation or construction for compliance with a requirement. The Order shall set a reasonable period of time to cure the action in a manner satisfactory to the County NPDES investigator. The Order shall be hand delivered whenever possible or sent Certified Mail return receipt. Notation is made in the violation file and Chrono Log of the issuance of the Notice.

   The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the violation file and Chrono Log and any follow-up material filed in the violation file. Once the matter is clean-up a final inspection letter is sent to the owner/violator of the property, updates are made to the violation file and Chrono Log. Final notations are made in green font indicating the file is closed and the violation file is closed.

   In the event the owner/violator fails to conduct the required activities described in the Order the NPDES enforcement may cause such required described in the Notice and the cost thereof shall be invoiced to the owner of the Property. If the invoice is not paid within sixty (60) days, a lien may be placed upon the property (Ord. 3966 Section 1 (part), 1998).

5. Fifth progressive enforcement action is a **referral letter to San Joaquin District Attorney and the California Regional Water Quality Control Board State** with copy to the owner/violator sent by Certified Mail. The Certified Mail receipt is stapled to the copy of the letter and action noted in the violation file and Chrono Log and filed in the violation file. Notation is made in the violation file and Chrono Log of the issuance of the referral letter. Final notations are made in red font indicating the file is closed on our end and all matters have been referred to the proper authorities.

Title: NPDES Construction Violations Investigation Inspection Policy and Procedures and Progressive Enforcement Policy

Reference Document: SJ CO. SWMP 2008 **SWMP Section:** 6-19
Issuance/Effective Date: 9/30/08 **Revised Date:** 12/30/08
Authors: Justin Padilla, Engineering Asst. I
Approved by: Maria Hinsey, Community Infrastructure Division

NPDES Construction Investigation-Enforcement Management

Investigation/Inspection Procedures:

When a construction project has been permitted, or if a construction site that may or may not be permitted is brought to Community Infrastructure Division (CID) Storm Water Management attention, a Construction *File* is initiated by the NPDES investigator. The Construction *File* will typically contain a copy of the NPDES Construction Permit, if on file, correspondence, inspection reports, photographs, communications record with the violators, complainants, witnesses or their representatives, and other pertinent information pertaining to the construction.

The following investigation/inspection procedures apply:

1. The NPDES investigator initiates a *Construction File*. The Construction Files are filed by an ID number assigned by Phase, then water year, and then the order in which the Permit is received (ex. P1-0708-001) and are located in a designated filing cabinet within the CID office. Phase I Files are kept together in blue folders. Phase II Files are kept together in green folders. Electronic copies of photos and notices will be saved on the CID server drive. The investigator conducts an investigation of the construction site once every two to four weeks, more often during the rainy season. Pictures are taken, inspections forms are filled, violations may be noted, samples of materials may be taken, any witnesses or parties to the action may be interviewed and any other evidence collected to investigate any incident. As needed, the investigator may call other County departments to assist with the incident such as the Fire Department, Sheriff, Environmental Health or Emergency Services. The incident is also reported to the NPDES Program Manager.

2. A chronology of the events is logged in the *Chrono Log* (Sample attached). The *Chrono Log* is filed inside of the front of Construction File.

3. All pertinent information relating to the enforcement is entered in the *Construction Project Inventory (*Sample attached). Once the construction is completed and a final inspection is made, updates are made to the

Construction File and Chrono Log. Final notations are made in green font indicating the file is closed and the *Construction File* is closed.

Progressive Enforcement Policy for Complaints/Alleged Violations:

San Joaquin County's Ordinance Title 5 – Health and Sanitation, Division 10 – Storm Water Management and Discharge Control, Chapter 4 Inspection and Enforcement provides the NPDES investigator the authority to investigate, inspect and enforce complaints and alleged violations of storm water management. San Joaquin County Ordinances can be found at:

http://municipalcodes.lexisnexis.com/codes/sanjoaquinweb

Pursuant to San Joaquin County's NPDES Permit and Stormwater Management Plan, the following progressive enforcement shall be taken for construction or post-construction occurrences.

1. First enforcement action is a verbal warning, if anyone is present during the time of inspection. The enforcement action and date of communication is entered into the *Construction File and the Chrono Log.*

   The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the *Construction File and Chrono Log* and any follow-up material filed in the *Construction File*. Once the matter is cleaned-up, updates are made to the *Construction File and Chrono Log*.

2. Second progressive enforcement action is the issuance of a letter (**Warning Notice or Notice to Clean)**. This letter must be sent Certified Mail with return receipt. The Certified Mail receipt is stapled to the copy of the letter and filed in the *Construction File*. Notation is made in the *Chrono Log and the Construction File* of the issuance of the Notice. The owner/violator will be given ten (10) days from the mailing date to respond and to clean up the incident/violation. If an imminent hazard to life or property exists, a shorter time frame may be required. Should the letter be returned, the address must be changed and a new letter generated, sent out and copy retained in the *Construction File*. Updated entries must be made in the *Construction File* and *Chrono Log*.

   The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the *Construction File and Chrono Log* and any follow-up material filed in the *Construction File*.

3. Third progressive enforcement action is issuance of a **Notice of Violation**. The Notice is sent Certified Mail return receipt. The Certified Mail receipt is stapled to the copy of the Notice and filed in the *Construction File*. Notation is made in the *Chrono Log and the Construction File* of the issuance of the Notice. The owner/violator is given twenty-one (21) days from the mailing date to respond and to clean up the incident/violation. If an imminent hazard to life or property exists a shorter time frame may be required. Should the letter be returned, the address must be changed and a new letter generated, sent out and copy retained in the *Construction File*. Updated entries must be made in the *Construction File* and *Chrono Log*.

   The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the *Construction File and Chrono Log* and any follow-up material filed in the *Construction File*.

4. Fourth progressive enforcement as stipulated under San Joaquin County Ordinance 5-10312 ADMINISTRATIVE ENFORCEMENT, the NPDES investigator may issue an *Order to Cease and Desist* a discharge, practice, operation or construction for compliance with a requirement. The Order shall set a reasonable period of time to cure the action in a manner satisfactory to the County NPDES investigator. The Order shall be hand delivered whenever possible or sent Certified Mail return receipt. Notation is made in the *Chrono Log and the Construction Project Inventory* of the issuance of the Notice.

   The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the *Chrono Log and Construction Project Inventory* and any follow-up material filed in the *Construction File*. Once the matter is clean-up a final inspection letter is sent to the owner/violator of the property, updates are made to the *Chrono Log and Construction Project Inventory*. Final notations are made in green font indicating the file is closed and the Construction *File* is closed.

   In the event the owner/violator fails to conduct the required activities described in the Order the NPDES enforcement may cause such required described in the Notice and the cost thereof shall be invoiced to the owner of the Property. If the invoice is not paid within sixty (60) days, a lien may be placed upon the property (Ord. 3966 Section 1 (part), 1998).

5. Fifth progressive enforcement action is a **referral letter to San Joaquin District Attorney and the California Regional Water Quality Control Board State** with copy to the owner/violator sent by Certified Mail. The Certified Mail receipt is stapled to the copy of the letter and action noted in the Chrono Log and Construction Log and filed in the Construction *File*. Notation is made in the *Chrono Log and the Construction Project Inventory* of the issuance of the

referral letter. Final notations are made in red font indicating the file is closed on our end and all matters have been referred to the proper authorities.

Note: If a construction site has received three notices for significant violations within a twelve (12) month period, the County will notify the Regional Water Board. The construction site referral is made in writing within 30 days of the inspection that led to the third notice. Additionally, at the County's discretion, based upon circumstances involving violation, gravity and/or location.

Attachments:

Chrono Log
Construction Inspection Form
Construction Project Inventory

Procedure ID: CO6-19.01B

Title: NPDES Construction Violations Investigation Inspection Policy and Procedures and Progressive Enforcement Policy – Rainy Season (November 1st to April 15th)

Reference Document: SJ CO. SWMP 2008 **SWMP Section:** 6-19
Issuance/Effective Date: 9/30/08 **Revised Date:** 3/6/09
Authors: Justin Padilla, Engineering Asst. I
Approved by: Maria Hinsey, Community Infrastructure Division

NPDES Construction Investigation-Enforcement Management

Investigation/Inspection Procedures:

When a construction project has been permitted, or if a construction site that may or may not be permitted is brought to Community Infrastructure Division (CID) Storm Water Management attention, a Construction *File* is initiated by the NPDES investigator. The Construction *File* will typically contain a copy of the NPDES Construction Permit, if on file, correspondence, inspection reports, photographs, communications record with the violators, complainants, witnesses or their representatives, and other pertinent information pertaining to the construction.

The following investigation/inspection procedures apply:

1. The NPDES investigator initiates a *Construction File*. The Construction Files are filed by an ID number assigned by Phase, then water year, and then the order in which the Permit is received (ex. P1-0708-001) and are located in a designated filing cabinet within the CID office. Phase I Files are kept together in blue folders. Phase II Files are kept together in green folders. Electronic copies of photos and notices will be saved on the CID server drive. The investigator conducts an investigation of the construction site every two weeks during the rainy season. Pictures are taken, inspections forms are filled, violations may be noted, samples of materials may be taken, any witnesses or parties to the action may be interviewed and any other evidence collected to investigate any incident. As needed, the investigator may call other County departments to assist with the incident such as the Fire Department, Sheriff, Environmental Health or Emergency Services. The incident is also reported to the NPDES Program Manager.

2. A chronology of the events is logged in the *Chrono Log* (Sample attached). The *Chrono Log* is filed inside of the front of Construction File.

3. All pertinent information relating to the enforcement is entered in the *Construction Project Inventory (*Sample attached). Once the construction is completed and a final inspection is made, updates are made to the

Construction File and Chrono Log. Final notations are made in green font indicating the file is closed and the *Construction File* is closed.

Progressive Enforcement Policy for Complaints/Alleged Violations:

San Joaquin County's Ordinance Title 5 – Health and Sanitation, Division 10 – Storm Water Management and Discharge Control, Chapter 4 Inspection and Enforcement provides the NPDES investigator the authority to investigate, inspect and enforce complaints and alleged violations of storm water management. San Joaquin County Ordinances can be found at:

http://municipalcodes.lexisnexis.com/codes/sanjoaquinweb

Pursuant to San Joaquin County's NPDES Permit and Stormwater Management Plan, the following progressive enforcement shall be taken for construction or post-construction occurrences.

1. First enforcement action is a verbal warning, if anyone is present during the time of inspection. The enforcement action and date of communication is entered into the *Construction File and the Chrono Log.*

   The NPDES investigator will perform a follow-up/final inspection within 2 business days, prepare a report and take pictures. The follow-up actions will be entered into the *Construction File and Chrono Log* and any follow-up material filed in the *Construction File*. Once the matter is cleaned-up, updates are made to the *Construction File and Chrono Log*.

2. Second progressive enforcement action is the issuance of a letter (**Warning Notice or Notice to Clean)**. This letter will be sent through our Clerical Division as "Urgent". This letter must be sent Certified Mail with return receipt. The Certified Mail receipt is stapled to the copy of the letter and filed in the *Construction File*. Notation is made in the *Chrono Log and the Construction File* of the issuance of the Notice. The owner/violator will be given seven (7) days from the mailing date to respond and to clean up the incident/violation. If a storm is approaching, or an imminent hazard to life or property exists, a shorter time frame may be required. Should the letter be returned, the address must be changed and a new letter generated, sent out and copy retained in the *Construction File*. Updated entries must be made in the *Construction File* and *Chrono Log*.

   The NPDES investigator will perform a follow-up/final inspection, prepare a report and take pictures. The follow-up actions will be entered into the *Construction File and Chrono Log* and any follow-up material filed in the *Construction File*.

3. Third progressive enforcement action is issuance of a **Notice of Violation**. The Notice is sent Certified Mail return receipt. The Certified Mail receipt is stapled to the copy of the Notice and filed in the *Construction File*. Notation is made in the *Chrono Log and the Construction File* of the issuance of the Notice. The owner/violator is given ten (10) days from the mailing date to respond and to clean up the incident/violation. If a storm is approaching, or an imminent hazard to life or property exists a shorter time frame may be required. Should the letter be returned, the address must be changed and a new letter generated, sent out and copy retained in the *Construction File*. Updated entries must be made in the *Construction File* and *Chrono Log*.

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5. Fifth progressive enforcement action is a **referral letter to San Joaquin District Attorney and the California Regional Water Quality Control Board State** with copy to the owner/violator sent by Certified Mail. The Certified Mail receipt is stapled to the copy of the letter and action noted in the Chrono Log and Construction Log and filed in the Construction *File*. Notation is made in the

Chrono Log and the Construction Project Inventory of the issuance of the referral letter. Final notations are made in red font indicating the file is closed on our end and all matters have been referred to the proper authorities.

Note: If a construction site has received three notices for significant violations within a twelve (12) month period, the County will notify the Regional Water Board. The construction site referral is made in writing within 30 days of the inspection that led to the third notice. Additionally, at the County's discretion, based upon circumstances involving violation, gravity and/or location.

Attachments:

Chrono Log
Construction Inspection Form
Construction Project Inventory

Storm Water Training Program

Since pollution prevention is much easier and less costly than cleaning up after-the-fact, we must all work together to help keep our precious waterways pollutant free and protect our natural resources.

STORMWATER

Pollution Prevention

SAN JOAQUIN COUNTY

Table of Contents

OVERVIEW 3
Storm Water Management Plan 4
Storm Water Training Overview 5
Storm Water Training Modules 6
Additional Modules 7
Annual Refresher Training 7
Module 1: Illicit Discharge/Illegal Connections 8
Overview *8*
Module 2: Municipal Operations 9
Overview *9*
Module 3: Construction/Planning and Development 10
Overview *10*
Industrial/Commercial Environments 11
Overview *11*
Storm Water Training Audiences Defined 12
NPDES Outreach & Workshops 13
NPDES Outreach & Workshop Modules 15
NPDES Business Outreach 16
Overview *16*
NPDES Construction Outreach 17
Overview *17*
NPDES Pesticide Plan Workshop 18
Overview *18*
San Joaquin County Resource Appendix 19

OVERVIEW

The San Joaquin County's Storm Water Training Plan was developed in support of San Joaquin County's Storm Water Management Plan (SWMP). The SWMP was filed with the California State Water Quality Control Board on June 6, 2008. The SWMP is a comprehensive program for addressing current and future regulatory and policy requirements for managing storm water runoff and water quality. The SWMP consists of a number of programs, policies, procedures, and activities to be conducted by the Public Works Department and the identified coordinating San Joaquin County Departments. The SWMP focuses upon regulatory requirements, the need for public services and safety, and the County's commitment to protect and improve the quality of its watersheds. The SWMP entails monitoring capital improvement projects, construction and post-construction, upgrading construction design procedures for water quality, public awareness, public and private maintenance of public storm water systems, monitoring watersheds to assess and improve/mitigate water quality issues, private storm water facility inspection, and public outreach and education.

The San Joaquin County's Storm Water Training Plan (SWTP) addresses how to meet the training requirements adopted by the performance standards of the SWMP. The training provides a general awareness and understanding of storm water management practices, policies, procedures and regulations and gives some specific guidance to both internal and external County audiences.

A number of the SWMP sections overlap subject matter and contain the same principals. Because of this, the SWTP Modules have been consolidated to cover multiple areas of the SWMP and make the training more efficient and capitalize on the interaction of the intended audiences.

Storm Water Management Plan

The Storm Water Management Plan (SWMP) includes existing and enhanced program performance standards and control measures. The SWMP represents the five-year strategy (2007-2012) for controlling the discharge of pollutants from the municipal storm drain system to the maximum extent practicable (MEP).

Overview of SWMP Sections addressed in the NPDES Training Program

SWMP Section	**Description**
Section 2 - Illicit Discharges	Section 2 describes the program developed to detect, respond, investigate and report illicit discharges and illegal connections.
Section 3 - Public Education	Section 3 describes the public education and outreach program developed to promote change in behavior and increase the knowledge of target communities to reduce pollutants to the storm drain systems.
Section 4 - Municipal Operations	Section 4 describes the program developed to address municipal operations so they are performed in a manner that is protective of water quality and minimizes the potential for Pollutants to enter the storm drain system.
Section 5 - Industrial and Commercial	Section 5 describes the program developed to inspect and outreach to industrial and commercial businesses.
Section 6 - Construction	Section 6 describes the program developed to reduce pollutants from construction sites during all phases of construction and post-construction.
Section 7 - Planning and Land Development	Section 7 describes the program developed to address the reduction of pollutants in development planning through better site planning, design practices, and post-construction controls to improve water quality.
Section 9 - Pesticide Plan	The overall goal of the Pesticide Plan is to protect water quality by implementing IPM, and the associated BMPs to minimize or eliminate pesticides in storm water runoff.

Storm Water Training Overview

Module 1 Illicit Discharge and Illegal Connections (Reference: SWMP Section 2):

Module 1 provides overview training on the National Pollutant Discharge Elimination System and San Joaquin County's obligation to manage water quality. The training focuses on illicit discharge and illegal connection detection, enforcement and reporting and the adoption of pollution prevention/ good housekeeping behaviors.

Training recurrence: Illicit Discharge: Conduct training twice per five-year permit term with annual refresher training. *(see Training Schedule).*
Assessment: An assessment of the attendees' initial familiarity with the subject matter and absorption of the training material after the training session will be made through pre and post-survey evaluations during the training session. Information will be tracked and reported as a part of the Annual Report.

Module 2 Municipal Operations (Reference: SWMP Sections 4):

Module 2 provides training on municipal operations best management practices and industrial/commercial owner/operators of best management practices with the ultimate goal of preventing or reducing pollutant runoff from operations into the storm sewer system. It also provides information on the County's inspection, reporting and enforcement practices.

Training recurrence: Municipal Operations: Conduct training twice per five-year permit term with annual refresher training. (See Training Schedule)
Assessment: An assessment of the attendees' initial familiarity with the subject matter and absorbtion of the training material after the training session will be made through pre and post-survey evaluationsduring the training session. Information will be tracked and reported as a part of the Annual Report.

Module 3 Construction Planning/Land Development
(Reference: SWMP Sections 6 and 7):

Module 3 provides training on construction, design and development best management practices to mitigate negative impacts on changing the natural landscape and water quality.

Training recurrence: Construction/Land Development: Conduct training twice per five-year permit term with annual refresher training. (See Training Schedule)
Assessment: An assessment of the attendees' initial familiarity with the subject matter and absorption of the training material after the training session will be made through pre and post-survey evaluationsduring the training session. Information will be tracked and reported as a part of the Annual Report.

From time to time, resources available, the County may collaborate with the City of Stockton or may invite a speaker to focus upon specific subject matter.

Storm Water Training Modules

	Module 1	Module 2	Module 3
	Illicit Discharges and Illegal Connections	**Municipal Operations**	**Construction / Planning and Land Development**
GOAL	Basic principals of storm water pollution prevention and water quality and provide an awareness of illicit discharges and illegal connections, reporting and enforcement	Pollution Prevention/Good Housekeeping for County Municipal Operations in favor of Water Quality and inspection, reporting and enforcement	Best management practices on construction, post-construction, design and development of County projects and public projects
NPDES Phase I Permit & SWMP	Section 2	Section 4	Section 6 Section 7
Class Time	45 Minutes	60 Minutes	60 Minutes
Objectives	• Storm Water Overview • Understanding of the SWMP • Recognize, respond and report illicit discharges and illegal connections • Tracking and enforcement of illicit discharges and illegal connections • Storm water Hotline • Best Management Practices • Behavioral changes to improve water quality	• Storm water Overview • Municipal Operations and Best Management Practices • Recognize, respond and report illicit discharges and illegal connections, • Tracking and enforcement of illicit discharges and illegal connections • Storm water Ordinance and Enforcement Policy	• Storm water Overview • Impacts on land development from design, construction and post-construction • Inspection, reporting, tracking and enforcement • Storm water Hotline • Best Management Practices • SWPPP Requirements
Audience	PW – Flood Management PW – Water Resources PW – Transportation Planning Sheriff's Department	PW – Channel Maintenance PW – Road Maintenance PW – Utility Maintenance PW – Fleet Services PW – Solid Waste County Parks & Recreation County Airport Staff Fire Department	PW – Bridge Engineering PW – Design Engineering PW – Traffic Engineering PW – Field Engineering PW – Surveyor PW – Special Projects PW – Public Services Community Development Department Facilities Management Department – Capital Projects
Schedule	3 sessions	6 sessions	4 sessions

Additional Modules

Industrial/Commercial Environments (Reference: SWMP Section 5):
Industrial/Commercial Environments provides training on best management practices for specific environments to mitigate stormwater pollution. SWMP Section 5 is discussed. This module may serve independently to a previously trained inspection staff or as an add-on to Module 2.

Training Reoccurrence: Industrial/Commercial: Conduct training twice five-year permit term with annual refresher training. (See Training Schedule)
Assessment: An assessment of the attendees' initial familiarity with the subject matter and absorption of the training material after the training session will be made through pre and post-survey evaluations during the training session. Information will be tracked and reported as a part of the Annual Report.

Annual Refresher Training

Module 1 Illicit Discharge and Illegal Connections – Refresher training consist of targeted staff to watch a 20-minute video: Just Passing Through which reiterates the impact of stormwater pollution and pollution prevention methods. Recognition of illicit discharges and reporting procedures are discussed.

Module 2 Municipal Operations - Refresher training consist of targeted staff to watch a 20-minute video: Stormwater Watch: Municipal Operations which reiterates the impact of storm water pollution, includes pollution prevention methods and best management practices used during variety of municipal job duties. Recognition of illicit discharges and reporting procedures are discussed.

Module 3 Construction Planning/Land Development - Refresher training consist of targeted staff to watch a 20-minute video: Stormwater Watch: Ground Control which reiterates the impact of storm water pollution from construction activities and includes best management practices for the construction site. Recognition of illicit discharges and reporting procedures are discussed. County workflows and permitting procedures are discussed.

Industrial/Commercial Environments - Refresher training consist of a discussion hosted between the Commercial Inspectors, Public Works Industrial Inspector and NPDES Outreach Staff. Recognition of illicit discharges and reporting procedures are discussed. Checklists, pollution prevention methods, and the Commercial Inspection Program are evaluated. Inspectors are provided further outreach materials for Industrial/Commercial Environments.

Module 1: Illicit Discharge/Illegal Connections

Reference Requirement: SJ CO Storm water Management Plan
Section 2 Supporting Control Measure – ID5

Overview

Content/Topic	Time/Aids
History of the Clean Water Act 1972 The Importance of Protecting the Water Quality SJ CO. Storm water Management Plan (Section 2) Video: Just Passing Through Reporting, Inspection, Tracking and Enforcement Question & Answer/Test your Knowledge	BMPs, Video

Discussion Points

- Why is it important to protect water quality?
- How does storm water run off cause water pollution?
- What possible consequences might result if the County fails to follow regulations to prevent storm water pollution?
- Who do you contact in the event of a complaint, violation?
- What activities performed have the potential to pollute storm water runoff?
- What should be done with hazardous materials?
- What are some good housekeeping practices that should be followed to prevent and reduce storm water pollution?

Implementation	Materials Needed
	Module 1 – Power Point Presentation SJ Co. Storm Water Management Plan SJ Co. Ordinance Title 5 Division 10 Best Management Practices Video: Storm Watch BMPs

Documentation / Evidence of Learning
Pre- & Post- training surveys

Evaluation
Analysis of pre- and post- survey results Illicit Discharges Reporting activity

Module 2: Municipal Operations

Reference Requirement: SJ CO. Storm water Management Plan
Section 4 Supporting Control Measure - MO8

Overview

Content/Topic	Time/Aids
Overview and Compliance with State Regulations SJ Co. SWMP (Section 4 &5) Video: Stormwatch: Municipal Stormwater Maintenance Staff Guide Discussion OSS Plan Overview Reporting, Inspection, Tracking and Enforcement Process Question & Answer	Enforcement Policy BMPs Video

Discussion Points

- Which materials used could contaminate storm water runoff?
- What is the best location for storage of Hazardous materials?
- What are the basic steps for cleaning up a spill? Wet? Dry?
- Why is sediment considered a pollutant?
- How should soil removed from ditches be handled and used?
- Where can specific information on how to clean up a spill be found?
- What is a Facility Pollution Prevention Plan?/Sewer System Management Plan?
- FM: Where should vehicle maintenance activities be conducted?
- FM: What is the proper procedure for cleaning shop floors? Pavement?
- What are some signed of pollution to look for when conducting daily activities?
- What are some good housekeeping practices?

Implementation	Materials Needed
	Module 2 – Power Point Presentation SJ Co. Storm Water Management Plan SJ Co. Maintenance Staff Guide/SSO Video: Storm watch BMPs Sewer System Management Plan

Documentation / Evidence of Learning
Pre- & Post- training survey

Evaluation
Analysis post- survey results Illicit Discharges Reporting activity

Module 3: Construction/Planning and Development

Reference Requirement: SJ CO. Storm water Management Plan
Section 6 Supporting Control Measure - CO7
Section 7 Supporting Control Measure - LD5

Overview

Content/Topic	Time/Aides
Overview and Compliance with State Regulations San Joaquin Co. Storm water Management Plan (Section 6&7) Storm water Ordinance and Enforcement PolicySWPPP Requirements Construction Inspection TrainingVideo: Ground Control Question & Answer Test your Knowledge	Information for distribution to contractors BMPs Video Enforcement Policy NPDES Standards NPDES Checklist

Discussion

- Why is sediment considered a pollutant?
- What precautions should be used regarding dirt stockpiles?
- What is erosion prevention more effective than sediment removal?
- Overview of Stormwater Quality Control Criteria Plan
- What BMPs can be used for erosion? Removing segment in runoff?
- What is a NOI? Who needs to file one?
- What are SWPPP Requirements?
- Overview of Erosion and Grading Manual

Implementation	Materials Needed
	Module 3 – Power Point Presentation SJ Co. Storm Water Management Plan SJ Co. Small Site Stormwater Management Plan CASQA Construction BMP Handbook SWQCCP Video: Ground Control - Construction

Documentation / Evidence of Learning
Pre- & Post- training survey

Evaluation
Analysis of pre- and post- survey results Illicit Discharges Reporting activity

Industrial/Commercial Environments

Reference Requirement: SJ CO. Storm water Management Plan
Section 5 Supporting Control Measure – IC5

Overview

Content/Topic	Time/Aides
Overview and Compliance with State Regulations- SWMP Section 5 Industrial/Commercial Inspections Outreach Materials Evaluations Question & Answer	BMPs Enforcement Policy Stormwater Inspection Checklist

Discussion

- Sewer vs. Stormdrain System
- Facilities database/recordkeeping
-
- Procedures of an expected ordinance violation
- The reporting process
-

Implementation	Materials Needed
	SJ Co. Storm Water Management Plan Commercial Outreach Brochures (Restaurant, Auto Services, etc.)

Documentation / Evidence of Learning
Pre- & Post- training survey

Evaluation
Analysis of pre- and post- survey results Illicit Discharges Reporting activity

Storm Water Training Audiences Defined

Stormwater – Illicit Discharges and Illegal Connections	**# of County Staff** *As of June 30, 2008*
PW – Flood Management	8
PW – Water Resources	6
PW – Transportation Planning	7
Sheriff's Department and Trainers	X
Total	
Storm water - Municipal Operations	
PW – Channel Maintenance	33
PW – Road Maintenance	106
PW – Utility Maintenance	25
PW – Fleet Services	39
PW – Solid Waste	87
County Parks & Recreation	X
County Airport Staff	X
Fire Department and Trainers	X
Total	
Stormwater – Construction / Planning and Development	
PW – Bridge Engineering	4
PW – Design Engineering	24
PW – Traffic Engineering	7
PW – Field Engineering	24
PW – Surveyor	6
PW – Special Projects	7
PW – Public Services	8
Community Development Department	X
Facilities Management Department – Capital Projects	7
Total	
Stormwater- Industrial/Commercial Environments	
PW – Environmental Health	X
Total	

NPDES Outreach & Workshops

Business Outreach:
Since commercial and industrial businesses can be sources of storm water pollutants, the SJC SWMP requires these organizations to become familiar with storm water management and NPDES. Workshops ensure that business owners and operators are informed about storm water quality and impacts on water resources. As of September 31, 2008 the County had in NPDES Phase I jurisdiction a total of 12 Industrial Permitees. To increase storm water pollution prevention awareness, the County shall conduct/participate in various workshops addressing industrial and commercial businesses. . Sponsor/co-sponsorship shall include collaborations with the City of Stockton and the Port of Stockton whom host the annual GOT SWPPP? Events geared at Industrial and Commerical Storm water education, as well as establishing new relationships through the Greater Stockton Chamber of Commerce. Currently CID has utilized the direct link between the Environmental Health Department and commercial businesses during their inspection processes, to disseminate Storm water BMPs. This link will continue to be a viable route of outreach. Supplemental pollution prevention workshops to businesses are being planned for the Permit Year 2009-2010.

*Training recurrence**:*** Public Outreach and Education: Conduct business workshops twice during the five-year permit term. Dates are to be determined.
Assessment: Training effectiveness will be measured by attendance to the workshops and gathering data through feedback forms from participants about their storm water pollution prevention awareness and behaviors. Information will be tracked and reported as a part of the Annual Progress Report.

Construction Outreach:
The Construction Outreach program is required by the SWMP to ensure that appropriate construction housekeeping are implemented throughout the construction process

Training recurrence: Construction: Conduct training for developers, builders and contractors twice during the Permit term: 1st Quarter 2010; 1st Quarter 2012. Tailgate meetings will also be schedule for the construction inspector to disseminate BMP information and provide guidance to contractors.
Assessment: During the construction workshops, the participants and their affiliation will be tracked; BMPs and storm water pollution prevention practices will be discussed and tracked. Information presented will be reported as a part of the Annual Report.

Pesticide Plan Workshop:
The overall goal of the Pesticide Plan is to protect water quality by implementing Integrated Pest Management (IMP), and the associated BMPs to minimize or eliminate pesticides in storm water runoff. The Pesticide Plan addresses this goal both through water quality monitoring and the promotion of IPM to the public and within municipal operations. The following organizations currently have training available, the Master Gardeners of San Joaquin County and the Our Water Our World Program, which promote low impact design and IMP. These organizations are a resource for the County along with the County Agricultural Department.

The County intends to host a workshop to build upon existing training within the Parks and Recreation Department to include storm water pollution prevention emphasis and to work with the Master Gardeners Program in educating the public as well as nurseries about proper handling and disposal of pesticides.

Training recurrence: Water Quality Based Program: Public education focusing on safer handling of pesticides occurs harmoniously with business outreach and construction training. The existing Our Water World program allows the County to interact with residents in the familiarity of garden/home improvement stores (i.e. Orchard Supply Hardware) four times each calendar year. Training is in place by County pesticide use organizations (such as Parks & Recreation) and will be supplemented to include a Pesticide Workshop. Targeted training at municipal operations will begin the second Permit year, 2nd Quarter and 3rdQuarter.

Assessment: Conduct feasibility of surveying the pesticides available for the public during the 3rd Quarter of 2009 and the 3rd Quarter of 2011. Annually track number of pest control operators and municipal employees who participated in training and conduct surveys every two years.

NPDES Outreach & Workshop Modules

	NPDES **Business Outreach**	**NPDES** **Construction Outreach**	**NPDES** **Pesticide Plan Workshop**
GOAL	Inform business owners and operators about storm water quality and impacts on water resources.	To ensure that appropriate BMPs are implemented at construction sites to prevent pollutants from being discharged to the storm drain system.	Protect water quality by implementing IPM and the associated BMPs to minimize or eliminate pesticide runoff from storm water.
NPDES Phase I Permit & SWMP	Section 3	Section 6	Pesticide Plan
Class Time	30 Minutes	30 Minutes	30 Minutes
Objectives	• Pollution prevention to business and industry • Distribute BMPs • Distribute Persistent Organic Compounds (POC) Information	• BMP Implementation Distribute Persistent Organic Compounds (POC) Information • Construction Permit Overview • SWPPP • SWQCCP 2007 • Enforcement & Reporting	Public Education – • Our Water Our World Program Participation • Persistent Organic Compounds (POC) Municipal Operations – • Public Education Overview • Proper handling • Application • Disposal of Pesticides
Audience	The Greater Stockton Chamber of Commerce business members Targeted businesses: • Auto repair shops/Auto body shops • Auto/Equip sales, lease and rental dealerships • Gas stations • Restaurants • Nurseries • Kennels	County Contract Project Contractors General Building Community: Developers, Builders & Contractors	Public Education – Public Workshops Municipal Operations – Parks & Recreation Road Maintenance

NPDES Business Outreach

Reference Requirement: SJ CO. Stormwater Management Plan
Section 3 Supporting Control Measure – PO5
This training may be collaborated with the City of Stockton

Overview

Overreaching Message: Environmental management reduces risk, lowers costs, improves productivity and enhances your business' reputation. Presentations will take place as a collaboration between the County, City and/or Greater Chamber of Commerce.

Target Audience	Venue/Dates
Auto repair shops/Auto body shops	TBD
Auto Equip.sales, lease and rental dealerships	
Gas stations	
Restaurants	
Nurseries	
Kennels	

Outreach Topics	Materials/Handouts
The Stormdrain System	How Environmentally Friendly is your Business Check sheet
Stormwater Runoff	Commercial/Industrial Fact Sheets/BMPs
Commercial and Industrial Compliance	Persistent Organic Compounds (POC)
Inspection and Enforcement	
Common Pollutant Sources/Violations	
BMPs/Practices/Good Housekeeping	
How to get more information	
SJ CO. Stormwater Hotline	

Discussion Points

- What Pollution Prevention Practices do you have in place now?
- Have you observed potential stormwater pollution occurrences?
- Who needs a Stormwater Pollution Prevention Plan?
- Do you have spill clean-up procedures?
- To whom do you report leaks and spills?
- What are your industry standard Best Management Practices?

Materials/Handouts Needed

How Environmentally Friendly is your Business Check sheet
Commercial/Industrial Fact Sheets/BMPs

Documentation / Evidence of Learning
Distribution of Outreach Materials for Commercial Environments Workshop attendance and Feedback forms

Evaluation
Reported as a part of the Annual Progress Report

NPDES Construction Outreach

Reference Requirement: SJ CO. Stormwater Management Plan
Section 6 Supporting Control Measure - CO4
This training may be collaborated with the City of Stockton

Overview

Overreaching Message: Construction site management is environmentally responsible and a requirement of Local and Federal Agencies. Information will be disseminated though on-site workshops and collaborations with the construction industry.

Target Audience	Venue
County Contract Project Contractors General Building Community: Developers, Builders & Contractors	Construction Sites Co-sponsored Workshops

Discussion Points

- What are your BMPs for the Construction Site?
- How are your BMPs communicated to sub-contractors?
- Are your Grading, Erosion, and Building Plans readily available for review?
- POC Information
- Who is responsible for implementing your SWPPP at the construction site?
- Are you familiar with the inspection and enforcement policies of SJ CO.?
- Where can you find information on the Construction General Permit?

Supporting Literature/ BMPs/ Guidance

In support of the County's requirements for BMPs at construction sites and the associated outreach efforts to the building community, the County will inform Contractors on the obtainment of: The California Stormwater Quality Association BMP Handbook & Control Plan, San Joaquin County Stormwater Quality Control Plan, and outside training from agencies such as the EPA and California Department of Transportation.

Implementation

The County will conduct/participate in training for developers, builders and contractors twice during the Permit term. Since the County has no traditional subdivision projects to inspect but rather a collection of individually single-lot developments, larger annual training sessions have proven to be a more time- and cost-effective method of educating industry stakeholders in the County's permit area.

Documentation / Evidence of Learning
Workshops attendance and Feedback Forms

Evaluation
Training evaluation forms

NPDES Pesticide Plan Workshop

Reference Requirement: SJ CO. Stormwater Management Plan
Section 9 Supporting Control Measure - Pesticide Plan
This training may be collaborated with the City of Stockton

Overview

The Pesticide Workshop has been created to supplement existing County department training in relation to Municipal Operations (Parks & Recreation) as well as an informative public education tool. The workshop shall be utilized to inform the public of proper and safe handling/disposal of pesticides, their impact to the environment and the relationship between low impact design and storm water pollution prevention.

Target Audience	**Format/Aids**
Parks and Recreation Staff Road Maintenance Crews Pest control operators SJC Consumers in cooperation of Orchard Supply Hardware	

Discussion Points

- Are you familer with the *Our Water Our World* program?
- What are the proper disposal methods of hazardous waste?
- Who maintains IPM Protocol?
- How are IPM standards communicated to landscape contractors?
- What prompts your decision in purchasing pesticides?
- What are the reporting procedures for an observed or potential illicit discharge?

Implementation	**Materials/Handouts Needed**
	Video: Stormwatch BMP Our Water Our World Training Guide

Documentation / Evidence of Learning
Distribution of brochure and literature Feedback Forms

Evaluation
Annual Surveys on pesticide usage Cooperation with Our Water Our World Program

San Joaquin County Resource Appendix

Environmental Protection Agency (EPA)

Environmental Protection Agency
Region 9 •
75 Hawthorne St. • San Francisco, CA 94105
http://www.epa.gov/region09/water/npdes/stormwater.html

State Water Resources Control Board (SWRCB)

State Water Resources Control Board
1001 I Street Sacramento, CA 95814
http://www.swrcb.ca.gov/water_issues/programs/stormwater/

California Stormwater Quality Association (CASQA)

California StormwaterQuality Association
P.O. Box 2105 Menlo Park, CA 94026-2105
http://www.casqa.org/Default.aspx
Phone: (650) 366-1042
E-mail: info@casqa.org

California Water Environment Association (CWEA)

California Water Environment Association
7677 Oakport St., Suite 600 Oakland, CA 94621
http://www.cwea.org/index.shtml
Phone: 510.382.7800
Fax: 510.382.7810
info@cwea.org

San Joaquin Storm Water Quality Partnership (SJSWQP)

Cities and County of San Joaquin
www.sjgov.org

2009/10 NPDES Training Audience

Module 1

Illicit Discharges and Illegal Connections

- PW – Flood Management
- PW – Water Resources
- PW – Transportation Planning
- Sheriff's Department

ID/IC Program
Recognize Discharges
Reporting/Enforcement

Module 2

Municipal Operations

- PW – Channel Maintenance
- PW – Road Maintenance
- PW – Utility Maintenance
- PW – Fleet Services
- PW – Solid Waste
- County Parks & Recreation
- County Airport Staff
- County Environmental Health
- Fire Marshall & Dept. Staff

Stormwater Issues
BMPs for Operations
BMPs for Facilities

Module 3

Construction/Planning and Land Development

- PW – Bridge Engineering
- PW – Design Engineering
- PW – Traffic Engineering
- PW – Field Engineering
- PW – Special Projects
- PW – Public Services
- Community Development Department
- Facilities Management Department – Capital Projects

BMPs for Construction
BMPs for Sediment Control
SWMP related Permits

*Actual training audience may change based on 2007 SWMP.
Supplemental to Training Plan

2009/10 NPDES Training Schedule

Module 1 3rd Quarter 2009	Module 2 2nd Quarter 2009	Module 3 3rd Quarter 2010

• July
  • To be determined
 	
• August
  • To be determined
 	
• September
  • To be determined
	• January
	  • n/a
	
	• February
	  • 2/9 (AM)
	  • 2/13 (AM)
	  • 2/25 (PM)
	
	• March
	  • 3/3 (AM)
	  • 3/13 (AM)
	  • 3/23 (PM)
		• January
		  • To be determined
		
		• February
		  • To be determined
		
		• March
		  • To be determined

*Actual training dates may change. All training to take place within the designated training period.

2009/10 NPDES Industrial/Commercial

Module: Industrial/ Commercial	Industrial/ Commercial 1st Quarter 2009

• Environmental Health Department – Commercial Inspector (s)	• January
	  • n/a
	• February
	  • 2/20 (AM)
	• March
	  • n/a

*Actual training dates may change. All training to take place within the designated training period.

NPDES Refresher Training Schedule

Modules 1, 2, 3 &

Industrial/ Commercial Environments

- Refresher training will occur each year a formal training class will not be held (Module 1 & 2: 2010 & 2012, Module 3: 2011).

- Refresher trainings consist of a Municipal Operations and/or Construction video distributed to the target audience identified in each module and will be coordinated through Division Heads to occur in the same quarter yet alternating years as the formal training class.

*Actual training dates may change. All training to take place within the designated training period.

2009 NPDES Public Outreach Calendar

Table of Contents

I. Regularly Scheduled Monthly and Ongoing Activities 2

II. Continuing Outreach Campaigns 3

III. Re-Occurring Outreach Opportunities 5

January 2009 5

February 2009 5

March 2009 5

March 2009(cont'd) 6

April 2009 7

May 2009 7

June 2009 9

July 2009 9

August 2009 10

September 2009 10

October 2009 11

November 2009 11

December 2009 11

IV. New Outreach 12

V. Programs/Events On Hold 14

VI. Programs/Events Relinquished 15

(Programs and events are subject to change)

I. Regularly Scheduled Monthly and Ongoing Activities

San Joaquin County NPDES Phase I Joint Outreach Meeting
Location(s): Location rotated among Co-Permittees' sites
Partner(s): City of Stockton
Date: 2nd Tuesday of each Month.
Time: 10:00am to 12:00pm
CID Staff: Management Analyst I, Administrative Assistant I
Purpose: To discuss joint outreach events and activities. This year's focus is on the education outreach. This is a Permit requirement for 2009.

San Joaquin County NPDES Phase II City Partnership Meeting
Location(s): Location rotated among Partnership members' business sites
Partner(s): Cal Trans., City of Lathrop, City of Lodi, City of Manteca, City of Stockton, City of Ripon. City of Tracy and Port of Stockton
Date: 3rd Wednesday of each Month.
Time: 9:00am to 12:00pm
CID Staff: Administrative Assistant I
Purpose: General discussion to exchange ideas and matters of concern for Phase II

Additional Event:
Additionally, bi-annual conferences are held to discuss the future of the Phase II Permit and the ramifications therefore. The schedules have not been determined at this time.

Check and Replenish San Joaquin County Libraries and Community Center with City of Stockton, Flood Control, NPDES, & Solid Waste Literature
Location(s): Various libraries and Community Centers in San Joaquin County
Partner(s): City Of Stockton, Flood Control & Solid Waste
Date(s): Various based on need
Time(s): Various based on need
CID Staff: Administrative Assistant I

II. Continuing Outreach Campaigns

NPDES (800) Number
The San Joaquin County NPDES Program has acquired a new (866)755-4955 that is linked to the existing hotline number of (209) 468-3055. The new (866)755-4955 will be placed on all future print media and web based media produced by and for the NPDES Program. The new (866)755-4955 should make it more convenient for residents not located in our toll area to contact us for information concerning the programs and services we provide or to report any illicit discharges and/or other illegal polluting activities within the NPDES Phase I and Phase II Permit Areas.

Public Works Community Infrastructure Division (CID) Website
The San Joaquin County NPDES Program maintains the web address of www.sjcleanwater.org which leads to the San Joaquin County CID webpage. The webpage serves as a portal to the public. The Permit requires the County facilitate reporting of illicit discharges by maintaining the Hotline and advertising it on County website along with stormwater-related public education materials. Additional outreach on the County website shall include and Outreach Event Calendar, Business/Commercial Best Management Practices (BMPs) and the promotion of the Used Oil and Household Hazardous Waste Programs as well as other waste management literature.

Storm Drain Stenciling
The Permit requires the County to stencil and maintain the stencil on Phase I storm drains. Some of the drains were stenciled years ago and need maintenance. Many storm drains were not stenciled. CID plans to campaign for volunteers to perform the stenciling. Some of the target groups would include schools, girl/boy scouts and other community organizations. Another possibility may to be campaign for sponsors. Finally, another possibility would be collaborating internal efforts within Public Works Road Maintenance, Channel Maintenance and/or Field engineering stencil during off season.

Any or all of the target groups above may be reached through campaign efforts to complete the Permit requirement. The stenciling commitment is scheduled for 2009 in the SJC Storm Water Management Plan. The plan would be to begin the campaigning process in April 2009.

Public School Outreach
The Permit requires the County evaluate the ability to interface and coordinate with school education programs on a regional or local level. The school outreach efforts over the 2002-2007 Permit term have been successful; however, due to increased curriculum and testing requirements, stormwater program staff has found it to be progressively more difficult to gain access to schools in order to provide outreach to students. Thus, the County in collaboration with the City reviewed existing programs and assessed the feasibility of alternative programs.

The County and City plan to supplement City of Stockton after-school programs with stormwater education. The development of the program is underway and plans to be implemented in late January 2009 and run through March 2009.

II. Continuing Outreach Campaigns (contd)

Business Outreach

The Permit requires the County implement a Business Outreach Program. Business outreach efforts over the 2002-2007 Permit term have been successful; however, due to declining resources many environmental interest groups have become passive. The outreach campaign described in the SJC NPDES Training Plan offers stormwater education to members of the Business Community directly in a classroom style format. The County is exploring relationships with the Stockton Chamber of Commerce and the San Joaquin County Green Team to reach out during monthly meetings and special events. The County in collaboration with these targeted business and environmental group programs will disseminate general knowledge and distribute related information directly to those business owners and operators.

The development of the program is underway and plans to be implemented by June 2009.

III. Re-Occurring Outreach Opportunities

January 2009

2009 Earth Day – Planning Meeting
Location(s): Raymond Lodge, University of the Pacific, Stockton, CA
Partner(s): City Of Stockton, UOP, & Various Community Groups
Date: TBD
Time: 5:30pm to 7:30pm
CID Staff: Administrative Assistant I

February 2009

2009 Earth Day – Planning Meeting
Location(s): Raymond Lodge, University of the Pacific, Stockton, CA
Partner(s): City Of Stockton, UOP, & Various Community Groups
Date: TBD
Time: 5:30pm to 7:30pm
CID Staff: Administrative Assistant I

March 2009

2009 Earth Day – Planning Meeting
Location(s): University of the Pacific, Stockton, CA
Partner(s): City Of Stockton, UOP, & Various Community Groups
Date: TBD
Time: 5:30pm to 7:30pm
CID Staff: Administrative Assistant I

2009 California Coastal Cleanup Preparation
Location(s): San Joaquin County Public Works, 1810 E. Hazelton Ave. Stockton, CA
Partner(s): City of Stockton, Port of Stockton, UOP, Solid Waste Division, & Volunteers
Date: 2nd Wednesday of the Month
Time: 10:00am to 12:00pm
CID Staff: Management Analyst II, Administrative Assistant I

Orchard Supply Hardware Store Pesticide Prevention Program/ No Tax Days
Location: 1015 W Hammer Lane, Stockton, CA
Partner(s): City of Stockton Storm Water Program
Date: March 14 & 15, 2009 (COS mans location on Saturday from 10am to 2pm)
Time: 10:00am to 2:00pm
CID Staff: Administrative Assistant I

March 2009(cont'd)

2009 Home and Garden show – April 2009 at the San Joaquin Fair Grounds

Location(s):	San Joaquin County Fair Grounds, 1658 South Wilson Way, Stockton, CA
Partner(s):	Solid Waste Division of San Joaquin County Public Works
Date:	TBD
Time:	Friday: 1:00pm to 8:00pm, Sat/Sun: 10:00am to 6:00pm
CID Staff:	Management Analyst II, Administrative Assistant I

April 2009

2009 California Coastal Cleanup Preparation
Location(s): San Joaquin County Public Works, 1810 E. Hazelton Ave. Stockton, CA
Partner(s): City of Stockton, Port of Stockton, UOP, Solid Waste Division, & Volunteers
Date: 2nd Wednesday of the Month
Time: 10:00am to 12:00pm
CID Staff: Management Analyst II, Administrative Assistant I

Orchard Supply Hardware Store Pesticide Prevention Program/ No Tax Days
Location: 1015 W Hammer Lane, Stockton, CA
Partner(s): City of Stockton Storm Water Program
Date: April 18 & 19, 2009 (COS mans location on Saturday from 10am to 2pm)
Time: 10:00am to 2:00pm
CID Staff: Administrative Assistant I

GOT SWPPP? Co-Sponsor of a Storm Water Workshop at the Port of Stockton
Location: Port of Stockton
Partner(s): Port of Stockton, City of Stockton, WGR, Inc. (Consultant)
Date: April 30, 2009
Time: 8:00am to 2:00pm
CID Staff: Management Analyst II, Administrative Assistant I
Purpose This target of this event is to reach out to industry/commercial businesses

2009 Earth Day – Planning Meeting
Location(s): Raymond Lodge, University of the Pacific, Stockton, CA
Partner(s): City Of Stockton, UOP, & Various Community Groups
Date: TBD
Time: 5:30pm to 7:30pm
CID Staff: Administrative Assistant I

2009 Earth Day –At Victory Park from 11:00am to 5:00pm
Location(s): Victory Park, 1201 N. Pershing Ave., Stockton, CA
Partner(s): City Of Stockton, Various Community Groups
Date: April 19, 2009
Time: 7:00am to 7:00pm
CID Staff: Management Analyst II, Administrative Assistant I

May 2009

Orchard Supply Hardware Store Pesticide Prevention Program/ No Tax Days
Location: 1015 W Hammer Lane, Stockton, CA
Partner(s): City of Stockton Storm Water Program
Date: May 9 & 10, 2009 (COS man location on Saturday 10am to 2pm)

Time: 10:00am to 2:00pm
CID Staff: Administrative Assistant I

2009 California Coastal Cleanup Preparation
Location(s): San Joaquin County Public Works, 1810 E. Hazelton Ave. Stockton, CA
Partner(s): City of Stockton, Port of Stockton, UOP, Solid Waste Division, & Volunteers
Date: 2nd Wednesday of the Month
Time: 10:00am to 12:00pm
CID Staff: Management Analyst II, Administrative Assistant I

2009 Cinco de Mayo – May in Downtown Stockton at Weber Point
Location(s): Weber Point, 221 N. Center St., Stockton, CA
Partner(s): City Of Stockton, Various Community Groups
Date: May 3, 2009
Time: Sunday: 11:00am to 6:00pm
CID Staff: Administrative Assistant I

2009 Public Works Week Proclamation
Location(s): San Joaquin County Public Works, 1810 E. Hazelton Ave. Stockton, CA
Partner(s): All Public Works Divisions
Date: TBD
Time: 9:00am Board of Supervisor Meeting
CID Staff: All CID and Candis Oldham from Admin.
Purpose: Possible participation in Proclamation process

2009 Senior Awareness Day
Location(s): Micke Grove, Lodi, CA
Partner(s): City of Stockton
Date: May 28, 2009
Time: 8:00am to 1:00pm
CID Staff: Administrative Assistant I

June 2009

2009 Keep the Delta Clean Proclamation
Location: San Joaquin County Public Works, 1810 E. Hazelton Ave. Stockton, CA
Partner(s): Keep the Delta Clean Committee; Solid Waste Division
Date: TBD
Time: 9:00am Board of Supervisor Meeting
CID Staff: Management Analyst II, Administrative Assistant I
Purpose: Possible participation in Proclamation process

Orchard Supply Hardware Store Pesticide Prevention Program/ No Tax Days
Location: 1015 W Hammer Lane, Stockton, CA
Partner(s): City of Stockton Storm Water Program
Date: June 6 & 7, 2009 (COS mans location on Saturday 10am to 2pm)
Time: 10:00am to 2:00pm
CID Staff: Administrative Assistant I

2009 California Coastal Cleanup Preparation
Location(s): San Joaquin County Public Works, 1810 E. Hazelton Ave. Stockton, CA
Partner(s): City of Stockton, Port of Stockton, UOP, Solid Waste Division, & Volunteers
Date: 2nd Wednesday of the Month
Time: 10:00am to 12:00pm
CID Staff: Management Analyst II, Administrative Assistant I

2009 San Joaquin County Fair
Location(s): San Joaquin County Fair Grounds, 1658 South Wilson Way, Stockton, CA
Partner(s): Solid Waste Division of San Joaquin County Public Works
Date: June 26, 2009 (on Children Free Day)
Time: 8:00am to 5:00pm
CID Staff: Management Analyst II, Administrative Assistant I

July 2009

2009 California Coastal Cleanup Preparation
Location(s): San Joaquin County Public Works, 1810 E. Hazelton Ave. Stockton, CA
Partner(s): City of Stockton, Port of Stockton, UOP, Solid Waste Division, & Volunteers
Date: 2nd Wednesday of the Month
Time: 10:00am to 12:00pm
CID Staff: Management Analyst II, Administrative Assistant I

August 2009

2009 California Coastal Cleanup Preparation
Location(s): San Joaquin County Public Works, 1810 E. Hazelton Ave. Stockton, CA
Partner(s): City of Stockton, Port of Stockton, UOP, Solid Waste Division, & Volunteers
Date: 2nd Wednesday of the Month
Time: 10:00am to 12:00pm
CID Staff: Management Analyst II, Administrative Assistant I

September 2009

2009 California Coastal Cleanup
Location(s): Various locations around San Joaquin County
Partner(s): City of Stockton, Port of Stockton, & Solid Waste Division
Date: TBD
Time: 7:00am to 5:00pm
CID Staff: Management Analyst II, Administrative Assistant I

2009 National Pollution Week Proclamation
Location: San Joaquin County Public Works, 1810 E. Hazelton Ave. Stockton, CA
Partner(s): City of Stockton & Solid Waste Division
Date: May 17 – 23, 2009
Time: 9:00am Board of Supervisor Meeting
CID Staff: Management Analyst II, Administrative Assistant I
Purpose: Possible participation in Proclamation process

2009 Black Family Day – (Labor Day Holiday)
Location(s): Stockton Memorial Civic Auditorium, 525 N Center St., Stockton, CA
Partner(s): City Of Stockton
Date: September 7, 2009
Time: 9:00am to 5:00pm
CID Staff: Administrative Assistant I

2009 Family Literacy Day in the Park
Location: University Park, Stockton, CA
Partner(s): City of Stockton- Sponsor
Date: One weekend day in September
Time: 8:00am to 5:00pm
CID Staff: Administrative Assistant I

October 2009

Orchard Supply Hardware Store Pesticide Prevention Program/ No Tax Days
Location: 1015 W Hammer Lane, Stockton, CA
Partner(s): City of Stockton Storm Water Program
Date: October 10 & 11, 2009 (COS mans location on Saturday 10am to 2pm)
Time: 10:00am to 2:00pm
CID Staff: Administrative Assistant I

2009 Make A Difference Day sponsored by City of Stockton
Location: Weber Point, 221 N. Center St., Stockton, CA
Partner(s): City of Stockton
Date: TBD
Time: 8:00am to 1:00pm
CID Staff: Management Analyst II, Administrative Assistant I

Note: This event was not held in 2008.

November 2009

Orchard Supply Hardware Store Pesticide Prevention Program/ No Tax Days
Location: 1015 W Hammer Lane, Stockton, CA
Partner(s): City of Stockton Storm Water Program
Date: November 27 & 28, 2009 (COS mans location Saturday 10am to 2pm)
Time: 10:00am to 2:00pm
CID Staff: Administrative Assistant I

December 2009

No events scheduled.

IV. New Outreach

RESUME- 2009 Stenciling Campaign (see Section I)
Location(s): San Joaquin County Public Works, 1810 E. Hazelton Ave. Stockton, CA
Partner(s): City of Stockton, & Volunteers
Date: Kick off to take place in March
Time: Various
CID Staff: Management Analyst II, Administrative Assistant I

The stenciling commitment is scheduled for 2009 in the SJC Storm Water Management Plan. The plan would be to begin the campaigning process in April 2009.

NEW- 2009 Public School Outreach Campaign (see Section I above)
Location: San Joaquin County Fairgrounds 1658 South Airport Way Stockton, CA 95206
Partner(s): City of Stockton
Date: Various
Time: Various
CID Staff: Administrative Assistant I

The County in collaboration with the City plans to supplement City of Stockton after-school programs with stormwater education. The development of the program is underway and plans to be implemented in late January 2009 and run through March 2009 in a Day Camp format of stormwater Education.

NEW - Business Outreach: Business/Industrial Committee Mtgs. (see Section I)
Location(s): Stockton Chamber of Commerce 445 W. Weber Ave., Ste. 220, Stockton, CA
Partner(s): Green Team of San Joaquin
Date: TBD
Time: TBD
CID Staff: Management Analyst II, Administrative Assistant I

The new Permit demands outreach to businesses. In the past, specific focus on business outreach was minimal. Business outreach has been undertaken by way of the inspections performed by Environment Health. The aforementioned activity would provide an avenue to network with businesses for stormwater management/NPDES outreach in an effective manner. Once this network is developed the intent would be to host two business workshops during the Permit year, an NPDES Permit requirement.

IV. New Outreach (contd)

NEW- 2009 Energy and Clean Air Expo
Location(s): TBD (within Stockton city limits)
Partner(s): City of Stockton
Date: TBD December 2009
Time: 9:00am to 5:00pm
CID Staff: Management Analyst II, Administrative Assistant I

This event has been placed on the CID Event Calendar as a place holder for the 2009 calendar year. The event of 2008 was held by the Green Team of San Joaquin Greater Stockton Chamber of Commerce. The event attracts businesses and services that proactively promote environmentally sustainable business practices. NOTE: 2009 AG Expo will not be held.

NEW – 2009 San Joaquin County Kennel Club Annual Dog Show
Location: San Joaquin County Fairgrounds 1658 South Airport Way Stockton, CA 95206
Partner(s): TBD
Date: Two weekend days in November
Time: 8:00am – 5:00pm
CID Staff: Administrative Assistant I

Management of pet waste is a new focus of the Permit. It has been determined that the aforementioned activity would be a global and effective event to capture pet lovers and communicate pet waste management in the County.

San Joaquin County 2008 Kennel Club Dog Show was attended by residents of San Joaquin County and its neighbors. Over 3000 dogs participated in the competition. Reaching out to the dog owner community through this event will allow for the proper & safe handling of pet waste message to come across in a receptive manner. CID views the event as an opportunity to get owners and the communities involved in stormwater issues revolving around pet waste and disseminate information from pamphlets to the community.

NEW - Stockton Thunder's "Green Fair"
Location(s): Stockton Arena 248 W. Fremont Street
Partner(s): Solid Waste Division, & Greater Stockton Chamber of Commerce Green Tea,
Date: March 6 & 7th, 2009 (Administrative Assistant I – one weekend day)
Time: 4:30pm to 8:30pm
CID Staff: Administrative Assistant I

V. Programs/Events On Hold

2009 AG Expo
Location(s): San Joaquin County Fairgrounds 1658 South Airport Way Stockton, CA 95206
Partner(s): City of Stockton
Date: January 2009
Time: 9:00am to 5:00pm

This event will not be held in 2009.

2009 Boat and RV Show – February at the San Joaquin Fair Grounds
Location(s): San Joaquin County Fair Grounds, 1658 South Wilson Way, Stockton, CA
Partner(s): City of Stockton, Keep the Delta Clean Committee
Date: TBD
Time: 9:00am to 5:00pm

This event will not be held in 2009.

TOPPS Meeting
Location(s): 1) City Of Stockton, 2500 Navy Drive, Stockton, CA
Neumiller & Beardslee Law Firm, 509 W. Weber Ave., 5th Floor,
Stockton, CA
Partner(s): TOPPS Members
Date: 1st Wednesday of each Month.
Time: 9:00am to 12:00pm

The organization will be imposing a one-year break. During this time the mission and involvement of the group in the community will be re-assessed by the members and communicated by email interaction between the parties.

Green Carwash Program
Potential Location(s): The commercial carwashes operated in Stockton, CA
Potential Partner(s): City of Stockton and Western Car Wash Association
Date: Late March 2009
Time: Various

This Program will require the development of a plan for San Joaquin County. No change in ordinance is necessary. This program plan has been develop by City of Stockton to communicate the concept of green car washes to the community. The City manages networking with local commercial car washes and charities.

VI. Programs/Events Relinquished

2009 Water Awareness Month Proclamation
Location(s): San Joaquin Courthouse – Board of Supervisors Meeting, Stockton, CA
Partner(s): City Of Stockton
Date: May 6, 2009
Time: 9:00am
CID Staff: Public Works Senior Management Representative, Management Analyst II, Administrative Assistant I, and Candis Oldham from Admin.

This program has been assigned to Water Resources. Water Resources filed for the 2008 Water Awareness Month Proclamation.

2009 Water Awareness Month Proclamation
Location(s): San Joaquin Courthouse – Board of Supervisors Meeting, Stockton, CA
Partner(s): City Of Stockton
Date: May 6, 2009
Time: 9:00am
CID Staff: Public Works Senior Management Representative, Management Analyst II, Administrative Assistant I, and Candis Oldham from Admin.

This program has been assigned to Water Resources. Water Resources filed for the 2008 Water Awareness Month Proclamation.

ECO:LOGIC
ENGINEERS · CONSULTANTS

San Joaquin County Public Works Department

Sewer System Management Plan (SSMP)

June 2008

Prepared for
San Joaquin County

Prepared by
ECO:LOGIC

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Contents

San Joaquin County Public Works Department UMD Sewer System Management Plan (SSMP)

1 **BACKGROUND** **1-1**

2 **SSMP ELEMENT 1: GOALS** **2-1**
- 2.1 Regulatory Requirements 2-1
- 2.2 Goals Discussion 2-1

3 **SSMP ELEMENT 2: ORGANIZATION** **3-1**
- 3.1 Regulatory Requirements 3-1
- 3.2 Authorized Representative 3-1
- 3.3 Organization Charts and Chain of Communication 3-1

Figure

Figure 3-1: Organization & Chain of Communications Chart 3-2

Appendix

Appendix A California State Water Resources Control Board Order No. 2006-0003-DWQ
Appendix B California State Water Resources Control Board Order No. 2008-0002-EXEC
Appendix C SSMP Development Plan and Schedule

Section 1

BACKGROUND

On May 2, 2006, the California State Water Resources Control Board (SWRCB) issued Statewide General Waste Discharge Requirements (WDRs) for all publicly owned sanitary sewer systems greater than one mile in length. Guidelines and requirements for WDRs are described in the State Water Resources Control Board Order No. 2006-0003-DWQ Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, herein referred to as WDR 2006-0003. A significant requirement outlined in WDR 2006-0003 is the completion of a Sewer System Management Plan (SSMP). The SSMP has Elements as well as an initial Development Plan and Schedule. These Elements include:

1. Goals
2. Organization
3. Legal Authority
4. Operations and Maintenance (O&M) Program
5. Design and Performance Provisions
6. Overflow Emergency Response Plan (OERP)
7. Fats, Oils, and Grease (FOG) Control Program
8. System Evaluation and Capacity Assurance Plan (SECAP)
9. Monitoring, Measurement and Program Modifications
10. SSMP Program Audits
11. Communication Program

The SSMP Development Plan and Schedule was adopted by the San Joaquin County Public Works Department UMD Board of Directors at a public meeting on June 13, 2008.

Section 2

SSMP ELEMENT 1: GOALS

2.1 REGULATORY REQUIREMENTS

The San Joaquin County Public Works Department UMD (County) is required to create a goal statement aimed at the proper management, operations and maintenance of the sanitary sewer system for the prevention of Sanitary Sewer Overflows (SSOs), mitigate any SSOs that may occur and provide adequate sewer capacity to accommodate design storm flows.

2.2 GOALS DISCUSSION

It is the County's goal to provide quality, safe and reliable sewer service at a reasonable cost. The County strives to provide the highest level of service to the residents of the San Joaquin County while maintaining the community's infrastructure in the most cost-effective manner possible. The County has developed the following goals in an effort to meet the requirements of the SSMP:

1. Properly manage, operate, and maintain all portions of the County's wastewater collection system.
2. Minimize frequency and impacts of sanitary sewer overflows (SSOs).
3. Prevent public health hazards.
4. Minimize inconveniences by responsibly handling interruptions in service.
5. Protect the large investment in collection systems by maintaining adequate capacities and extending useful life.
6. Prevent unnecessary damage to public and private property.
7. Use funds available for sewer operations in the most efficient manner.
8. Convey wastewater to treatment facilities with a minimum of infiltration and inflow.
9. Provide adequate capacity to convey peak flows.
10. Perform all operations in a safe manner to avoid personal injury and property damage.
11. Mitigate the impacts that are associated with any SSO that may occur.
12. Meet all regulatory notification and reporting requirements.

These goals provide focus for the County to continue providing high quality service and to improve the management, operations, and maintenance of the sanitary sewer system.

Section 3

SSMP ELEMENT 2: ORGANIZATION

3.1 REGULATORY REQUIREMENTS

The collection system agency's SSMP must identify the staff responsible for implementing, managing and updating the SSMP as well as reporting SSOs. The SSMP Element 2 - Organization must include the following:

1. The name of the County's responsible or authorized representative.
2. The names and telephone numbers for management, administrative and maintenance positions for implementing specific measures in the SSMP program.
3. The lines of authority through an organization chart or similar document with a narrative explanation.
4. The chain of communication for reporting SSOs, from receipt of a complaint to the person responsible for reporting SSOs to the State and Regional Water Board and other agencies, as applicable.

3.2 AUTHORIZED REPRESENTATIVE

The Utility Maintenance Division Superintendent is the Legally Responsible Officer (LRO) who is authorized to certify electronic SSO reports to the State Water Resources Control Board (SWRCB). In the absence of the LRO the Assistant Superintendent will submit final spill certification. Data submittals and preliminary reporting are also conducted by the Assistant Superintendent.

3.3 ORGANIZATIONAL CHART AND CHAIN OF COMMUNICATION

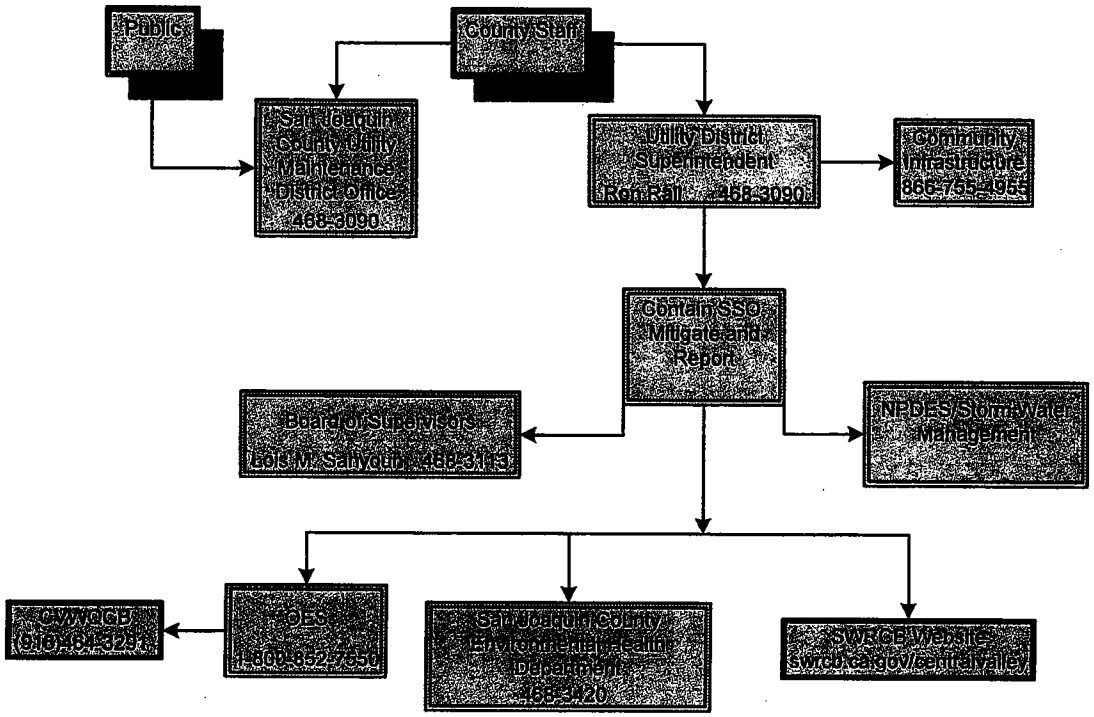
The County has created a hybrid chart showing the Organizational Lines of Authority and Chain of Communication for the response to a SSO. The charts are presented in Figure 3-1 below. The organizational chart illustrates the lines of authority from the County Board of Supervisors to the Utility Maintenance Trainee. Embedded within the chart, are descriptions of each title as they relate to the responsibilities of the sewer collection system. The chart also identifies the LRO, the individual responsible for certifying monthly reports on the status of the collection system.

The Chain of Communication chart illustrates the flow of SSO information as it is received from the public or internal staff through the final report to the regulatory agencies. The phone numbers of each title in this chart is also displayed for quick referencing. A detailed procedure for responding to an SSO will be documented in Element 6: Overflow Emergency Response Plan (OERP). The contact list should be updated periodically and when organizational changes occur.

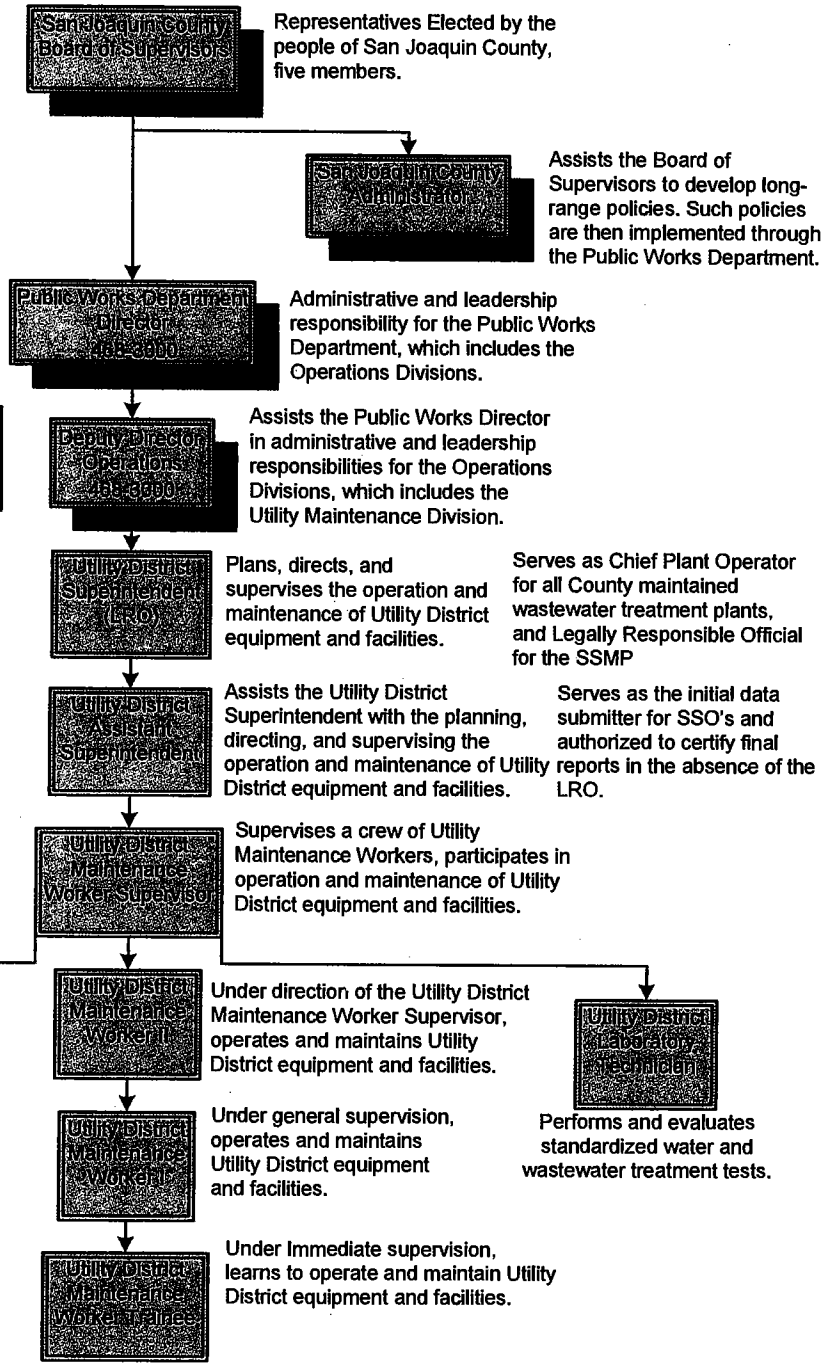
San Joaquin County Utility Maintenance District

Sewer System Management Plan

Chain of Communication For Reporting SSO's



Organizational Lines of Authority



Appendix A

California State Water Resources Control Board Order No. 2006-0003-DWQ

STATE WATER RESOURCES CONTROL BOARD
ORDER NO. 2006-0003-DWQ

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

The State Water Resources Control Board, hereinafter referred to as "State Water Board", finds that:

1. All federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California are required to comply with the terms of this Order. Such entities are hereinafter referred to as "Enrollees".

2. Sanitary sewer overflows (SSOs) are overflows from sanitary sewer systems of domestic wastewater, as well as industrial and commercial wastewater, depending on the pattern of land uses in the area served by the sanitary sewer system. SSOs often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen-demanding organic compounds, oil and grease and other pollutants. SSOs may cause a public nuisance, particularly when raw untreated wastewater is discharged to areas with high public exposure, such as streets or surface waters used for drinking, fishing, or body contact recreation. SSOs may pollute surface or ground waters, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.

3. Sanitary sewer systems experience periodic failures resulting in discharges that may affect waters of the state. There are many factors (including factors related to geology, design, construction methods and materials, age of the system, population growth, and system operation and maintenance), which affect the likelihood of an SSO. A proactive approach that requires Enrollees to ensure a system-wide operation, maintenance, and management plan is in place will reduce the number and frequency of SSOs within the state. This approach will in turn decrease the risk to human health and the environment caused by SSOs.

4. Major causes of SSOs include: grease blockages, root blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, excessive storm or ground water inflow/infiltration, debris blockages, sanitary sewer system age and construction material failures, lack of proper operation and maintenance, insufficient capacity and contractor-caused damages. Many SSOs are preventable with adequate and appropriate facilities, source control measures and operation and maintenance of the sanitary sewer system.

SEWER SYSTEM MANAGEMENT PLANS

5. To facilitate proper funding and management of sanitary sewer systems, each Enrollee must develop and implement a system-specific Sewer System Management Plan (SSMP). To be effective, SSMPs must include provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Additionally, an SSMP must contain a spill response plan that establishes standard procedures for immediate response to an SSO in a manner designed to minimize water quality impacts and potential nuisance conditions.

6. Many local public agencies in California have already developed SSMPs and implemented measures to reduce SSOs. These entities can build upon their existing efforts to establish a comprehensive SSMP consistent with this Order. Others, however, still require technical assistance and, in some cases, funding to improve sanitary sewer system operation and maintenance in order to reduce SSOs.

7. SSMP certification by technically qualified and experienced persons can provide a useful and cost-effective means for ensuring that SSMPs are developed and implemented appropriately.

8. It is the State Water Board's intent to gather additional information on the causes and sources of SSOs to augment existing information and to determine the full extent of SSOs and consequent public health and/or environmental impacts occurring in the State.

9. Both uniform SSO reporting and a centralized statewide electronic database are needed to collect information to allow the State Water Board and Regional Water Quality Control Boards (Regional Water Boards) to effectively analyze the extent of SSOs statewide and their potential impacts on beneficial uses and public health. The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. 2006-0003-DWQ, are necessary to assure compliance with these waste discharge requirements (WDRs).

10. Information regarding SSOs must be provided to Regional Water Boards and other regulatory agencies in a timely manner and be made available to the public in a complete, concise, and timely fashion.

11. Some Regional Water Boards have issued WDRs or WDRs that serve as National Pollution Discharge Elimination System (NPDES) permits to sanitary sewer system owners/operators within their jurisdictions. This Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more

prescriptive WDRs for sanitary sewer systems. Upon issuance or reissuance of a Regional Water Board's WDRs for a system subject to this Order, the Regional Water Board shall coordinate its requirements with stated requirements within this Order, to identify requirements that are more stringent, to remove requirements that are less stringent than this Order, and to provide consistency in reporting.

REGULATORY CONSIDERATIONS

12. California Water Code section 13263 provides that the State Water Board may prescribe general WDRs for a category of discharges if the State Water Board finds or determines that:

    - The discharges are produced by the same or similar operations;
    - The discharges involve the same or similar types of waste;
    - The discharges require the same or similar treatment standards; and
    - The discharges are more appropriately regulated under general discharge requirements than individual discharge requirements.

    This Order establishes requirements for a class of operations, facilities, and discharges that are similar throughout the state.

13. The issuance of general WDRs to the Enrollees will:
    a) Reduce the administrative burden of issuing individual WDRs to each Enrollee;
    b) Provide for a unified statewide approach for the reporting and database tracking of SSOs;
    c) Establish consistent and uniform requirements for SSMP development and implementation;
    d) Provide statewide consistency in reporting; and
    e) Facilitate consistent enforcement for violations.

14. The beneficial uses of surface waters that can be impaired by SSOs include, but are not limited to, aquatic life, drinking water supply, body contact and non-contact recreation, and aesthetics. The beneficial uses of ground water that can be impaired include, but are not limited to, drinking water and agricultural supply. Surface and ground waters throughout the state support these uses to varying degrees.

15. The implementation of requirements set forth in this Order will ensure the reasonable protection of past, present, and probable future beneficial uses of water and the prevention of nuisance. The requirements implement the water quality control plans (Basin Plans) for each region and take into account the environmental characteristics of hydrographic units within the state. Additionally, the State Water Board has considered water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect

water quality in the area, costs associated with compliance with these requirements, the need for developing housing within California, and the need to develop and use recycled water.

16. The Federal Clean Water Act largely prohibits any discharge of pollutants from a point source to waters of the United States except as authorized under an NPDES permit. In general, any point source discharge of sewage effluent to waters of the United States must comply with technology-based, secondary treatment standards, at a minimum, and any more stringent requirements necessary to meet applicable water quality standards and other requirements. Hence, the unpermitted discharge of wastewater from a sanitary sewer system to waters of the United States is illegal under the Clean Water Act. In addition, many Basin Plans adopted by the Regional Water Boards contain discharge prohibitions that apply to the discharge of untreated or partially treated wastewater. Finally, the California Water Code generally prohibits the discharge of waste to land prior to the filing of any required report of waste discharge and the subsequent issuance of either WDRs or a waiver of WDRs.

17. California Water Code section 13263 requires a water board to, after any necessary hearing, prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge. The requirements shall, among other things, take into consideration the need to prevent nuisance.

18. California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
    a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
    b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
    c. Occurs during, or as a result of, the treatment or disposal of wastes.

19. This Order is consistent with State Water Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California) in that the Order imposes conditions to prevent impacts to water quality, does not allow the degradation of water quality, will not unreasonably affect beneficial uses of water, and will not result in water quality less than prescribed in State Water Board or Regional Water Board plans and policies.

20. The action to adopt this General Order is exempt from the California Environmental Quality Act (Public Resources Code §21000 et seq.) because it is an action taken by a regulatory agency to assure the protection of the environment and the regulatory process involves procedures for protection of the environment. (Cal. Code Regs., tit. 14, §15308). In addition, the action to adopt

this Order is exempt from CEQA pursuant to Cal.Code Regs., title 14, §15301 to the extent that it applies to existing sanitary sewer collection systems that constitute "existing facilities" as that term is used in Section 15301, and §15302, to the extent that it results in the repair or replacement of existing systems involving negligible or no expansion of capacity.

21. The Fact Sheet, which is incorporated by reference in the Order, contains supplemental information that was also considered in establishing these requirements.

22. The State Water Board has notified all affected public agencies and all known interested persons of the intent to prescribe general WDRs that require Enrollees to develop SSMPs and to report all SSOs.

23. The State Water Board conducted a public hearing on February 8, 2006, to receive oral and written comments on the draft order. The State Water Board received and considered, at its May 2, 2006, meeting, additional public comments on substantial changes made to the proposed general WDRs following the February 8, 2006, public hearing. The State Water Board has considered all comments pertaining to the proposed general WDRs.

IT IS HEREBY ORDERED, that pursuant to California Water Code section 13263, the Enrollees, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

A. DEFINITIONS

1. **Sanitary sewer overflow (SSO)** - Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:
   (i) Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
   (ii) Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
   (iii) Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.

2. **Sanitary sewer system** – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant headworks used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, etc.) are considered to be part of the sanitary sewer system, and discharges into these temporary storage facilities are not considered to be SSOs.

For purposes of this Order, sanitary sewer systems include only those systems owned by public agencies that are comprised of more than one mile of pipes or sewer lines.

3. **Enrollee** - A federal or state agency, municipality, county, district, and other public entity that owns or operates a sanitary sewer system, as defined in the general WDRs, and that has submitted a complete and approved application for coverage under this Order.

4. **SSO Reporting System** – Online spill reporting system that is hosted, controlled, and maintained by the State Water Board. The web address for this site is http://ciwqs.waterboards.ca.gov. This online database is maintained on a secure site and is controlled by unique usernames and passwords.

5. **Untreated or partially treated wastewater** – Any volume of waste discharged from the sanitary sewer system upstream of a wastewater treatment plant headworks.

6. **Satellite collection system** – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.

7. **Nuisance** - California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
    a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
    b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
    c. Occurs during, or as a result of, the treatment or disposal of wastes.

B. APPLICATION REQUIREMENTS

1. Deadlines for Application – All public agencies that currently own or operate sanitary sewer systems within the State of California must apply for coverage under the general WDRs within six (6) months of the date of adoption of the general WDRs. Additionally, public agencies that acquire or assume responsibility for operating sanitary sewer systems after the date of adoption of this Order must apply for coverage under the general WDRs at least three (3) months prior to operation of those facilities.

2. Applications under the general WDRs – In order to apply for coverage pursuant to the general WDRs, a legally authorized representative for each agency must submit a complete application package. Within sixty (60) days of adoption of the general WDRs, State Water Board staff will send specific instructions on how to

apply for coverage under the general WDRs to all known public agencies that own sanitary sewer systems. Agencies that do not receive notice may obtain applications and instructions online on the Water Board's website.

3. Coverage under the general WDRs – Permit coverage will be in effect once a complete application package has been submitted and approved by the State Water Board's Division of Water Quality.

C. PROHIBITIONS

1. Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.

2. Any SSO that results in a discharge of untreated or partially treated wastewater that creates a nuisance as defined in California Water Code Section 13050(m) is prohibited.

D. PROVISIONS

1. The Enrollee must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the California Water Code and is grounds for enforcement action.

2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:

   (i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;
   (ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;
   (iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDR, superseding this general WDR, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or
   (iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.

3. The Enrollee shall take all feasible steps to eliminate SSOs. In the event that an SSO does occur, the Enrollee shall take all feasible steps to contain and mitigate the impacts of an SSO.

4. In the event of an SSO, the Enrollee shall take all feasible steps to prevent untreated or partially treated wastewater from discharging from storm drains into

flood control channels or waters of the United States by blocking the storm drainage system and by removing the wastewater from the storm drains.

5. All SSOs must be reported in accordance with Section G of the general WDRs.

6. In any enforcement action, the State and/or Regional Water Boards will consider the appropriate factors under the duly adopted State Water Board Enforcement Policy. And, consistent with the Enforcement Policy, the State and/or Regional Water Boards must consider the Enrollee's efforts to contain, control, and mitigate SSOs when considering the California Water Code Section 13327 factors. In assessing these factors, the State and/or Regional Water Boards will also consider whether:

   (i) The Enrollee has complied with the requirements of this Order, including requirements for reporting and developing and implementing a SSMP;

   (ii) The Enrollee can identify the cause or likely cause of the discharge event;

   (iii) There were no feasible alternatives to the discharge, such as temporary storage or retention of untreated wastewater, reduction of inflow and infiltration, use of adequate backup equipment, collecting and hauling of untreated wastewater to a treatment facility, or an increase in the capacity of the system as necessary to contain the design storm event identified in the SSMP. It is inappropriate to consider the lack of feasible alternatives, if the Enrollee does not implement a periodic or continuing process to identify and correct problems.

   (iv) The discharge was exceptional, unintentional, temporary, and caused by factors beyond the reasonable control of the Enrollee;

   (v) The discharge could have been prevented by the exercise of reasonable control described in a certified SSMP for:
      - Proper management, operation and maintenance;
      - Adequate treatment facilities, sanitary sewer system facilities, and/or components with an appropriate design capacity, to reasonably prevent SSOs (e.g., adequately enlarging treatment or collection facilities to accommodate growth, infiltration and inflow (I/I), etc.);
      - Preventive maintenance (including cleaning and fats, oils, and grease (FOG) control);
      - Installation of adequate backup equipment; and
      - Inflow and infiltration prevention and control to the extent practicable.

   (vi) The sanitary sewer system design capacity is appropriate to reasonably prevent SSOs.

(vii) The Enrollee took all reasonable steps to stop and mitigate the impact of the discharge as soon as possible.

7. When a sanitary sewer overflow occurs, the Enrollee shall take all feasible steps and necessary remedial actions to 1) control or limit the volume of untreated or partially treated wastewater discharged, 2) terminate the discharge, and 3) recover as much of the wastewater discharged as possible for proper disposal, including any wash down water.

   The Enrollee shall implement all remedial actions to the extent they may be applicable to the discharge and not inconsistent with an emergency response plan, including the following:

   (i) Interception and rerouting of untreated or partially treated wastewater flows around the wastewater line failure;
   (ii) Vacuum truck recovery of sanitary sewer overflows and wash down water;
   (iii) Cleanup of debris at the overflow site;
   (iv) System modifications to prevent another SSO at the same location;
   (v) Adequate sampling to determine the nature and impact of the release; and
   (vi) Adequate public notification to protect the public from exposure to the SSO.

8. The Enrollee shall properly, manage, operate, and maintain all parts of the sanitary sewer system owned or operated by the Enrollee, and shall ensure that the system operators (including employees, contractors, or other agents) are adequately trained and possess adequate knowledge, skills, and abilities.

9. The Enrollee shall allocate adequate resources for the operation, maintenance, and repair of its sanitary sewer system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures. These procedures must be in compliance with applicable laws and regulations and comply with generally acceptable accounting practices.

10. The Enrollee shall provide adequate capacity to convey base flows and peak flows, including flows related to wet weather events. Capacity shall meet or exceed the design criteria as defined in the Enrollee's System Evaluation and Capacity Assurance Plan for all parts of the sanitary sewer system owned or operated by the Enrollee.

11. The Enrollee shall develop and implement a written Sewer System Management Plan (SSMP) and make it available to the State and/or Regional Water Board upon request. A copy of this document must be publicly available at the Enrollee's office and/or available on the Internet. This SSMP must be approved by the Enrollee's governing board at a public meeting.

12. In accordance with the California Business and Professions Code sections 6735, 7835, and 7835.1, all engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. Specific elements of the SSMP that require professional evaluation and judgments shall be prepared by or under the direction of appropriately qualified professionals, and shall bear the professional(s)' signature and stamp.

13. The mandatory elements of the SSMP are specified below. However, if the Enrollee believes that any element of this section is not appropriate or applicable to the Enrollee's sanitary sewer system, the SSMP program does not need to address that element. The Enrollee must justify why that element is not applicable. The SSMP must be approved by the deadlines listed in the SSMP Time Schedule below.

Sewer System Management Plan (SSMP)

(i) **Goal**: The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.

(ii) **Organization**: The SSMP must identify:

(a) The name of the responsible or authorized representative as described in Section J of this Order.

(b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and

(c) The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (OES)).

(iii) **Legal Authority:** Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

(a) Prevent illicit discharges into its sanitary sewer system (examples may include I/I, stormwater, chemical dumping, unauthorized debris and cut roots, etc.);

(b) Require that sewers and connections be properly designed and constructed;

(c) Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;

(d) Limit the discharge of fats, oils, and grease and other debris that may cause blockages, and

(e) Enforce any violation of its sewer ordinances.

(iv) **Operation and Maintenance Program**. The SSMP must include those elements listed below that are appropriate and applicable to the Enrollee's system:

(a) Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities;

(b) Describe routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance (PM) program should have a system to document scheduled and conducted activities, such as work orders;

(c) Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;

(d) Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and

(e) Provide equipment and replacement part inventories, including identification of critical replacement parts.

(v) **Design and Performance Provisions**:

(a) Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and

(b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

(vi) **Overflow Emergency Response Plan -** Each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

(a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;

(b) A program to ensure an appropriate response to all overflows;

(c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, Regional Water Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;

(d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;

(e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and

(f) A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

(vii) **FOG Control Program:** Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:

(a) An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;

(b) A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;

(c) The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;

(d) Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;

(e) Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance;

(f) An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section; and

(g) Development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each section identified in (f) above.

(viii) **System Evaluation and Capacity Assurance Plan**: The Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:

(a) **Evaluation**: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs

that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;

(b) **Design Criteria:** Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria; and

(c) **Capacity Enhancement Measures:** The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.

(d) **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14.

(ix) **Monitoring, Measurement, and Program Modifications:** The Enrollee shall:

(a) Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;

(b) Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;

(c) Assess the success of the preventative maintenance program;

(d) Update program elements, as appropriate, based on monitoring or performance evaluations; and

(e) Identify and illustrate SSO trends, including: frequency, location, and volume.

(x) **SSMP Program Audits** - As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the

Enrollee's compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

(xi) **Communication Program** – The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.

The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

14. Both the SSMP and the Enrollee's program to implement the SSMP must be certified by the Enrollee to be in compliance with the requirements set forth above and must be presented to the Enrollee's governing board for approval at a public meeting. The Enrollee shall certify that the SSMP, and subparts thereof, are in compliance with the general WDRs within the time frames identified in the time schedule provided in subsection D.15, below.

    In order to complete this certification, the Enrollee's authorized representative must complete the certification portion in the Online SSO Database Questionnaire by checking the appropriate milestone box, printing and signing the automated form, and sending the form to:

    State Water Resources Control Board
    Division of Water Quality
    Attn: SSO Program Manager
    P.O. Box 100
    Sacramento, CA 95812

    The SSMP must be updated every five (5) years, and must include any significant program changes. Re-certification by the governing board of the Enrollee is required in accordance with D.14 when significant updates to the SSMP are made. To complete the re-certification process, the Enrollee shall enter the data in the Online SSO Database and mail the form to the State Water Board, as described above.

15. The Enrollee shall comply with these requirements according to the following schedule. This time schedule does not supersede existing requirements or time schedules associated with other permits or regulatory requirements.

Sewer System Management Plan Time Schedule

Task and Associated Section	Completion Date			
	Population > 100,000	Population between 100,000 and 10,000	Population between 10,000 and 2,500	Population < 2,500
Application for Permit Coverage ***Section C***	6 months after WDRs Adoption			
Reporting Program ***Section G***	6 months after WDRs Adoption[1]			
SSMP Development Plan and Schedule ***No specific Section***	9 months after WDRs Adoption[2]	12 months after WDRs Adoption[2]	15 months after WDRs Adoption[2]	18 months after WDRs Adoption[2]
Goals and Organization Structure ***Section D 13 (i) & (ii)***	12 months after WDRs Adoption[2]		18 months after WDRs Adoption[2]	
Overflow Emergency Response Program ***Section D 13 (vi)***	24 months after WDRs Adoption[2]	30 months after WDRs Adoption[2]	36 months after WDRs Adoption[2]	39 months after WDRs Adoption[2]
Legal Authority ***Section D 13 (iii)***				
Operation and Maintenance Program ***Section D 13 (iv)***				
Grease Control Program ***Section D 13 (vii)***				
Design and Performance ***Section D 13 (v)***	36 months after WDRs Adoption	39 months after WDRs Adoption	48 months after WDRs Adoption	51 months after WDRs Adoption
System Evaluation and Capacity Assurance Plan ***Section D 13 (viii)***				
Final SSMP, incorporating all of the SSMP requirements ***Section D 13***				

1. In the event that by July 1, 2006 the Executive Director is able to execute a memorandum of agreement (MOA) with the California Water Environment Association (CWEA) or discharger representatives outlining a strategy and time schedule for CWEA or another entity to provide statewide training on the adopted monitoring program, SSO database electronic reporting, and SSMP development, consistent with this Order, then the schedule of Reporting Program Section G shall be replaced with the following schedule:

Reporting Program ***Section G***	
Regional Boards 4, 8, and 9	8 months after WDRs Adoption
Regional Boards 1, 2, and 3	12 months after WDRs Adoption
Regional Boards 5, 6, and 7	16 months after WDRs Adoption

If this MOU is not executed by July 1, 2006, the reporting program time schedule will remain six (6) months for all regions and agency size categories.

2. In the event that the Executive Director executes the MOA identified in note 1 by July 1, 2006, then the deadline for this task shall be extended by six (6) months. The time schedule identified in the MOA must be consistent with the extended time schedule provided by this note. If the MOA is not executed by July 1, 2006, the six (6) month time extension will not be granted.

E. WDRs and SSMP AVAILABILITY

1. A copy of the general WDRs and the certified SSMP shall be maintained at appropriate locations (such as the Enrollee's offices, facilities, and/or Internet homepage) and shall be available to sanitary sewer system operating and maintenance personnel at all times.

F. ENTRY AND INSPECTION

1. The Enrollee shall allow the State or Regional Water Boards or their authorized representative, upon presentation of credentials and other documents as may be required by law, to:

    a. Enter upon the Enrollee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order;

    b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and

d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the California Water Code, any substances or parameters at any location.

G. GENERAL MONITORING AND REPORTING REQUIREMENTS

1. The Enrollee shall furnish to the State or Regional Water Board, within a reasonable time, any information that the State or Regional Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Enrollee shall also furnish to the Executive Director of the State Water Board or Executive Officer of the applicable Regional Water Board, upon request, copies of records required to be kept by this Order.

2. The Enrollee shall comply with the attached Monitoring and Reporting Program No. 2006-0003 and future revisions thereto, as specified by the Executive Director. Monitoring results shall be reported at the intervals specified in Monitoring and Reporting Program No. 2006-0003. Unless superseded by a specific enforcement Order for a specific Enrollee, these reporting requirements are intended to replace other mandatory routine written reports associated with SSOs.

3. All Enrollees must obtain SSO Database accounts and receive a "Username" and "Password" by registering through the California Integrated Water Quality System (CIWQS). These accounts will allow controlled and secure entry into the SSO Database. Additionally, within 30days of receiving an account and prior to recording spills into the SSO Database, all Enrollees must complete the "Collection System Questionnaire", which collects pertinent information regarding a Enrollee's collection system. The "Collection System Questionnaire" must be updated at least every 12 months.

4. Pursuant to Health and Safety Code section 5411.5, any person who, without regard to intent or negligence, causes or permits any untreated wastewater or other waste to be discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State, as soon as that person has knowledge of the discharge, shall immediately notify the local health officer of the discharge. Discharges of untreated or partially treated wastewater to storm drains and drainage channels, whether man-made or natural or concrete-lined, shall be reported as required above.

   Any SSO greater than 1,000 gallons discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State shall also be reported to the Office of Emergency Services pursuant to California Water Code section 13271.

H. CHANGE IN OWNERSHIP

1. This Order is not transferable to any person or party, except after notice to the Executive Director. The Enrollee shall submit this notice in writing at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new Enrollee containing a specific date for the transfer of this Order's responsibility and coverage between the existing Enrollee and the new Enrollee. This agreement shall include an acknowledgement that the existing Enrollee is liable for violations up to the transfer date and that the new Enrollee is liable from the transfer date forward.

I. INCOMPLETE REPORTS

1. If an Enrollee becomes aware that it failed to submit any relevant facts in any report required under this Order, the Enrollee shall promptly submit such facts or information by formally amending the report in the Online SSO Database.

J. REPORT DECLARATION

1. All applications, reports, or information shall be signed and certified as follows:

    (i) All reports required by this Order and other information required by the State or Regional Water Board shall be signed and certified by a person designated, for a municipality, state, federal or other public agency, as either a principal executive officer or ranking elected official, or by a duly authorized representative of that person, as described in paragraph (ii) of this provision. (For purposes of electronic reporting, an electronic signature and accompanying certification, which is in compliance with the Online SSO database procedures, meet this certification requirement.)

    (ii) An individual is a duly authorized representative only if:

        (a) The authorization is made in writing by a person described in paragraph (i) of this provision; and

        (b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.

K. CIVIL MONETARY REMEDIES FOR DISCHARGE VIOLATIONS

1. The California Water Code provides various enforcement options, including civil monetary remedies, for violations of this Order.

2. The California Water Code also provides that any person failing or refusing to furnish technical or monitoring program reports, as required under this Order, or

falsifying any information provided in the technical or monitoring reports is subject to civil monetary penalties.

L. SEVERABILITY

1. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.

2. This order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Enrollee from liability under federal, state or local laws, nor create a vested right for the Enrollee to continue the waste discharge.

CERTIFICATION

The undersigned Clerk to the State Water Board does hereby certify that the foregoing is a full, true, and correct copy of general WDRs duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 2, 2006.

AYE: Tam M. Doduc
Gerald D. Secundy

NO: Arthur G. Baggett

ABSENT: None

ABSTAIN: None

Song Her
Clerk to the Board

STATE WATER RESOURCES CONTROL BOARD

MONITORING AND REPORTING PROGRAM NO. 2006-0003-DWQ
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS
FOR
SANITARY SEWER SYSTEMS

This Monitoring and Reporting Program (MRP) establishes monitoring, record keeping, reporting and public notification requirements for Order No. 2006-2003-DWQ, "Statewide General Waste Discharge Requirements for Sanitary Sewer Systems." Revisions to this MRP may be made at any time by the Executive Director, and may include a reduction or increase in the monitoring and reporting.

A. SANITARY SEWER OVERFLOW REPORTING

SSO Categories

1. Category 1 - All discharges of sewage resulting from a failure in the Enrollee's sanitary sewer system that:
   A. Equal or exceed 1000 gallons, or
   B. Result in a discharge to a drainage channel and/or surface water; or
   C. Discharge to a storm drainpipe that was not fully captured and returned to the sanitary sewer system.

2. Category 2 – All other discharges of sewage resulting from a failure in the Enrollee's sanitary sewer system.

3. Private Lateral Sewage Discharges – Sewage discharges that are caused by blockages or other problems within a privately owned lateral.

SSO Reporting Timeframes

4. Category 1 SSOs – All SSOs that meet the above criteria for Category 1 SSOs must be reported as soon as: (1) the Enrollee has knowledge of the discharge, (2) reporting is possible, and (3) reporting can be provided without substantially impeding cleanup or other emergency measures. Initial reporting of Category 1 SSOs must be reported to the Online SSO System as soon as possible but no later than 3 business days after the Enrollee is made aware of the SSO. Minimum information that must be contained in the 3-day report must include all information identified in section 9 below, except for item 9.K. A final certified report must be completed through the Online SSO System, within 15 calendar days of the conclusion of SSO response and remediation. Additional information may be added to the certified report, in the form of an attachment, at any time.

   The above reporting requirements do not preclude other emergency notification requirements and timeframes mandated by other regulatory agencies (local

County Health Officers, local Director of Environmental Health, Regional Water Boards, or Office of Emergency Services (OES)) or State law.

5. Category 2 SSOs – All SSOs that meet the above criteria for Category 2 SSOs must be reported to the Online SSO Database within 30 days after the end of the calendar month in which the SSO occurs (e.g. all SSOs occurring in the month of January must be entered into the database by March 1st).

6. Private Lateral Sewage Discharges – All sewage discharges that meet the above criteria for Private Lateral sewage discharges may be reported to the Online SSO Database based upon the Enrollee's discretion. If a Private Lateral sewage discharge is recorded in the SSO Database, the Enrollee must identify the sewage discharge as occurring and caused by a private lateral, and a responsible party (other than the Enrollee) should be identified, if known.

7. If there are no SSOs during the calendar month, the Enrollee will provide, within 30 days after the end of each calendar month, a statement through the Online SSO Database certifying that there were no SSOs for the designated month.

8. In the event that the SSO Online Database is not available, the enrollee must fax all required information to the appropriate Regional Water Board office in accordance with the time schedules identified above. In such event, the Enrollee must also enter all required information into the Online SSO Database as soon as practical.

Mandatory Information to be Included in SSO Online Reporting

All Enrollees must obtain SSO Database accounts and receive a "Username" and "Password" by registering through the California Integrated Water Quality System (CIWQS). These accounts will allow controlled and secure entry into the SSO Database. Additionally, within thirty (30) days of receiving an account and prior to recording SSOs into the SSO Database, all Enrollees must complete the "Collection System Questionnaire", which collects pertinent information regarding an Enrollee's collection system. The "Collection System Questionnaire" must be updated at least every 12 months.

At a minimum, the following mandatory information must be included prior to finalizing and certifying an SSO report for each category of SSO:

9. Category 2 SSOs:

    A. Location of SSO by entering GPS coordinates;
    B. Applicable Regional Water Board, i.e. identify the region in which the SSO occurred;
    C. County where SSO occurred;
    D. Whether or not the SSO entered a drainage channel and/or surface water;
    E. Whether or not the SSO was discharged to a storm drain pipe that was not fully captured and returned to the sanitary sewer system;

F. Estimated SSO volume in gallons;
G. SSO source (manhole, cleanout, etc.);
H. SSO cause (mainline blockage, roots, etc.);
I. Time of SSO notification or discovery;
J. Estimated operator arrival time;
K. SSO destination;
L. Estimated SSO end time; and
M. SSO Certification. Upon SSO Certification, the SSO Database will issue a Final SSO Identification (ID) Number.

10. Private Lateral Sewage Discharges:

A. All information listed above (if applicable and known), as well as;
B. Identification of sewage discharge as a private lateral sewage discharge; and
C. Responsible party contact information (if known).

11. Category 1 SSOs:

A. All information listed for Category 2 SSOs, as well as;
B. Estimated SSO volume that reached surface water, drainage channel, or not recovered from a storm drain;
C. Estimated SSO amount recovered;
D. Response and corrective action taken;
E. If samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA must be selected.
F. Parameters that samples were analyzed for (if applicable);
G. Identification of whether or not health warnings were posted;
H. Beaches impacted (if applicable). If no beach was impacted, NA must be selected;
I. Whether or not there is an ongoing investigation;
J. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
K. OES control number (if applicable);
L. Date OES was called (if applicable);
M. Time OES was called (if applicable);
N. Identification of whether or not County Health Officers were called;
O. Date County Health Officer was called (if applicable); and
P. Time County Health Officer was called (if applicable).

Reporting to Other Regulatory Agencies

These reporting requirements do not preclude an Enrollee from reporting SSOs to other regulatory agencies pursuant to California state law. These reporting requirements do not replace other Regional Water Board telephone reporting requirements for SSOs.

1. The Enrollee shall report SSOs to OES, in accordance with California Water Code Section 13271.

Office of Emergency Services
Phone (800) 852-7550

2. The Enrollee shall report SSOs to County Health officials in accordance with California Health and Safety Code Section 5410 et seq.

3. The SSO database will automatically generate an e-mail notification with customized information about the SSO upon initial reporting of the SSO and final certification for all Category 1 SSOs. E-mails will be sent to the appropriate County Health Officer and/or Environmental Health Department if the county desires this information, and the appropriate Regional Water Board.

B. Record Keeping

1. Individual SSO records shall be maintained by the Enrollee for a minimum of five years from the date of the SSO. This period may be extended when requested by a Regional Water Board Executive Officer.

3. All records shall be made available for review upon State or Regional Water Board staff's request.

4. All monitoring instruments and devices that are used by the Enrollee to fulfill the prescribed monitoring and reporting program shall be properly maintained and calibrated as necessary to ensure their continued accuracy;

5. The Enrollee shall retain records of all SSOs, such as, but not limited to and when applicable:

   a. Record of Certified report, as submitted to the online SSO database;
   b. All original recordings for continuous monitoring instrumentation;
   c. Service call records and complaint logs of calls received by the Enrollee;
   d. SSO calls;
   e. SSO records;
   f. Steps that have been and will be taken to prevent the SSO from recurring and a schedule to implement those steps.
   g. Work orders; work completed, and any other maintenance records from the previous 5 years which are associated with responses and investigations of system problems related to SSOs;
   h. A list and description of complaints from customers or others from the previous 5 years; and
   i. Documentation of performance and implementation measures for the previous 5 years.

6. If water quality samples are required by an environmental or health regulatory agency or State law, or if voluntary monitoring is conducted by the Enrollee or its agent(s), as a result of any SSO, records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical technique or method used; and,
f. The results of such analyses.

C. Certification

1. All final reports must be certified by an authorized person as required by Provision J of the Order.
2. Registration of authorized individuals, who may certify reports, will be in accordance with the CIWQS' protocols for reporting.

Monitoring and Reporting Program No. 2006-0003 will become effective on the date of adoption by the State Water Board.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Board held on May 2, 2006.

Song Her
Clerk to the Board

Appendix B

California State Water Resources Control Board Order No. 2008-0002-EXEC

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER NO. WQ 2008-0002-EXEC

ADOPTING AMENDED MONITORING AND REPORTING REQUIREMENTS FOR STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

The State of California, Water Resources Control Board (State Water Board) finds:

1. The State Water Board is authorized to prescribe statewide general waste discharge requirements for categories of discharges that involve the same or similar operations and the same of similar types of waste pursuant to Water Code 13263, subdivision (i).

2. The State Water Board on May 2, 2006, adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Order No. 2006-0003-DWQ, pursuant to that authority.

3. The State Water Board on May 2, 2006, adopted Monitoring and Reporting Requirements to implement the General Waste Discharge Requirements for Sanitary Sewer Systems.

4. State Water Board Order No. 2006-0003-DWQ, paragraph G.2., and the Monitoring and Reporting Requirements, both provide that the Executive Director may modify the terms of the Monitoring and Reporting Requirements at any time.

5. The time allowed in those Monitoring and Reporting Requirements for the filing of the initial report of an overflow is too long to adequately protect the public health and safety or the beneficial uses of the waters of the state when there is a sewage collection system spill. An additional notification requirement is necessary and appropriate to ensure the Office of Emergency Services, local public health officials, and the applicable regional water quality control board are apprised of a spill that reaches a drainage channel or surface water.

6. Further, the burden of providing a notification as soon as possible is de minimis and will allow response agencies to take action as soon as possible to protect public health and safety and beneficial uses of the waters of the state.

IT IS HEREBY ORDERED THAT:

Pursuant to the authority delegated by Resolution No. 2002-0104 and Order No. 2006-0003-DWQ, the Monitoring and Reporting Requirements for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems No. 2006-0003-DWQ is hereby amended as shown in Attachment A, with new text indicated by double-underline.

Dated: February 20, 2008

Dorothy Rice
Dorothy Rice
Executive Director

ATTACHMENT A

STATE WATER RESOURCES CONTROL BOARD
MONITORING AND REPORTING PROGRAM NO. 2006-0003-DWQ
(AS REVISED BY ORDER NO. WQ 2008-0002-EXEC)

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS
FOR
SANITARY SEWER SYSTEMS

This Monitoring and Reporting Program (MRP) establishes monitoring, record keeping, reporting and public notification requirements for Order No. 2006-2003-DWQ, "Statewide General Waste Discharge Requirements for Sanitary Sewer Systems." Revisions to this MRP may be made at any time by the Executive Director, and may include a reduction or increase in the monitoring and reporting.

NOTIFICATION

Although State and Regional Water Board staff do not have duties as first responders, this Monitoring and Reporting Program is an appropriate mechanism to ensure that the agencies that do have first responder duties are notified in a timely manner in order to protect public health and beneficial uses.

1. For any discharges of sewage that results in a discharge to a drainage channel or a surface water, the Discharger shall, as soon as possible, but not later then two (2) hours after becoming aware of the discharge, notify the State Office of Emergency Services, the local health officer or directors of environmental health with jurisdiction over affected water bodies, and the appropriate Regional Water Quality Control Board.

2. As soon as possible, but no later then twenty-four (24) hours after becoming aware of a discharge to a drainage channel or a surface water, the Discharger shall submit to the appropriate Regional Water Quality Control Board a certification that the State Office of Emergency Services and the local health officer or directors of environmental health with jurisdiction over the affected water bodies have been notified of the discharge.

A. SANITARY SEWER OVERFLOW REPORTING

SSO Categories

1. Category 1 - All discharges of sewage resulting from a failure in the Enrollee's sanitary sewer system that:
   A. Equal or exceed 1000 gallons, or
   B. Result in a discharge to a drainage channel and/or surface water; or
   C. Discharge to a storm drainpipe that was not fully captured and returned to the sanitary sewer system.

2. Category 2 – All other discharges of sewage resulting from a failure in the Enrollee's sanitary sewer system.

3. Private Lateral Sewage Discharges – Sewage discharges that are caused by blockages or other problems within a privately owned lateral.

SSO Reporting Timeframes

4. Category 1 SSOs – Except as provided above, all SSOs that meet the above criteria for Category 1 SSOs must be reported as soon as: (1) the Enrollee has knowledge of the discharge, (2) reporting is possible, and (3) reporting can be provided without substantially impeding cleanup or other emergency measures. Initial reporting of Category 1 SSOs must be reported to the Online SSO System as soon as possible but no later than 3 business days after the Enrollee is made aware of the SSO. Minimum information that must be contained in the 3-day report must include all information identified in section 9 below, except for item 9.K. A final certified report must be completed through the Online SSO System, within 15 calendar days of the conclusion of SSO response and remediation. Additional information may be added to the certified report, in the form of an attachment, at any time.

   The above reporting requirements are in addition to do not preclude other emergency notification requirements and timeframes mandated by other regulatory agencies (local County Health Officers, local Director of Environmental Health, Regional Water Boards, or Office of Emergency Services (OES)) or State law.

5. Category 2 SSOs – All SSOs that meet the above criteria for Category 2 SSOs must be reported to the Online SSO Database within 30 days after the end of the calendar month in which the SSO occurs (e.g. all SSOs occurring in the month of January must be entered into the database by March 1st).

6. Private Lateral Sewage Discharges – All sewage discharges that meet the above criteria for Private Lateral sewage discharges may be reported to the Online SSO Database based upon the Enrollee's discretion. If a Private Lateral sewage discharge is recorded in the SSO Database, the Enrollee must identify the sewage discharge as occurring and caused by a private lateral, and a responsible party (other than the Enrollee) should be identified, if known.

7. If there are no SSOs during the calendar month, the Enrollee will provide, within 30 days after the end of each calendar month, a statement through the Online SSO Database certifying that there were no SSOs for the designated month.

8. In the event that the SSO Online Database is not available, the enrollee must fax all required information to the appropriate Regional Water Board office in

accordance with the time schedules identified above. In such event, the Enrollee must also enter all required information into the Online SSO Database as soon as practical.

Mandatory Information to be Included in SSO Online Reporting

All Enrollees must obtain SSO Database accounts and receive a "Username" and "Password" by registering through the California Integrated Water Quality System (CIWQS). These accounts will allow controlled and secure entry into the SSO Database. Additionally, within thirty (30) days of receiving an account and prior to recording SSOs into the SSO Database, all Enrollees must complete the "Collection System Questionnaire", which collects pertinent information regarding an Enrollee's collection system. The "Collection System Questionnaire" must be updated at least every 12 months.

At a minimum, the following mandatory information must be included prior to finalizing and certifying an SSO report for each category of SSO:

9. Category 2 SSOs:

    A. Location of SSO by entering GPS coordinates;
    B. Applicable Regional Water Board, i.e. identify the region in which the SSO occurred;
    C. County where SSO occurred;
    D. Whether or not the SSO entered a drainage channel and/or surface water;
    E. Whether or not the SSO was discharged to a storm drain pipe that was not fully captured and returned to the sanitary sewer system;
    F. Estimated SSO volume in gallons;
    G. SSO source (manhole, cleanout, etc.);
    H. SSO cause (mainline blockage, roots, etc.);
    I. Time of SSO notification or discovery;
    J. Estimated operator arrival time;
    K. SSO destination;
    L. Estimated SSO end time; and
    M. SSO Certification. Upon SSO Certification, the SSO Database will issue a Final SSO Identification (ID) Number.

10. Private Lateral Sewage Discharges:

    A. All information listed above (if applicable and known), as well as;
    B. Identification of sewage discharge as a private lateral sewage discharge; and
    C. Responsible party contact information (if known).

11. Category 1 SSOs:

A. All information listed for Category 2 SSOs, as well as;
B. Estimated SSO volume that reached surface water, drainage channel, or not recovered from a storm drain;
C. Estimated SSO amount recovered;
D. Response and corrective action taken;
E. If samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA must be selected.
F. Parameters that samples were analyzed for (if applicable);
G. Identification of whether or not health warnings were posted;
H. Beaches impacted (if applicable). If no beach was impacted, NA must be selected;
I. Whether or not there is an ongoing investigation;
J. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
K. OES control number (if applicable);
L. Date OES was called (if applicable);
M. Time OES was called (if applicable);
N. Identification of whether or not County Health Officers were called;
O. Date County Health Officer was called (if applicable); and
P. Time County Health Officer was called (if applicable).

Reporting to Other Regulatory Agencies

These reporting requirements do not preclude an Enrollee from reporting SSOs to other regulatory agencies pursuant California state law. These reporting requirements do not replace other Regional Water Board telephone reporting requirements for SSOs.

1. The Enrollee shall report SSOs to OES, in accordance with California Water Code Section 13271.

   Office of Emergency Services
   Phone (800) 852-7550

2. The Enrollee shall report SSOs to County Health officials in accordance with California Health and Safety Code Section 5410 et seq.

3. The SSO database will automatically generate an e-mail notification with customized information about the SSO upon initial reporting of the SSO and final certification for all Category 1 SSOs. E-mails will be sent to the appropriate County Health Officer and/or Environmental Health Department if the county desires this information, and the appropriate Regional Water Board.

B. Record Keeping

1. Individual SSO records shall be maintained by the Enrollee for a minimum of five years from the date of the SSO. This period may be extended when requested by a Regional Water Board Executive Officer.

[2. Omitted.]

3. All records shall be made available for review upon State or Regional Water Board staff's request.

4. All monitoring instruments and devices that are used by the Enrollee to fulfill the prescribed monitoring and reporting program shall be properly maintained and calibrated as necessary to ensure their continued accuracy;

5. The Enrollee shall retain records of all SSOs, such as, but not limited to and when applicable:

   a. Record of Certified report, as submitted to the online SSO database;
   b. All original recordings for continuous monitoring instrumentation;
   c. Service call records and complaint logs of calls received by the Enrollee;
   d. SSO calls;
   e. SSO records;
   f. Steps that have been and will be taken to prevent the SSO from recurring and a schedule to implement those steps.
   g. Work orders, work completed, and any other maintenance records from the previous 5 years which are associated with responses and investigations of system problems related to SSOs;
   h. A list and description of complaints from customers or others from the previous 5 years; and
   i. Documentation of performance and implementation measures for the previous 5 years.

6. If water quality samples are required by an environmental or health regulatory agency or State law, or if voluntary monitoring is conducted by the Enrollee or its agent(s), as a result of any SSO, records of monitoring information shall include:

   a. The date, exact place, and time of sampling or measurements;
   b. The individual(s) who performed the sampling or measurements;
   c. The date(s) analyses were performed;
   d. The individual(s) who performed the analyses;
   e. The analytical technique or method used; and,
   f. The results of such analyses.

C. Certification

1. All final reports must be certified by an authorized person as required by Provision J of the Order.
2. Registration of authorized individuals, who may certify reports, will be in accordance with the CIWQS[i] protocols for reporting.

Monitoring and Reporting Program No. 2006-0003 will become effective on the date of adoption by the State Water Board. The notification requirements added by Order No. WQ 2008-0002-EXEC will become effective upon issuance by the Executive Director.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order amended by the Executive Director of the State Water Board.

Jeanine Townsend
Clerk to the Board

Appendix C

Development Plan and Schedule

ECO:LOGIC
ENGINEERS · CONSULTANTS

San Joaquin County Public Works Department UMD

SSMP Development Plan and Schedule

June 2008

Prepared for
San Joaquin County

Prepared by
ECO:LOGIC

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Contents

San Joaquin County Public Works Department UMD Sewer System Management Plan (SSMP) Development Plan and Schedule

1 BACKGROUND 1-1

2 SEWER SYSTEM MANAGEMENT PLAN (SSMP) ELEMENTS 2-1
- 2.1 Goal 2-1
- 2.2 Organization 2-1
- 2.3 Legal Authority 2-2
- 2.4 Operations and Maintenance (O&M) Program 2-2
- 2.5 Design and Performance Provisions 2-2
- 2.6 Overflow Emergency Response Plan (OERP) 2-3
- 2.7 Fats, Oils, and Grease (FOG) Control Program 2-3
- 2.8 System Evaluation and Capacity Assurance Plan (SECAP) 2-4
- 2.9 Monitoring, Measurement, and Program Modifications 2-4
- 2.10 SSMP Program Audits 2-4
- 2.11 Communication Program 2-4

3 SSMP ASSESSMENT RESULTS 3-1

4 SSMP SCOPE OF WORK 4-1

5 SSMP PROGRAM IMPLEMENTATION SCHEDULE 5-1

Tables

Table 3-1 San Joaquin County UMD SSMP Assessment 3-1
Table 5-1 San Joaquin County UMD Completion of SSMP Elements Schedule 5-2

Section 1

BACKGROUND

On May 2, 2006, the California State Water Resources Control Board (SWRCB) issued statewide general waste discharge requirements (WDRs) for all publicly owned sanitary sewer systems greater than one mile in length. Guidelines and requirements for WDRs are described in the State Water Resources Control Board Order No. 2006-0003-DWQ Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, herein referred to as WDR 2006-0003. A significant requirement outlined in WDR 2006-0003 is the completion of a Sewer System Management Plan (SSMP).

One of the initial requirements of WDR 2006-0003 is an SSMP Development Plan and Schedule, which is required to receive approval by the County's Board of Supervisors at a public meeting. This document serves to fulfill the SSMP Development Plan and Schedule requirement of WDR 2006-0003.

The purpose of this document is to provide an assessment of San Joaquin County's (County) current sewer system management, operation, and maintenance procedures and to recommend actions that will be necessary to produce a complete SSMP in compliance with the requirements of the WDR 2006-003. The County actively manages seven collection systems which this document is intended to umbrella. Programs needed to comply with the WDR will be developed under separate covers for each collection system.

This document is organized into four major parts:

(1) Description of each SSMP element, including the minimum WDR 2006-0003 requirements;

(2) Assessment of the County's compliance with each required SSMP element;

(3) A scope of work showing tasks required for the County to develop or improve required SSMP elements; and

(4) An implementation schedule for completion of each element.

Section 2

SEWER SYSTEM MANAGEMENT PLAN (SSMP) ELEMENTS

The SSMP is a general compilation of information about the management, operation and maintenance of the County's sanitary sewer collection system. The SSMP has 11 primary components as specified in the WDR:

1. Goal;
2. Organization;
3. Legal Authority;
4. Operation and Maintenance Program;
5. Design and Performance Provisions;
6. Overflow Emergency Response Plan (OERP);
7. Fats, Oils and Grease (FOG) Control Program;
8. System Evaluation and Capacity Assurance Plan (SECAP);
9. Monitoring, Measurement, and Program Modifications;
10. SSMP Program Audits; and
11. Communication Program.

A brief explanation of each of the eleven elements and the minimum requirements, as outlined in WDR 2006-0003, is provided below. The full WDR 2006-0003 is located in Appendix A.

2.1 GOAL

The primary goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system, with a focus on preventing, reducing, and mitigating Sanitary Sewer Overflows (SSOs).

2.2 ORGANIZATION

The SSMP must identify:

a) The name of the responsible or authorized representative;

b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program, including lines of authority through an organizational chart; and

c) The chain of communication for reporting SSOs.

2.3 LEGAL AUTHORITY

The agency must demonstrate, through sanitary system use ordinances, that it possesses the necessary legal authority to:

a) Prevent illicit discharges into the sanitary sewer system;

b) Require that sewers and connections be properly designed and constructed;

c) Ensure access for maintenance, inspection, or repairs;

d) Limit the discharge of fats, oils, and grease and other debris that may cause blockages; and

e) Enforce any violation of sewer ordinances.

2.4 OPERATIONS AND MAINTENANCE (O&M) PROGRAM

A collection system needs to be properly operated and maintained. The SSMP must address the following elements (as applicable):

a) Maintain an up-to-date map of the sanitary sewer system.

b) Describe routine preventative O&M activities, including a system for scheduling regular maintenance and cleaning with more frequent maintenance and cleaning in known problem areas. The O&M program should include a system to document activities and assess the effectiveness of the program.

c) Develop and implement short and long-term rehabilitation and replacement plans that prioritize deficiencies.

d) Provide training on a regular basis for O&M staff and contractors.

e) Provide an inventory of general and critical equipment and replacement parts.

2.5 DESIGN AND PERFORMANCE PROVISIONS

The design and performance provisions should identify minimum design and construction standards and specifications for the installation of new sewer systems and for rehabilitation and repair of existing sewers. An effective program that ensures new sewers are properly designed and installed can minimize system deficiencies that could create or contribute to future overflows and/or operations and maintenance problems. Design criteria should include specifications such as pipe materials, minimum sizes, minimum cover, strength, minimum slope, trench and backfill, structure standards, flow factors, and other relevant parameters as necessary. In addition,

procedures and standards are required for inspecting and testing the installation of new sewers, pump stations, and other facilities and for rehabilitation and repair projects.

2.6 OVERFLOW EMERGENCY RESPONSE PLAN (OERP)

Development and implementation of an overflow emergency response plan that identifies measures to protect public health and the environment is required. At a minimum, the OERP must include the following:

a) Proper notification procedures so that the primary responders and regulatory agencies are informed of SSOs in a timely manner.

b) A program to ensure an appropriate response to all overflows.

c) Procedures to ensure prompt notification to appropriate regulatory agencies of SSOs in accordance with the Monitoring and Reporting Program (MRP).

d) Procedures to ensure that appropriate staff are aware of and follow the emergency Response Plan.

e) Procedures to address emergency operations.

f) A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated wastewater to waters of the United States and to minimize or correct any adverse impacts on the environment resulting from the SSOs.

2.7 FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM

The service area is required to be evaluated to determine whether a FOG control program is needed. If FOG is found to be a problem, preparation and implementation of a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system is required. The plan shall include the following as appropriate:

a) An implementation plan and schedule for a public education outreach program;

b) A plan and schedule for the disposal of FOG generated within the service area;

c) The legal authority to implement and enforce a FOG Control Program;

d) Requirements to install grease removal devices, design standards, maintenance requirements, Best Management Practice (BMP) requirements, recordkeeping and reporting requirements;

e) Authority to inspect grease producing facilities;

f) An identification of sanitary sewer sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section; and

g) Development and implementation of source control measures.

2.8 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN (SECAP)

The collection system should be evaluated to determine where hydraulic deficiencies exist. Based on this analysis, a capital improvement plan (CIP) must be prepared and implemented to ensure adequate hydraulic capacity of key sanitary sewer system elements for dry and wet weather flow conditions. Capacity enhancement measures should establish short and/or long-term actions to correct each identified hydraulic deficiency. Short and long term actions should include alternative analyses, a prioritization of recommended projects, an implementation schedule, and source of funding. At a minimum, the plan must include:

a) Evaluation;

b) Design Criteria;

c) Capacity Enhancement Measures; and

d) Schedule.

2.9 MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

During implementation of the SSMP program, the program elements should be monitored for their effectiveness. If the elements are not effective, the program elements should be modified or updated to increase effectiveness.

2.10 SSMP PROGRAM AUDITS

Internal audits should be performed at a frequency of every two years or less, as appropriate. The internal audits will assess the effectiveness of the SSMP and compliance with WDR 2006-0003. Audits are also intended to identify and correct any deficiencies within the SSMP.

2.11 COMMUNICATION PROGRAM

As part of developing and implementing the SSMP, a public outreach program should be established to inform the public of the process. The public outreach program will provide a means of incorporating public input into the SSMP development.

Section 3

SSMP ASSESSMENT RESULTS

An assessment was conducted on how the County's current practices comply with the eleven elements described above. Information pertaining to the County's current policies for management, operations and maintenance of their collection system was gathered through discussion with County staff and review of County general regulations and ordinances. This information was used to evaluate the level to which the County complies with each of the SSMP program elements (Table 3-1). The elements were assessed for level of completion and rated as:

- Completed or nearly completed
- In-progress
- Needs to be initiated to comply with SSMP requirements

Table 3-1
San Joaquin County UMD
SSMP Assessment

Program Element	Program Completed or Nearly Completed	Program In-Progress	Program Needed
1. Goal	X		
2. Organization			
a. SSMP Organization Chart	X		
b. Chain of Communication for Reporting SSO Events	X		
3. Legal Authority			
a. Illicit Discharges	X		
b. Proper Design and Construction	X		
c. Access for Maintenance, Inspection and Repairs	X		
d. Limit FOG and debris	X		
e. Enforcement	X		
4. Operation & Maintenance Program			
a. Maintain Up-to-Date Map		X	
b. Perform Routine Preventative Maintenance		X	
c. Rehabilitation and Replacement Plan		X	
d. Training Program		X	
e. Parts & Equipment Inventory		X	
5. Design and Performance Provisions			
a. Design and Construction Standards	X		
b. Inspection and Testing Standards	X		

Table 3-1 (continued)
San Joaquin County UMD
SSMP Assessment

Program Element	Program Completed or Nearly Completed	Program In-Progress	Program Needed
6. Overflow Emergency Response Plan			
a. Notification Procedures		X	
b. Overflow Response		X	
c. SSO Notification		X	
d. Training		X	
e. Emergency Operations		X	
f. SSO Mitigation		X	
7. Fats, Oils & Grease (FOG) Control Program			
a. Develop a Public Outreach Program to Promote Proper Disposal of FOG			X
b. Establish a Plan and Schedule for Disposal of FOG Generated within System			X
c. Exercise Legal Authority to Prohibit FOG Discharges	X		
d. Require the Implementation of Grease Removal Devices and other BMPs	X		
e. Enforce FOG Ordinances and Inspect Grease Producing Facilities	X		
f. Identify Problem Areas & Establish Cleaning Schedule	X		
g. Source Control Measures		X	
8. System Evaluation & Capacity Assurance Plan			
a. Evaluation			X
b. Capacity Enhancement Measures			X
c. Capital Improvement Program Schedule			X
9. Monitoring, Measurement, and Program Modifications			
a. Implementation and Effectiveness of SSMP			X
b. Update SSMP Program Elements			X
c. Identify and Track SSO Trends			X
10. SSMP Program Audits			X
11. Communications Program			X

Section 4

SSMP SCOPE OF WORK

As shown in Table 3-1, the County has the majority of the SSMP elements either in-place or partially developed. However, there are also several elements that will need to be developed or added to the programs to comply with the minimum SSMP requirements. A summary of where the County stands with each program element is shown below:

1. **Goal** – The County has developed a goal statement for the collection system which is aimed at the proper management, operation, and maintenance of the sanitary sewer system for the prevention of SSOs.

2. **Organization** – The County has developed an organizational chart and chain-of-communication for reporting SSOs. The organizational chart illustrates lines of authority, identifies key staff members who are responsible for implementing various elements of the SSMP, and documents the names and contact information for those staff members.

3. **Legal Authority** – The County's legal authority is defined in Title 5 Divisions 4 and 5 of the San Joaquin County Ordinance Code. These ordinances appear to be generally consistent with the SSMP requirements. However, the ordinance should be reviewed in more detail and updated as necessary.

4. **Operations & Maintenance Program** – The County's Operation and Maintenance procedures appear to follow the SSMP requirements. A primary component of the O&M Program is the requirement to maintain an up-to-date map of the sewer collection system. The County fulfills this requirement by maintaining their sewer system maps in a GIS database. The County GIS database includes sewer collection system specific data such as pipe size, slope, installation date, material and manhole inverts. This database allows the County to efficiently maintain an up-to-date map of the sewer system showing manholes, gravity sewers, force mains, pump stations, and storm water collection systems. The County's storm water system is also shown as a selectable layer in the GIS database for most of the County maintained systems. This allows the County to quickly identify locations where SSOs could enter the storm water system and potentially impact waters of the State. Data population of the County's collection system data is ongoing and will eventually evolve into an interdepartmental tool.

   Other key requirements of the O&M Program are not formally documented. To comply with the requirements established in the WDR, the following improvements are recommended:

   a) Currently the County's routine preventative operation and maintenance activities are not formalized. It is recommended that the County develop a Preventative Maintenance (PM) program to document routine operation and maintenance activities. This program

should incorporate a system that schedules preventative maintenance activities and also targets known problem areas, which need more frequent maintenance. Activities of this program should include:

- develop pump station maintenance checklists,
- establish written procedures for managing and tracking operation and maintenance practices,
- incorporate internal TV inspection into routine maintenance,
- implement a manhole inspection and assessment program,
- and formalize Standard Operating Procedures (SOPs) for sewer system appurtenances.

b) It is recommended that the County establish a standardized training program for the operation and maintenance of the County's collection systems, develop annual training goals and include methods for assessing the effectiveness of the training programs. Additionally, contractors who perform operation or maintenance activities on the system should also be required to be properly trained. The County's safety materials should also be updated and kept current.

c) The County currently does not have a rehabilitation and replacement plan (R&R) in place however; the County is in the process of soliciting an RFP for an Asset Management System (AMS) which will be used as the primary vehicle for the R&R Program. The County intends to use the AMS to identify and prioritize pipeline deficiencies that might result in a blockage, SSO or capacity issue. The R&R should also describe the method the County uses to evaluate the condition of the collection system and develop a CIP program to prioritize, schedule and fund rehabilitation or replacement projects.

d) Via the anticipated AMS, the County needs to identify critical equipment and replacement parts and create an inventory of these parts.

5. **Design and Performance Review** – The County has design and construction standards for installation, rehabilitation, and repair of new and existing sewer systems. The County also has inspection and testing standards for new and existing sewers. These standards appear to be consistent with the SSMP requirements. However, it is recommended that these current standards are reviewed in more detail.

6. **Overflow Emergency Response Plan (OERP)** – The County does not have a formal Overflow Emergency Response Plan in place. The County is currently compiling information and evaluating resources needed to establish an OERP. To fully comply with the requirements established in the WDR, a formalized plan must be developed and would at minimum address the requirements listed in Section 2.6.

7. **Fats, Oils and Grease (FOG) Control Program** – The County does not currently have a formal fats, oils and grease (FOG) control program in place, although FOG control

elements are included in the County's Ordinance. County staff has indicated, due to the low number of SSOs of which FOG is not typically the primary cause, the County is prepared to justify that a FOG program is not needed. If FOG is later found to be a problem, the County must prepare and implement a FOG source control program.

8. **System Evaluation and Capacity Assurance Plan (SECAP)** – The County does not currently have a System Evaluation and Capacity Assurance Plan (SECAP). Therefore, the County will need to prepare and implement a SECAP that will provide a hydraulic capacity capital improvement plan. The SECAP will include the following components:

   a) Flow Monitoring: A baseline of the wastewater collection system will be established by conducting flow monitoring at defined sub-basin locations throughout the system during periods of dry-weather conditions. Wet-weather flow monitoring in conjunction with precipitation data will be used to quantify the amount of I/I entering the collection system during rainfall events.

   b) Modeling: Data gathered during the flow monitoring and the County GIS database will be used to create a dynamic hydraulic model of the collection system. The model will utilize the collected flow and rainfall data to execute real time dynamic conditions to produce accurate hydraulic conditions under various simulated scenarios.

   c) System Capacity Evaluation: The dynamic hydraulic model will project wet-weather flows to a predetermined level of service (design storm) to determine any existing capacity deficiencies within the system. The information obtained during this evaluation will be used to assist the County in prioritizing sewer CIPs.

SSMP Elements 9, 10 & 11

The last three required SSMP elements are focused on measuring and reviewing the effectiveness of the SSMP as well as communicating its performance to the public. The County will need to develop a program to address these elements. This program should include procedures for monitoring the program, measuring the effectiveness of each program element and updating program elements. This program should also include periodic SSMP internal audits. In addition, a communication program is required to inform the public regarding the development, implementation, and performance of the County's SSMP.

Section 5

SSMP PROGRAM IMPLEMENTATION SCHEDULE

The SRWCB has provided a timeframe upon which to complete each of the required program components. The permit and reporting schedule states that all wastewater systems needed to apply for permit coverage under the Order by November 2, 2006. Additionally, each system was ordered to start an online Reporting Program within 6 months of WDR adoption. An extension of the Reporting Program requirement was given to systems who executed a Memorandum of Agreement (MOA) by July 1, 2006, allowing the system additional time to attend a training program. The time allotment extended the Reporting Program requirement an additional 2 to 8 months dependent on the region the system resides in.

The element schedule provides completion dates based on service area population, with smaller communities having more time than larger ones. For collection systems serving populations within the range of 2,500 to 10,000, which includes the San Joaquin County UMD, the required program element completion and implementation schedule is presented in Table 5-1. The responsible County staff member for each element is also provided in Table 5-1. The County is required to certify that the SSMP elements are in compliance with the WDR within the time frame shown. This certification is done electronically in the SSO database.

This SSMP Development Plan and Schedule and the final completed SSMP are required to be presented to the County's governing board for approval at a public meeting. The County is not required to send the completed SSMP to the State or Regional Water Boards for review or approval. However, the County must make the document available to the State and/or Regional Water Board upon request. Furthermore, the completed SSMP must be publicly available at the County's office and/or available on the Internet.

The WDR requires that the SSMP be updated every five years to include any significant program changes. Approval by the County's Board is required when significant updates to the SSMP are made. Furthermore, to complete the re-certification process, the County must enter the data into the online SSO database and mail the form to the State Water Board as described in the WDR.

Table 5-1
San Joaquin County UMD
Completion of SSMP Elements Schedule

SSMP Element	Due Date (Pop. < 2.5)[a]	Due Date (2.5 < Pop. < 10)[a]	Responsible County Staff Member
Application for Permit Coverage	Feb. 2, 2006	Feb. 2, 2006	Ron Rall
Reporting Program	Sept. 2, 2007	Sept. 2, 2007	Ron Rall
SSMP Development Plan and Schedule	May. 2, 2008	Feb. 2, 2008	Ron Rall
Goal and Organization	May 2, 2008	May 2, 2008	Ron Rall
Legal Authority	Feb. 2, 2010	Nov. 2, 2010	Ron Rall
Operation and Maintenance Program			Ron Rall
Overflow Emergency Response Program			Ron Rall
FOG Control Program (if needed)			Ron Rall
Design and Performance Provisions	Aug. 2, 2010	May. 2, 2010	Ron Rall
System Evaluation and Capacity Assurance Plan			Ron Rall
Monitoring and Program Modifications			Ron Rall
Program Audits			Ron Rall
Communication Program			Ron Rall
Final SSMP Implementation			Ron Rall

a – Population in Thousands

Table 5-1
San Joaquin County UMD
Completion of SSMP Elements Schedule

SSMP Element	Due Date (Pop. < 2.5)	Due Date (2.5 < Pop. < 10)	Responsible County Staff Member
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Reporting Program	Sept. 2, 2007	Sept. 2, 2007	Ron Rall
SSMP Development Plan and Schedule	May. 2, 2008	Feb. 2, 2008	Ron Rall
Goal and Organization	May 2, 2008	May 2, 2008	Ron Rall
Legal Authority	Feb. 2, 2010	Nov. 2, 2010	Ron Rall
Operation and Maintenance Program			Ron Rall
Overflow Emergency Response Program			Ron Rall
FOG Control Program (if needed)			Ron Rall
Design and Performance Provisions	Aug. 2, 2010	May. 2, 2010	Ron Rall
System Evaluation and Capacity Assurance Plan			Ron Rall
Monitoring and Program Modifications			Ron Rall
Program Audits			Ron Rall
Communication Program			Ron Rall
Final SSMP Implementation			Ron Rall

a – Population in Thousands

CEQA
Environmental Checklist Form

1. **Project Title:**

2. **Lead Agency Name and Address:**

3. **Contact Person and Phone Number:**

4. **Project Location:**

5. **Project Sponsor's Name and Address:**

6. **General Plan Designation:**

7. **Zoning:**

8. **Description of Project:**

9. **Surrounding Land Uses and Setting:**

10. **Other public agencies whose approval is required**

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:
The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Hazards & Hazardous Materials	☐ Hydrology/Water Quality	☐ Land Use/Planning
☐ Mineral Resources	☐ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	☐ Transportation/Traffic
☐ Utilities/Service Systems	☐ Mandatory Findings of Significance	

DETERMINATION:

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.

4) “Negative Declaration: Less Than Significant With Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less Than Significant Impact.” The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, “Earlier Analyses,” may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are “Less Than Significant With Mitigation Measures Incorporated,” describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats, however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.

9) The explanation of each issue should identify:
   a. The significance criteria or threshold, if any, used to evaluate each question; and
   b. The mitigation measure identified, if any, to reduce the impact to less than significant.

I. AESTHETICS

Would the project:

a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☐

II. AGRICULTURE RESOURCES

Would the project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☐
b) Conflict with existing zoning for agriculture use, or a Williamson Act contract?	☐	☐	☐	☐
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☐

III. AIR QUALITY

Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☐

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☐

IV. BIOLOGICAL RESOURCES

Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☐

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☐

V. CULTURAL RESOURCES

Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☐	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☐

VI. GEOLOGY AND SOILS

Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☐	☐
ii) Strong seismic ground shaking?	☐	☐	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☐
iv) Landslides?	☐	☐	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☐

c) Be located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☐

VII. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☐

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☐
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☐
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☐

VIII. HYDROLOGY AND WATER QUALITY

Would the project:

a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☐

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☐
f) Otherwise substantially degrade water quality?	☐	☐	☐	☐
g) Place housing within a 100-year floodplain hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☐
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☐
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☐

IX. LAND USE AND PLANNING

Would the project:

a) Physically divide an established community?	☐	☐	☐	☐
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☐

X. MINERAL RESOURCES

Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☐
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☐

XI. NOISE

Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☐
b) Exposure of persons to or generation of excessive groundbourne vibration or groundborne noise levels?	☐	☐	☐	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels exiting without the project?	☐	☐	☐	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐
f) For a project within the vicinity of a private airstrip, would the project expose people	☐	☐	☐	☐
Residing or working in the project area to excessive noise levels?	☐	☐	☐	☐

XII. POPULATION AND HOUSING

Would the project:

a) induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☐
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☐

XIII. PUBLIC SERVICES

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	☐	☐	☐	☐
Fire protection?	☐	☐	☐	☐
Police protection?	☐	☐	☐	☐
Schools?	☐	☐	☐	☐
Parks?	☐	☐	☐	☐
Other public facilities?	☐	☐	☐	☐

XIV. RECREATION

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☐

XV. TRANSPORTATION/TRAFFIC

Would the project:

a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☐	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☐
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☐
e) Result in inadequate emergency access?	☐	☐	☐	☐
f) Result in inadequate parking capacity?	☐	☐	☐	☐
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☐

XVI. UTILITIES AND SERVICE SYSTEMS

Would the project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☐

c) Require or result in the construction of new construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☐

XVII. MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project area considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☐

STORMWATER
Pollution Prevention
SAN JOAQUIN COUNTY

San Joaquin County Storm Water Management Program Construction Activities

SMALL SITE STORM WATER MANAGEMENT PLAN

JUNE 2004

TABLE OF CONTENTS

Page	
	STORM WATER POLLUTION PREVENTION
1	Background
1	Construction Pollution Prevention
	EROSION CONTROL
2	Primary Concerns related to Erosion and Sedimentation
2	Principles for Controlling Building Site Erosion and Sedimentation
3	Building Lot Drainage
	STEP BY STEP POLLUTION PREVENTION
4	Step 1. Evaluate the Site
4	Step 2. Install Perimeter Erosion and Sediment Controls
5	Step 3. Prepare Site for Construction
5	Step 4. Build the Structure and Install the Utilities
6	Step 5. Maintain the Control Practices
6	Step 6. Re-vegetate the Building Site
7	Step 7. Remove Remaining Temporary Control Measures
	CONSTRUCTION MATERIALS AND HOUSEKEEPING
8	Concrete and Masonry
8	Paints, Sealers and Solvents
8	Adhesives and calk
9	Solid Waste
9	Housekeeping
9	Spills
10	**RESOURCES AND REFERENCE**
	APPENDIX
A-2	Temporary Drains and Swales
A-3	Storm Drain Inlet Protection

BACKGROUND

The Federal Clean Water Act includes requirements for certain cities, counties and urbanized areas to establish programs to reduce pollutants in stormwater runoff and to prohibit non stormwater runoff into a storm drainage system or any water body.

As a result of these requirements, San Joaquin County was required to obtain a Municipal National Pollutant Discharge Elimination System (NPDES) permit for the urbanized areas near the City of Stockton.

The County NPDES permit requires that the County establish a program to minimize stormwater pollution from all activities including any construction activities. State regulations require that any construction project in the State that disturbs over 1 acre of land file for coverage under the State General Construction Permit. Projects less than 1 acre that are part of a larger development also require coverage. Any permitted projects within the County NPDES permit area are regulated by the County.

Information on filing for coverage under the State General Construction Permit is available online at www.swrcb.ca.gov/stormwtr and www.swrcb.ca.gov/~rwqcb5/. Information on the required Stormwater Pollution Prevention Plan is available at the County Public Works Department, or from the State resources above.

This guide is provided to assist developers of small construction projects in complying with the requirements of the State NPDES permit. Implementation of the recommended measures does not ensure compliance with federal, state, and local laws, regulations and ordinances. The burden of compliance rests solely with the owner and developer of each project.

CONSTRUCTION POLLUTION PREVENTION

Construction projects are a major source of potential pollution of our streams, sloughs, and the Delta. Many Californians enjoy the benefits of the State's waterways including fishing, swimming and boating. The waters also provide a habitat for many species of wildlife and plants. Many people also rely on the state waterways for drinking water, industrial water supplies and irrigation. By practicing Best Management Practices (BMPs) during construction you can minimize the impact your project has on the beneficial uses of our waterways.

Most BMPs consist of simple measures that prevent potential pollutants from entering the County storm drainage system or waterways near the construction site. Good housekeeping, common sense, and inexpensive structural controls will significantly reduce the impact of your project on the environment. Installation and proper maintenance of the structural BMPs and an organized construction site will help in preventing violations of storm water laws and regulations.

EROSION CONTROL

Soil erosion and resulting sedimentation are a leading cause of water quality problems in the Delta. Although erosion has long been associated with farming activities, it is also a major concern at construction sites, if the disturbed land is left unprotected. Every phase of a construction project has the potential of contributing significant quantities of sediment-laden runoff. Therefore, as a site is developed, all who are associated with the project must do their part to control erosion.

PRIMARY CONCERNS RELATED TO EROSION AND SEDIMENTATION

- **Water quality.** Sediment is a major pollutant of surface water in the state of California. It impacts water quality by degrading the habitat of aquatic organisms and fish, by decreasing recreational value, and by promoting the growth of nuisance weeds and algae.

- **Local costs.** Sediment that finds its way into streets, storm sewers, and ditches results in additional maintenance costs for local government.

- **Flooding.** Sediment accumulation in streams, lakes, and rivers reduces their capacity, which can result in increased flooding.

- **Property values.** Sediment deposits not only impair water quality but also damage property, thus reducing its use and value.

PRINCIPLES FOR CONTROLLING BUILDING SITE EROSION AND SEDIMENTATION

Erosion control is important on any building site regardless of its size. Usually, the principles and methods for controlling erosion and reducing off-site sedimentation are relatively simple and inexpensive. Here are four basics to be followed when developing a building site.

- **Evaluate the site**. Inventory and evaluate the resources on the lot before building. Location of structures should be based, in large part, on the lot's natural features. Identify trees that you want to save and vegetation that will remain during construction. Also identify areas where you want to limit construction traffic. Wherever possible, preserve existing vegetation to help control erosion and off-site sedimentation.

- **Select and install erosion/sediment control practices.** Determine the specific practices needed, and install them before clearing the site. The more commonly used practices are: vegetative filter strips, silt fence, gravel drives, and runoff inlet protection.

- **Develop a maintenance practice program.** Maintenance of all practices is essential for them to function properly. They should be inspected twice a week and after each rainfall event. When a problem is identified, repair the practice immediately. Also, any sediment that is tracked onto the street should be scraped and deposited in a stable area. *Do not flush sediment from the street with water*.

- **Revegetate the site.** Do so as soon as possible. A well-maintained lot has a higher sale potential.

BUILDING LOT DRAINAGE

The best time to provide for adequate lot drainage is before construction begins. With proper planning, most drainage problems can be avoided. And that's important because correcting a problem after it occurs is usually much more difficult and costly. Here's what it takes to ensure good lot surface and subsurface drainage.

- Minimize drainage to hard paved surfaces to allow water to infiltrate into the soil and to trap sediments within the vegetated areas.

- Position the structure a minimum of 18 inches above street level.

- Divert stormwater runoff away from the structure by grading the lawn to provide at least 6 inches of vertical fall in the first 10 feet of horizontal distance.

- Construct side and rear yard swales to take surface water away from the structure. *(See attached drawing)*

- Avoid filling in existing drainage channels and roadside ditches, since that could result in wetness problems on someone else's property and/or damage to adjacent road surfaces. Any work in the road right of way or a drainage channel requires an Encroachment Permit and is subject to inspection and approval by the County Department of Public Works.

STEP BY STEP POLLUTION PREVENTION

STEP 1. EVALUATE THE SITE

Before construction, evaluate the entire site, marking for protection any important trees and associated rooting zones, unique areas to be preserved, on-site septic system absorption fields, and vegetation suitable for filter strips, especially in perimeter areas.

Identify Vegetation To Be Saved.

- Select and identify the trees, shrubs, and other vegetation that you want to save (*see "Vegetative Filter Strips" under Step 2 below*).

Protect Trees and Sensitive Areas.

- To prevent root damage, do no grade, burn, place soil piles, or park vehicles near trees or in areas marked for preservation.
- Place plastic mesh or snow fence barriers around the tree's dripline to protect the area below their branches.
- Place a physical barrier, such as plastic fencing, around the area designated for a septic system absorption field (if applicable).

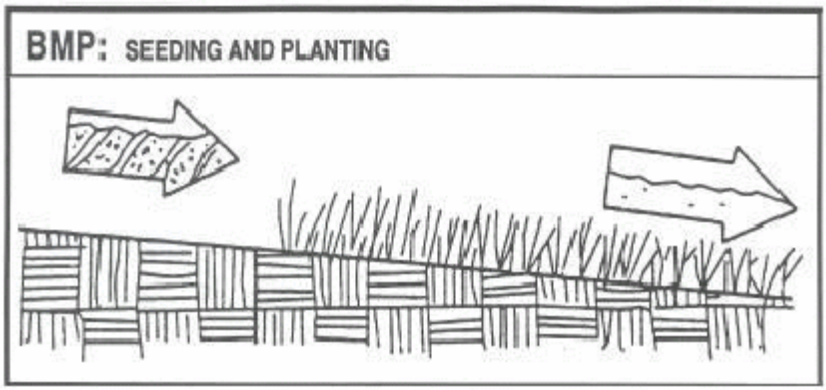
STEP 2. INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS

Identify the areas where sediment-laden runoff could leave the construction site, and install perimeter controls to minimize the potential for off-site sedimentation. It's important that perimeter controls are in place before any other earth-moving activities begin.

Protect Down-Slope Areas.

With Vegetative Filter Strips

- On slopes of less than 6 percent, preserve a 10- to 30-foot wide vegetative buffer strip around the perimeter of the property, and use it as a filter strip for trapping sediment
    - Do not mow filter strip vegetation shorter than 4 inches.



With Fiber Rolls

- Use fiber rolls along the perimeter of a flat lot, or in a terrace pattern on a lot with a significant slope to trap sediment. *(See attached drawing)*

With Silt Fences

- Use silt fences along the perimeter of the lot's downslope side(s) to trap sediment. *(See attached drawing)*

Install Gravel Drive.

- To keep vehicles from tracking mud onto roadways, make this the only lot access. The gravel drive can later serve as a base for a concrete or asphalt driveway.

Protect Storm Sewer Inlets.

- Protect nearby storm sewer curb inlets with stone-filled or gravel-filled geotextile bags or equivalent measures before disturbing soil. *(See attached drawing)*
- Protect on-site storm sewer drop inlets with silt fence material, straw bales, or equivalent measures before disturbing soil.

STEP 3. PREPARE THE SITE FOR CONSTRUCTION

Prepare the site for construction and for installation of utilities. Make sure all contractors (especially the excavating contractor) are aware of areas to be protected.

Salvage and Stockpile the Topsoil/subsoil.

- Remove topsoil (typically the upper 4 to 6 inches of soil material) and stockpile.
- Remove subsoil and stockpile separately from the topsoil.
- Locate the stockpiles away from any downslope street, driveway, stream, lake, wetland, ditch, or drainage way.
- Immediately after stockpiling, temporary-seed the stockpiles with annual rye or winter wheat and/or place sediment barriers around the perimeter of the piles.

STEP 4. BUILD THE STRUCTURE(S) AND INSTALL THE UTILITIES

Construct the home and install the utilities; also install the sewage disposal system and drill the water well (if applicable). See the CONSTRUCTION MATERIALS AND HOUSEKEEPING section for control of pollutants during construction.

STEP 5. MAINTAIN THE CONTROL PRACTICES

Maintain all erosion and sediment control practices until construction is completed and the lot is stabilized.

- Inspect the control practices a minimum of twice a week and after each storm event, making any needed repairs immediately.

- Toward the end of each work day, sweep or scrape up any soil tracked onto roadways. *Do not flush area with water.*
- By the end of the next work day after a storm event, clean up any soil washed off-site.

STEP 6. RE-VEGETATE THE BUILDING SITE

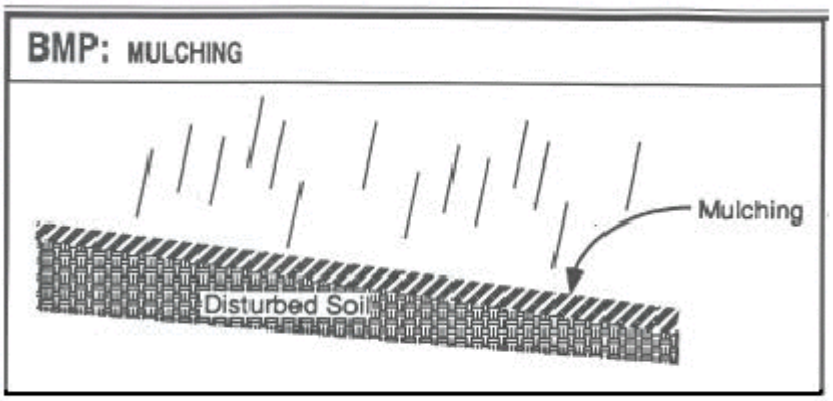
Immediately after all outside construction activities are completed, stabilize the lot with sod, seed, and/or mulch.

Redistribute the Stockpiled Subsoil and Topsoil.

- Spread the stockpiled subsoil to rough grade.
- Spread the stockpiled topsoil to a depth of 4 to 6 inches over rough-graded areas.
- Fertilize and lime according to soil test results or recommendations of a seed supplier or a professional landscaping contractor.

Mulch Newly Seeded Areas.

- Spread straw mulch on newly seeded areas, using 1½ to 2 bales of straw per 1,000 square feet.
- On flat or gently sloping land, anchor the mulch by crimping it 2 to 4 inches into the soil. On steep slopes, anchor the mulch with netting or binding agents. An alternative to anchored mulch would be the use of erosion control blankets.



STEP 7. REMOVE REMAINING TEMPORARY CONTROL MEASURES

Once the sod and/or vegetation is well established, remove any remaining temporary erosion and sediment control practices, such as:

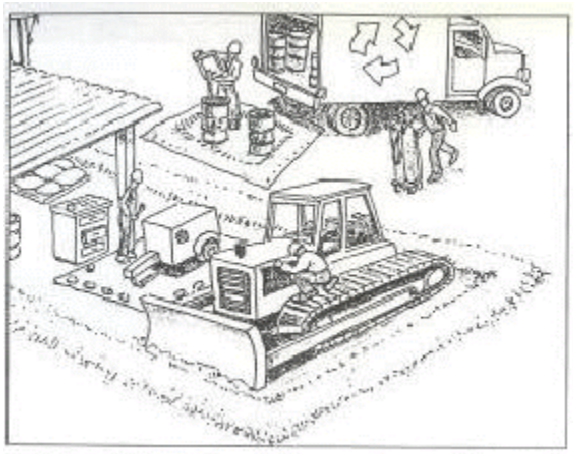
- Down spout extenders. (Or shorten to outlet onto the vegetated areas, allowing for maximum infiltration).
- Storm sewer inlet protection measures.

CONSTRUCTION MATERIALS AND HOUSEKEEPING

Improper storage, use or disposal of construction materials may cause pollutants or sediment to enter the storm drainage system or waterways. As the property owner or prime contractor you may be responsible for the action of employees, tradesmen, and subcontractors who cause, by direct action or neglect, a violation of federal, state or local law. By following good housekeeping and disposal practices during the construction process you not only prevent pollution and avoid possible penalties, you also conserve materials and may reduce your total costs.

CONCRETE AND MASONRY

- Store dry and wet materials under cover and away from drainage areas.
- DO NOT wash out concrete trucks or mortar mixers into storm drains, streets, ditches or waterways.
- Provide a wash out area such as a temporary pit or bermed area. Break up concrete before it fully sets and then properly dispose of the material.



PAINTS, SEALERS AND SOLVENTS

- Properly store all materials to prevent damage to containers or accidental spills
- Consider using recycled paints and materials
- Properly store and dispose of waste materials and containers, recycle when appropriate
- DO NOT wash any waste or spill into storm drains, streets, ditches or waterways

ADHESIVES AND CAULK

- Properly store all materials to prevent damage to containers or accidental spills
- Check container for proper disposal of residue and empty containers

SOLID WASTE

- Provide suitable, water tight, covered containers for small waste items to prevent trash from being blown or flushed from the site.
- Neatly stack large waste items or place in water tight dumpster if waste can leach from the material.
- Clean site daily.
- Provide separate water tight storage for hazardous materials (may require secondary containment).
- Dispose of all materials in accordance with applicable laws and regulations.
- Call the County Solid Waste Hotline at 1-(800) 449-4840 for more information.

HOUSEKEEPING

- Secure any potential pollutants or hazardous materials to prevent accidental spills, upsets or vandalism. Common materials which may pose a hazard include: pesticides, herbicides, fertilizers, detergents, petroleum products, paints and solvents, and other materials such as adhesives and curing agents.
- Use less hazardous materials when possible.
- Keeping the construction site neat, clean, and organized not only prevents pollution, but reduces injury and increases worker productivity.
- Plan ahead for material delivery by providing the necessary storage facility or area. Remember to clean any mud or dirt that is tracked into areas where it could enter the storm drain or a waterway.

SPILLS

- Be prepared - Have a shovel, rags, gloves, absorbent material and a water tight container available
- Clean spilled non hazardous materials by sweeping or absorbing with rags or absorbents. DO NOT hose material away or bury material.
- Cleanup hazardous material only if you have the proper knowledge and safety equipment. Contain spills with sand berms or absorbents. Remember if the material is hazardous, then it must be disposed of in the proper manner.
- For any major spill or spills of toxic materials, call the Fire Department or 911.

RESOURCES AND REFERENCE

Every building site is unique and poses its own restraints and potential pollution and erosion hazards. In many instances, additional or alternative methods are necessary if your lot is:

- Adjacent to a creek, lake, or wetland.
- Has slopes in excess of 6 percent.
- Receives runoff from adjacent areas.

The California Stormwater Quality Association (formerly the California Stormwater Task Force) has produced a Best Management Practices Handbook for Construction Activities that is available for purchase on their website.

http://www.cabmphandbooks.org

The Handbook can also be accessed or downloaded from the world wide web at:

http://www.cabmphandbooks.org

There are also engineers and other consultants that can prepare a pollution prevention and erosion control plan for your particular project conditions.

State and Federal regulations and local information is available on the Internet at:

http://www.swrcb.ca.govhttp://www.swrcb.ca.gov/stormwtr/index.html

http://www.swrcb.ca.gov/~rwqcb5/

http://cfpub1.epa.gov/npdes/

http://www.epa.gov/enviro/index_java.html

http://www.co.san-joaquin.ca.us/pubworks/NPDES.htm

TELEPHONE NUMBERS

County Stormwater	- Office	(209) 468-3000
	- HOTLINE	(209) 468-3055
City of Stockton Stormwater	- Office	(209) 937-8791
	- Spills	(209) 973-8341

County Solid Waste Hotline at	1-(800) 449-4840
County Office of Emergency services	(209) 468-3962
County Environmental Health	(209) 468-3420

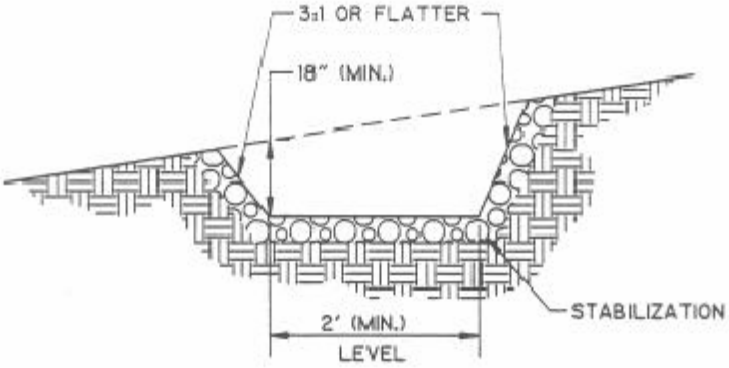
IN AN EMERGENCY CALL 911

SMALL SITE STORM WATER MANAGEMENT PLAN

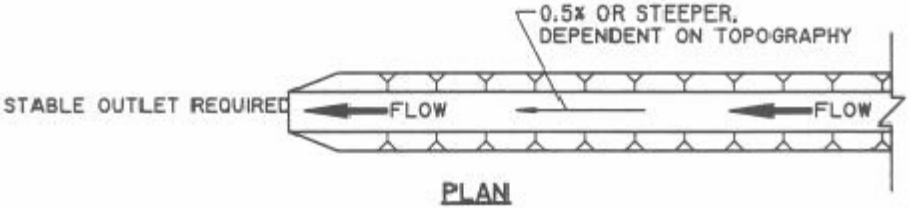
APPENDIX

SAMPLE BEST MANAGEMENT PRACTICES

Additional Information — Temporary Drains and Swales



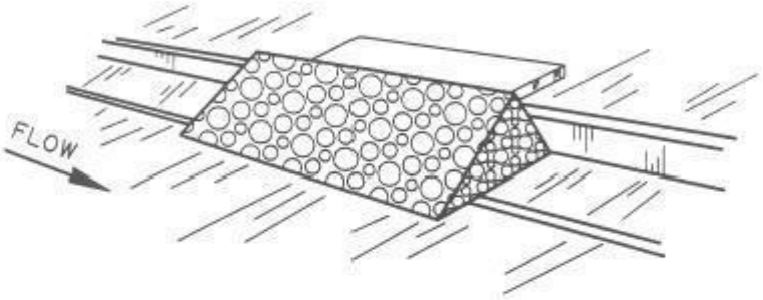
CROSS SECTION

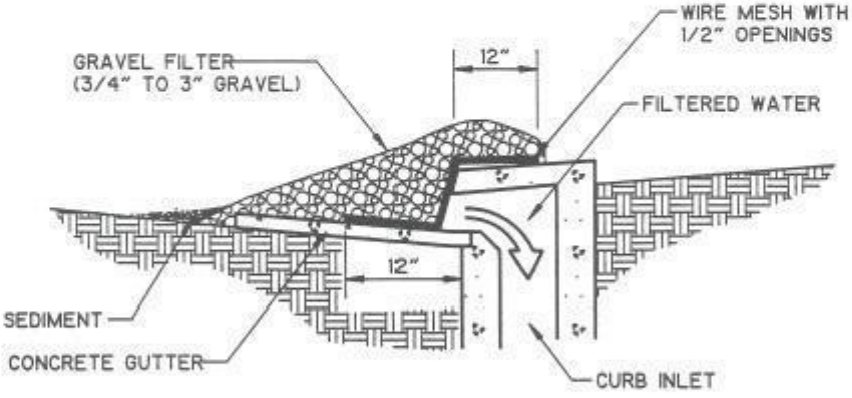


PLAN

TEMPORARY DRAINAGE SWALE

Additional Information — Storm Drain Inlet Protection





GRAVEL AND WIRE MESH FILTER FOR CURB INLET

SITE IMPROVEMENT PLAN
SPECIAL EVENT

SAN JOAQUIN COUNTY COMMUNITY DEVELOPMENT DEPARTMENT
1810 E. HAZELTON AVENUE, STOCKTON CA 95205
BUSINESS PHONE: (209) 468-3121
Business Hours: 8:00 a.m. to 5:00 p.m. (Monday through Friday)

APPLICATION PROCESSING STEPS

STEP 1 **CHECK WITH STAFF** - Development Services Staff will explain the requirements and procedures to you.

STEP 2 **SUBMIT YOUR APPLICATION - When you apply, file all of the following:**

- FEE — The staff will let you know the current cost of filing a Site Improvement Plan. Make checks payable to the San Joaquin County Treasurer.
- FORM — Two (2) copies of the completed information forms (attached) which all owners must sign.
- IMPROVEMENT PLAN — Two (2) copies of a Site Improvement Plan, 24" x 36"
- PLAN COMPLETE — Staff will check your Site Improvement plan. If anything is missing, you will be notified. (Your plan cannot be processed until it is complete.)

STEP 3 **PROCESSING**

- REVIEW AND ACTION — You will route the Site Improvement Plan to any County departments, and other agencies, affected by your proposal. After the approved Site Plan is returned, the staff will approve your Site Improvement Plan if the plan conforms to all conditions. If the plan needs to be modified, you will be so informed. The Director shall either approve or deny a Special Event permit within fifteen working days of receipt of the complete application. **The applicant shall notify the Sheriff's Department of the intent to hold the event at the time the application is submitted to the Community Development Department**. The Sheriff's Department shall have up to ten days to review the application. The Director may extend the time for consideration of the application for up to an additional three working days with the written consent of the applicant.
- FINAL ACTION — The action of the staff is final.

IMPROVEMENT PLAN CHECK LIST

- Size: The Site Improvement Plan must be drawn on 24" x 36" .
- North Arrow, Date and Scale: Use an engineer's scale (e.g., 1" = 20', 1" = 40', etc). The direction of "north" should be pointing towards the top (or right) of the page.
- Vicinity Map: A reduced size vicinity map showing the location of the property in relation to surrounding streets.
- Streets and Easements: Location, widths and names of all streets and easements bordering on the property with access details.
- Adjacent Properties: The type of development (e.g., residential, vacant, etc.) illustrated on all adjacent properties with all property owner names.
- Property Lines: All property lines or boundary lines of the parcel with dimensions.
- Existing and Proposed structures, tents, booths and similar features shall be shown on plan.
- Parking and Driveways: The location, dimensions and surface material of all existing and proposed parking and driveways. Calculations indicating the number of required spaces must be shown.

SITE IMPROVEMENT PLAN - SPECIAL EVENT

SAN JOAQUIN COUNTY COMMUNITY DEVELOPMENT DEPARTMENT

FILE NUMBER: IP-_____

TO BE COMPLETED BY THE APPLICANT PRIOR TO FILING THE APPLICATION	
Owner Information	**Applicant Information**
Name:	Name:
Address:	Address:
Phone:	Phone:

PROJECT DESCRIPTION
Proposal
Description of the proposed project:

REQUIREMENTS	
Assessors Parcel No.(s):	Number of Parcels:
Date/Time of Event:	Maximum Persons Anticipated at One Time:
Date/Time of Event:	Parcel Size:
Date/Time of Event:	Parking Spaces Required:
Date/Time of Event:	Number of Employees:

AUTHORIZATION SIGNATURES

ONLY THE OWNER OF THE PROPERTY OR AN AUTHORIZED AGENT MAY FILE AN APPLICATION.

I, the Owner/Agent agree, to defend, indemnify, and hold harmless the County and its agents, officers and employees from any claim, action, or proceeding against the Owner/Agent's project.

I, further, certify under penalty of perjury that I am (check one):

☐ Legal property owner (owner includes partner, trustee, trustor, or corporate officer) of the property(s) involved in this application, or

☐ Legal agent (attach proof of the owner's consent to the application of the property's involved in this application and have been authorized to file on their behalf., and that the foregoing application statements are true and correct.

I understand the approved permit must be available at the event site during all hours of operation. I agree to present the approved permit to any official upon request.

Print Name: _____ Signature: _____ Date: _____

Print Name: _____ Signature: _____ Date: _____

Print Name: _____ Signature: _____ Date: _____

SAN JOAQUIN COUNTY
PARKS AND RECREATION
11793 N. MICKE GROVE ROAD, LODI, CALIFORNIA 95240
209/953-8800 OR 209/331-7400

USE PERMIT AGREEMENT

Function Date: 09/16/2007 Function: UNION PICNIC Estimated Attendance: 600
Applicant's Name: MARCUS WILLIAMS Drivers License Number:
Telephone Numbers: Work: (209) 463-3283 Pager: (209) 615-9452
Organization: SEIU LOCAL 1021
Address: 37 HUNTER SQUARE PLAZA, STOCKTON, CA 95202
Reservation Comments: PLEASE INFORM YOUR GUESTS OF THE PARKING FEES
Use Permit Number: 07P7HKNU Receipt Date: Receipt Number:

Processing Fee: 10.00
Micke Grove Park, The Delta: 09/16/2007 Setup 9:00am, Start 12:00pm, End 9:00pm, Site Fee: 260.00
TOTAL DUE: 270.00

Open to the public:	No
Selling meals, raffle tickets, alcohol, or mrchndse:	Yes
Participation fee:	No
ABC license required:	Yes
Health permit required:	No
Insurance required:	No
Potluck:	No
Supplying food and beverages:	Yes
Is this a catered event:	Yes
Supplying alcoholic beverages:	Yes
Guests are bringing alcoholic beverages:	No
Paying guests way:	No
Guests paying their own way:	Yes
Pre-paid passes:	No
Home made passes:	No
Zoo Passes:	No
Security required:	No
DJ, Band or PA System:	Yes
Hopper:	Yes
Dunk tank:	No
Trailer BBQ:	No
Lawn pass required:	No
Understand cancellation policy:	Yes
Addendum required:	No

Total Fees and Signed Agreement Due Back: 07/31/2007

SAMPLE CONTRACT

1. ASSUMPTION OF LIABILITY: AGREEMENT TO HOLD HARMLESS
The undersigned, as an authorized representative of the above-named organization or group, and on behalf of such organization or group, hereby accepts full responsibility for any breakage or damage to property or structures and for the deportment and conduct of those attending the function for which the facility is requested. The above-named organization or group assumes all risks incident to or connected with its operation under such Park Facility Use Permit, and shall be solely responsible for liabilities arising from accidents or injuries to persons or property resulting from the function or activity. The above-named organization or group further agrees to indemnify, defend and hold harmless the County of San Joaquin, its elected and appointed Boards, Commissions, Officers, Agents, and Employees from any claims, suits, losses or damages for injury to persons or property arising out of activities of such organization or groups, its members, agents, and employees, upon Park premises or facilities.

2. AGREEMENT TO ABIDE BY RULES AND REGULATIONS
The undersigned, as an authorized representative of the above-named organization or group, represents that he/she has read the Rules and Regulations appended hereto, agrees to make these Rules and Regulations known to persons attending the function or activity, and give unqualified assurances that no violation of such Rules and Regulations shall be allowed to occur on the premises or facilities. The undersigned represents that he/she understands that permission for use of the facility is contingent upon compliance with these Rules and Regulations and such permission may be revoked at any time upon the failure of persons attending the function or activity to fully comply with these Rules and Regulations.

3. UNDERSIGNED, OR REPRESENTATIVE, TO BE PRESENT THROUGHOUT
If an agreement is granted for the function or activity, the undersigned agrees to be present, or to have a representative designated by the undersigned present, during the entire period of use of the facility by the above-named organization or group.

DECLARATION
I declare, under penalty of perjury, that I have carefully read and considered the foregoing Agreement and the appended Rules and Regulations, stated on the attached "Use Permit Rules and Information," and that the information I have applied herein is true and correct.

Signature of Applicant/Agent: Date:
Parks and Recreation Authorization: Date:

READ FRONT AND BACK OF PERMIT SIGN, AND RETURN FOR AUTHORIZATION

USE PERMIT RULES AND INFORMATION

PARKING FEES-
Fees are charged daily and are due UPON ENTRY into a park. Facility rental fee does not include parking for yourself, your vendors or for your guests. Pre-paid park entry passes can be purchased from the Administration Office in advance of function at a discounted rate based on the current parking fee. Pre-paid park entry passes are date stamped, non-refundable, and must be passed out by YOU prior to your function. They cannot be left at the park entry gate or passed out at the park entry gate.
INSTRUCTIONS FOR USE – Place half the parking pass in the Pay Envelope or give it to the Fee Collector. Place the other half of the parking pass on dash of vehicle in plain view.

BUSES effective 1/1/07 the bus fee will be eliminated and any vehicle exceeding 22 ft. in length will be charged $10.00 for parking.

PARKING – Please park in a regular parking stall during the function. Do not block handicapped access or parking areas. Vehicles illegally parked will be cited.

LOADING ZONES – are for loading only, while persons are actually engaged in loading or unloading merchandise or persons. Parking on the lawn is not allowed unless you have a facility reservation and have received prior approval from the Administrative Office. A lawn pass must be issued.

CANCELLATION OF RESERVATIONS
OUTDOOR FACILITY cancellations must be made at least 21 days prior to function to receive a refund.
INDOOR FACILITY cancellations must be made at least 90 days prior to function to receive a refund.
There is a $25.00 Administration Fee for all cancellation. Processing fees are non-refundable.

THERE ARE NO REFUNDS FOR INCLEMENT WEATHER.

CLEANING DEPOSTIS are normally returned by the Auditor's Office approximately three (3) weeks after the function, if approved.

PARTY HOPPERS/DUNK TANKS
The Parks & Recreation Department must approve use of all apparatus prior to the completion of a reservation. Only those companies with approved Operational Permits and insurance on file with the Department are allowed. ***If you do not receive prior approval you will be asked to remove the apparatus.*** Party Hoppers and Dunk Tanks are only allowed in certain areas. Dunk tanks are only allowed in certain areas, on certain days.

UTILITIES (Electric and water) are provided at outdoor shelters. Electrical service is limited to convenience only. Please do not overload. Utilities are provided for convenience and cannot be guaranteed. THERE ARE NO REFUNDS FOR FAILURE OF UTILITIES.

AMPLIFIED SOUND Permission to have amplified sound must be noted on Use Permit. A signed Amplified Sound Permit is required. Volume must be kept at a reasonable level showing consideration for other facility users. Ranger staff and other County personnel shall have the discretion to determine what is reasonable.

DECORATIONS – DO NOT USE tacks, nails, or staples on picnic tables or facility structures. TAPE ONLY! Signs can be posted on your stakes and must be removed by you at the end of function. Do not post signs on park structures or posts.

INSURANCE CERTIFICATES may be required if, in the judgment of the Director of Facilities Management or his/her designated representative, the risk of the event warrants such insurance.

TIME LIMITS on Use Permit Agreement must be adhered to or permittee will pay additional rental fees and my be excluded from future use of facilities.

DANCE PERMITS are required by the County for public dances and must be obtained through the Building Inspection Department (Planning).

HEALTH PERMITS are required if event is open to the public and you are selling food.

ALCOHOL BEVERAGE CONTROL (ABC) Permit is required if your group is selling alcohol or if you are serving alcohol and are charging your guests to attend your function.

CANS AND BOTTLES are not permitted in the Amphitheater during concerts. Permittee is responsible for guests adherence to rules.

ALL SPECIAL CONDITIONS not covered in the Use Permit Agreement must be noted on your Use Permit Agreement and approved by the Director of Facilities Management or his/her designated representative.

FEES subject to increase.

All state and local laws apply on park property.

This reservation system invites all to participate regardless of race, color, national origin, handicap, or age.

Originally Established: March 2004
Currently undergoing revisions
DRAFT as of July 2008

Maintenance Staff Guide

San Joaquin County

Department of Public Works

Stormwater Management Division

(209) 468-3055

Section 1
Introduction

San Joaquin County (SJCO) "*Maintenance Staff Guid*e" is not designed to, nor does it establish a legal standard of care. It is published solely for the information and guidance of the employees of San Joaquin County. It is subject to modifications as conditions warrant. It is not intended that any standard of conduct or duty toward the public shall be created or imposed by the publication of this *Maintenance Staff Guide*.

The County Operation and Maintenance Sections are assigned the care and upkeep of SJCO facilities such that the investment in facilities will be preserved and the maximum benefits afforded by and to be available to the public. The Maintenance employee should attempt to perform each operation in the safest and most efficient manner, while maintaining good relations with the public. The employee should understand the contents of this *Maintenance Staff Guide*.

1.1 Important Terms

In beginning the discussion of stormwater quality management as it relates to SJCO maintenance activities, it is beneficial to know the meaning of some terms that will be used. Some of these terms may be completely new, whereas others may be recognized, but not very familiar. The definitions provided here are conceptual, and these terms may be more completely defined in subsequent portions of this document or in the glossary (Appendix A- Acronyms and Definition of Terms).

Clean Water Act: The Federal Clean Water Act (Clean Water Act) prohibits the discharge of pollutants to waters of the United States unless the discharge is covered by the terms of a discharge permit. The Clean Water Act includes guidelines for regulating discharges from stormwater drainage systems for certain municipalities, industries, and construction activities.

National Pollutant Discharge Elimination System (NPDES): The national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing wastewater and stormwater discharge permits under the Clean Water Act.

Maximum Extent Practicable (MEP): The extent of implementation of stormwater management practices that are effective at reducing stormwater pollution except when any of the following conditions are met: (1) other effective management practices would achieve greater or substantially the same pollution control benefits; (2) the management practice would not be feasible; (3) the cost of implementing the management practice would greatly outweigh the probable pollution control benefits; or (4) implementation of the management practice would

compromise other legal and institutional constraints, expectations, or obligations imposed by federal and state statutes or case law.

Stormwater Management Plan (SWMP): The plan that describes the SJCOO program to reduce the discharge of pollutants from stormwater drainage systems, facilities, properties, and activities to the maximum extent practicable. The SWMP also describes assignment of responsibilities for implementing stormwater best management practices, as well as training, public education and participation, monitoring, program evaluation, and reporting activities.

Best Management Practice (BMP): Those stormwater management practices selected for implementation under the SWMP by meeting the MEP criteria. The array includes: treatment requirements, operating procedures, and management practices designed to control pollutants from typical SJCOO activities.

Maintenance Stormwater Protection Program (MSWPP): The component of the SWMP that describes:

1. The program to implement BMP's as part of the ongoing maintenance activities for existing properties, facilities, and activities;

2. Surveillance activities to help manage potential stormwater pollution from accidental spills, illicit connections, illegal discharges, and illegal dumping within SJCOO rights-of-way; and

3. Implementation of BMPs to reduce the potential for stormwater pollution at facilities by minimizing contact between stormwater and the various substances used.

1.2 Purpose and Scope of This Maintenance Staff Guide

This Maintenance Staff Guide addresses the implementation of stormwater BMPs during maintenance activities and during activities conducted at Maintenance Facilities.

This Maintenance Staff Guide addresses BMPs for the following Maintenance activities:

- Flexible Pavement – A Family
- Rigid Pavement – B Family
- Slopes, Drainage, and Vegetation – C Family

- Litter, Debris, and Graffiti – D Family
- Landscaping – E Family
- Environmental – F Family
- Bridges – H Family
- Other Structures – J Family
- Electrical – K Family
- Traffic Guidance – M Family
- Storm Maintenance – S Family
- Management and Support – T Family

BMPs to reduce the discharge of potential pollutants to stormwater drainage systems or watercourses are also described for preventing, eliminating, or responding to:

- Accidental spills
- Illicit Connections
- Illegal Dumping

Guidance is also provided to prevent or control the discharge of potential pollutants via non-stormwater discharges or operations conducted at Maintenance facilities through implementation of BMPs related to:

- Material storage controls
- Housekeeping practices
- Vehicle and equipment fueling
- Vehicle and equipment pressure washing
- Vehicle and equipment maintenance and repair
- Outdoor loading and unloading of materials

- Outdoor storage of materials
- Waste minimization, handling, and disposal
- Building and grounds maintenance

1.3 Organization of this Maintenance Staff Guide

The remainder of Section 1 provides an introduction to stormwater quality management as it relates to maintenance activities for the facilities.

Section 2 describes the general objectives of the MSWPP and discusses potential pollutants of concern for maintenance activities and Maintenance Facility activities that are related to water quality. Section 2 also provides a reference table that can be used to identify BMPs applicable to specific highway maintenance activities, highway surveillance activities, Maintenance facility operations, and public education activities.

Section 3 describes how Maintenance personnel will gather information about the implementation of BMPs, learn from the information that is collected, and provide feedback that will result in a continuous improvement of the MSWPP.

1.4 Background of Stormwater Regulation

Federal regulations for controlling the discharge of pollutants from stormwater drainage systems were issued by the U.S. Environmental Protection Agency in 1990. These regulations require that stormwater discharges from municipal stormwater drainage systems, defined industrial facilities, and construction activities obtain NPDES permits.

The fundamental requirements of the regulations are:

- Municipal. The federal stormwater regulations require the operators of municipal stormwater drainage systems to develop and implement programs to: reduce pollutants from runoff from commercial and residential areas; detect and eliminate illicit connections and illegal discharges to the stormwater drainage system; monitor and control the discharge of pollutants from landfills, hazardous waste treatment, disposal and recovery facilities, and certain industrial facilities; and reduce pollutants in stormwater runoff from construction sites. Operators of municipal stormwater drainage systems must also demonstrate adequate legal authority to control discharges to their system, develop and implement a stormwater quality monitoring program, identify fiscal requirements of the various programs and the associated funding sources, and prepare annual reports describing program implementation.

- Industrial. The federal stormwater regulations define 11 categories of industries subject to stormwater permitting requirements. Some examples of such industrial activities are manufacturing facilities, hazardous waste treatment, storage, or disposal facilities, landfills, recycling facilities, steam electric power generating facilities, and transportation facilities. The basic requirements of the regulations are elimination of most non-stormwater discharges to stormwater drainage systems and receiving waters, preparation and implementation of

both a stormwater pollution prevention plan and a monitoring program, recordkeeping, and annual reporting.

Any person who violates a NPDES permit condition is subject to a civil penalty not to exceed $27,500 per day per violation. The Clean Water Act also provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under an NPDES permit, including reports of compliance or non-compliance, is subject to a fine of not more than $10,000 or to imprisonment for not more than two years, or both. Additionally, the state's Porter-Cologne Water Quality Act provides for civil and criminal penalties that, in some cases, may be greater than those under the Clean Water Act.

In California, the U.S. Environmental Protection Agency has delegated its authority to issue National Pollutant Discharge Elimination permits to the State Water Resources Control Board and the nine Regional Water Quality Control Boards.

The Clean Water Act and the federal stormwater regulations require that stormwater best management practices be implemented to control pollutants to the maximum extent practicable. Although the concepts of maximum extent practicable and "practicability" are not explicitly defined in the Clean Water Act or the federal regulations, the meaning of these concepts is evolving and becoming progressively clearer through emerging case law and regulatory practice.

SJCOO is committed to implementing the BMPs described in the SWMP. As part of implementing its SWMP, SJCOO will regularly review its activities, inspect its facilities, oversee and guide its personnel, and conduct focused studies in order to refine, enhance, and improve best management practices. Information obtained will support responsible management of the limited resources available to implement the best management practices and control pollutants from entering stormwater drainage systems to the MEP. This monitoring and evaluation program serves as a quality control mechanism to help assess the effectiveness of the implementation of activities as required by the statewide SWMP. The program evaluation will be an iterative process—a continuous loop of gathering information about implementation, evaluating and learning from the information that is collected, and providing feedback that will result in continuous improvement.

Section 2
Objectives of Maintenance Stormwater Protection Program

2.1 Purpose of this Section

This section describes the general objectives of the MSWPP. The SJCOO Stormwater Discharge Permit (Permit) [pending] and regulatory background are discussed and the pollutants of concern are described. These pollutants are the constituents which the BMPs are intended to control.

2.2 Permit and Regulatory Background

The Permit, like other stormwater and wastewater permits, is intended to protect the rivers, streams, lakes, bays, and other surface waters in California. The Central Valley Regional Water Quality Control Board (CVRWQCB) has established specific standards and criteria which apply to local surface waters. The standards vary depending on the location and the sensitivity of the surface waters.

The standards and objectives for each surface water are found in the RWQCB Basin Plan for each region. For example, a Sierra stream will have different standards than ocean waters. A classification by the RWQCB of a surface water as "cold freshwater habitat" means that it should generally support trout and may also support migrating fish, such as salmon and steelhead. This classification sets a much lower limit on the amount of various constituents that can be discharged to surface waters, such as nutrients that could adversely affect oxygen levels.

2.3 General Objectives of the Program

The objective of the MSWPP is to ensure that maintenance activities are conducted in a manner which prevents or controls the amount of pollutants discharged to surface waters. SJCOO is prepared to facilitate this objective and to comply with the Permit.

The Permit and SWMP require that SJCOO use BMPs to control potential pollutants that could be discharged to stormwater drainage systems. Maintenance field personnel play a key role in this program: they observe and correct situations that could cause water pollution, such as roadside dumping. In addition, they conduct operations such as road and bridge repair and vegetation management utilizing BMPs described in this Maintenance Staff Guide. Other BMPs

described herein are intended for use at SJCOO Maintenance Facilities. The BMPs described in this Maintenance Staff Guide have been selected to focus on those stormwater related pollutants of concern most likely to come from maintenance activities or facilities. The following sections discuss these pollutants of concern in stormwater discharges. Successful implementation of these BMPS will mean that SJCOO is complying with the Permit and doing its part in protecting waterways.

2.4 Pollutants of Concern for Maintenance Activities and Facilities

Maintenance Activities are organized into several families, each of which is concerned with various elements of maintenance. Within each family, there are numerous specific activities, each of which may contribute pollutants via the stormwater drainage system. Many of these activities are also conducted at SJCOO maintenance facilities.

"Pollutants of concern" include a broad range of materials that could result in adverse impacts of discharged to receiving waters. SJCO maintenance activities involve the use of a wide variety of products. Under normal, intended conditions of use, these materials are generally not considered "pollutants of concern". However, if these products are used, stored, spilled, or disposed of in a way that may cause theme to contact stormwater, they may become a concern for water quality. The typical pollutants generated by SJCO maintenance activities and at SJCO maintenance facilities are described below.

2.4.1 Petroleum Products

Petroleum products (e.g. gasoline, diesel fuel, motor oil, other lubricants, asphalt) are common pollutants deposited on the traveled highway. Some fuels and lubricants contain additives, which may themselves be toxic to humans and aquatic life.

Potential sources of petroleum products from SJCO activities include leaks form vehicles and machinery and maintenance activities such as fueling or changing oil, and washing. Although petroleum products are commonly used on a daily basis, it is important to be careful about how they are used and disposed of. Another common petroleum product used in SJCO maintenance activities is asphalt (especially cold mix), which, while not a pollutant under normal conditions of use, could potentially contribute pollutants to surface waters if mishandled or disposed of improperly.

2.4.2 Sediment

In general, sediment is considered a pollutant when it significantly exceeds natural concentrations. Sometimes other potential pollutants (e.g., lead) may become attached to sediments and are transported with the sediments to receiving waters, increasing the potential for water quality impacts.

Possible sources of sediment in runoff from maintenance facilities and highway maintenance activities include the tracking, transport, and storage of loose bulk materials (e.g., sand or other aggregate), in addition to construction-related and soil erosion.

2.4.3 Litter and Debris

Litter and debris includes items such as paper, aluminum cans, Styrofoam cups, and other items commonly discarded which can be transported by wind and stormwater into the storm drainage system. In addition, to impacting water quality, these items may obstruct the stormwater drainage system.

2.4.4. Metals

The term “metals”, as used here, refers to dissolved and suspended metals. Metals found in highway stormwater runoff are considered pollutants, because above a certain threshold even low concentrations of these materials may harm aquatic life.

These metals come from various sources and activities, including fuel combustion, brake pad wear (copper), tire wear (cadmium and zinc), metal corrosion, pressure treated wood and creosote posts used for guard rails (arsenic), paints, herbicides, and other materials.

2.4.5 pH

The pH of a water sample is a measure of its acidity or alkalinity. Water that is acidic or alkaline potentially causes harm to aquatic organisms or consumers of the water, and may even result in damage to equipment and materials.

Some SJCO maintenance activities that may change the pH of runoff include the storage of cracked batteries resulting in leaking battery acid, underpass washing and management of concrete wastes.

2.4.6 Nutrients

Certain forms of nitrogen and phosphorous are used as nutrients by aquatic plants. Plant growth in surface water systems is often limited by available phosphorous. While some levels of nitrogen and phosphorous are necessary for aquatic plant life, high levels of these nutrients may cause abnormal algal blooms which contribute to low dissolved oxygen levels and can result in fish kills.

Some of the possible sources of nitrogen and phosphorous from SJCO maintenance activities and facilities include storage of fertilizers, decaying plant materials from tree trimming and vegetation management, and gasoline and diesel exhaust (nitrous oxides).

2.4.7 Organic Compounds

Common materials used in a variety of maintenance activities including motor fuels, solvents (such as paint thinner, degreasers, and parts cleaning fluids), and certain paints, deicing chemicals, crack and joint repair products, and asphalt.

2.4.8 Other Pollutants

Other pollutants originating from SJCO maintenance facilities and activities include pesticides and herbicides, detergents, and epoxy resins.

Pesticides and herbicides are organic chemicals that are usually toxic above certain concentrations and can be persistent in the environment. This means that these materials biodegrade slowly and may accumulate through the food chain, causing harm to certain organisms. Pesticides and herbicides are used in SJCO chemical weed control and integrated pest management activities.

Synthetic detergents and their additives also contain a variety of chemicals that are potentially harmful in the environment. Some of these additives, such as bleaches, dyes, fragrances, and enzymes, are toxic to aquatic life. Detergents are commonly used in cleaning and washing activities as part of routine maintenance of vehicles and equipment.

Some bonding and adhesive materials, and protective coatings contain epoxy resins. SJCO maintenance activities that may use epoxy resins include repairs of cracks, joints, bridges, barriers, and irrigation lines. Some of the constituents of epoxy products may be toxic to aquatic life, and some are potentially carcinogenic (cancer-causing) to humans.

2.5 Incorporation of BMPs into Maintenance Programs and Activities

As described above, the potential pollutants of concern for SJCO maintenance activities include petroleum products, sediment, trash, metals, acids/alkalines, nutrients, organics, and other contaminants. Many of these potential pollutants can be prevented from being discharged via the storm drainage system. This can be achieved by selecting and implementing appropriate BMPs. There are two types of BMPs which may be used as appropriate: source controls, and treatment controls.

Source controls are designed to keep pollutants form coming in contact with stormwater, and are generally the most cost-effective approach to stormwater pollution control. Maintenance personnel are encouraged to use source controls whenever possible.

Treatment controls capture and remove pollutants from stormwater before the runoff leaves the facility. These should only be considered in cases where the pollutants or amounts are such that a treatment control may solve the problem more efficiently, and/or where there is a nearby sensitive receiving water that requires backup controls. Treatment controls (e.g., oil/water separators) are typically more expensive to construct and maintain and, as such, require careful review of their financial feasibility.

SJCO maintenance personnel should consider implementing both source control BMPs and treatment control BMPs at maintenance facilities and during maintenance activities that potentially contribute pollutants to stormwater runoff.

SJCO has developed a wide range of BMPs described in Appendix B (Maintenance BMP Cut-Sheets) that are suitable for implementation by maintenance personnel.

2.5 How to Use Table 2-1 and Appendix B

Table 2-1 provides a matrix that identifies BMPs that are applicable to maintenance activities, operations at maintenance facilities, and public education activities conducted by Maintenance. Detailed descriptions and guidance regarding each BMP is provided in the “cut sheets” in Appendix B.

Table 2-1
Recommended BMPs for Maintenance Activities

Maintenance Activities	Related SWMP BMP	Activity-Specific Cut Sheet	Page No.
A Family (Flexible Pavement)			
Bridge and Road Surface Maintenance	MD 14 Bridge and Road Surface Maintenance	A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-3
Crack and Joint Repair	MD 14 Bridge and Road Surface Maintenance	A1 Crack and Joint Repair A/B/C/h/J/K/M/S Bridge and Road Surface Maintenance	B-5 B-3
Asphalt Work	MD 14 Bridge and Road Surface Maintenance	A2 Asphalt Work A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-6 B-3
Fog Seals/Chip Seals	MD 14 Bridge and Road Surface Maintenance	A2 Asphalt Work A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-6 B-3
Pothole Repairs	MD 14 Bridge and Road Surface ' Maintenance	A4 Pothole Repairs A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-7 B-3
Pavement Grinding and Removal	MD 14 Bridge and Road Surface Maintenance	A9 Pavement Grinding and Removal A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-8 B-3

Table 2-1
Recommended BMPs for Maintenance Activities

Maintenance Activities	Related SWMP BMP	Activity-Specific Cut Sheet	Page No.
B Family (Rigid Pavement)			
Concrete Work	MD 14 Bridge and Road Surface Maintenance	B2 Concrete Work A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-9 B-3
Mudjacking and Drilling	MD 14 Bridge and Road Surface Maintenance	B9 Mudjacking A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-10 B-3
C Family (Slopes/Drainage/Vegetation)			
Drainage Culverts and Apputenances	MD 11 Stormwater Drainage System Facilities Inspection and Cleaning	C Stormwater Drainage System Facilities Inspection and Cleaning	B-11
Lateral Support (Roadway Shoulder Maintenance)	MD 14 Bridge and Road Surface Maintenance	C1 Lateral Support (Roadway Shoulder Maintenance	B-13
Detention/Retention Basin and Infiltration Device Maintenance	MD 15 Detention/Retention Basin and Infiltration Device Maintenance	C5 Detention Basin and Infiltration Device Maintenance C Stormwater Drainage System Facilities Inspection and Cleaning	B-14 B-11

Table 2-1
Recommended BMPs for Maintenance Activities

Maintenance Activities	Related SWMP BMP	Activity-Specific Cut Sheet	Page No.
C Family (Slopes/Drainage/Vegetation) - continued			
Illicit Connection Detection and Removal	MD 9 Illicit Connection Detection, Reporting and Removal	C9 Illicit Connection Detection, Reporting and Removal C Stormwater Drainage System Facilities Inspection and Cleaning	B-16 B-11
D Family (Litter/Debris/Graffiti)			
Street Cleaning	MD 10 Street Cleaning	D Street Cleaning	B-20
Illegal Dumping Control	MD 8 Illegal Dumping Control	D2 Illegal Dumping Control D Street Cleaning	B-22 B-20
Sweeping Operations	MD 10 Street Cleaning	D3 Sweeping Operations D Street Cleaning	B-26 B-20
Litter and Debris Removal	MD 10 Street Cleaning	D4a Litter and Debris Removal D Street Cleaning	B-27 B-20
Anti-Litter Signs	MD 34 Anti-Litter Signs	D4b Anti-Litter Signs D Street Cleaning	B-28 B-20
Unidentified Spills	MD 1 Emergency Response and Cleanup Practices	D5a Emergency Response and Clean-Up Practices D Street Cleaning	B-29 B-20

Table 2-1
Recommended BMPs for Maintenance Activities

Maintenance Activities	Related SWMP BMP	Activity-Specific Cut Sheet	Page No.
D Family (Litter/Debris/Graffiti)			
Graffiti Removal	MD 10 Street Cleaning	D6 Graffiti Removal D Street Cleaning	B-31 B-20
Adopt-a-Street Program	MD 35 Adopt-a-Street/Adopt-a-Wall	D9 Adopt a Street Program D Street Cleaning	B-32 B-20
E Family (Landscaping)			
Vegetation Management	MD 12 Vegetation Management	E Vegetation Management	B-33
Chemical Weed Control	MD 12 Vegetation Management	E1a Chemical Weed Control E Vegetation Management	B-35 B-33
Mechanical Weed Control	MD 12 Vegetation Management	E1 b Mechanical Weed Control E Vegetation Management	B-36 B-33
Tree and Shrub Pruning	MD 12 Vegetation Management	E2a Tree and Shrub Pruning E Vegetation Management	B-37 B-33
Tree and Shrub Removal	MD 12 Vegetation Management	E2b Tree and Shrub Removal E Vegetation Management	B-38 B-33
Brush Chipping	MD 12 Vegetation Management	E2c Brush Chipping E Vegetation Management	B-39 B-33
Irrigation (Water) Line Repairs	MD 20 Non-Stormwater Discharges	E3a Water Line Repairs E Vegetation Management	B-40 B-33

Table 2-1
Recommended BMPs for Maintenance Activities

Maintenance Activities	Related SWMP BMP	Activity-Specific Cut Sheet	Page No.
E Family (Landscaping)- continued			
Irrigation (Watering) Potable and Non-Potable	MD 20 Non-Stormwater Discharges	E3b Irrigation (Watering) Potable and Non-Potable E Vegetation Management	B-41 B-33
Erosion Control	MD 12 Vegetation Management	E9 Erosion Control E Vegetation Management	B-42 B-33
F Family (Environmental)			
Non-Stormwater Discharges	MD 20 Non-Stormwater Discharges	F2 Non-Stormwater Discharges	B-43
H Family (Bridges)			
Welding and Grinding	MD 14 Bridge and Road Surface Maintenance	H2 Welding and Grinding A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-46 B-3
Sand Blasting and Hydro Blasting	MD 14 Bridge and Road Surface Maintenance	H7a Sand Blasting, Wet Blast with Sand Injection, and Hydro Blasting A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-47 B-3
Painting	MD 14 Bridge and Road Surface Maintenance	H7b Painting A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-48 B-3

Table 2-1
Recommended BMPs for Maintenance Activities

Maintenance Activities	Related SWMP BMP	Activity-Specific Cut Sheet	Page No.
H Family (Bridges)- continued			
Irrigation (Water) Line Repairs	MD 20 Non-Stormwater Discharges	E3a Water Line Repairs E Vegetation Management	B-40 B-33
Bridge Repairs	MD 14 Bridge and Road Surface Maintenance	H9a Bridge Repairs A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-49 B-3
J Family (Other Structures)			
Pump Stations	MD 31 Pump Station Cleaning	J1 Pump Station Cleaning A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-50 B-3
Tube and Tunnel Washing	MD 10 Street Cleaning	J2 Underpass Washing A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-52 B-3
Tow Truck Operations(	MD 1 Emergency Response and Cleanup Practices	J5 Tow Truck Operations A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-53 B-3-
Lane Scrubbing Operations	MD 10 Street Cleaning.	J7 Lane Scrubbing Operations A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-54 B-3

Table 2-1
Recommended BMPs for Maintenance Activities

Maintenance Activities	Related SWMP BMP	Activity-Specific Cut Sheet	Page No.
K Family (Electrical)			
Saw Cutting for Detector Loops	MD 14 Bridge and Road Surface Maintenance	K6 Saw Cutting for Detector Loops A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-55 B-3
M Family (Traffic Guidance)			
Thermoplastic Striping and Preheaters	MD 14 Bridge and Road Surface Maintenance	M1 a Thermoplastic Striping and Preheaters A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-56 B-3
Paint Striping and Markings	MD 14 Bridge and Road Surface Maintenance	M1b Paint Striping and Markings A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-57 B-3
Raised/Recessed Pavement Marker Applicant and Removal	MD 14 Bridge and Road Surface Maintenance	M3a Raised/Recessed Pavement Marker Application and Removal A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-58 B-3
Thermoplastic Grinding	MD 14 Bridge and Road Surface Maintenance	M3b Thermoplastic Grinding/Removal A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-59 B-3
Sign Removal and Replacement	MD 14 Bridge and Road Surface Maintenance	M4 Sign Removal and Replacement A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-60 B-3

Table 2-1
Recommended BMPs for Maintenance Activities

Maintenance Activities	Related SWMP BMP	Activity-Specific Cut Sheet	Page No.
M Family (Traffic Guidance) - continued			
Median Barrier Repair	MD 14 Bridge and Road Surface Maintenance	M7 Median Barrier Repair A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-61 B-3
S Family (Storm Maintenance)			
Minor Slides and Slipouts	MD 14 Bridge and Road Surface Maintenance	S3 Minor Slides and Slip-Outs A/B/C/H/J/K/M/S Bridge and Road Surface Maintenance	B-62 B-3
T Family (Management and Support)			
Oil Water Separators	MD 16 Oil Water Separators	T4a Oil/Water Separators	B-63.
Waste Minimization Handling and Disposal	MD 28 Waste Minimization, Handling and Disposal	T4b Waste Minimization, Handling, and Disposal	B-65
Used Oil Recycling	MD 19 Used Oil Recycling	T4c Used Oil Recycling	B-66
Maintenance Facility Housekeeping Practices	MD 18 Maintenance Facility Housekeeping Practices	T5a Maintenance Facility Housekeeping Practices	B-68

Table 2-1
Recommended BMPs for Maintenance Activities

Maintenance Activities	Related SWMP BMP	Activity-Specific Cut Sheet	Page No.
T Family (Management and Support)			
Building and Grounds Maintenance	MD 30 Building and Grounds Maintenance	T5b Building and Ground Maintenance	B-70
Material Storage Controls	MD 17 Material Storage Controls (Hazardous Materials)	T7a Storage of Hazardous Materials (Working Stock)	B-72
Outdoor Loading and Unloading of Materials	MD 24 Outdoor Loading and Unloading of Materials	T7b Outdoor Loading/Unloading of Materials	B-75
Outdoor Container Storage of Liquids Material Storage Controls	MD 25 Outdoor Container Storage of Liquids (Hazardous Materials)	T7c Material Storage Controls (Hazardous Waste)	B-77
Outdoor Storage of Raw Materials	MD 27 Outdoor Storage of Raw Materials	T7d Outdoor Storage of Raw Materials	B-79
Safer Alternative Products	MD 5 Safer Alternative Products	T7e Safer Alternative Products	B-81
Vehicle and Equipment Fueling	MD 21 Vehicle and Equipment Fueling	T9a Vehicle and Equipment Fueling	B-83
Vehicle and Equipment Pressure Washing	MD 22 Vehicle and Equipment Pressure Washing	T9b Vehicle and Equipment Pressure Washing	B-85
Vehicle and Equipment Maintenance and Repair	MD 23 Vehicle and Equipment Maintenance and Repair	T9c Vehicle and Equipment Maintenance and Repair	B-87
Above Ground Leak and Spill Control	MD 7 Above Ground Tank Leak and Spill Control	T9d Above Ground Tank Leak and Spill Control	B-90

Section 3
Program Evaluation

3.1 Introduction

This section of the Maintenance Staff Guide describes how Maintenance field personnel will provide information on the implementation of the BMPs described in Appendix B and how SJCO Community Infrastructure Division Division will evaluate the information.

3.2 Purpose of Providing Information on the Implementation of BMPs

Providing feedback on the implementation of the BMPs described in Appendix B will serve as the feedback loop for Community Infrastructure Division to identify the following:

- BMP's that are in need of revision or improvement
- New BMPs that need to be developed
- BMPs that are effective in reducing the discharge of potential pollutants
- BMPs that are cost effective
- Studies or research that could be conducted to advance the state of knowledge regarding the design and implementation of stormwater management practices.

3.3 Feedback Process

Evaluation of the implementation of BMPs by field personnel is the key to the process of continually improving the SWPPP. Field personnel are encouraged to complete the BMP questionnaire on the following page and forward to their supervisor, who will forward it to the Community Infrastructure Division. A member of the CID Staff will review the questionnaires and identify BMPs requiring modification.

Maintenance BMP Questionnaire

BMP: Date:

Name: Title:

Maintenance Facility:

Can any of the BMP procedures being implemented be improved? Please describe new or improved BMP procedures. (Attached additional comments as necessary)
If the BMP is not being implemented as described in the Maintenance Staff Guide, what is the cause:

_____Safety Concern _____Lack of Training

Describe:

_____Operational:

Describe:

_____Equipment or Material Availability

Describe equipment or material needs:

_____Personnel

Estimate additional PY's required:

_____Financial Resources

Describe the category of financial resources:

Reviewed by: _____Supervisor _____Superintendent _____Stormwater Coordinator

Appendix A
Acronyms and Definition of Terms

Acronyms

BMP	Best Management Practice
Cal/OSHA	California Occupational Safety and Health Administration
CCR	California Code of Regulations
CHP	California Highway Patrol
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
FRO	First Responder Operational
MEP	Maximum Extent Practicable
NPDES	National Pollution Elimination Discharge System
OES	Office of Emergency Services
PCC	Portland Cement Concrete
RWQCB	California Regional Water Quality Control Board
SPCC	Spill Prevention Control and Countermeasure
SWMP	Stormwater Management Plan
SWRCB	California State Water Resources Control Board

Definition of Terms

Basin Plan: A water quality control plan developed by a Regional Water Quality Control Board (RWQCB) for a specific geographical area. It identifies beneficial uses of waters and the water quality objectives needed to maintain these beneficial uses.

Beneficial Uses: Reasonable use of water for a purpose consistent with the laws and best interests of the people of the state. Such uses include, but are not limited to, the following: in stream, out of stream, and groundwater uses, domestic, municipal, industrial water supply, irrigation, fish and aquatic life, hydropower, and commercial navigation.

Best Management Practice: A stormwater management practice selected for implementation under the SWMP by meeting the MEP criteria. The array includes: treatment requirements, operating procedures, and management practices to control site runoff. The array was selected form stormwater management practices designed to control pollutants from typical SJCO activities.

Clean Water Act: The Federal Water Pollution Control Act enacted by congress in 1972 by Public Law 92-500 and amended by the Water Quality Act in1987. The Clean Water Act prohibits the discharge of pollutants to waters of the United States unless the discharge is covered by the terms of the discharge requirement.

Compliance Monitoring: Refers to various information gathering activities that SJCO will use to assess its efforts to comply with the requirements in the Permit and the SWMP. Compliance monitoring will involve a broad variety of observations and inspections that will help SJCO managers know whether the stormwater management procedures and practices described in the SWMP are being implemented as intended.

Detention Basin: A facility designed to collect and temporarily detain the initial volume of stormwater runoff for a specified period of time, to permit settlement of particulate pollutants.

Drain Inlet: A drainage structure which collects surface runoff and conveys it to an underground stormwater drainage system.

Erosion: The wearing away of land surface primarily by wind or water. Erosion occurs naturally as a result of weather or runoff, but can be intensified by clearing, grading, or excavation of the land surface.

Existing Vegetation: Any vegetated area that has not already been cleared and grubbed.

Fire protection strips: Buffer strips adjacent to the right-of-way where vegetation is controlled to reduce the risk of fire.

Good Housekeeping: A common practice related to the storage, use, or cleanup of materials, performed in a manner that minimizes the discharge of pollutants.

Grubbed: Removal of vegetation by mechanical or manual methods.

Hazardous Waste: A waste or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either cause or significantly contribute to, an increase in mortality or an increase in serious irreversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special EPA or state lists. Hazardous wastes are regulated under the federal Resource Conservation and Recovery Act and the California Health and Safety Code.

Herbicide: Chemical compounds that are used to control weeds.

Hydrologic Unit: A subunit of a basin as defined by a Regional Water Quality Control Board (RWQCB).

Illicit Connections: Permanent, usually underground pipe connections to the SJCO stormwater drainage system that have not been approved by SJCO under an encroachment permit.

Illicit Discharge: Any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges pursuant to an NPDES permit. Some illicit discharges are non-prohibited if they are not polluted.

Maintenance Activities: Routine maintenance activities that may require clearing, grading, or excavation to maintain original line and grade, hydraulic capacity, or original purpose of the facility.

Maintenance Facility: Facilities under SJCO ownership or control that contain such operations as fueling areas, waste storage or disposal facilities, wash racks, equipment or vehicle storage, and materials storage areas.

Maintenance Staff Guide: A handbook for SJCO Maintenance personnel designed to provide guidance on potential pollutant sources and BMP's for SJCO maintenance facilities and activities.

Maintenance Stormwater Protection Program (MSWPP): The component of the Stormwater Management Plan that describes: the program to implement best management practices as part of the ongoing maintenance activities for existing highways and highway-related properties, facilities, and activities; surveillance activities to help manage potential stormwater contamination from accidental spills, illicit connections, illegal discharges, and illegal dumping on SJCO property; and implementation of best management practices to reduce the potential for

stormwater pollution at existing highway maintenance facilities by minimizing contact between stormwater and the various substances used at maintenance facilities.

M**aximum Extent Practicable (MEP):** Means the extent of implementation of stormwater management practices that are effective at reducing stormwater pollution except when any of the following conditions are met: (1) other effective management practices would achieve greater or substantially the same pollution control benefits; (2) the management practice would not be technically feasible; (3) the cost of management practice implementation would greatly outweigh pollution control benefits; or (4) implementation of the management practice would compromise other legal and institutional constraints, expectations, and obligations imposed by Federal or State statute or case law.

Median Area: The portion of a divided highway separating the traveled ways for traffic in opposite directions. Often contains storm drain system facilities, such as ditches and swales.

Monitoring: Refers to a variety of activities and processes through which SJCO will obtain information relevant to its implementation on the stormwater quality management program and to identify the need for and/or opportunities for revising or refining its program.

National Pollutant Discharge Elimination System (NPDES): The national program for issuing, modifying, revoking, and reissuing, terminating, monitoring and enforcing permits under the Clean Water Act. In California, the NPDES permits are incorporated into Waste Discharge Requirements.

Non-Point Source Discharge: Discharge from a diffuse pollution source (i.e., without a single point of origin or not introduced into a receiving stream from a specific outlet).

Non-Stormwater Discharge: Any discharge to the storm drain system or receiving water that is not entirely composed of stormwater.

Nutrients: Nitrogen an phosphorous and possibly other substances such as iron in highway runoff due to atmospheric deposition and roadside fertilizer application. In urban areas, landscaping activities that may yield nutrient organic matter such as lawn clippings, leaves, street dirt, automobile exhaust and excess fertilizer.

Oil Waste: Oil of any kind or in any form, including but not limited to petroleum, fuel oil, sludge, oil refuse, and oil mixed with waste other than dredged soil.

Outfall: The point source where a wastewater discharges to waters of the United States.

Permit: Refers to an NPDES Permit and is an authorization, license, or equivalent control document, issued by the U.S. Environmental Protection Agency (EPA) or an approved state, to implement the requirements of the NPDES. In California, refers to Waste Discharge Requirements issued by the RWQCB or SWRCB.

Pump Station: A complete pumping installation including a storage box, pump or pumps, standby pumps, connecting pipes, electrical equipment, pump house, and outlet chamber.

Receiving Waters: All surface water bodies within the permit area.

Regional Water Quality Control Board (RWQCB): California agencies that implement and enforce Clean Water Act section 402(p) NPDES permit requirements, and are issuers and administrators of these permits as delegated by EPA. There are nine regional boards working with the State Water Resources Control Board.

Reporting: Refers primarily to information SJCO will report to the SWRCB, although there also will be instances where information will be reported or otherwise communicated within SJCO.

Retention Basin: An infiltration basin designed to capture runoff volume from the water quality design storm and infiltrate it prior to a significant storm event.

Sanitary sewer system: Underground pipes that carry off only domestic or industrial waste, not stormwater.

Sediment: Organic or inorganic material that is carried by or is suspended in water and that settles out to form deposits in the storm drain system or receiving waters.

Site: The land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

Spill: An accidental dumping or spilling of a potential pollutant onto the ground or into a waterway.

State Water Resources Control Board (SWRCB): As delegated by EPA, California agency that implements and enforces Clean Water Act section 402(p) NPDES Permit requirements, and is the issuer and administrator of the SJCO NPDES Stormwater Permit.

Stormwater: Rainfall runoff, snow melt runoff, and surface runoff and drainage. It excludes infiltration and runoff from agricultural land.

Stormwater Management Plan (SWMP): The plan that describes the SJCO program to reduce the discharge of pollutants from stormwater drainage systems associated SJCO facilities, properties, and activities to the maximum extent practicable. The SWMP also describes assignment of responsibilities for implementing BMPs, as well as training, public education and participation, monitoring, program evaluation, and reporting activities.

Stormwater Management Practice: Any activities, prohibitions or modifications of practices, maintenance procedures, or other physical, structural, and/or managerial practices to prevent or reduce the pollution of waters of the State.

Stormwater Drainage System: Streets, gutters, conduits, artificial drains, channels and watercourses, or other facilities that are owned, operated, maintained and used for the purpose of collecting, storing, transporting, or disposing of stormwater.

Sump: In drainage, any low area which does not permit the escape of water by gravity flow. In practice, these often occur by design at pumping stations.

Surface Runoff: Precipitation, snow-melt, or irrigation water in excess of what can infiltrate that soil surface and be stored in small surface depressions; a major transporter of non-point source pollutants.

Vista Point: A paved area beyond the shoulder which permits travelers to safely exit the highway to stop and view a scenic area. In addition to parking areas, trash receptacles, interpretive displays, restrooms, drinking water, and telephones may also be provided.

Watercourse: Surface water bodies including streams, lakes, bays, estuaries, lagoons, reservoirs, and ponds.

Water Quality Standards: State adopted and EPA-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality objective that must be met to protect designated uses.

Waters of the State: Any water, surface or underground, including saline waters, within the boundaries of the state.

Appendix B
Maintenance BMP Cut-Sheets

The following BMP cut-sheets are intended to be used as a guideline for implementing BMPs for highway maintenance activities, highway surveillance activities. Maintenance facility activities, and public education activities.

BMP Number	BMP Title	Page
A/B/C/H/J/K/M/S	Bridge and Road Surface Maintenance	B-3
Al	Crack and Joint Repair "	B-5
A2	Asphalt Work	B-6
A4	Pothole Repairs	B-7
A9	Pavement Grinding and Removal	B-8
B2	Concrete Work	B-9
B9	Mudjacking	B-10
C	Stormwater Drainage System Facilities Inspection and Cleaning	B-l 1
Cl	Lateral Support (Roadway Shoulder Maintenance)	B-13
C5	Detention Basin and Infiltration Device Maintenance	B-14
C9	Illicit Connection Detection, Reporting and Removal	B-16
D	Street Cleaning	B-20
D2	Illegal Dumping Control	B-22
D3	Sweeping Operations	B-26
D4a	Litter and Debris Removal	B-27
D4b	Anti-Litter Signs	B-28
D5a	Emergency Response and Clean-Up Practices	B-29
D6	Graffiti Removal	B-31
D9	Adopt-a-Street Program	B-32
E	Vegetation Management	B-33
Ela	Chemical Weed Control	B-3 5
Elb	Mechanical Weed Control .	B-36
E2a	Tree and Shrub Pruning	B-37
E2b	Tree and Shrub Removal	B-3 8
E2c	Brush Chipping	B-39
E3a	Water Line Repairs	B-40
-E3b	Irrigation (Watering) Potable and Non-Potable	B-41
E9	Erosion Control	B-42
F2	Non-Stormwater Discharges	B-43

BMP Number	BMP Title	Page
H2	Welding and Grinding	B-46
B-2H7a	Sand Blasting, Wet Blast with Sand Injection,	B-47
	and Hydro Blasting	
H7b	Painting	B-48
H9a	Bridge Repairs	B-49
J1	Pump Station Cleaning .	B-50
J2	Underpass Washing	B-52
J5	Tow Truck Operations	B-53
J7	Lane Scrubbing Operations	B-54
K6	Saw Cutting for Detector Loops	B-55
M1a	Thermoplastic Striping and Preheaters	B-56
M1b	Paint Striping and Markings	B-57
M3a	Raised/Recessed Pavement Marker Application	B-58
	and Removal	
M3b	Thermoplastic Grinding/Removal	B-59
M4	Sign Removal and Replacement	B-60
M7	Median Barrier Repair	B-61
S3	Minor Slides and Slip-Outs	B-62
T4a	Oil/Water Separators	B-63
T4b	Waste Minimization, Handling, and Disposal	B-65
T4c	Used Oil Recycling	B-66
T5a	Maintenance Facility Housekeeping Practices	B-68
T5b	Building and Grounds Maintenance	B-70
T7a	Storage of Hazardous Materials (Working Stock)	B-72
T7b	Outdoor Loading/Unloading of Materials	B-75
T7c	Material Storage Controls (Hazardous Waste)	B-77
T7d	Outdoor Storage of Raw Materials	B-79
T7e	Safer Alternative Products	B-81
T9a	Vehicle and Equipment Fueling	B-83
T9b	Vehicle and Equipment Pressure Washing	B-85
T9c	Vehicle and Equipment Maintenance and Repair	B-87
T9d	Above Ground Tank Leak and Spill Control	B-90

BMP **A/B/C/H/J/K/M/S**

Bridge and Road Surface Maintenance

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Asphaltic emulsion
- Concrete or asphalt grindings and cuttings
- Sediment
- Sealant material
- Grout
- Oil
- Asphalt concrete binder
- Liquid asphalt
- Cleaning products
- Metal products
- Paint products
- Animal wastes
- Thermoplastic
- Asphalt concrete
- Asphalt cement
- Portland cement concrete (PCC)
- Equipment wash water
- Process water
- Bitumen adhesive
- Litter and debris
- Wood products

Definition and Purpose	Bridge and road surface maintenance activities include A Family Flexible Pavement, B Family - Rigid Pavement, C Family - Lateral Support, H Family - Bridges, J Family - Other Structures, K Family Electrical, M Family - Traffic Control, and S Family - Storm Maintenance. Proper control and disposal of materials and waste products from bridge and road surface maintenance will reduce the discharge of potential pollutants to the stormwater drainage system or watercourses.
Appropriate Applications	These BMPs should be implemented on a site-specific basis whenever bridge and road surface maintenance activities are performed.

BMP **A/B/C/H/J/K/M/S**

Bridge and Road Surface Maintenance

Limitations

- To minimize the discharge of potential pollutants to the storm water drainage system, it is recommended that bridge and road surface maintenance be avoided during wet weather. However, it is recognized that during periods of rain, bridge and road surface maintenance may be necessary.

- BMP implementation will depend on traffic, weather, available resources, and safety conditions.

Drainage Protection and Equipment Operation

When possible and practical, pre-plan your work to protect storm water drainage systems and watercourses from discharge of potential pollutants and keep equipment in good operating condition:

- Look to see where the flow of a leak, spill, or other runoff would go.

- Identify drain inlets and watercourses, both upstream and downstream of the work site.

- All vehicles and equipment should be clean and in good operating condition. Perform a thorough pre-operational inspection of vehicles and equipment.

- Set-up the work area to minimize the tracking of material by vehicles and equipment in or out of the work area.

Housekeeping and Spill Control

Practice good housekeeping at the work site:

.

- Litter and debris should be collected and properly disposed of.

- Containers of liquids should be secured with lids until needed.

- Any spills should be controlled promptly. Transport collected materials back to a Maintenance facility or approved storage site.

- If a leak or spill occurs, protect drainage systems and watercourses from spilled material. For example, by covering or blocking drain inlets with sand bags, plastic bags filled with native material or absorbent booms. Remove covers/blocks once clean-up is completed.

Crack and Joint Repair

E**nvironmental Concerns**
Discharge of the following materials into the stormwater drainage system or receiving waters: Asphalt concrete binder Asphalt cement Liquid asphalt Asphalt concrete Sediment Asphaltic emulsion Sealant material

Definition and Purpose

Crack and joint repair involves the sealing and filling of cracks and joints in flexible pavement. This work is done to prevent the entrance of moisture and foreign material into the subgrade, and to maintain the integrity of the pavement surface.

Operational Procedures

- When possible, avoid crack and joint repair during rainfall.
- Avoid applying excess sealant material.
- When cleaning out equipment, use an appropriate container to capture any excess material.

- Transport the collected excess material to a Maintenance facility approved storage site.

Asphalt Work

Environmental Concerns
Discharge of the following materials into the stormwater drainage system or receiving waters: Asphalt concrete binder Asphalt cement Liquid asphalt Asphalt concrete Sediment Asphaltic emulsion Sealant material

Definition and Purpose

Asphalt work involves the patching or resurfacing of the roadbed with a mixture of mineral aggregate and asphalt concrete binder. The purpose is to repair degraded asphalt surfaces or to cover a new road with asphalt pavement.

Operational Procedures

- Protect drain inlets, the stormwater drainage system, and watercourses from loose asphalt concrete and sealant materials. For example, by covering or blocking drain inlets with sand bags, plastic bags filled with native material or absorbent booms. Remove covers/blocks once clean-up is completed.
- Stockpile material away from drain inlets and watercourses.
- When cleaning out application equipment use appropriate container to collect any excess material that is not re-used or recycled.
- Transport collected materials back to a Maintenance facility or approved storage site.
- Dispose of removed asphalt at an approved storage site or Maintenance facility asphalt pile; recycle when possible.

Pothole Repairs

Environmental Concerns

Discharge of the following materials into the stormwater drainage system
or receiving waters:

Asphalt concrete binder
Asphalt cement
Liquid asphalt
Asphalt concrete
Sediment
Asphaltic emulsion
Sealant material

Definition and Purpose

Pothole repairs involve the filling and resurfacing of potholes along the flexible pavement portions of roadways and highways. The purpose of these repairs is to eliminate holes and cuts in the pavement.

Operational Procedures

- Use only prescribed materials in wet weather, if possible.
- Where practical, remove excess asphalt concrete material from the roadway.

BMP A9

Pavement Grinding and Removal

Environmental Concerns
Discharge of the following materials into the stormwater drainage system or watercourses: • Concrete • Asphalt • Sediment

Definition and Purpose

During resurfacing activities sections of roadway are removed (dug out) using graders and grinders.

Operational Procedures

- Collect digout material by mechanical or manual methods. This material should be recycled whenever possible, for use as shoulder backing or base material at approved locations.
- If digout material cannot be recycled, transport the material back to a Maintenance facility or approved storage site.
- When possible, avoid conducting digout activities in the rain.
- Stockpile material removed from roadways away from drain inlets, drainage ditches, and watercourses.

Concrete Work

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Portland cement concrete (PCC)
- Concrete rinse water
- Concrete grindings and cuttings
- Concrete waste

Definition and Purpose

Concrete work procedures and practices are designed to reduce the discharge of concrete waste materials (e.g., concrete grindings and cuttings, concrete rinse water, and concrete waste) to the stormwater drainage system or to watercourses by implementing rinsing procedures and disposal practices.

Operational Procedures

- Do not dump concrete grindings into drain inlets, the stormwater drainage system or watercourses.
- When washing equipment or vehicles to remove PCC, minimize water use. For example, use a positive shutoff on the washout hose.
- Where appropriate, designate areas to be used for concrete washout.
- Locate washout areas away from drain inlets or watercourses. Contain runoff from this area. For example, by constructing a temporary pit, or discharging to an appropriate container or bermed area large enough to contain the liquid and solid waste generated during washout procedures,
- Perform washout of equipment, tools or vehicles in designated areas only.

BMP B9

Mudjacking

Environmental Concerns
Discharge of the following materials into the stormwater drainage system or watercourses: Grout Concrete or asphalt grindings and cuttings Equipment wash water on Drilled out materials

Definition and Purpose

Mudjacking is the maintenance and repair of rigid type surfacing, its associated base and any portland concrete cement (PCC) shoulders less than two feet in width.

Operational Procedures

- When washing equipment or vehicles to remove mudjack material, minimize water use. For example, use a positive shutoff on the washout hose.
- Where appropriate, designate areas to be used for mudjack washout
- Locate washout areas away from drain inlets or watercourses. Contain runoff from this area. For example, by constructing a temporary pit, discharging to an appropriate container or bermed area large enough to contain the liquid and solid waste generated during washout procedures.
- Perform washout of equipment, tools or vehicles in designated areas only.
- Remove all excess mudjack or other material by mechanical or manual methods.
- When cleaning out equipment use appropriate container to collect any excess material that is not re-used or recycled.
- Transport collected materials back to a Maintenance facility or approved storage site.
- Cover broken mudjack material bags while traveling.

Stormwater Drainage System Facilities Inspection & Cleaning

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Sediment
- Litter and debris
- Illegally dumped material
- Hazardous material

Definition and Purpose

Culverts, ditches and gutters, underdrains, horizontal drains and downdrains require inspection and cleaning to prevent flooding and provide for unobstructed flows.

Appropriate Applications

These procedures are applicable to Maintenance personnel who conduct stormwater drainage system facilities inspection and cleaning.

Limitations

- BMP implementation will depend on traffic, weather, available resources, and safety conditions.
- Access to the stormwater drainage system and worker safety.

Operational Procedures

- Observe culverts and drain inlets and outlets annually in the fall, and as needed during the winter season to determine if cleaning is required or if damage has occurred. Remove litter and debris from drain inlet grate to prevent flooding and where practical dispose of the debris at an approved location.
- Make sure water is not overflowing or ponding onto inappropriate areas (e.g., active traffic lanes, material storage areas, etc.).
- Clean culverts when sediment accumulation impairs the culvert function.
- Inspect ditches and gutters periodically to maintain unobstructed flow. Seal or repair when structural integrity is directly endangered.
- Inspect downdrains once a year and clean or repair as necessary.

Stormwater Drainage System Facilities Inspection & Cleaning

- Inspect ditches for accumulation of sediment and other materials as needed. If possible, schedule routine ditch-cleaning activities designed to maintain the hydraulic capacity of ditches prior to the rainy season.
- When cleaning drainage ditches below cut slopes or steep slopes, where practical, avoid cutting the toe of the slope. Operate equipment in a slow, controlled manner. This can also prevent damage to the ditch.
- Inspect and clean stormwater drainage facilities that have a history of frequent obstruction.
- Report damaged drainage facilities to your supervisor and schedule repair as needed.
- Inspect protected stream channel banks and known trouble locations prior to the winter season, and as needed during the winter season. Schedule repair as needed.

Drainage Protection and Equipment Operation

When possible and practical, pre-plan your work to protect stormwater drainage systems and watercourses from discharge of potential pollutants and keep equipment in good operating condition:

- Look to see where the flow of a leak, spill, or other runoff would go.
- Identify drain inlets and watercourses, both upstream and downstream of the work site.
- All vehicles and equipment should be clean and in good operating condition. Perform a thorough pre-operational inspection of vehicles and equipment.
- Set-up the work area to minimize the tracking of material by vehicles and equipment in or out of the work area.

Housekeeping and Spill Control

Practice good housekeeping at the work site:

- Litter and debris should be collected and properly disposed of.
- Containers of liquids should be secured with lids until needed.
- Any spills should be controlled promptly. Transport collected materials back to a Maintenance facility or approved storage site.
- If a leak or spill occurs, protect drainage systems and watercourses from spilled material. For example, by covering or blocking drain inlets with sand bags, plastic bags filled with native material or absorbent booms. Remove covers/blocks once clean-up is completed.

Lateral Support (Roadway Shoulder Maintenance)

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or receiving waters:

- Sediment
- Asphalt
- Asphalt concrete
- Sealant materials

Definition and

Areas adjacent to surfaced and unsurfaced road shoulders require maintenance Purpose to prevent the loss of lateral support, the deterioration or failure of the edge of road surfaces, and to maintain roadside drainage patterns.

Operational Procedures

- Minimize grading shoulders in the rain.
- Minimi2e placing asphalt grindings in locations where they can be transported to drain inlets, the stormwater drainage system or watercourses by runoff.
- If grading occurs during periods of rain, where necessary protect stormwater drainage systems and watercourses from the discharge of excess material generated by grading. For example, by covering or blocking storm dram inlets with sand bags or plastic bags filled with native material. Remove covers/blocks once grading is completed.

Detention Basin and Infiltration Device Maintenance

	Environmental Concerns Discharge of the following materials into the stormwater drainage system or watercourses: • Sediment • Litter and debris
Definition and Purpose	Detention basins and infiltration systems collect and temporarily detain the initial volume of stormwater runoff for a specified period of time. Regular inspection and maintenance will remove accumulation of sediments and debris so the systems will continue to function as designed.
Appropriate Applications	This BMP applies to maintenance personnel who inspect and maintain detention and retention basins
. Limitations	If upstream erosion is not properly controlled, extended detention basins can become maintenance intensive with respect to sediment removal, nuisance odors, and insects. Breeding of disease-carrying insects such as mosquitoes, due to the presence of stagnant water. Frequent inspection is necessary to maintain the life of the device. Systems will typically plug and fail if a significant erosion area develops upstream of the facility.

Drywells have additional regulatory requirements. Check with Environmental Health

Detention Basin and Infiltration Device Maintenance

Operational Procedures

Detention Basin Maintenance

- Detention basins should be inspected annually and following significant storm events. Maintenance should be performed on an as needed basis to maintain BMP performance.
- Vegetation should be controlled as needed including periodic removal of aquatic plants that may potentially impact nutrients in the water.
- Maintain the embankment as needed to prevent erosion, damage by rodents, or seepage.
- Debris should be removed as needed to prevent outlet clogging.
- Sediment should be removed as needed, re-used or disposed of properly.

Infiltration System Maintenance

- In order to prevent clogging or overflow of a dry well downspout, clean the gutters, gutter screens, and downspout screens of the buildings 'connected to the drywell as-needed.
- Inspect to ensure that trees are not planted on or near dry well boundaries.

Illicit Connection Detection, Reporting & Removal

Environmental Concerns

Discharge of me following materials into the stormwater drainage system or watercourses:

Hazardous materials
Detergents
Sanitary wastes
Waste water
Sediment
Nutrients
Bacteria and viruses

Definition and Purpose	Procedure for Maintenance field staff to detect, correct, and report illicit connections and associated discharges into SJ CO storm drain facilities. Illicit connections are usually permanent, underground pipe connections to the SJ CO stormwater drainage system that have not been approved by SJ CO. This management practice is directed at continuous, or recurring discharges through direct connections to the drainage system or as run-on from an adjacent property. Management practice D2 Illegal Dumping Control, focuses on single incident dumping or spills.
Appropriate Applications	Detecting, reporting and removing illicit connections applies to all SJ CO existing facilities and construction sites.
Limitations	Discharges resulting from illicit connections may include unknown or hazardous materials. If the nature of the discharge is unknown, or known or suspected to be a hazardous substance, applicable hazardous substances procedures must be followed as described below.
Operational Procedures	Maintenance Supervisors and personnel, as part of their routine inspection, or maintenance work shall report all observed suspected illicit connections to the Community Infrastructure Division.

Illicit Connection Detection, Reporting & Removal

Methods for Detecting Elicit Connections
Improper physical connections to the storm drain system are relatively rare at freeway and rural drainage facilities because of the generally restricted access. Illicit connections at SJ CO facilities are more likely to be found on streets in urbanized or otherwise developed areas. However, occasional illicit connections and run-on can occur in a number of ways, such as:

1. Surface runoff from graded properties or construction projects;
2. Contaminated areas adjacent to SJ CO right-of-way;
3. Overflows from sanitary sewers;
4. Roof and floor drain connections from businesses and residences.

Illicit connections are detected by several general methods:

1. Observation of discharges - A connection is suspected as a result of actual evidence of ongoing or previous discharges.
2. Observation of connections - Maintenance staff can observe actual connections (pipes, ditches) during routine drainage system inspection and maintenance procedures, even though there may not be any observable discharges. This primarily involves heightened awareness by the Maintenance staff.
3. Underground search - This is not recommended as a normal procedure, except as necessary to locate the source of a previously observed, significant discharge. Connections are detected through a more rigorous, dedicated effort to search for connection points (TV, surveys, etc.).

Evidence of Illicit Connections
If a discharge is observed from an illicit connection, and the nature is unknown or suspected of being a hazardous substance, no further investigation should be conducted and the incident reported as described below.
Urban Areas - Evidence of illicit connections is usually best detected at storm drain outfall locations or at manholes - Signs of an illicit connection can include:

- Abnormal water flow during the dry weather season.
- Unusual flows in subdrain systems used for dewatering.
- Pungent odors coming from the drainage systems.
- Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes.

Illicit Connection Detection, Reporting & Removal

- Excessive sediment deposits, particularly adjacent to or near active
- Off-site construction projects.

Rural Areas - Illicit connections involving irrigation drainage ditches are detected by visual inspections. Signs of an illicit connection can include:

- Abnormal water flow during the dry weather season.
- Non-standard junction structures.
- Broken concrete, disturbed soil, removed vegetation, or other disturbances at or near junction structures.

Construction Sites - undocumented or unmapped underground connections to SJ CO drainage facilities discovered during construction on the site.

Reporting

Any field maintenance employee who observes or discovers a suspected illicit connection into any SJ CO stormwater drainage system shall report such activities to a supervisor. If a discharge is observed from an illicit connection and the nature is unknown or suspected of being a hazardous substance, the Fire Department shall be notified. Any illicit connections or evidence of off-site run-on shall be reported to the supervisor who will forward the report to the Community Infrastructure.

Investigation

- Storm drain investigations requiring detection and isolation processes physical entry into pipes and other confined areas shall be performed by trained personnel only.
- Investigations of potential illicit discharges will be conducted by the Community Infrastructure Division.
- All discharges known to be hazardous, suspected of being hazardous, or of unknown nature shall be responded to according to all applicable procedures.
- A field review and evaluation will be conducted by the Maintenance Staff. This may include contacting local agencies responsible for the downstream receiving waters.
- When available, "as-built" plans of the facility will be examined for identification of existing drainage system.
- The Department of Public Works will be consulted to determine if the connection has an encroachment permit.

Illicit Connection Detection, Reporting & Removal

If for any reason it is necessary to sample a discharge, the Community Infrastructure Division will develop an appropriate sampling procedure. Once a discharge is determined to be illicit, remedial actions shall be taken to identify the source, to cease and/or re-route ongoing flows, and to remove any illegal encroachments. The actions will depend on the nature of the discharge.

Pinpointing principal responsible parties, serving formal notices of violation, and remedying any problems may be done by the county or other local agency health specialists, or by local County code enforcement officials.

Illicit Connection Removal

Illicit connection removal involves the clean-up of any discharges, the removal of the connection and the repair of the highway facilities.

Clean-Up

Clean-up of discharged materials on SJ CO rights-of-way from an illicit connection shall be performed as follows:

Non-hazardous and hazardous materials shall be cleaned up in accordance with existing SJ CO practice.

Removal of Connection

Established legal procedures may be used to remove illegal encroachments into SJ CO right of way.
After the illicit discharge is halted or re-routed, pipes or other connections shall be removed from the SJ CO right-of-way or as far as practicable and plugged or capped to prevent leakage and soil contamination. Connection points shall be patched or otherwise repaired to maintain the line, grade, and material of the original facility by SJ CO.

Follow-Up

Maintenance Supervisors with responsibility for clean-up removal activities must follow-up on the incident to ensure corrective actions have taken place per applicable SJ CO procedures, and report to the Community Infrastructure Division.

BMP D

Street Cleaning

Environmental Concerns
Discharge of the following materials into the stormwater drainage system or watercourses: Litter and debris Sweeper wastes Paint products Sediment (sand blasting grit) Cleaning products Equipment wash water Process water Wash water

Definition and Purpose

Street cleaning activities include D Family - Sweeping Operations, Graffiti Removal, and Litter and Debris Removal, and J Family - Lane Scrubbing Operations and Underpass Washing. The use of proper cleaning procedures for highway/freeway surfaces, conducted on a regular basis, will reduce the discharge of potential pollutants into the stormwater drainage system and watercourses.

Appropriate Applications

This BMP should be implemented whenever graffiti removal, sweeping operations, litter and debris removal, lane scrubbing operations, and underpass washing activities are conducted.

Limitations

BMP implementation will depend on traffic, weather, available resources, and safety conditions.

Drainage Protection and Equipment Operation

When possible and practical, pre-plan your work to protect stormwater drainage systems and watercourses from discharge of potential pollutants and keep equipment in good operating condition:

- Look to see where the flow of a leak, spill, or other runoff would go.
- Identify drain inlets and watercourses, both upstream and downstream of the work site.
- All vehicles and equipment should be clean and in good operating condition. Perform a thorough pre-operational inspection of vehicles and equipment.

BMP D

Street Cleaning

Set-up the work area to minimize the tracking of material by vehicles and equipment in or out of the work area.

Housekeeping and Spill Control	Practice good housekeeping at the work site: Litter and debris should be collected and properly disposed of. • Containers of liquids should be secured with lids until needed. • Any spills should be controlled promptly. Transport collected materials back to a Maintenance facility or approved storage site. • If a leak or spill occurs, protect drainage systems and watercourses from spilled material. For example, by covering or blocking drain inlets with sand bags, plastic bags filled with native material or absorbent booms. Remove covers/blocks once clean-up is completed.

D2

Illegal Dumping Control

Environmental Concerns

Discharge of the following materials into me stormwater drainage system or watercourses:

Paint
Oil
Vehicle fluids
Solid wastes
Hazardous materials
Litter and debris
Sediment

Definition and Purpose	Procedure for Maintenance field staff to detect, correct, and report illegal dumping and spills of pollutants on SJ CO properties and facilities. This management practice is directed at incidences of dumping or spills that effect stormwater.
Limitations	Illegally dumped material must be clearly identified by OES or Environmental Health to determine the appropriate personnel to perform the clean-up (e.g., Maintenance personnel or Hazmat Response Team). In the event of a spill of hazardous material, SJ CO personnel should refer to BMP D5a Emergency Response and Clean-up Practices for more specific information. Where adjacent properties drain to SJ CO properties or where private storm drain systems tie into SJ CO drainage systems, pollutants from offsite dumping or spills could also enter SJ CO properties or storm drains.
Operational Procedures	Maintenance Supervisors and field personnel shall report observed illegal dumping as part of their routine inspections, and maintenance. Illegal dumping may occur on highways and freeways or at roadside rest areas, vista points, park-and-ride lots, and weigh stations. Illegal dumping on highway facilities typically occurs in the following locations:

Illegal Dumping Control

Stormwater Drainage Systems

- Inlets - A typical problem is the dumping of paints, used oils, and other automotive fluids into storm drain inlets. Though not commonly a problem on freeways due to limited access, this type of dumping is most prevalent on highways in both rural and urbanized areas.
  Open Channels - Solid wastes including landscape trimmings, concrete wastes, old furniture, and household rubbish are often found in open channels in rural areas or in "out of sight" locations in urban areas.

- Freeways and Roadways
  Roadways in urban areas are commonly littered by motorists and pedestrians. Roadway shoulders and turnouts in rural areas, and "out of sight" locations in urban areas, are sometimes used to illegally dispose of landscape trimmings, construction wastes, old furniture, bio-hazardous wastes, and household rubbish.

- Other Off-Highway Facilities
  Rest areas, park-and-ride lots, vista points, brake check areas, weigh stations, and on/off ramps are often subjected to illegal dumping of waste oils and other debris.

- Adjacent Properties
  Dumping or spills on adjacent properties could impact SJ CO property or drainage systems if the dumping results in a discharge and the property drains toward SJ CO right-of-way.

- Evidence of Illegal Dumping

  All instances of illegal dumping shall be approached with extreme caution, in accordance with all applicable health and safety guidelines, until the substance can be identified.

  Solids - Look for debris, or rubbish piles on roadway shoulders, at turnouts, in open channels or in other areas. Solid waste dumping often occurs on roadways with light traffic loads or in areas not easily visible from the traveled way.

Illegal Dumping Control

Approach containers, such as bottles or barrels, with caution as they may• contain hazardous liquids or solids.

Liquids - Signs of illegal liquid dumping can include:

- Visible signs of staining or unusual colors to the pavement or surrounding adjacent soils
- Pungent odors coming from the drainage systems.
- Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes.
- . Abnormal water flow during the dry weather season.

Reporting

Any field Maintenance employee who observes or discovers a suspected illegal dumping incident on any SJ CO roadway or into any SJ CO storm water drainage system shall report such activities to a supervisor.

If illegally dumped material is known to be hazardous, suspected of being hazardous, or cannot be identified, the Fire Department shall be notified.

Local enforcement agencies shall be notified in accordance with existing SJ CO practice.

Staff from other agencies that are stationed at SJ CO facilities should also be requested to cooperate in observing illegal dumping incidents and reporting them.

If any pollutants or evidence of dumping or spills are observed in a SJ CO storm drain facility (i.e., pipes, channels or culverts) and it can be traced to a connecting stormwater drainage system, then a representative of the owner shall be contacted as soon as possible for follow-up.

If an illegally dumped substance reaches a receiving water via a SJ CO stormwater drainage system, then the incident should be reported to the proper authorities.

Illegal Dumping Control

Clean-Up

Clean-up or other corrective action on SJ CO right-of-way shall be performed as follows:

All materials must be identified before Maintenance personnel or a Hazmat contractor can start clean-up. Maintenance personnel shall not clean up any material that is identified as hazardous without clearance and supervision by OES. Maintenance personnel shall isolate the site as required but are not to clean up hazardous materials.

Follow-Up

Maintenance personnel with responsibility for sites where an illegal dumping incident has occurred shall follow-up on the incident to ensure corrective actions have taken place according to relevant SJ CO procedures.

If a site experiences repeated dumping, the reporting supervisor should determine if a "no dumping" sign, or other corrective action is needed, and follow-up as necessary.

Sweeping Operations

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Litter and debris
- Equipment wash water
- Sweeper wastes

Definition and Purpose

The primary purpose of sweeping operations is to remove litter and debris from the traveled way to reduce traffic hazards and improve aesthetics. Sweeping is usually performed when the amount of accumulated debris is between one-half cubic yard and one cubic yard per mile.

Operational Procedures

- Be careful not to sweep up an unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently to maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.
- Clean sweepers in an approved area to capture solid materials. For example, use a pre-wash area located away from the wash rack. When water is used to clean sweepers ensure that wash water is contained and disposed of properly.

Litter and Debris Removal

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Litter and debris

Definition and Purpose

Litter and debris removal will be performed on SJ CO right-of-way to ensure that the highway has a neat, clean, attractive appearance.

Operational Procedures

- Pick up litter and debris as needed.
- Consider litter and debris removal from drainage grates, trash racks, and ditch lines a top priority, to prevent clogging of the stormwater drainage system.
- Do not place collected litter and debris in or next to drain inlets, the stormwater drainage system, or watercourses.
- When possible, load litter and debris directly into a truck for proper disposal at an approved dumpsite.
- County Employees while traveling in their assigned areas should observe overall conditions and assess the need for litter removal. If you observe increased rates of litter deposition notify your supervisor.

Anti-Litter Signs

$500 FINE
FOR
LITTERING
SJ Co.Ord. 648

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Litter and debris

Definition and Purpose	SJ CO conducts a signage program which warns against littering. These signs are found along streets and parks where littering violations are frequent. The purpose of this program is to discourage littering by educating the Public.
Appropriate Applications	Along corridors which receive an unsightly amount of litter. Along streets susceptible to dumping activities (litter fine only). At parks.
Limitations	Not a high maintenance priority.

Operational Maintenance Supervisors will travel streets in their assigned section to
Procedures observe overall conditions and assess the need for litter removal. If you observe increased rates of litter deposition notify your supervisor.

Emergency Response and Clean-Up Practices

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Hazardous materials
- Powder or granular materials
- Liquid materials
- Vehicle fluids

Definition and Purpose

Emergency response and clean-up practices address the isolation, containment, identification, hazard assessment, proper removal, and disposal of spilled substances on highway rights-of-way. Proper containment and clean-up of spilled material, especially material that is spreading rapidly, will reduce the discharge of potential pollutants to the stormwater drainage system or watercourses.

Appropriate Applications

This BMP is to be used when SJ CO personnel spill or encounter spilled materials. After proper hazard assessment, action is to be taken to safely contain spilled material, to remove it or have it removed by the responsible party or by a qualified contractor, and to assure proper disposal.

Limitations

- Contact County OES for evaluation and instructions
- SJ CO does not have legal responsibility for clean-up outside of the operating right-of-way in cases where the spill is generated by a third party.

Operational Procedures

- Environmental Health and OES shall determine the appropriate spill response after proper assessment of the spilled material.

Emergency Response and Clean-Up Practices

Special Concerns

Drain inlet protection. Look to see where the flow of the spill would go. Identify drain inlets and outlets and watercourses, both upstream and downstream. Where safe to do so, protect downstream drainage systems and water courses from spilled material by covering or blocking storm drain inlets. For example, cover storm drain inlets with sand bags, plastic bags filled with native material or absorbent booms or other appropriate devices. Remove covers/blocks once clean-up is completed.

Hazardous material in the stormwater drainage system.

If hazardous materials enter the stormwater drainage system, the municipal/county stormwater management is to be notified.

Spills on roadways.

For spills on roadways, minimize further tracking of spilled material.

BMP D6

Graffiti Removal

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Anti-graffiti coating
- Paint products
- Sediment (sand blasting grit)
- Cleaning products (solvents)

Definition and Purpose	Graffiti is removed or painted over. This activity is performed to ensure that the street/highway has a neat, clean, attractive appearance.
Operational Procedures	When painting or removing graffiti take every precaution to prevent spillage of paint, cleaning products, or anti-graffiti coatings onto the ground. If necessary, use plastic sheeting to protect the ground, and clean the area thoroughly after work is completed (See H7b Painting). If sandblasting is used to remove, the graffiti, 'remove grit by mechanical or manual methods after the job is completed (See H7a Sand Blasting and Hydro Blasting). Dispose of solvent application materials (rags, sponges), and empty paint and solvent containers at a Maintenance facility according to waste disposal procedures commonly used at the facility.

BMP D9

Adopt-a-Street Program

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Litter and debris
- Sediment
- Cleaning products (solvents)
- Paint products

Definition and Purpose

To encourage volunteer community involvement, SJ CO welcomes community groups to adopt a street. Upon assignment of an area, the community group is issued an encroachment permit (valid for two years) and is required to pick up litter between 4 and 52 times per year or plant native trees/flowers, or remove graffiti. In recognition of the group's efforts, SJ CO displays the group's name on signage along the adopted street or in the adopted area.

Appropriate Applications

- SJ CO Streets.
- SJ CO walls or structures.

Limitations

- Some sections of highways are not safe for volunteer activities.
- Volunteers often only pick-up litter the minimum requirement of four times per year.

Operational Procedures

- Bagged litter and debris should be removed as soon as possible.
- When overseeing volunteer groups that are conducting litter pickup and graffiti removal, review D4a Litter and Debris Removal and D6 Graffiti Removal with the groups.
- If volunteer groups will be conducting landscaping and/or native plant re-vegetation projects, review E family BMPs as they apply to the group.

Vegetation Management

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Pesticides and herbicides
- Fuel and oil
- Sediment
- Organic material

Definition and Purpose	Vegetation management is the management of roadside vegetation within SJ CO rights-of-way by chemical treatment, cutting and removal by manual and mechanical methods, and irrigation. The purpose of vegetation management is fire protection, driver safety, weed control, aesthetics and erosion control. Vegetation management BMPs minimize the use of herbicides, encourage the use of non-chemical vegetation control methods, and reduce erosion and sediment discharges by stabilizing disturbed soil areas. Other practices serve to minimize the discharge of dead vegetation, clippings, sediment, irrigation water, and wood chips into the stormwater drainage system.
Appropriate Applications	This BMP should be implemented whenever vegetation management is performed.
Limitations	Vegetation management can result in reduced erosion control effectiveness. BMP implementation will depend on traffic, weather, available resources, and safety conditions.
Drainage Protection and Equipment Operation	When possible and practical, pre-plan your work to protect storm drainage systems and watercourses from discharge of potential pollutants and keep equipment in good operating condition: Look to see where the flow of a leak, spill, or other runoff would go. Identify drain inlets and watercourses, both upstream and downstream of the work site.

Vegetation Management

All vehicles and equipment should be clean and in good operating condition. Perform a thorough pre-operational inspection of vehicles and equipment Set-up the work area to minimize the tracking of material by vehicles and equipment in or out of the work area-

Housekeeping and Spill Control	Practice good housekeeping at the work site:
	Litter and debris should be collected and properly disposed of.
	Containers of liquids should be secured with lids until needed.
	Any spills should be controlled promptly. Transport collected materials back to a Maintenance facility or approved storage site.
	If a leak or spill occurs, protect drainage systems and watercourses from spilled material. For example, by covering or blocking drain inlets with sand bags, plastic bags filled with native material or absorbent booms. Remove covers/blocks once clean-up is completed.

Chemical Weed Control

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Pesticides
- Fuel and oil
- Herbicides

Definition and Purpose

This method of weed control uses herbicides to eliminate and prevent weed growth. The purpose is to control weed growth that would pose a harm to the growth and health of preferred vegetation or that may become a fire hazard, or other safety concern.

Operational Procedures

In order to achieve effective vegetation control through chemical means, Maintenance personnel should consider: (1) use of the correct herbicide or pesticide, (2) seasonal timing of applications, (3) speed of travel when applying chemical treatment, and (4) proper agitation of the spray tank. Maintenance personnel should implement the following procedures:

· Apply pesticides only as specified on the "Pesticide Use Recommendation" on the label. The pesticide label is considered to be the law. Use of a pesticide inconsistent with the label is considered to be a violation. Follow safety and application methods as specified in the Annual Pesticide Safety Training.
· Apply herbicides as recommended by the County Pest Control Manager.
· Minimize the use of post-emergent herbicides in and near the stormwater drainage system or watercourses.
· Calibrate the spray rig as needed, to ensure accurate applications of pesticides.
· Record the use of all pesticides.
· Avoid using overhead irrigation for as long as the chemical manufacturer recommends after applying pesticides or post-emergents.
· Avoid applying post-emergents prior to a predicted rain event.

Mechanical Weed Control

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Organic material (dead or decaying vegetation)
- Sediment
- on
- Fuel

Definition and Purpose

Mechanical weed control is the removal of weeds growing within the highway right-of-way using machinery and/or mobile equipment. The purpose is to control grass and weeds for aesthetics and fire prevention.

Operational Procedures t

When possible, keep any removed vegetation out of drain inlets, he stormwater drainage system, and watercourses.

Do not stack or leave removed weeds or other debris on or near drain inlets or in the stormwater drainage system or watercourses.

Do not fuel equipment next to drain inlets.

Leave organic material from mechanical weed control operations in place or spread on flat, non-landscaped areas to provide protection from erosion.

Do not place fuel or oil cans in watercourses, the stormwater drainage system or next to a drain inlet.

Tree and Shrub Pruning

Environmental Concerns
Discharge of the following materials into the stormwater drainage system or watercourses: • Organic material (dead or decaying vegetation) • Oil • Fuel

Definition and Purpose

Tree and shrub pruning is the trimming of trees and native shrubs to preserve the health and structure of trees and shrubs, to maintain sight distances and aesthetics, and to prevent property damage.

Operational Procedures

Do not stack or leave organic material (dead or decaying pruning wastes) on or near drain inlets, or in the stormwater drainage system or watercourses.

Remove prunings as soon as practicable.

When possible, chip removed vegetation (See E2c Brush Chipping).

Do not fuel equipment next to drain inlets.

Do not place fuel or oil cans in watercourses, the stormwater drainage system or next to a drain inlet.

When loading vegetative debris into a cargo truck, tarp or cover the load if required.

Do not leave debris on a paved shoulder or location where they could be transported by stormwater runoff into the stormwater drainage system or watercourses.

Tree and Shrub Removal

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Organic material (dead or decaying vegetation)
- Fuel Oil

Definition and Purpose	Dead trees and shrubs and those that are diseased or dying are removed to maintain safety by preventing any part of the dead tree or shrub from falling or blowing onto the roadway. Trees and shrubs are also removed to maintain a healthy landscape alongside the roadside.
Operational Procedures	Do not stack or leave organic material (dead or decaying vegetation) near drain inlets or in the stormwater drainage system or watercourses. Clear all prunings and stump grindings as soon as practicable. When possible, chip removed vegetation (See E2c Brush Chipping). When loading vegetative brush into a cargo truck tarp or cover the load if required. Do not fuel equipment next to drain inlets. Do not place fuel or oil cans in watercourses, the stormwater drainage system or next to a drain inlet.

Brush Chipping

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Organic material (chips)
- Fuel
- Oil

Definition and Purpose

Chipping is the mechanical cutting of limbs into chips. The purpose of this operation is to transport tree and shrub limbs away from the roadside in an efficient manner and to use the chipped material as mulch.

Operational Procedures

When chipping into the back of the truck, do not leave chips on the paved shoulder where they could be transported to the storm water drainage system or watercourses.

When chipping onto the ground, do not chip into the stormwater drainage system or watercourses.

Do not fuel equipment next to drain inlets.

Do not place fuel or oil cans in watercourses, the stormwater drainage system or next to a drain inlet.

Place/spread chipped material over non-landscaped areas (bare soil) to prevent or reduce soil erosion. '

Do not place chips in areas where high flows or runoff will transport them into the stormwater drainage system. For example, on steep slopes.

Water Line Repairs

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses: a Sediment

- Litter and debris
- Fertilizers
- Pesticides and herbicides
- Chlorine

Definition and Purpose

Water line repairs includes maintenance (water line flushing) and repair activities on broken water lines, sprinklers, or valves.

Operational Procedures

When flushing water lines, the rinse water should be reused for landscaping purposes if possible. Note that a stormwater drainage system discharge from water line flushing is considered to be a permissible non-stormwater discharge.

Shut off the water source from a broken line, sprinkler, or valve as soon as possible to prevent excess water from flowing.

Schedule necessary repairs on broken water lines as soon as possible.

When digging out the irrigation line, return the soil to the same area after repair is complete.

Protect downstream stormwater drainage systems and watercourses from water pumped or bailed from trenches excavated to repair water lines. For example, cover or block drain inlets with sand bags or plastic bags filled with native material. Remove covers/blocks once clean-up is completed.

Irrigation (Watering) Potable and Non-Potable

Environmental Concerns
Discharge of the following materials into the stormwater drainage system or watercourses: Sediment Litter and debris Fertilizers Pesticides and herbicides Chlorine from potable water sources Salts

Definition and Purpose	Irrigation or watering activities are conducted on landscaped areas using potable and non-potable water.
Operational Procedures	inspect irrigation system to ensure the appropriate amount of water is used and runoff is minimized. Consider factors such as soil structure, grade, time of year, and type of plant material in determining the proper amounts of water for a specific area. Make necessary repairs on broken water lines, sprinkler, valves, or nozzles as soon as possible (See E3a Water Line Repairs). Avoid over watering. Irrigation controllers should be programmed to minimize runoff and encourage deep rooting of vegetation.

Erosion Control

Environmental Concerns

Discharge of me following materials into the stormwater drainage system or watercourses:
- Sediment
- Organic material

Definition and Purpose	Erosion control/soil stabilization practices refers to the stabilization of cut and fill slopes and other areas within the highway right-of-way by means of establishing a vegetative cover or placing chips. The purpose is to maintain a vegetative cover to prevent erosion.
Operational Procedures	• Where possible, avoid removing vegetation from erodible surface areas. • Utilize erosion control measures that are appropriate for the area you are working in.

BMP F2

Non-Stormwater Discharges

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
Cleaning products
Litter and debris
Pesticides
Nutrients
Wash water from painting, concrete mixing or vehicle washing activities
Sanitary wastes

Definition and Purpose	This BMP is intended to help Maintenance personnel determine which non-stormwater discharges are allowed and which are prohibited according to the SJ CO Stormwater Permit and to control discharges from allowed non-stormwater discharges.
Appropriate Applications	This BMP provides guidance to Maintenance personnel in the field when they encounter non-stormwater discharges into SJ CO stormwater drainage system. This also provides guidance to ensure that maintenance facilities are in compliance with the non-stormwater provisions of the Permit. Because this is a complex issue, SJ CO personnel should consult with the Community Infrastructure Division for assistance in determining which discharges are allowed.
Limitations	SJ CO District Maintenance staff should consult with the Community Infrastructure Division.

Non-Stormwater Discharges

Category 1 - Prohibited discharges, connections or dumping to the storm water drainage system

This category includes illegal waste dumping and prohibited illicit connections. These discharges are not allowed in stormwater drainage systems under any situation. Notify the Community Infrastructure Division whenever these discharges are encountered.

- **Waste dumping -** Wastes deposited by citizens or contractors on or adjacent to SJ CO property. Examples: waste solvent drum discovered on right-of-way; crankcase oil discharged by contractor to the ground; painting wastes dumped by contractor; concrete wash water discharged by contractor.

- **Floor drains** - Floor drains in Maintenance facilities or other industrial-type facilities that are connected to the stormwater drainage system.

- **Industrial-type waste water discharges -** Discharge of waste water from an industrial process on SJ CO property to the stormwater drainage system or to a watercourse unless covered by a separate NPDES permit (Waste Discharge Requirements).

- **Vehicle and equipment wash water -** Commercial vehicle or equipment wash water containing cleaning solutions such as detergents and degreasers, or hydrocarbons, if the water is discharged to a stormwater drainage system or watercourse.

- **Sanitary wastes -** Connections or overflows from sanitary sewer systems or septic tanks and leach fields.

- **Construction wastes** - Includes slurry from saw cutting operations and concrete work.

- **Other prohibited illicit connections -** Any other permanent connection to the SJ CO stormwater drainage system not permitted by law. Any other direct discharge to a waterway from SJ CO property not included in Category 2.

- **Spills -** Accidental spills on roadways or construction sites. This includes spilled vehicle fluids at accident locations.

- **Intentional releases -** Any dumping which presents immediate risks to human health or the environment similar to those from a spill.

BMP F2

Non-Stormwater Discharges

Category 2 - Acceptable non-stormwater discharges

The following discharges are allowed as long as they are not identified as a source of potential pollutants by SJ CO.

Lower threat non-prohibited discharges:

- Diverted stream flows (potential pollutant: sediment)
- Ground water infiltration
- Uncontaminated pumped ground water
- Flows from riparian habitats and wetlands
- Rising ground water (potential pollutant: hydrocarbons or septic wastes from leaky tanks)
- Foundation drains
- Footing drains
- Water from crawl space pumps (potential pollutant: oil)
- Air conditioning condensation

Higher threat non-prohibited discharges:

- Water line flushing (potential pollutant: chlorine, sediment)
- Discharges from potable water sources (potential pollutant: chlorine)
- Irrigation water (potential pollutant: fertilizer, salts, pesticides, sediment, chlorine)
- Street wash waters related to cleaning and maintenance (potential pollutant: sediment, detergents, metals)
- Runoff from fire fighting (potential pollutant: sediment, other contaminants from fire)
- Construction-related dewatering (potential pollutant: sediment, soil contaminants)
- Other similar discharges on approval of the Executive Officer of the applicable RWQCB.

The following sources may be encountered adjacent to SJ CO roadways or within rights-of-way:

- Irrigation or watering of vegetation (potential pollutant: fertilizer, salts, pesticides, sediment, chlorine)

Welding and Grinding

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Slag
- Metal grindings

Welding and grinding is used during field and shop work on maintenance activities conducted on structures, such as bridges and roads, and individual service facilities

- Use appropriate protective measures when working near a drain inlet or a watercourse to prevent debris from entering the storm drain water drainage system or surface waters.

- Use fire blankets or fire proof tarps when welding over the side of a bridge to capture slag and metal grindings.

- When cleaning-up use appropriate container to collect any excess material.

- Transport collected materials back to a Maintenance facility or approved storage site.

Sand Blasting, Wet Blast with Sand Injection, and Hydro Blasting

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
Sediment (sand blasting grit)
Dust
Paint chips
Process water (hydro blasting)
Paint products (paint chips)
Rust
Steel

Definition and Purpose

Sand blasting and hydro blasting is used to clean residue from concrete walls and structural steel and for graffiti removal.

Operational Procedures

Where possible, when hydro blasting, collect as much process water as possible using a vacuum or other system, and return bulk materials and waste water to a Maintenance facility in an appropriate container. Dispose of the material in accordance to waste disposal procedures commonly used at the facility.

Where possible while performing hydro blasting, reduce sediment and metal loading as much as possible using appropriate or approved methods.
When sand blasting meter sand to use the minimum amount necessary to complete the job.

Collect as much sand blasting grit as possible.

Transport collected materials back to a Maintenance facility or approved storage site.

When sand blasting to remove lead-based paint use approved removal and disposal procedures.

Painting

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Paint products (paint, thinner, chips)
- Cleaning solutions (solvents)
- Equipment wash water

Definition and Purpose

Painting operations include the application of paint to facilities and highway and bridge surfaces and the routine maintenance of painting equipment.

Operational Procedures

Transport paint and materials to and from work sites in containers with positive locking lids. Secure the paint containers to the transport vehicle using approved methods (e.g., ropes and straps). When using conventional spray equipment monitor weather and wind direction to ensure that paint is not entering drain inlets, the stormwater drainage system or watercourses.

Do not transfer or load paint near drain inlets, the stormwater drainage system or watercourses.

If possible, use canvas or plastic tarps under work area to capture excess paint or paint chips. Transfer material captured by canvas or tarps into a waste container for disposal at a Maintenance facility.

Collect all paint equipment wash water and return it to a Maintenance facility. If possible, dispose of the equipment wash water in waste water evaporation trays at the facility. After the liquid evaporates, dispose of the remaining paint solids according to approved waste disposal procedures.

If waste water evaporation trays are not available, consult the Supervisor for proper disposal.

Bridge Repairs

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
Epoxies
Metal grindings
Concrete grindings and cuttings
Expansion joint filler
Concrete mix water
Concrete rinse water

Bridge maintenance activities include repairing bent or damaged steel beams, cracked or spalled concrete, damaged expansion joints, and bent or damaged railings.

When working over watercourses stage the operation to capture and collect as much debris as possible.

Transport the waste back to a Maintenance facility or approved storage site.

When repairing cracked or spalled concrete, see B2 Concrete Work.

Collect broken or damaged treated bridge pier fender posts and bring them back to a Maintenance facility. Dispose of the posts according to approved waste disposal procedures.

Pump Station Cleaning

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Litter and debris
- Petroleum products
- Sediment
- Metals

Definition and Purpose

Pump stations are used to dewater depressed highway sections where water routinely collects. Maintenance work includes structural repairs. removal of material from sumps, and periodic servicing or repairs of electrical and mechanical equipment. Periodic pump station inspection and cleaning will reduce the discharge of potential pollutants to the storm water drainage system or watercourses.

Appropriate Applications

This BMP provides guidance to Maintenance personnel involved in inspecting and cleaning pump stations

Operational Procedures

Inspect pump stations to determine if cleaning or repairs are required:

During the rainy season, pump stations should be inspected at least once every two weeks.

During the off-season, stations should be inspected at least monthly.

During each inspection visit, check for the following:

Inspect sump screen to ensure that it is free of debris which could block the flow of water to the pumps.

Check the level of solids in sumps. When solids accumulate to approximately 50% of the basin capacity, schedule sumps to be cleaned.

Pump Station Cleaning (cont.)

When large amounts of dirt or debris are entering the storage box or pump sump, take measures (such as the use of sandbags, gravel barriers or filter berms) to intercept the dirt or debris before it reaches drain inlets, the stormwater drainage system, or watercourses.

Inspect and clean (if necessary) pump outfall facilities to ensure a free flow of water beyond the pumping system.

Keep pump station swept and cleaned up. Miscellaneous supplies and tools, other than those used frequently for the pump station, should not be stored in the pump station or building.

Do not dump material removed from pump station, sumps or storage cistern alongside the roadway. Material removed from pump station facilities should be disposed of at an approved site.

Contain and collect pumping equipment drips or leaks by using drip pans or absorbent materials to absorb the oil or petroleum products.

During maintenance and repair of pump stations, remove all waste oil and place it in an approved container. Transport the waste oil to an approved site for recycling or disposal. Do not leave waste oil at the pump station.

Underpass Washing

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Wash water
- Litter and debris
- Cleaning products (detergents)

Definition and Purpose

Underpass washing reduces the accumulation of dirt, debris, and potential pollutants in these passageways; preserves the capital investment; and improves aesthetics.

Operational Procedures

If feasible, sweep underpass prior to conducting wash operations and properly dispose of swept material.

Dispose of wash water to the sanitary sewer system.

Tow Truck Operations

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
Fuel
Oil
Antifreeze
Battery fluid
Plastics
Rubber
Glass
Metal fragments

Definition and of Purpose	Tow truck operations involve the removal of vehicles from SJ CO rights of way.
Limitation	SJ CO does provide tow truck service in all areas.
Operational Procedures	When possible, collect loose vehicle parts that have fallen onto the roadway and bring them back to a Maintenance facility or approved storage site.

Lane Scrubbing Operations

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Process water
- Cleaning products (detergents)

Definition and Purpose	Lane scrubbing operations reduce the accumulation of dirt and oily buildup from vehicles.
Operational Procedures operations.	If feasible, use lane scrubber with vacuum capability to remove process water from pavement during lane scrubbing Properly dispose of waste water and swept material. Waste water should be discharged to a sanitary sewer system. The swept material should be transported to a Maintenance facility or approved storage site. When feasible use safer alternative products for cleaning products (See T7e Safer Alternative Products).

Saw Cutting for Detector Loops and Underground Utilities

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Concrete or asphalt cuttings
- Loop sealant

Definition and Purpose

Detector loops are electrical sensors used to trigger a traffic signal at an intersection and/or for long-term traffic counts. Installation of detector loops is accomplished by cutting into the road surface with a concrete saw, inserting the electric wire into the cut, and sealing the cut with loop sealant.

Operational Procedures

Minimize the use of water. Apply water only to the cutting site.

Avoid cutting concrete and installing loop detectors in wet conditions (See B2 Concrete Work).

Clean-up concrete or asphalt cuttings.

Use appropriate container to collect asphalt cuttings.

Minimize the use of loop sealant by carefully estimating the amount needed. Return excess loop sealant to a Maintenance facility and store this material according to approved storage procedures.

Clean-up excess loop sealant and place the collected material in an approved container.

Transport collected materials back to a Maintenance facility or approved storage site.

Thermoplastic Striping and Preheaters

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Thermoplastic material
- Oil

Definition and Purpose

Pavement marking with thermoplastic materials is used for pavement delineation to guide or control vehicular traffic. Thermoplastic material is heated in preheater equipment then applied to pavement by thermoplastic stripers or applicators.

Operational Procedures

Make certain that all thermoplastic striper and preheater equipment shutoff valves are working properly to prevent leaking thermoplastic from entering drain inlets, the stormwater drainage system, or watercourses.

Preheater should be filled carefully to prevent splashing or spilling of hot thermoplastic. Leave six inches of space at the top of the preheater container when filling thermoplastic to allow room for material to move when the vehicle is deadheaded.

Do not pre-heat, transfer, or load thermoplastic near drain inlets or watercourses.

Clean truck beds daily of loose debris and melted thermoplastic. When possible recycle thermoplastic material. Dispose of unused material place thermoplastic waste in an appropriate container.

Transport collected materials back to a Maintenance facility or approved storage site.

Paint Striping and Markings

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Paint products
- Clean products (solvents)

Definition and Purpose

Pavement striping is used to supplement traffic signs and to guide and control vehicular traffic. Longitudinal pavement striping delineates the separation of traffic flow on highways and freeways. Water-based paints are applied using striper paint systems.

Pavement paint markings are used to supplement traffic signs and to guide and control vehicular and pedestrian traffic. Water-based paints are applied to pavement by using stencil or striper paint systems. Stencils are also used to place pavement paint markings.

Operational Procedures

Do not transfer or load paint near drain inlets, the storm water drainage system, or watercourses.

Monitor weather and wind direction to ensure that paint is not entering drain inlets, the stormwater drainage system, or watercourses.

Be sure no pressure remains in paint striper system when setting up, cleaning, pulling filters, or servicing spray guns. Release pressure on bead tank before removing lid.

Check to ensure that the paint spray gun remains closed when not in use to prevent leaks.

Check for leaking or ruptured paint containers.

Small paint spills should be wiped up immediately with rags. Use dry absorbent material for larger spills. Dispose of absorbent and rags at a Maintenance facility or approved site.

Raised/Recessed Pavement Marker Application and Removal

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Bitumen adhesive
- Oil
- Pavement markers
- Epoxy

Pavement markers are used to supplement traffic signs and convey messages or directions to motorists. Pavement markers are either surface mounted (raised) or placed in recessed slots in the pavement. Markers are applied using bitumen/epoxy adhesives. Damaged or old markers are removed for replacement using hand tools or special attachments on a motor grader.

Do not transfer or load bituminous material near drain inlets, the stormwater drainage system or watercourses.

Melting tanks should be loaded with care and not filled to beyond three inches from the top to leave room for splashing when vehicle is deadheaded.

When servicing or filling melting tanks, ensure all pressure is released before removing lids to avoid spills.

On large scale projects, use mechanical or manual methods to collect excess bituminous material from the roadway after removal of markers.

Transport collected materials back to a Maintenance facility or approved storage site.

Thermoplastic Grinding/Removal

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Thermoplastic grindings (yellow thermoplastic may contain lead)
- Asphalt grindings
- Concrete grindings

Definition and Purpose	Thermoplastic material is applied to the road surface to delineate lanes. pedestrian crosswalks, turn pockets, and to convey other information to the motorist. Damaged or obsolete thermoplastic material is removed by grinding, hand removal, heating and scraping, etc. the material off the pavement surface.
Operational Procedures	Collect excess asphalt, concrete, and thermoplastic grindings. Transport collected materials back to a Maintenance facility or approved storage site.

Sign Removal and Replacement

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Building products (wood post material)
- Concrete
- Flow from damaged water lines

Definition and Purpose

Sign installation may range from digging a hole for a small one-post sign to more complex activities such as mounting large multi-panel signs on overhead sign structures. When signs are damaged or obsolete, they are replaced or removed.

Operational Procedures

Be careful when digging in landscaped areas to avoid damaging buried water lines (call USA at 1-800-277-2600, or 1 -800-422-4133), so as to prevent work area debris from being transported by flow from damaged water lines to drain inlets, the stormwater drainage system, or watercourses.

Collect debris from broken sign posts.

Transport collected materials back to a Maintenance facility or approved storage site.

When sign replacement involves the use of concrete refer to B2 Concrete Work.

Median Barrier Repair

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:

- Concrete, metal and bituminous debris

Definition and Purpose	Median barriers may require repair following an accident, or as part of routine maintenance activities.
Operational Procedures	When working over water, avoid dropping work materials concrete, bituminous materials, metals, wood. etc.) into watercourses or leaving work materials in an area where they could be washed into dram inlets or the stormwater drainage system. Transport the waste back to a Maintenance facility or approved storage site and dispose of properly. When median barrier repair requires concrete work, see B2 Concrete Work.

Minor Slides and Slip-Outs

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or receiving waters:
- Sediment
- Organic material (dead vegetation)
- Asphalt

Definition and Purpose

Repair of minor slides and slip-outs includes cleaning up or backfilling minor slides, slip-outs, or other minor damage to the roadside, the removal of materials (soil. rock. boulders) that have been deposited on the roadway by wind, water, or minor landslides, placing dikes or otherwise controlling drainage at minor slides and slip-outs, filling and repairing minor erosion damage to cut and fill slopes, and clearing the roadside of downed or damaged vegetation.

Operational Procedures

· Locate watercourses, drain inlets, and drainage ditches downstream of the area where minor slides and slip-outs are being repaired or cleared.

· When practical, protect watercourses, drain inlets, and drainage ditches from discharges of sediment or organic material. For example, by installing temporary sediment barriers such as rock filter berms or sand bag barriers.

· When clearing the roadside of downed or damaged vegetation avoid placing the vegetation near drain inlets, or in watercourses or drainage ditches.

· Stockpile material removed from roadways away from drain inlets, drainage ditches, and watercourses.

· Where appropriate consider installing temporary sediment barriers around stockpiled materials in the winter season after the clean-up and repair of the minor slide and slip-out is completed.

· Where feasible, apply a temporary around cover of protective mulch to protect the soil surface from rain and wind erosion. See E9 Erosion Control.

· Where possible, set-up the work area such that vehicles will not track materials in or out.

Oil/Water Separators

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Oil
- Grease

Definition and Purpose	Maintenance facilities which have vehicle wash racks or other vehicle washing areas typically have oil/water separators installed at the vehicle wash areas. Additionally, Maintenance facilities may have portable oil/water separators for pretreatment of mop water and other wash waters prior to disposal to the sanitary sewer. Oil/water separators may be used when floating product or high concentrations of oil and grease are present in waste water and source controls will not be effective. This BMP promotes proper maintenance of oil/water separators, which reduces the potential for water pollution
Appropriate Applications	The procedures are for oil/water separators which use gravity separation using baffles. Oil/water separators using other media may require other maintenance guidelines.
Limitations	Oil/water separators do not directly apply to stormwater protection because the waste water is required to be disposed to the sanitary sewer system. Oil/water separators may be installed in the stormwater drainage systems; however, the typically low concentrations of oil in most stormwater limit the effectiveness of removal by an oil/water separator. In addition, the oil that accumulates in oil/water separators is usually considered a hazardous waste.

Oil/Water Separators

Operational Procedures

Oil water separators require frequent maintenance throughout the life of the structure. The following procedures should be implemented by Maintenance personnel who are responsible for operation and maintenance of oil/water separators:

- Oil/water separators should be inspected and cleaned on a regular basis. Scheduled maintenance includes removal of accumulated oil and grit to maintain effective performance.

- Dispose of oil properly, following all applicable hazardous waste disposal guidelines. Recycle the oil if possible.

- Grit removed from the oil/water separator may be classified as hazardous waste if it is contaminated with oil or heavy metals. Check with the Supervisor for proper procedures for disposal.

- Record maintenance dates of oil/water separators in order to track upkeep and to prolong the life of the device.

Waste Minimization, Handling, and Disposal

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Litter and debris
- Sediment
- Organic and inorganic material

Definition and Purpose

This BMP is intended to reduce the potential for the discharge of potential generated during waste handling and disposal activities to the stormwater drainage system or watercourses by minimizing exposure of the waste to stormwater.

Appropriate Applications

This BMP provides general waste minimization guidance for non-hazardous and hazardous wastes handled at Maintenance facilities.

Limitations

Hazardous waste generators have specific waste minimization requirements which must be documented.

Operationa Procedures

l• Methods for reducing the discharge of potential pollutants in waste include source reduction, reuse and recycling, tracking of waste generation, safe storage and disposal practices, and minimizing contact between stormwater and waste.

- When possible, purchase or order supplies in smaller quantities to minimize excess or expired materials.

- Closely evaluate waste streams: processes generating waste, chemical spill records, shelf life expiration, and product or raw material inventory records.

- Inspect waste storage areas to ensure that materials stored in the area are not leaking, and if they do leak, take immediate measures to repair the leak.

- Train staff to minimize wastes (e.g., use all paint, stop leaks and spills, and recycle all oil).

- Reduce or minimize waste handling activities when it is raining, the ground is frozen, or the ground is saturated.

- Store hazardous materials in approved labeled containers.

BMP T4c

Used Oil Recycling

Environmental Concerns
Discharge of the following materials into the stormwater drainage system or watercourses: Oil

Definition and Purpose

This BMP applies to vehicle and equipment maintenance activities and other activities occurring at Maintenance facilities which generate oil. Used oil is classified as a hazardous waste and is harmful to the environment. It is SJ CO policy to recycle all used oil. Recycling waste oil in conformance with State regulations removes it from classification as a hazardous waste.

Appropriate Applications

This BMP applies to uncontaminated used crankcase oil and waste equipment oil. It does not apply to waste oil containing chlorinated hydrocarbons (e.g., methylene chloride) or other hazardous substances

Limitations

Waste oil is to be handled following the requirements for hazardous waste generators (manifest, accumulation time, biennial report, etc.). Waste oil which is contaminated with chlorinated hydrocarbons or other hazardous substances must be handled as a hazardous waste. Check with the Supervisor for specific guidelines.

Operational Procedures

Maintenance facilities should implement the following procedures for all activities that use oil:

- A designated waste oil drum or tank should be located near the activities which generate used oil.

- Designate containers for used oil filters.

- All waste oil containers stored outside shall be covered and have secondary containment.

- All containers must be clearly labeled 'Used Oil," or "Used Oil Filters," and should include the accumulation start date.

- Waste oil should not be mixed with any other type of waste or material, so that me oil can be recycled.

Used Oil Recycling

Maintenance/Equipment Shop personnel involved in activities which produce waste oil should manage the waste oil and filters in the following way:

Drain the oil in the used filters into the waste oil drum or tank, and close the drum/tank cover securely after use.

Place the used oil filter in the designated drum and close the cover securely.

Other Guidelines

Oily rags and wipes are a potential fire hazard. Place oily rags and papers in a fire-proof can designated for this purpose. Use a rag cleaning service for disposal of the rags if possible. If the rag or wipe is potentially contaminated with a listed hazardous waste, handle it as a hazardous waste.

Typically, empty oil containers can be disposed of as solid waste if the containers are smaller than 5 gallon size. If the container size is 5 gallons or larger, it should be sent for metal reclamation or reconditioning.

BMP T5a

Maintenance Facility Housekeeping Practices

Environmental Concerns
Discharge of. the following materials into the stormwater drainage system or watercourses: Fuel Oil Chemicals (acids, solvents) Hazardous Waste Heavy metals Nutrients Sediments

Definition and Purpose

Daily activities occurring at Maintenance facilities often involve the use of materials and products which are potentially harmful to the environment. Good housekeeping practices are intended to reduce the potential for discharge of pollutants to the stormwater drainage system or watercourses by promoting efficient and safe storage, use, and clean-up methods of potentially harmful materials.

Appropriate Applications

Proper housekeeping practices apply to all Maintenance personnel who participate in activities which have the potential to generate materials that can be discharged to the stormwater drainage system or watercourses.

Operational Procedures

The following procedures should be implemented by all personnel at Maintenance facilities:

- Sweep or vacuum maintenance facility floors and pavement to prevent tracking of materials outdoors. Use mopping as an alternative to hosing down work areas when possible.

- If mopping is used to clean floors or pavement, contain and dispose of the mop water to the sanitary sewer system following these guidelines:

- Remove any spilled oil or other liquids using dry sweep or rags.

- Do not dispose of mop water into the parking lot, street, gutter, or drain inlet.

Maintenance Facility Housekeeping Practices

- If an oil/water separator is available, pour the mop water into the separator so that the wastewater is treated before being discharged to the sanitary sewer system

- Use drip pans or absorbent material under leaking vehicles and equipment to capture fluids.

- Promptly remove absorbent material or drip pan after use.

Recycling

- Recycle materials such as used oil, antifreeze, solvents or asphaltic emulsion whenever possible.

- Ensure containers are clearly labeled.

Building and Grounds Maintenance

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
Litter and debris
Organic material
Fertilizer
Pesticides
Herbicides

Definition and Purpose	Permanent Maintenance facilities require building and grounds maintenance. Building and grounds maintenance includes care of landscaped areas around the facility, cleaning of parking areas and pavements other than in the area of industrial activity, and maintenance of the stormwater drainage system. Minimization of water use, proper handling and disposal of waste collected and wash waters used during building and grounds maintenance, and immediate clean-up of spills are key elements in the protection of stormwater quality.
Appropriate Applications	This BMP is applicable to Maintenance personnel involved in building and grounds maintenance activities.
Limitations	If a large spill should occur, it may be necessary to utilize a private company or Hazmat team for clean-up.
Operational Procedures	Minimize water use in washing activities. Properly dispose of wash water and sediment generated by building maintenance activities. Dispose of wash water to the sanitary sewer system. Dispose of sediment as solid waste. Regularly inspect, clean, and maintain the stormwater drainage system. This is particularly important in the fall prior to the first rains (in areas with seasonal wet weather). Dispose of sweepings and cleaning wastes as solid waste.

Building and Grounds Maintenance

Apply fertilizers and pesticides in accordance with the label instructions (See E 1a Chemical Weed Control). Utilize integrated pest management where appropriate.

Avoid excessive irrigation of landscaped areas to minimize runoff containing nutrients, pesticides, and herbicides (See E3b Irrigation (Watering) Potable and Non-Potable).

Storage of Hazardous Materials (Working Stock)

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
Acids
Solvents
Paint Products
Pesticides
Fertilizers
Fuels
Oils

Definition and Purpose	Maintenance facilities store a variety of products which may be harmful to the environment if they come in contact with surface waters. This BMP is intended to reduce the potential for the discharge of materials from hazardous material storage sites to the stormwater drainage system or watercourses by minimizing exposure of the materials to stormwater and safeguarding against accidental release of materials.
Appropriate Applications	This BMP is applicable to Maintenance facilities that store hazardous materials.
Limitations	This BMP only provides hazardous materials storage procedures for the purposes of stormwater pollution prevention.
Procedure	Proper hazardous materials storage procedures can be found in the following documents. Hazardous Materials Management Plan - In most cases, a Maintenance facility will have a Hazardous Materials Management Plan as required by state law. Hazardous materials storage must conform to this plan.

BMP T7a

Storage of Hazardous Materials (Working Stock)

The following should be implemented at Maintenance facilities:

Hazardous Materials Storage (General)

- Store hazardous materials in a designated area containing similar and chemically compatible materials. Do not store incompatible products in the same storage area without some type of physical barrier separating the containers. For example, do not store oxidizers, such as hydrogen peroxide, with organics, or flammable materials such as oil.
- Where feasible, store hazardous materials under cover and away from areas that might drain into the stormwater drainage system or watercourses.
- Keep labels on containers and ensure that covers or caps are secure.
- Install safeguards to prevent accidental releases such as overflow protection devices, automatic shutdown transfer pumps, protection guards around tanks and piping to prevent vehicle or forklift damage, labeling, and limit access to unauthorized persons.
- Comply with all federal and state requirements for the storage of hazardous materials and oil, including a Spill Prevention Control and Counter-measure (SPCC) Plan when required.
- Train personnel on proper handling procedures and familiarize them with the procedures in the emergency response plan.
- Maintain hazardous materials storage areas to minimize exposure to stormwater by storing materials on paved surfaces, minimizing storage and handling of materials, and regularly inspecting storage facilities.
- Maintain an ample inventory of appropriate spill clean-up materials near the storage area. Keep absorbent and baking soda on hand to soak up spilled fluids and to neutralize spilled acid from cracked batteries.
- Any spills should be attended to immediately.
- Store hazardous liquid and solid materials with secondary containment **(Uniform Fire Code Article 80, Section 8003.1.3.3).**
- Store used lead acid batteries, including cracked batteries in secondary containment.

Storage of Hazardous Materials (Working Stock)

Regular Maintenance of Outdoor Container Storage Area

- Inspect storage areas regularly. Ensure all containers are labeled, covered, and in good condition.

- If a container is corroded or leaking, have trained and qualified personnel or the Supervisor transfer wastes to a new clean container. Label the new container appropriately and properly dispose of the old container. The old container may be classified as hazardous waste.

Paint Storage Area

- Inspect all pallets of paint to ensure that they are securely fastened before moving.

- Load and off load paint on level ground when using a forklift to minimize possible spills and ruptures of paint containers.

- Where feasible, store paint materials in an area with a canopy or roof designed to direct runoff away from the area.

Wood Post Storage Area

- Cover wood post storage areas during the rainy season.

Outdoor Loading/Unloading of Materials

Environmental Concerns

Discharge of the following materials into the stormwater drainage system
or watercourses:
Pesticides
Fertilizers
Cleaning products
Petroleum products
Asphalt
Concrete
Paint products

Definition and Purpose

This BMP describes procedures and practices for the loading and unloading of materials in a manner which minimizes the discharge of the materials to the stormwater drainage system or watercourses.

Appropriate Applications

This BMP is applicable to Maintenance facilities where facility activities involve loading and/or unloading of the following materials:
Pesticides
Fertilizers
Cleaning products
Petroleum products such as fuels, oils, greases
Asphalt and concrete compounds
Hazardous materials such as acids, lime, glues, adhesives, paints, Solvents, and curing compounds (Also see T7a Hazardous Material

Operational Procedures

Storage Controls [Working Stock])

Paint products

Outdoor loading/unloading areas should meet the following requirements:

- It is desirable to conduct outdoor loading/unloading on paved surfaces.
- An ample supply of spill clean-up materials should be stored in readily accessible locations in the vicinity of the loading/unloading area.
- If feasible and appropriate, a dead-end sump should be installed beneath loading docks where large quantities of liquids are handled.

Outdoor Loading/Unloading of Materials

Maintenance facility personnel involved in outdoor loading/unloading of materials should implement the following procedures:

- Limit exposure of the materials to precipitation.
- Regularly check loading and unloading equipment for leaks before and after use.
- Contain leaks during the transfer of materials.
- If practical, place drip pans under hoses when making connections and during liquid material
- Inspect loading/unloading areas before and after precipitation events, and as needed during other times to promote good housekeeping.
- Repair and replace perimeter controls, containment structures, and covers as needed to keep them properly functioning.

Material Storage Controls (Hazardous Waste)

Environmental Concerns

Discharge of the following waste into the stormwater drainage system or watercourses:
- Any material considered by the State of California or Federal regulations to be hazardous waste.

Definition and Purpose

Maintenance facilities store a variety of products which may adversely impact water quality if they come in contact with surface waters. This BMP is intended to reduce the potential for the discharge of hazardous waste from hazardous waste storage sites to stormwater drainage systems or watercourses by providing safeguards against accidental releases and minimizing exposure of the hazardous waste to stormwater.

Appropriate Applications

This BMP is applicable to all Maintenance facilities that store and/or any material considered by the State of California or Federal regulations to be hazardous waste.

Limitations

Major contamination, large spills, and other serious hazardous waste incidents require immediate response from specialists such as private clean-up companies or Hazmat teams.

Operational Procedures

Maintenance facility Supervisors should ensure that all equipment and materials required for proper storage of hazardous waste are available and the following items are implemented as appropriate:

- Maintain hazardous waste storage areas to minimize exposure to stormwater by storing waste on paved surfaces, minimizing storage and handling of waste, and regularly inspecting storage facilities.

- Ensure that existing storage areas meet regulatory standards.

- Maintain an ample inventory of appropriate spill clean-up materials near the storage area. Keep absorbent and baking soda on hand to soak up spilled fluids and to neutralize spilled acid from cracked batteries.

Material Storage Controls (Hazardous Waste)

Regulations that apply to the management of self-generated hazardous waste include the Code of Federal Regulations Title 40, Part 262, the California Code of Regulations (CCR) Title 22, Sections 66262, and 66265, and the Uniform Fire Code (UFC) Articles 79 and 80. These regulations mandate proper procedures for identification, accumulation, record keeping, and storage (e.g., management of containers) of hazardous substances. With consideration to these regulations, those responsible for handling hazardous waste in storage areas should:

- Ensure all containers are covered, securely fastened, and properly labeled.

- Ensure that hazardous waste storage areas are properly secured to prevent unauthorized access and to prevent accidental spillage, or any other unauthorized access.

- Store hazardous liquid and solid waste with secondary containment (UFC Article 80, Section 8003.1.3.3).

- Store used lead acid batteries, including cracked batteries, in a covered area with secondary containment.

- Conduct weekly routine inspections and check for external corrosion or other signs of wear of material containers (CCR Title 22 Section 66265.174).

- Any spills should be attended to immediately.

- Place collected waste in an approved container. Dispose of the contents according to approved waste disposal procedures.

Outdoor Storage of Raw Materials

Environmental Concerns
Discharge of the following materials into the storm, water drainage system or watercourses: Soils Aggregates Asphalt and concrete products Mulches Road abrasives Salt Wood products

Definition and Purpose

Maintenance facilities and activities based out of Maintenance facilities store a variety of products which may be harmful to the environment if they come in contact with stormwater runoff. This BMP is intended to reduce the potential for the discharge of products from outdoor raw materials storage sites to the stormwater drainage system or watercourses by minimizing exposure of the products to stormwater.

Appropriate Applications

This BMP is applicable to Maintenance facilities that store raw materials such as asphalt, sand, soils, treated wood posts, and mulch outdoors.

Limitations

Hazardous materials and wastes have special requirements for outdoor storage (See T7a Storage Hazardous Materials (Working Stock).

Operational Procedures

The following procedures should be implemented at outdoor storage areas:

- Store materials away from areas that might drain into the storm water drainage system or other watercourses, or
- Where feasible, cover the storage area with a canopy or roof that is designed to direct the runoff away from the storage area, or
- Where practical cover (tarp) dry materials to prevent water intrusion during the winter season, or

- Protect storm drain inlets with sand bags, geotextile dams, filtration socks, berms and hay bales etc.

Outdoor Storage of Raw Materials

Maintenance facility personnel involved with outdoor storage of raw materials should implement the following procedures:

- Promote good housekeeping procedures (See T5a Maintenance Facility Housekeeping Practices) including sweeping of surfaces where material is blown or washed from the storage area, keeping materials covered, and keeping storage containers in good condition.

- Inspect storage areas regularly.

Safer Alternative Products

YES
☑ Non-caustic detergents ☑ Water based degreasers
No
☑ Organic solvents ☑ Toxic materials

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
Automotive products
Cleaning products
Paint products
Pesticides
Fertilizers
Building products

Definition and Purpose

A variety of products which may be harmful to the environment if they come in contact with surface waters are used in maintenance facilities and activities. In some cases, a harmful product may be replaced by a less harmful product which serves the same purpose. The less harmful product is referred to as a safer alternative product. The primary purpose of using safer alternative products is to reduce the potential for the discharging toxic products to stormwater drainage systems or watercourses.

Appropriate Applications

When safer alternative products exist for cleaning products, paints, pesticides, automotive products, and fertilizers, they should be used where practical and effective.

Limitations

Alternative products may not be available, effective, or cost effective in every situation.

Operational Procedures

Supervisors responsible for ordering products should select products Based on the guidelines below, Maintenance personnel should use safer alternative products when available

- Automotive products -In some cases, less toxic alternatives are not available for all automotive products (e.g., lubricants, coolants, and hydraulic fluids), but there are less toxic alternatives to car polishes, degreasers, and windshield washer solutions.

Safer Alternative Products

Cleaning products - Vegetable-based or citrus-based soaps and asphalt release agents are available to replace petroleum-based soaps/detergents.

Paint products - Water-based paints, wood preservatives, stains, and finishes are available.

Pesticides/Herbicides - Specific alternative products or methods exist to control most insects, fungi, and weeds. Use "general use" (non-restricted use) herbicides.

Fertilizers - Compost and soil amendments are natural alternatives to chemical fertilizers.

Building products - Pressure treated wood posts are alternatives to wood posts treated with creosote.

Other Guidelines

Avoid accumulating and storing unnecessary products. Use up existing products before additional products are purchased or used.

When using pesticides, comply with all EPA and California environmental regulations and SJ CO policies, procedures, and regulations.

Use training to create awareness among employees regarding the use of safer alternatives.

Even safer alternative products can result in the discharge of harmful materials to stormwater drainage systems or watercourses. Use safer alternative products in strict accordance with manufacturers recommendations and T5a Maintenance Facility Housekeeping Practices and T4b Waste Minimization, Handling, and Disposal.

Vehicle and Equipment Fueling

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
- Fuel
- Vehicle fluids
- Oil

Definition and Purpose

When vehicle and equipment fueling takes place at a Maintenance facility there is the potential for fuel to be leaked or spilled at the site. The procedures for vehicle and equipment fueling are designed to minimize contact between stormwater runoff and spilled fuel, oil, or other leaked vehicle fluids at equipment fueling areas.

Appropriate Applications

These procedures should be implemented at all equipment fueling areas.

Operational Procedures

All maintenance facilities should implement the following practices for vehicle and equipment fueling activities:

- An ample supply of spill clean-up materials, and spill control equipment should be kept near fueling areas to clean-up spills.

- Proper fueling and spill clean-up instructions should be posted at fueling areas.

- Automatic shut off valves should be installed at each pump, and manual shut off valves should be installed inside shop buildings.

- Fuel tanks and fuel dispensers should have current permits with the appropriate agencies.

Maintenance facility personnel who are involved in vehicle and equipment fueling activities should adhere to the following guidelines:

- When cleaning the area, use a "dry shop" principle (a damp cloth on the pumps and damp mop on the pavement).

- Avoid hosing off of the fueling area

Vehicle and Equipment Fueling

Inspect portable fueling tanks regularly for cracks and leaks. Repair as necessary.

Handle and dispose of used spill pillows and other absorbents as hazardous waste. Be on the alert for possible fire hazards. Spills should be cleaned-up. For example, use absorbent material or a dry mop method. Place absorbent material collected by sweeping in a waste container. Dispose of the contents according to approved disposal procedures.

Vehicle and Equipment Pressure Washing

Environmental Concerns
Discharge of the following materials into the stormwater drainage system or watercourses: oil Fuel Cleaning products (detergents) Vehicle fluids Sediment Metals

Definition and Purpose

When vehicle and equipment pressure washing is conducted at a Maintenance facility it is essential that the wash water not to be disposed to the stormwater drainage system. Alternative disposal methods include recycling or discharge to a sanitary sewer system. Proper vehicle and equipment pressure washing minimizes contact between stormwater runoff and the equipment washing area, and ensures that the wash water is not discharged to the stormwater drainage system or watercourses.

Appropriate Applications

This BMP is applicable to all pressure washing operations for vehicles and equipment.

Limitations

SJ CO may require permits, pretreatment and/or monitoring of wash water discharges.

Operational Procedures

Where vehicle and equipment pressure washing activities occur at Maintenance facilities, the activity should be located within a structure or building equipped with a connection to the sanitary sewer system or closed loop system. If a washing area must be located outside, the area should have the following characteristics:

- The area should be surrounded by berms or graded to minimize contact with stormwater running onto the area.

- The area should be paved with concrete.

Vehicle and Equipment Pressure Washing

- The pressure washing area should drain to a dead-end sump or directly into the sanitary sewer system.

- Wash water containing cleaning solutions such as detergents and degreasers, or hydrocarbons, should be prevented from entering the stormwater drainage system or watercourses.

Other procedures which should be implemented by Maintenance facility personnel involved with vehicle and equipment pressure washing operations include:

- Where feasible, designate an area for pre-wash of vehicles and equipment to capture solid materials.

- Vehicle and equipment washing areas should be inspected periodically.

- The sump should be serviced regularly.

- Good housekeeping practices should be implemented according to T5a Maintenance Facility Good Housekeeping Practices.

- Water usage should be minimized.

Vehicle and Equipment Maintenance and Repair

Environmental Concerns
Discharge of the following Materials into the stormwater drainage system or watercourses: Oil Vehicle fluids Fuel Paint products Metals

Definition and Purpose

Vehicle and equipment maintenance and repair may include vehicle fluid removal, engine and parts cleaning, body repair, and painting. This BMP is intended to reduce the discharge of potential pollutants from areas in which vehicle maintenance and repair activities are conducted by employing controls which minimize contact between stormwater and the activity areas and products used in each activity.

Appropriate Applications

This BMP is applicable to Maintenance and Equipment Shop personnel who are involved in vehicle and equipment maintenance and repair activities both at maintenance facilities and in the field.

Operational Procedures

Specific maintenance and repair activity procedures are described below

- Vehicle fluid removal

- Transfer contents to designated vehicle waste fluid storage barrels or tanks as soon as possible (See T4c "Used Oil Recycling).

If required, drain the fluid into a pan and immediately transfer the fluid to the designated waste vehicle fluid storage barrel or tank. A larger drip pan may be placed under the primary drain pan to catch any spilled fluids.

- Promptly remove drip pan after use.

- Ensure safeguards, such as oil shut-off valves, are installed and maintained.

Vehicle and Equipment Maintenance and Repair

- Engine and Parts Cleaning

  - Use self-contained sinks or tanks when working with solvents. Periodically check degreasing solvent tanks for leaks. Make necessary repairs as soon as possible.

  - Allow parts to drain over the solvent sink or tank, rather than allowing the solvents to drip or spill onto the floor.

  - Allow parts to dry over the hot tank if available. If rinsing is required, rinse over the hot tank.

  - Recycle waste water from steam-cleaning or pressure washing procedures as much as possible. Waste water from steam-cleaning cannot be poured into storm drains. Discharges of this wastewater to the sanitary sewer system may require permits and/or pretreatment (oil/water separator).

  - Designate specific areas in service bay for parts cleaning. Do not wash or rinse parts outdoors, since the discharge may enter a storm drain. Drains should be appropriately labeled to indicate whether they flow into a treatment system such as an oil/water separator, the sanitary sewer, or directly to the storm water drainage system.

- Body Repair and Painting

  - When receiving damaged vehicles, inspect for fluid leaks and use drip pans, if necessary.

  - Minimize use of hose-off degreasers to clean body parts before painting. Instead, brush off loose debris and use rags to wipe down parts. Dispose of rags as solid waste.

  - Use a shop vacuum to clean-up dust from sanding material. Do not use vacuums for flammable liquids. Debris from wet sanding can be allowed to dry overnight then swept or vacuumed. Dispose of dust as solid waste.

  - Minimize waste paint and thinner by carefully calculating paint needs based on surface area and using proper sprayer cup size.

Vehicle and Equipment Maintenance and Repair

- Body Repair and Painting (cont.)

  - Do not use water to control overspray or dust in the paint booth unless you collect this wastewater. This water is to be treated prior to discharge into the sanitary sewer system.

  - Clean spray guns in a self-contained cleaner. Recycle me cleaning solution when it becomes too dirty to use. Do not discharge cleaning waste to me sewer or storm drain.

- Drain Control

  - Keep internal floor drains plugged unless they drain to the sanitary sewer. Use dry clean-up methods, such as sweeping, when possible.

  - Keep spill control equipment and covers available to protect external drain inlets.

Above Ground Tank Leak and Spill Control

Environmental Concerns

Discharge of the following materials into the stormwater drainage system or watercourses:
Fuel
Oil
Paint
Herbicides
Asphaltic emulsion

Definition and Purpose

Maintenance facilities may utilize above ground storage tanks for storage of bulk quantities of liquids. Often the liquids stored are potentially harmful to the environment. This BMP is intended to reduce the discharge of potential pollutants to the stormwater drainage system or watercourses from above ground storage tanks by installing safeguards against accidental releases

Appropriate Applications

This BMP should be implemented at all above ground storage tank locations by personnel responsible for above ground storage tank operation, inspection and maintenance.

Limitations

If a large spill should occur, it may be necessary to utilize a private clean-up company or Hazmat team for clean-up. If a large spill or rupture occurs, call 911, contact supervisor and the Fire Department. Any large spill from an above around storage tank shall be reported to the supervisor and Fire Department. Supervisor shall notify County OES

Operational Procedures

Maintenance facility supervisors should ensure that the following procedures are implemented as appropriate:

- Inspect existing above ground storage tanks, secondary containment, and associated valves and piping for external corrosion, structural failure, and loose connections.

Above Ground Tank Leak and Spill Control

- Keep an appropriate spill kit near above ground tanks. (Insert size of spill kit) This includes an ample supply of clean-up materials (absorbent materials, shovel, rags, and plastic bags) near above ground tanks. Update and replenish the spill kit as changes occur in the types of materials stored.

- When required, review appropriate Spills Prevention Countermeasures and Control (SPCC) plan for the Maintenance facility.

- Any spills should be controlled immediately. For example, wet spills should be absorbed using an absorbent material or dry mopped. Place absorbent material collected in a waste container and dispose of the contents according to approved waste disposal procedures.

- Inspect or test rain water in secondary containment prior to releasing.

- After releasing rain water from secondary containment ensure that drain valve is closed.

Parking Lot Cleaning BMP MO-2

This Fact Sheet provides Best Management Practices (BMPs) that are recommended for the sweeping, cleaning and repair of municipally-owned parking lots.

Potential Pollutant Sources

The following activities are potential sources of pollutants:

- Waste disposal
- Surface Cleaning
- Maintenance and Repair

Pollutants may include:

- Bacteria
- Heavy metals (copper, lead, nickel and zinc)
- Sediment
- Hydrocarbons (oil and grease)
- Organics
- Trash

Pollution Prevention

Implementation of pollution prevention measures may reduce or eliminate the need to implement other more costly or complicated procedures.

The following pollution prevention principles apply to most facilities:

- Use alternative, safer, and/or recycled products;
- Reduce storm water flow across the site and redirect flows away from areas of concern;
- Reduce the use of water and/or use dry methods;
- Recycle and reuse waste products and waste flows; and.
- Provide on-going employee training.

Best Management Practices and Procedures

GENERAL

- Minimize the use of water for cleaning.
- If water is being used for cleaning, contain the wash water and dispose of in the sanitary sewer (with permission customize to include local phone number) or for offsite disposal, do not dispose of in the gutter or street.
- Maintain parking lot and move or cover activities and materials to prevent contact with storm water.
- Keep the parking and storage areas clean and orderly. Remove debris in a timely manner.
- Allow sheet runoff to flow into vegetated strips and swales and/or infiltration devices.

- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.
- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable landscape.

WASTE DISPOSAL - CONTROLLING LITTER

- Post "No Littering" signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Routinely sweep, shovel, and dispose of litter in the trash.

SURFACE CLEANING

- Clean oil/water/sand separators regularly, especially after heavy storms.
- Establish a frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- Inspect and clean if necessary, storm drain inlets and catch basins within the facility boundary before October 1 each year.
- Use dry cleaning methods (i.e. sweeping, vacuuming) to prevent the discharge of pollutants into the storm drain conveyance system.
- If water or cleaning agents are used for cleaning (even biodegradable cleaners) :
  - Block the storm drain or contain runoff.
  - Wash water should be collected and pumped to the sanitary sewer or discharge to a pervious surface. Do not allow wash water to enter storm drains. If wash water does not contain soap or other cleaning agents, discharge to a pervious surface.
  - Dispose parking lot sweeping debris and dirt at a landfill.
- When cleaning heavy oily deposits:
  - Use absorbent materials on oily spots prior to sweeping or washing.
  - Dispose used absorbents appropriately.
  - Vacuum/pump discharges to a tank or discharge to a sanitary sewer (with permission customize to include local phone number).

CLASSIFICATION CRITERIA FOR INDUSTRIAL AND COMMERCIAL SITES IN THE NPDES PERMIT AREA

Industries are assigned to one of three tiers, depending on their potential for pollution in case of accident.

Class 1 industries and commercial sites (also known as a Priority Industrial Facility, or PIF) have one or more of the following features:

- A landfill
- A Sara Title III facility
- A location in close proximity to waters of the state.
- A relatively large amount of exposed hazardous material.
- A history of noncompliance or safety issues.
- Examples: Auto dismantlers, industrial chemical manufacturers, petroleum products manufacturers.

Class 1 sites are inspected annually, and given shorter time periods in which to implement prescribed BMPs. Follow-up inspections are scheduled to confirm BMP implementation.

A **Class 2** industries and commercial sites have one or more of the following features:

- Close proximity of product or material to storm system.
- Processes that involve large volumes of liquid.
- Large-scale operations open to rainfall and runoff.
- Examples: Trucking companies with service facilities, industrial bakeries, unexposed chemical manufacturers.

Class 2 sites are inspected bi-annually. For serious issues requiring new BMP implementation, a follow-up inspection is held. For lower-priority BMPs, implementation is checked at the next regularly scheduled inspection.

A **Class 3** industries and commercial sites are any facilities that are in a category mandated by the Regional Board, but does not pose a likely threat of spillage or runoff contamination.

- Examples: unexposed steel fabricators, woodworking shops without chemical treatment services.

Class 3 sites are inspected every two years. BMP implementation is checked at the next regularly scheduled inspection.

SAN JOAQUIN COUNTY STORM WATER
INDUSTRIAL INSPECTION REPORT

Inspection # _____ Date of Inspection _____

WDID # _____ Facility Priority _____

Facility Name _____ Facility Site Address _____

Contact Person and Phone Number _____ Inspectors _____

Time Elapsed Since Last Inspection?: _____

BMP Checklist:

	Y	N	N/A	Needs Correction	Notes
Administrative Evaluation					
SWPPP Onsite					
Updated Site Drainage Map					
Most Recent Annual Report					
No Illicit Connections Evident					
Does Site Discharge To the MS4?					
Name of Receiving Water					
Indoor Inspection					
Floor Drains Plumbed To Sanitary					
Floor Drains Visually Inspected					
Evidence of Material Spills?					
Spill Clean-up Kits Available					
Production Liquid Storage					
Process Liquid Contained					
Waste Liquid Storage					
Condensate Runoff					
General Housekeeping: Indoor					
Outdoor Inspection					
Visually Inspect Catch Basins					
Raw Material Handling					
Waste Handling					
Pavement Sweeping Frequency					
General Housekeeping: Outdoor					
Specific Areas of Concern					
Vehicle Areas					
Process Areas					
Construction Activity					

Signature _____ Date _____

SAN JOAQUIN COUNTY STORMWATER PROGRAM
COMMERCIAL INSPECTION REPORT

INSPECTION #	INSPECTION DATE	EHD FACILITY ID:	EHD PR #

Facility Type: ☐ Food ☐ RGO ☐ Haz Waste/Materials ☐ Kennel ☐ Other

Facility Name:

Facility Site Address:

Contact Person: **Phone:**

Inspector(s): Last Inspection Date

BMP Checklist: **C= Compliant** **N= Non-compliant**

	C	N	N/A	Needs Correction	Notes
Administrative Evaluation					
Updated Site Drainage Map					
BMP Fact Sheet Provided					
No Illicit Connections Evident					
Site Discharge To the MS4					
Indoor Inspection					
Floor Drains Plumbed To Sanitary					
Floor Drains Visually Inspected					
No Evidence of Significant Material Spills					
Spill Clean-up Kits Available					
Production Liquid Storage Adequate					
Process Liquid Contained					
Waste Liquid Storage Adequate					
Condensate Runoff Clean					
Good General Housekeeping: Indoor					
Outdoor Inspection					
Site Does Not Wash Outdoor Areas					
Catch Basins Visually Inspected					
Raw Material Handling Adequate					
Waste Handling Adequate					
Pavement Sweeping Frequency Adequate					
Good General Housekeeping: Outdoor					
Specific Areas of Concern					
Vehicle Areas Clean					
Process Areas Clean					
Other:					
Other:					
Other:					

Owner/Operator Signature Date

Inspector Signature Date

For **Questions** regarding **the San Joaquin County Stormwater Program** and/or **Best Management Practice Information**, please contact the **Stormwater Management Division/Public Works Department** at **(209) 468-3055.**

NPDES PERMITTING PROCEDURE

The NPDES Permitting process is managed through Public Works Department (PWD) through the Public Services Division (PSD). The Community Infrastructure Division (CID) and PSD will coordinate the review for NPDES requirements using the following steps:

Step 1: Applicant applies for NPDES Construction Permit/Release through the PWD-PSD.

Step 2: PSD reviews the project location pursuant to County areas (see Exhibit A – map):

A. Non-Permitted Areas
B. NPDES Permit Phase I
C. NPDES Permit Phase II

A. Non-Permitted Areas Requirements:

One acre or more:

- Applicant needs to obtain a State Construction Permit Notice of Intent (NOI) for information only, not for enforcement.

Less than one acre:

- No action or Permit applicable

B. NPDES Permit Phase I Requirements:

One acre or more:

- State Construction NOI is required prior to Issuance of Permit
- WDID is obtained
- Storm Water Pollution Prevention Plan (SWPPP) is required
- Storm Water Quality Control Criteria Plan (SWQCCP) is required
- Construction BMPs are required (can be part of improvement plans)
- Projects on the Priority List (Exhibit B) must filter, treat or infiltrate the 85th percentile storm using BMPs. See County SWQCCP. Additional fees are applicable for Priority projects and NPDES Construction Permit must be completed
- Fees 3 and 4 apply

Less than one acre:

- State Construction NOI is required prior to Issuance of Permit
- WDID is obtained
- Small construction Site Plan is required
- Storm Water Pollution Prevention Plan (SWPPP) is required
- Copy of the BMP manual is provided
- Fee 1 and 2 apply

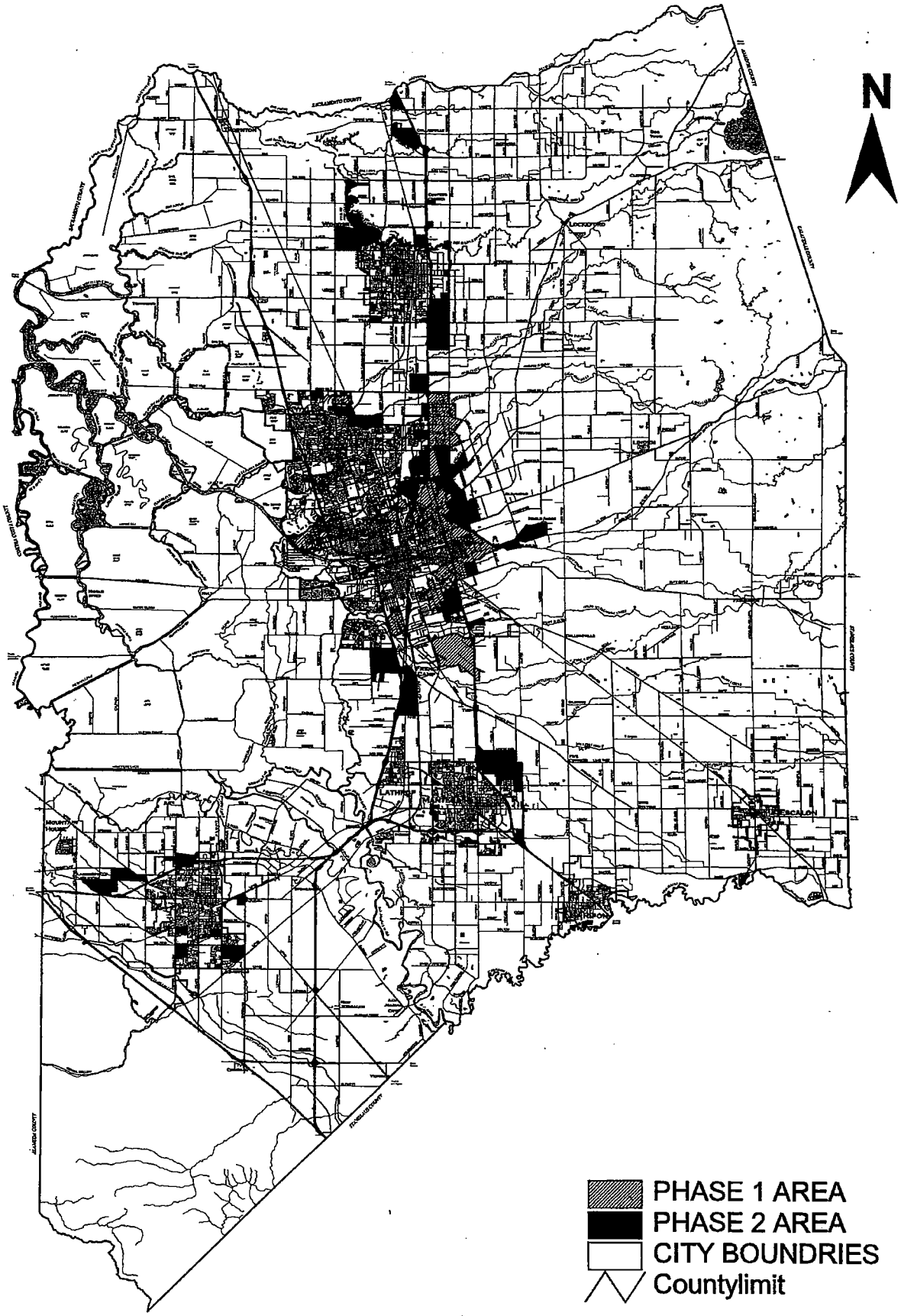
C. NPDES Permit Phase II Requirements

One acre or more:

- State Construction NOI is required prior to Issuance of Permit
- WDID is obtained
- Storm Water Pollution Prevention Plan (SWPPP) is required
- Fee 2 is applicable

Less than one acre:

- Small construction Site Plan is required
- Storm Water Pollution Prevention Plan (SWPPP) is required
- Copy of the BMP manual is provided
- Fee 1 Applicable



Public Works
Working for YOU

SAN JOAQUIN COUNTY

SAN JOAQUIN COUNTY PUBLIC WORKS DEPARTMENT
1810 EAST HAZELTON AVENUE, STOCKTON, CALIFORNIA 95205

1 0 1 2 3 4 Miles

Exhibit A

STORMWATER
Pollution Prevention
SAN JOAQUIN COUNTY

EXHIBIT B PRIORITY PROJECTS

Includes new development and substantial redevelopment (25% EXPANSION)

1. **Subdivisions of 10 or more housing units**

2. **Commercial developments greater than 100,000 SF of total land area. Includes but not limited to: Hospitals, laboratories, educational facilities, recreational facilities, commercial nurseries, multi apartment buildings, car wash facilities, mini malls or other complexes, Shopping malls, hotels, offices, warehouses, light industrial facilities**

3. **Automotive repair shops with greater than 5000 SF of impervious area**

4. **Restaurants, including all facilities that serve prepared food or drink for immediate consumption with 5000 SF or more of impervious area**

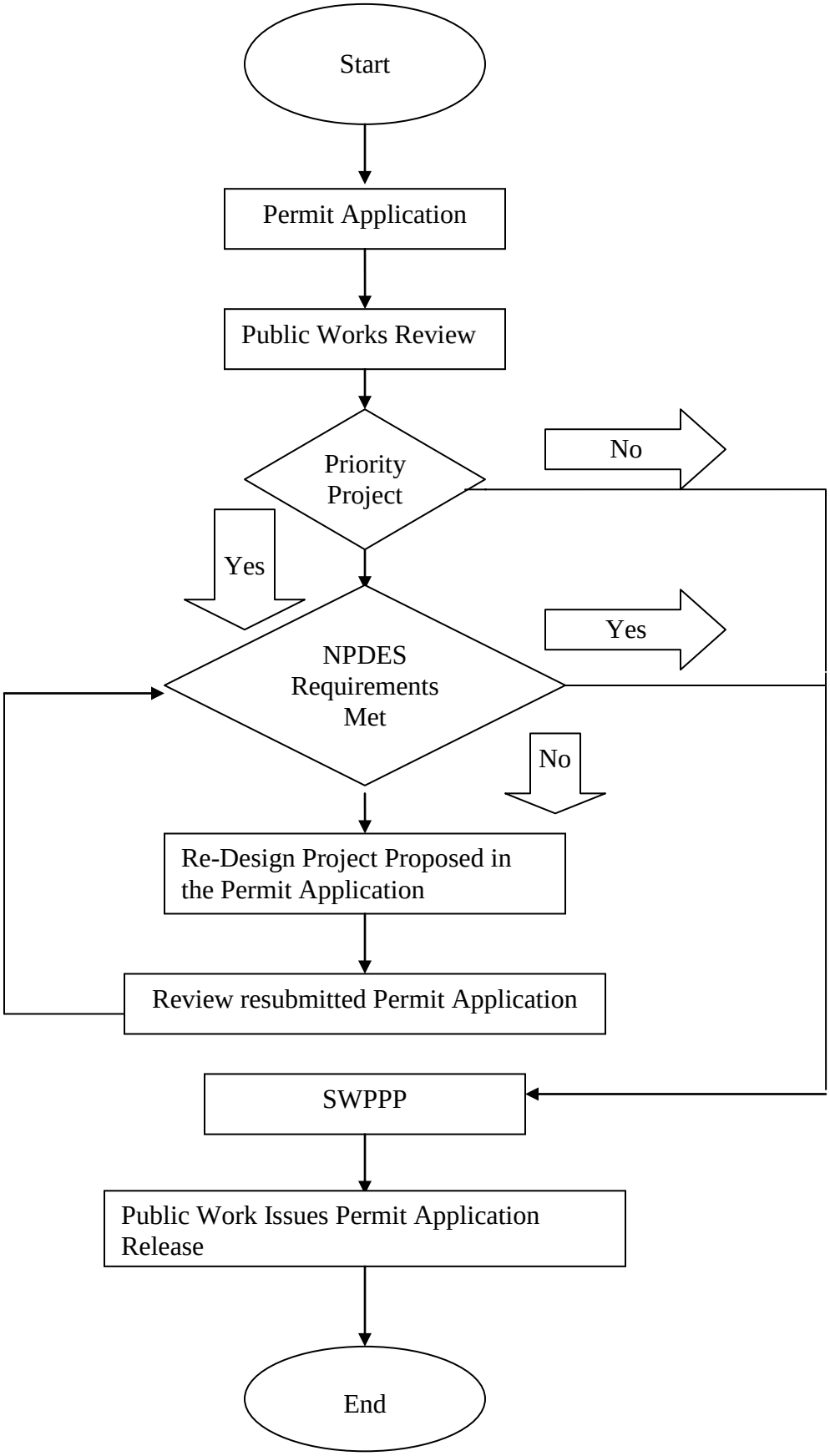
5. **Parking lots of 25 or more spaces or with a 5000 SF or greater impervious area.**

6. **Streets and Roads with more than 1 acre of impervious surface used for automotive transportation.**

7. **Retail Gasoline Outlets (RGOs) with 5000 square feet or more of impervious area.**

over

San Joaquin County NPDES Permit Review Process



Updated 2/12/2009

PLAN CHECKLIST
FOR DEVELOPMENT PLANNING AND CIP
PRIORITY PROJECTS CATEGORIZATION

Application No. (PA No.):_____
APN No.: ____ - ____ - ____
Applicant Name: _____
Applicant Phone: _____
Applicant Address: _____
Project Location: _____
Project Description: _____
_____

Standard Industrial Classification (SIC Code): _____

Type of Development

- ☐ Residential
- ☐ Commercial
- ☐ Industrial
- ☐ Mixed-Use
- ☐ Site Area _____ (sq. ft.)
- ☐ Disturbed Area _____ (sq. ft.)
- ☐ Existing Impervious Surface _____ (sq. ft)
- ☐ Streets, Roads, Highways, Freeways, etc.
- ☐ New Impervious Surface (created, added, and/or replaced) _____ (sq. ft)
- ☐ Significant Redevelopment Project (Addition of at least 5,000 square feet of impervious area to an already developed area)

PART A. Planning Priority Projects Subject to Comply with the SWQCCP	Yes	NO
1. Significant redevelopment results in an addition of at least 5,000 square feet of impervious area to an already developed area.		
2. Home subdivisions of 10 or more housing units.		
3. Commercial developments over 100,000 square feet in area including parking areas.		
4. Automotive repair shops (greater than 5,000square feet of impervious area).		
5. Restaurants 5,000 square feet or more including parking areas.		
6. Parking lots 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to urban runoff.		
7. Streets and Roads.		
8. Retail gasoline outlets (Gas Stations).		

If all answers to Part A are NO, continue to Part B

PART B. Non-Priority Projects Subject to Site Specific Mitigation	Yes	NO
1. Vehicle or equipment fueling area.		
2. Vehicle or equipment maintenance, including washing or repair.		
3. Commercial or industrial waste handling or storage.		
4. Outdoor handling or storage of hazardous material.		
5. Outdoor manufacturing areas		
6. Outdoor food handling or processing areas.		
7. Outdoor animal care, confinement, or slaughter.		
8. Outdoor horticulture activities.		

If all answers to Part B are NO, continue to Part C

PART C. Project is One Acre or More	Yes	NO
1. Project is disturbing one acre or more of land.		

Planning Priority Project

If ANY question in part A and/or B is answered "YES", the project is a planning priority project and is required to comply with the County's Storm Water Quality Control Criteria Plan, and a Storm Water Pollution Prevention Plan shall be prepared for the project.

Planning Non-Priority Project

If EVERY question in Parts A, B, and C is answered "NO", project is not a priority project and is not required to comply with the County's Storm Water Quality Control Criteria Plan, but must still comply with the County's Small Site Stormwater Management Plan.

One Acre or Greater Project

If the project disturbs one acre or more of land or that is part of a larger plan of common development, the project is subject to the General Construction Permit requiring an NOI and a Storm Water Pollution Prevention Plan.

Erosion and Sediment Control Plan

All projects are required to prepare an Erosion and Sediment Control Plan.

STORM WATER POLLUTION PREVENTION PLAN

All projects in NPDES Phase I are required to prepare a Storm Water Pollution Prevention Plan.

MINIMUM REQUIREMENTS FOR ALL PLANNING PRIORITY PROJECTS

All projects must incorporate as many of the following measures as practicable (check boxes that apply)

A. Site Design Measures

Projects must incorporate the following measures to the maximum extent practicable:

- ☐ Conserve natural areas.
- ☐ Protect slopes and channels.
- ☐ Minimize permeability by preserving open space and minimize soil compaction.
- ☐ Minimize impervious surface areas.
- ☐ Use permeable pavement surfaces where feasible.
- ☐ Use landscaping to treat stormwater.
- ☐ Minimize impervious areas from being directly connected to the storm drain system (e.g., direct roof downspouts to vegetated areas where feasible).

B. Project's Permanent Stormwater Treatment Control Measures

Projects must consider incorporating the following measures:

- ☐ Bioretention Area
- ☐ Vegetated Swale
- ☐ Extended Detention Basin (dry)
- ☐ Proprietary Treatment Controls
- ☐ Wet Pond.
- ☐ Media Filter (sand, organic matter)
- ☐ Grass Filter Strip
- ☐ Constructed Wetland.
- ☐ Grass Swale
- ☐ Porous Pavement Filter
- ☐ Infiltration Trench
- ☐ Tree-well Filter
- ☐ Other _____

SAN JOAQUIN COUNTY STORM WATER CONSTRUCTION INSPECTION REPORT

102

Date of Inspection

Time of Inspection

Name of General Contractor

Property Owner Street Address

Contractor Contact and Phone No.

Property Owner City, State, and Zip Code

Site Street Address/ APN

Property Owner Phone No.

Site City, State, and Zip Code

Dry Hot Clear Overcast Cold Raining
Weather Conditions During Inspection (circle all that apply)

Type of Construction (Residential/ Commercial)

State-Permitted Project?: _____

Time Elapsed Since Last Inspection?: _____

BMP Checklist:

BMP	In Place/Okay	Absent	Needs Maintenance	Not Applicable
Straw Wattles at Curbline				
Filter Bags in Drain Inlets				
Rock Bags in Gutters				
Restricted Construction Entrance				
Concrete Washout				
Portable Bathroom Placement				
SWPPP Onsite				

Notes:

Signature

Date

The constituents below, with the exception of volatiles and semi volatiles, bacteria indicators, and oil and grease, are taken as composites at urban discharge sites during wet weather. All the constituents below are taken as grab samples at urban discharge sites during dry weather or at receiving water sites during both wet and dry weather.

Conventional Pollutants	Bacteria
Oil and Grease pH Dissolved Oxygen	Fecal coliform E. coli (fresh waters)
General	**Metals**
Turbidity Total Suspended Solids Total Dissolved Total Organic Carbon Biochemical Oxygen Demand Chemical Oxygen Demand Total Kjeldahl Nitrogen Alkalinity Total Ammonia-Nitrogen Nitrate-Nitrite Total Phosphorus Specific Conductance Total Hardness Methylmercury Pyrethroids	Aluminum, Dissolved Aluminum, Total Copper, Dissolved Copper, Total Iron, Total Lead, Dissolved Lead, Total Mercury Zinc
	Organophosphate Pesticides
	Chlorpyrifos Diazinon

The following table shows the types of samples that are collected at baseline monitoring sites during wet and dry weather. The entries are “C” for composite and “G” for grab sample. Where a composite is taken during wet weather and a grab sample is taken during dry weather a “C/G” is listed.

Sites	Water Quality Parameters as listed in Appendix H-1	Water Column Toxicity
MS-14	C/G	
CR-46	C/G	
DC-65	C/G	
SC-1	C/G	
MS-1R	G	G
MS-14R	G	G
CR-46RU	G	G
CR-46R	G	G
DC-65RU	G	G
DC-65R	G	G
SC-1R	G	G

Site ID	Site Location
14-11	Cumberland Pl. & Harpers Ferry Dr.
14-12	Ft. Donelson Dr. & Falmouth Ct.
14-2	Culpepper Pl. & Swain Rd.
14-4	Williamsburg Pl. & Swain Rd.
14-6	Harrisonburg Pl. & Swain Rd.
BC-1	Thornton Rd. & Estate Dr.
CR-1	Princeton Ave. & Wisconsin Ave.
CR-2	Kirk Ave., North of Del Rio Ave.
CR-3	Plymouth Ave., West of Towery Ct.
CR-4	Hogue Ave., North of La Jolla Dr.
CR-6	West Lane & Calaveras River
CR-7	Calaveras River & North of Div. Canal
CR-8	Oakmoore Golf Course
DC-5	Duck Creek, East of Michael Ave.
DV-1	Wilson Way, North of Div. Canal
DV-12	Div. Canal, Northeast of Shaw Rd.
DV-13	Stokes Ave. & Cardinal Ave.
DV-14	Cardinal Ave., East of Farm St.
DV-15	Basin St. & Everglade Way
DV-2	Wigwam Dr. & Tomahawk Dr.
DV-3	Wilcox Rd. & Piccolo Rd.
DV-4	Alpine Ave. & Redwood Ave.
DV-8	Report Ave. & Waterloo Rd.
FC-1	Turnpike Rd., South of Clayton Ave.
FC-2	Airport Way & Weber Slough
FC-3	French Camp Slough, West of Airport Way
LBC-1	Little Bear Creek & Agate Ct.
MM-14	Diamond St. & Mormon Slough
MM-2	South of Charter Way & Sullivan Ave.
MM-9	Mormon Slough & Sinclair Ave.
MS-1	Portola Ave. & Arroyo Way
MS-10	Capewood Ave. & McFarland Lane
MS-11	99 Frontage, North of Greenoak Lane
MS-12	99 Frontage, North of Hildreth Lane
MS-13	99 Frontage & Hildreth Lane

Site ID	Site Location
MM-2	South of Charter Way & Sullivan Ave.
MM-9	Mormon Slough & Sinclair Ave.
MS-1	Portola Ave. & Arroyo Way
MS-10	Capewood Ave. & McFarland Lane
MS-11	99 Frontage,North of Greenoak Lane
MS-12	99 Frontage, North of Hildreth Lane
MS-13	99 Frontage & Hildreth Lane
MS-2	Portola Ave. & Balboa Ave.
MS-3	Aberdeen Wy & Thornton Rd..
MS-4	Mosher Dr. & Garnet Ave..
MS-5	West of Camden Ct..
MS-8	Oakwilde Ave., North of Acorn Ct.
MS-9	Quashnick Rd. & Oakwilde Ave.
OMS-1	Scotts Ave. & Fresno Ave.
SC-2	Lake Dr., South of Tuxedo Ave.
SC-3	Buena Vista Ave. & Middlefield Ave.
SC-7	East end of Yosemite Lake
SC-8	South end of Franklin Ave.

Initial Sediment Tests Conducted
Sediment Organic Carbon
Sediment Grain Size

If sediment is toxic, sediment will be sampled for the constituents below:

Organophosphate Pesticides
Chlorpyrifos

Pyrethroid Pesticides
Bifenthrin
Cyfluthrin-1
Cyfluthrin-2
Cyfluthrin-3
Cyfluthrin-4
Cypermethrin-1
Cypermethrin-2
Cypermethrin-3
Cypermethrin-4
Deltamethrin
Esfenvalerate/Fenvalerate-1
Esfenvalerate/Fenvalerate-2
Lambda-cyhalothrin-1
Lambda-cyhalothrin-2
Permethrin-1
Permethrin-2

Detention Basin Monitoring Work Plan

TABLE OF CONTENTS

1. Permittees' Requirements for Detention Basin Monitoring 2
2. Sacramento and Modesto Permit Requirements 3
County of Sacramento Permit 3
City of Modesto Permit 3
3. Scope of Work Plan 4
4. Project Organization and Responsibilities 5
5. Monitoring Locations and Procedures 5
6. 2002-2007 Permit Term Monitoring 8
7. 2007-2012 Permit Term Monitoring 8
Stormwater Monitoring 9
Sediment Chemistry Monitoring 10
Sediment Toxicity Monitoring 11
8. Future Actions 11
Appendix A: 2002-2007 Permit Term Detention Basin Monitoring Analysis 13

1. PERMITTEES' REQUIREMENTS FOR DETENTION BASIN MONITORING

The current National Pollutant Discharge Elimination System (NPDES) area-wide Municipal Separate Storm Sewer Systems (MS4) permit issued in 2007, Order No. R5-2007-0173, Monitoring and Reporting Program, Provision III.A, requires the City of Stockton and the County of San Joaquin (Permittees) to submit a Detention Basin Monitoring Work Plan (Work Plan). The provision states:

The Permittees shall update and submit the Detention Basin Monitoring Work Plan, as part of the SWMP, to reflect additional monitoring of the following constituents: pyrethroids, total mercury, and methylmercury in water; pyrethroids and total mercury in sediment. The Work Plan is designed to perform influent, effluent, and sediment chemistry/toxicity monitoring of one detention basin serving multiple land uses. Constituents that shall continue to be sampled include: total suspended solids (TSS), bacteria, turbidity, total dissolved solids (TDS) and organophosphate pesticides (chlorpyrifos and diazinon). Monitoring shall be designed to evaluate the effectiveness of the detention basins in removing pollutants of concern and determining whether basins stimulate methylmercury production. The Permittees may propose a joint study with other Central Valley MS4 Permittees if they can demonstrate that data collected in other jurisdictions is applicable to detention basins in the Permittees' jurisdictions.

The same Monitoring and Reporting Program, section II G further discusses sediment toxicity monitoring which should include:

> The Permittees shall conduct short-term sediment toxicity testing, which shall include (1) the analysis of sediment samples from one post first flush storm event[1], and one dry weather monitoring event**;** and (2) analysis of at least the following freshwater sediment test species: Amphipod [*Hyalella azteca* (10-day survival and growth test)]; and (3) analysis of sediment organic carbon and grain size. The testing shall be conducted in accordance with U.S. EPA's method (U.S. EPA 20007). Sample sites for sediment toxicity testing shall be conducted on urban receiving water sites.
>
> If toxicity is detected in a sediment sample, follow up actions shall be implemented and shall include sediment chemistry for chlorpyrifos and pyrethroids – including bifenthrin, cyfluthrin, deltamethrin, esfenvalerate, lambda cyhalothrin, permethrin, tralomethrin. Further, if toxicity is detected at a given monitoring station, the Permittees will continue conducting toxicity testing and sediment chemistry for chlorpyrifos and pyrethroids until the nature and cause(s) of the toxicity are defined.

[1] Post first flush timeframe is within two weeks of the qualifying storm event.

While sampling at receiving water sites is discussed in the Sediment Toxicity Work Plan (**Appendix H-8**), sampling of detention basins is discussed in this Detention Basin Monitoring Plan in order to group all sampling that occurs in La Morada Basin.

2. SACRAMENTO AND MODESTO PERMIT REQUIREMENTS

As indicated in the Permittees' 2007-2012 NPDES permit, detention basin monitoring studies may be coordinated with Modesto and/or Sacramento Permittees. To identify potential opportunities, a summary of the Sacramento and Modesto permits is provided below.

County of Sacramento Permit

The administrative draft of the Sacramento-area NPDES MS4 permit (dated February 2008) shows that the requirements for the Permittees and Sacramento overlap well. Sacramento is required to sample for all of the constituents for which is the Permittees are required to sample in water. As well as the permittees, Sacramento is required to take sediment chemistry and toxicity samples. The permit also notes the opportunity for collaboration in discussion of a revised Work Plan for detention basin monitoring:

1) The revised Work Plan is required to be designed to perform influent, effluent, and sediment chemistry/toxicity monitoring of at least detention basins that represent conditions within the Sacramento urban watershed.

2) Samples shall be collected annual during three storm events and one dry season event.

2) The Permittees may propose a joint study with other Central Valley MS4 Permittees if they can demonstrate that data collected in other jurisdictions is applicable to detention basins in the Permittees' jurisdictions.

City of Modesto Permit

The Modesto tentative NPDES MS4 permit (dated April 2008) requires more extensive detention basin monitoring than the Permittees' and Sacramento's permits, but still includes language allowing Modesto to partner with other Permittees. Modesto's permit has the following requirements

1) The Discharger shall monitor a minimum of two basins in year two and four of this permit term for the following constituents at each basin:

- Arsenic
- Total Mercury
- Methylmercury
- Bacteria
- Total Recoverable Petroleum Hydrocarbons (TRPH)
- Nickel
- Copper
- Silver
- Organophosphate Pesticides (diazinon and chlorpyrifos)
- Barium
- Selenium
- Chromium
- Zinc
- Total Petroleum Hydrocarbons (TPH)
- Lead
- Turbidity
- Total Dissolved Solids (TDS)
- Total Suspended Solids (TSS)

2) The basins shall represent storm water runoff from representative watersheds for residential and industrial/commercial urban areas. The Discharger may propose a joint study with other Central Valley MS4 Dischargers if they can demonstrate that data collected in other jurisdictions is applicable to detention basins in the Discharger's jurisdiction.

The Modesto permit also calls for sediment chemistry and toxicity monitoring with analysis for total mercury as does the Permittees' permit.

Both Modesto and Sacramento are required to specify a schedule for monitoring in Work Plans submitted to the Board. Once the permit requirements for Modesto and Sacramento are finalized, there will be an opportunity for Modesto's, Sacramento's, and the Permittees' Work Plans to be adapted so that collaboration is possible.

3. SCOPE OF WORK PLAN

This Work Plan describes Permittees' detention basin monitoring to be conducted under Order No. R5-2007-0173. The primary objectives of the Work Plan are to:

- Evaluate the effectiveness of pollutant removal by the detention basins with water quality design
- Determine whether detention basins stimulate methylmercury production

One detention basin will be monitored during the second and forth year of the permit. Influent and effluent will be monitored during two storm events in each year for a total of four storm events during the permit term. The first storm event samples each year will be within two weeks of an early-season storm. The second storm event will be later in the season. Sediment samples will be taken during a dry event in the second and forth year of the permit term as well for a total of two dry event samples during the permit term. Sediment toxicity samples will be taken during one event within two weeks of an early-season storm and one dry weather event. To establish a

meaningful set of data with which to identify trends, La Morada Detention Basin, which was sampled in the previous permit term, has been selected for sampling. Teaming with Modesto and/or Sacramento would potentially change the site of sampling, but at this point, La Morada Basin is being proposed. The monitoring program is more fully discussed in the following sections.

4. PROJECT ORGANIZATION AND RESPONSIBILITIES

The detention basin monitoring will be conducted by Condor Earth Technologies, Inc (Condor). Condor staff will collect samples and will contract California certified laboratory services.

5. MONITORING LOCATIONS AND PROCEDURES

Monitoring for La Morada Basin commenced in 2003. La Morada Basin was then called simply Basin 2 and before that just the San Joaquin Area Flood Control Agency (SJAFCA) Basin. The basin is located at the southeast corner of the intersection of the Union Pacific Railroad and Morada Lane. A map of the basin and its drainageshed is shown in **Figure 1**. La Morada Basin's drainageshed is approximately 760 acres and is predominantly residential in land use[2].

[2] While the NPDES permit identifies the need to monitor a detention basin with a mixed land use drainageshed, this basin was selected since it is designed as an extended detention basin, which is more representative of current basin design for water quality treatment than the older basins within the City, which were designed for flood control purposes.

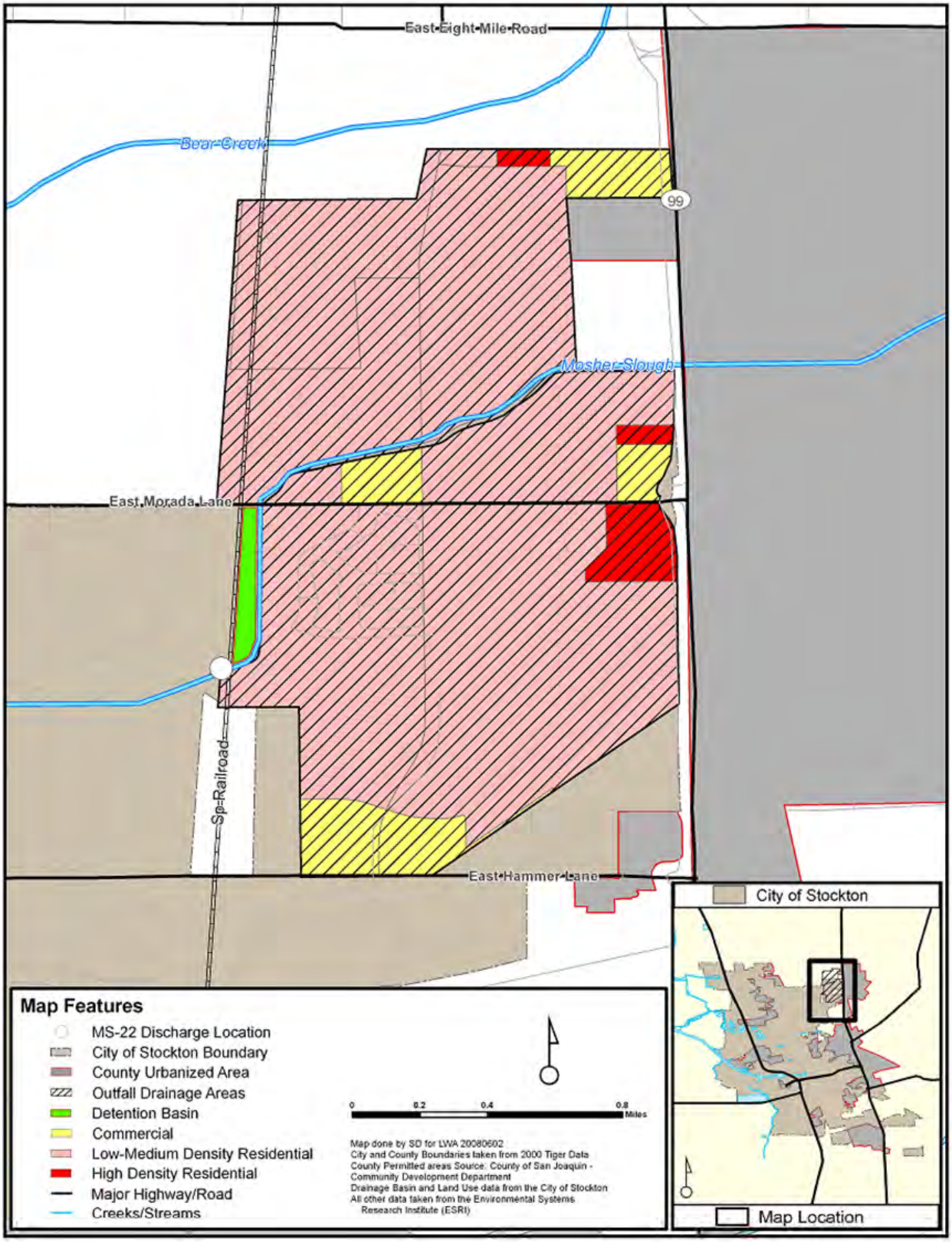
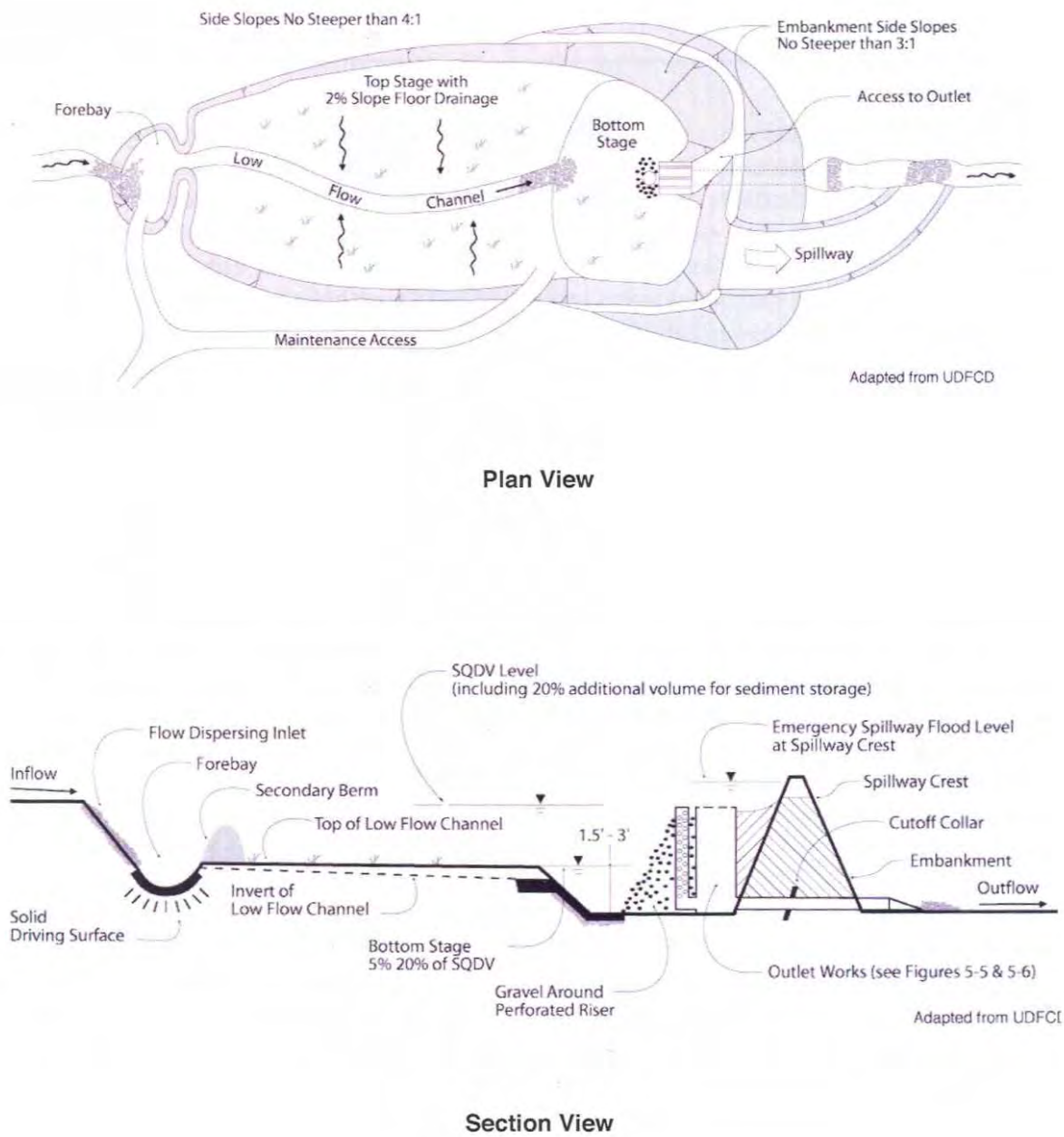


Figure 1. La Morada Basin Detention Basin and the Land Uses within its Drainageshed

La Morada Basin is designed according to the Stockton Urbanized Area's Storm Water Quality Control Criteria Plan (SWQCCP) guidelines. A conceptual layout of SWQCCP extended



detention basin design is shown in **Figure 2**. La Morada Basin receives inflow from three

Figure 2. Conceptual Layout of Extended Detention Basin Meeting SWQCCP Guidelines

separate storm drain systems. Therefore, influent samples will be collected from three separate manholes that discharge to the basin. The effluent samples will be collected from a wet well that

receives effluent directly from the basin. Access to the basin requires a key to unlock the gate and the wet well.

Discrete grab samples will be collected from the influent and effluent stations in the basin during wet weather events. Sediment samples for the constituents dictated in the permit (see 1. Permit Requirements for Detention Basin Monitoring) will be collected from the basin after the rainy season during dry weather. Sediment samples will be collected as grab samples, from the lower end of the basin where the greatest amount of stormwater collects. Three surface samples (to a depth of 6 inches) are collected and composited by the laboratory as one sample for analysis.

6. 2002-2007 PERMIT TERM MONITORING

During the previous permit term, three detention basins were monitored: Auto Center Basin, La Morada Basin, and Duck Creek Basin. The basins received discharges from commercial, residential, and industrial land uses, respectively. Stormwater samples were analyzed for pesticides and bacteria in addition to standard field measurements. Sediment samples were also analyzed for pesticides. The following conclusions were drawn from the monitoring conducted during 2003-2004 and 2005-2006:

- Chlorpyrifos and Diazinon were the pollutants that exhibited the most removal. In all but one event, if pesticides were detected in the influent, effluent concentrations of chlorpyrifos and diazinon were decreased.
- Organophosphate pesticides were not detected in the majority of sediment samples. However, during those events when pesticides were detected in influent, effluent concentrations usually decreased.
- Bacterial concentrations were ubiquitously high in all storm water grab samples and, while some events in La Morada Basin appeared to show marked reductions, monitoring at the Auto Center and Duck Creek basins was inconclusive.
- Total dissolved solids (TDS) concentrations were either roughly the same in influent and effluent or concentrations increased slightly from influent to effluent
- Total suspended solids (TSS) and turbidity concentrations decreased from influent to effluent in the majority of samples, but during one event at the Duck Creek basin, their concentrations increased significantly. Graphs of the complete 2003-2004 and 2005-2006 monitoring data can be found in **Appendix A** of this Work Plan. La Morada Basin exhibited the best constituent removal, which is likely because it was designed as an extended detention basin to improve water quality following SWQCCP guidelines. In comparison, the other basins were designed for flood control purposes. This is the primary reason why La Morada Basin was suggested for monitoring during the 2007-2012 permit term. Monitoring La Morada Basin will also allow a more meaningful analysis of trends because the basin was sampled during the 2002-2007 permit term.

7. 2007-2012 PERMIT TERM MONITORING

During the 2007-2012 permit term, pyrethroids and mercury will be added to the list of influent and effluent constituents analyzed for the detention basin monitoring program. The following sections discuss the complete constituent analysis for influent and effluent stormwater monitoring as well as sediment monitoring and sediment toxicity monitoring.

Stormwater Monitoring

A grab sample from each detention basin influent and effluent station shall be analyzed for each of the constituents listed in **Table 1**. **Table 1** also includes sample collection and analysis method direction.

Table 1. Detention Basin Monitoring Stormwater Sample Requirements

Constituent	Bottle	Volume (mL)	Preservative	Holding Time	Target Reporting Limit	EPA Method
Conventionals						
Conductivity	NA	NA	None	ASAP	1 µmhos/cm	Field
Dissolved Oxygen	NA	NA	None	ASAP	Sensitivity to 5 mg/L	Field
pH	NA	50	None	ASAP	0.0-14.0	Field
Temperature	NA	NA	None	ASAP	°C	Field
TDS	Sterilized poly	100	4°C	7 days	2 mg/L	EPA 160.1
TSS		100	4°C	7 days	2 mg/L	EPA 160.2
Turbidity		100	4°C	48 hrs	0.1 NTU	EPA 180.1
Bacteria						
E. coli	Sterilized poly	100	4°C, $Na_2S_2O_2$	24 hrs	<20 MPN/100mL	SM 9223B
Fecal coliform		100		6 hrs	<20 MPN/100mL	SM 9221E
Total coliform		100		6 hrs	<20 MPN/100mL	SM 9221B
Pesticides						
Chlorpyrifos	Borosilicate glass	1000	4°C	7 days*	0.01 µg/L	EPA 614/8141
Diazinon		100	4°C	7 days*	0.05 µg/L	
Pyrethroids	Amber glass	1000	4°C	3 days	5 ng/L	EPA 8270MOD
Mercury Program						
Total Mercury	Glass, Dbl bagged	500	HCl	48 hrs/ 90 days ***	0.05 ng/L	EPA 1631
Methylmercury		500	4°C + HCl or H_2SO_4**		0.5 ng/L	EPA 1630

* 7 days from sample collection to extraction, 40 days from extraction to analysis
** Preserve with HCl if less than 10 ppth salinity OR preserve with H_2SO_4 if greater than 10 ppth salinity
*** 48 hrs to preserve, 90 days once preserved

Sediment Chemistry Monitoring

Sediment chemistry samples will be collected from the lower end of the basin (above residual standing water) where the greatest amount of storm water collects and outside of any concrete lined channels. All surface vegetation will be removed from the sampling sites prior to sample collection. Three surface soil samples (from the ground surface to six inches below ground surface) will then be collected by loosening the soil with a clean stainless steel shovel and/or soil auger. A clean stainless steel scoop will be used to place loose soil into the appropriate laboratory supplied container. The soil samples from each basin will be composited (3:1) by the laboratory and the individual composites analyzed. Sediment chemistry monitoring protocols for specific constituent analyses is provided in **Table 3**. Pyrethroid isomers are typically reported as totals instead of the individual isomers except where individual isomers may be obtained.

Table 3. Detention Basin Monitoring Sediment Sample Requirements

Constituent	Container	Volume (mL)	Preservative	Holding Time	Target Reporting Limit	EPA Method
pH	CWM[1]	125	Ice to 4°C	ASAP	0.0 – 14.0	EPA 150.1
Chlorpyrifos	CWM[1]	250	Ice to 4°C	7 days[2]	10 ng/g	EPA 8141
Diazinon	CWM[1]	250	Ice to 4°C	7 days[2]	50 ng/g	EPA 8141
Total mercury	CWM[1]	250	none	28	20 ng/g	EPA 7471
Pyrethroids						
Bifentrhin	CWM[1]	250	Ice to 4°C	14	1 ng/g	EPA 8270
Cyfluthrin-1, -2, -3, -4	CWM[1]	250	Ice to 4°C	14	3 ng/g	EPA 8270
Cypermethrin-1, -2, -3, -4	CWM[1]	250	Ice to 4°C	14	3 ng/g	EPA 8270
Deltamethrin	CWM[1]	250	Ice to 4°C	14	2 ng/g	EPA 8270
Esfenvalerate/ Fenvalerate-1	CWM[1]	250	Ice to 4°C	14	2ng/g	EPA 8270
Esfenvalerate/ Fenvalerate-2	CWM[1]	250	Ice to 4°C	14	1 ng/g	EPA 8270
Lambda-cyhalothrin-1	CWM[1]	250	Ice to 4°C	14	1 ng/g	EPA 8270
Lambda-cyhalothrin-2	CWM[1]	250	Ice to 4°C	14	4 ng/g	EPA 8270
Permethrin-1	CWM[1]	250	Ice to 4°C	14	4 ng/g	EPA 8270
Permethrin-2	CWM[1]	250	Ice to 4°C	14	1 ng/g	EPA 8270
Tralomatrin[4]	CWM[1]	250	Ice to 4°C	14	1 ng/g	EPA 8270

1. CWM = clear wide-mouth glass jar with Teflon-lined lid
2. 7 days from sample collection to extraction, 40 days from extraction to analysis
3. Screw caps should be lined with PTFE
4. If laboratory is capable of analyzing for Tralomethrin

Sediment Toxicity Monitoring

Sediment Toxicity Monitoring will be coordinated with other detention basin monitoring as much as possible. Sediment toxicity samples will be gathered in the same manner as described for sediment chemistry samples. Once the sediment samples for sediment chemistry monitoring are composited, monitoring will include analysis of Total Organic Carbon (TOC) and grain size. A ten day survival and growth test for Hyalella azteca will also be performed using EPA 2000 methods. If toxicity is detected in a sediment sample, follow up chlorpyrifos and pyrethroids analysis will be conducted using the same target reporting limits as shown in **Table 3**. If sediment chemistry and sediment toxicity samples are collected within the same period, the

sediment chemistry results may be used to analyze chlorpyrifos and pyrethroids. In either case, sediment TIE will continue until the nature and source of toxicity has been determined.

8. FUTURE ACTIONS

Once Modesto and Sacramento have final permits, the possibility of teaming will be explored. The 2007-2012 permit states that the detention basin sampled should drain from an area with mixed land uses. This provides some flexibility to share monitoring with other permittees. Each permit requires that the sampled detention basin have a drainageshed which is representative of conditions in the rest of the permitted area, so a comparison of land use is the first step in determining the practicality of teaming. If the Permittees were to team with Sacramento, the constituents to be monitored would not need to be adjusted. If the Permittees teamed with Modesto, the Permittees would have to decide how costs would be determined for constituent requirements that do not overlap (e.g. Modesto is not required to sample for pyrethroids).

Once the extent of cooperation with other municipalities is determined, the Permittees will complete a Detention Basin Sampling and Analysis Plan detailing monitoring protocol at the location(s) chosen to be monitored. The following is an implementation schedule for completing the Detention Basin Sampling and Analysis Plan and executing the monitoring defined within:

- Initiate conversation with other permittees beginning in June 2008
- Develop Detention Basin Sampling and Analysis Plan by September 2008
- Begin monitoring in fourth quarter of 2008

APPENDIX A: 2002-2007 PERMIT TERM DETENTION BASIN MONITORING ANALYSIS

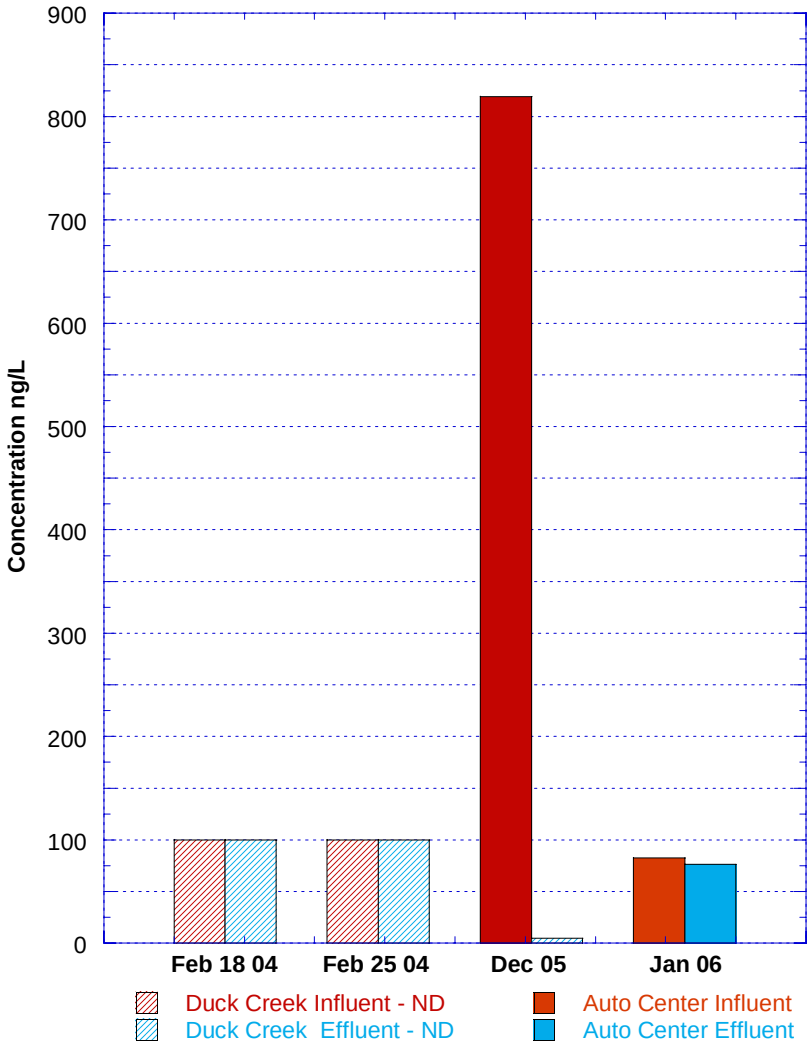


Figure 1. Auto Center Detention Basin Chlorpyrifos Concentrations

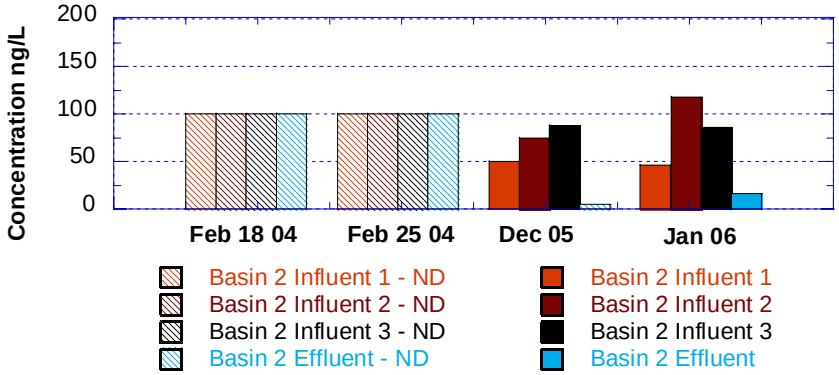


Figure 2. Basin 2 Detention Basin Chlorpyrifos Concentrations

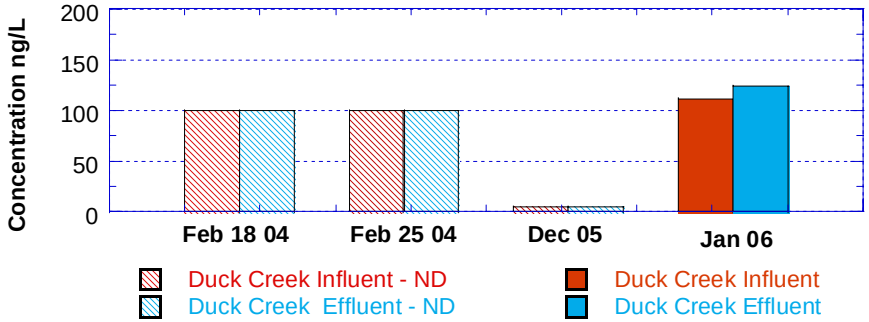


Figure 3. Duck Creek Detention Basin Chlorpyrifos Concentrations

ND in graphs stands for non-detect values which are less than or equal to the give value "> " stands for concentrations that are greater than the given value.

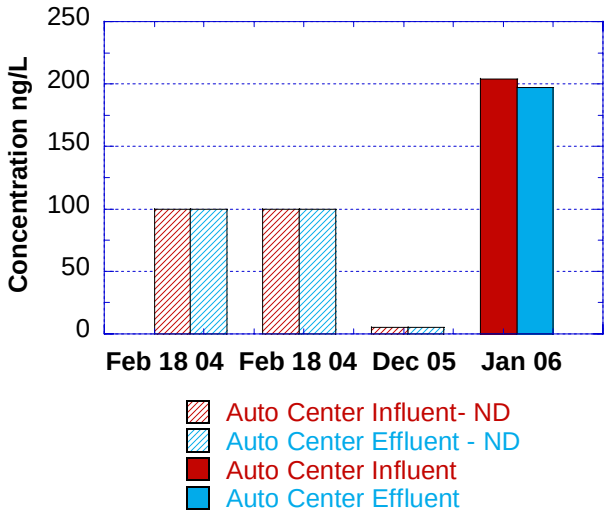
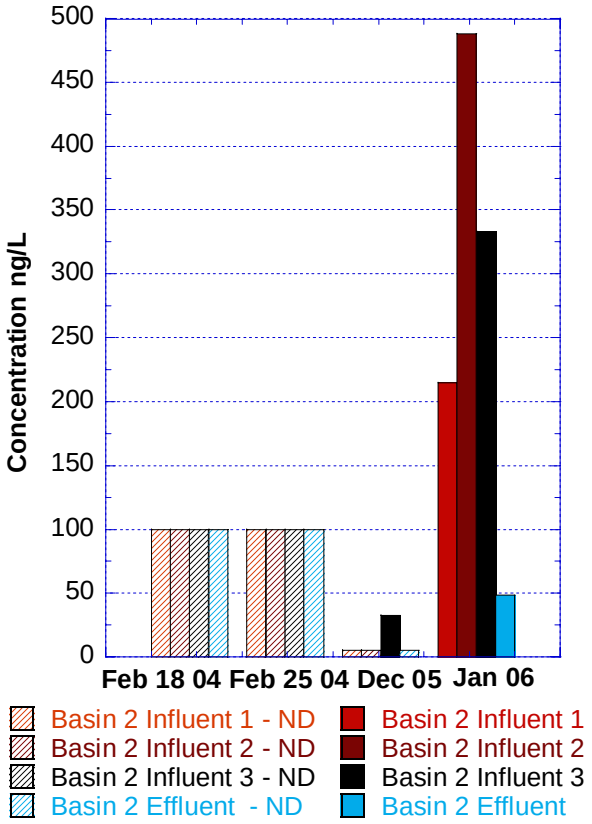


Figure 4. Auto Center Detention Basin Diazinon Concentrations



Figured 5. Detention Basin Diazinon Concentrations

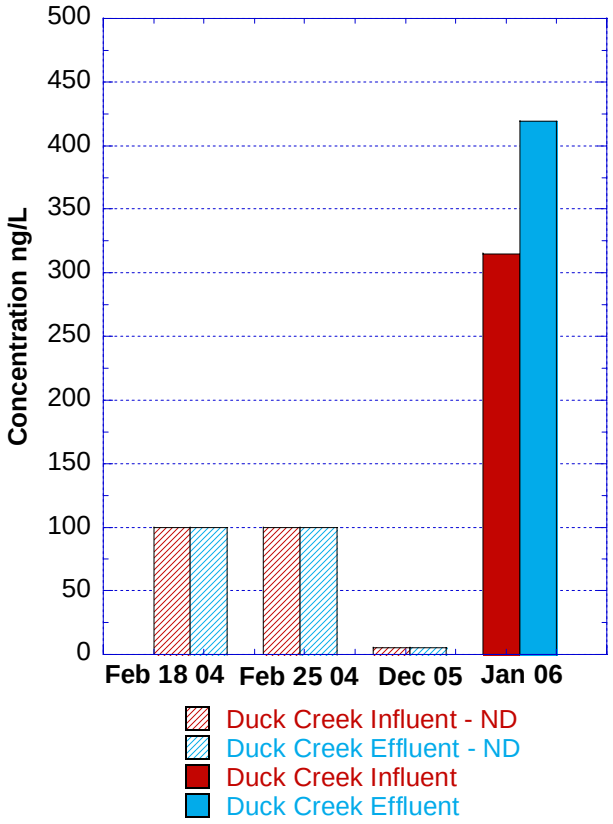


Figure 6. Duck Creek Detection Basin Diazinon Concentrations

ND in graphs stands for non-detect values which are less than or equal to the give value ">" stands for concentrations that are greater than the given value.

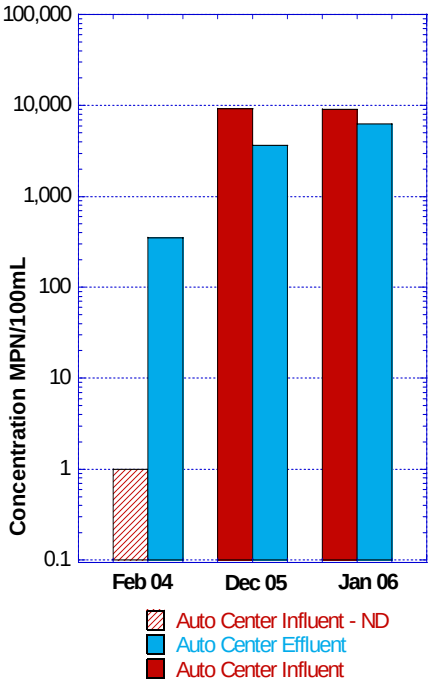


Figure 7. Auto Center Detention Basin *e. coli* Concentration

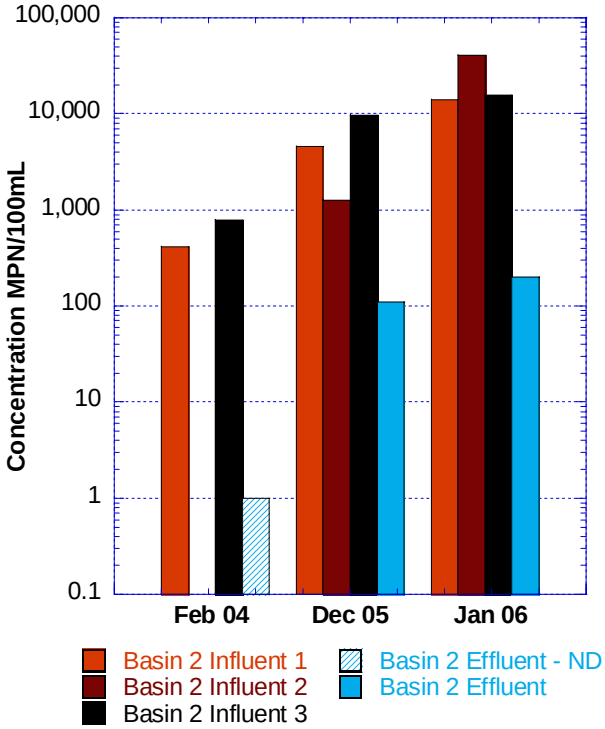


Figure 8. Basin 2 Detention Basin e. coli Concentrations

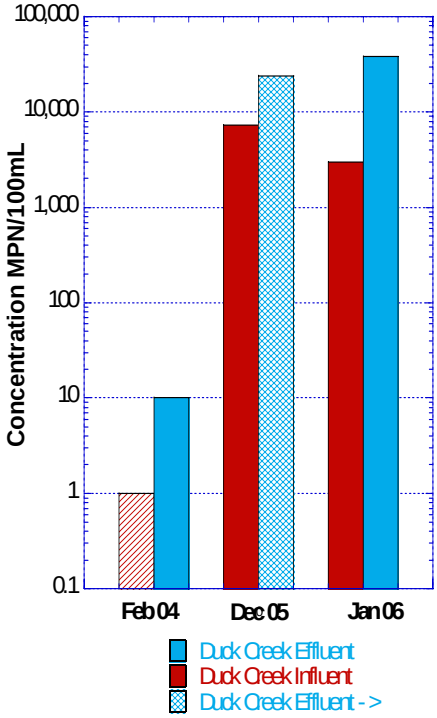


Figure 9. Duck Creek Detention Basin e. coli Concentrations

ND in graphs stands for non-detect values which are less than or equal to the give value ">" stands for concentrations that are greater than the given value.

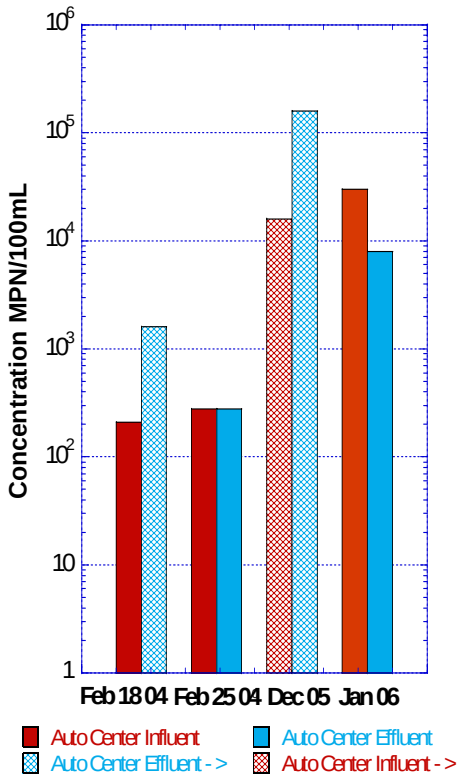


Figure 10. Auto Center Detention Basin Fecal Coliform Concentrations

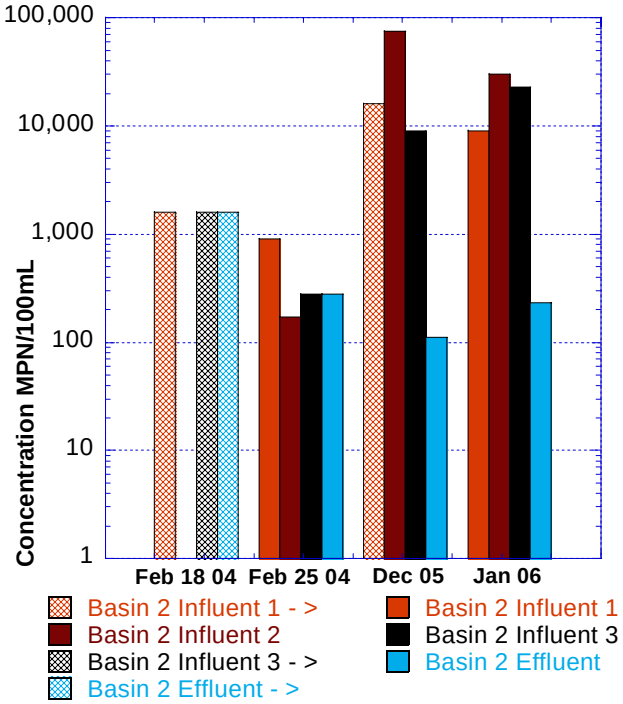


Figure 11. Basin 2 Detention Basin Fecal Coliform Concentration

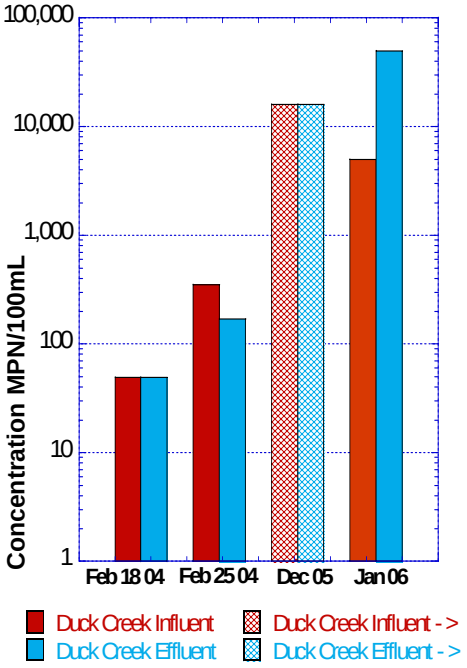


Figure 12. Duck Creek Detention Bain Fecal Coliform Concentration

ND in graphs stands for non-detect values which are less than or equal to the give value "> " stands for concentrations that are greater than the given value.

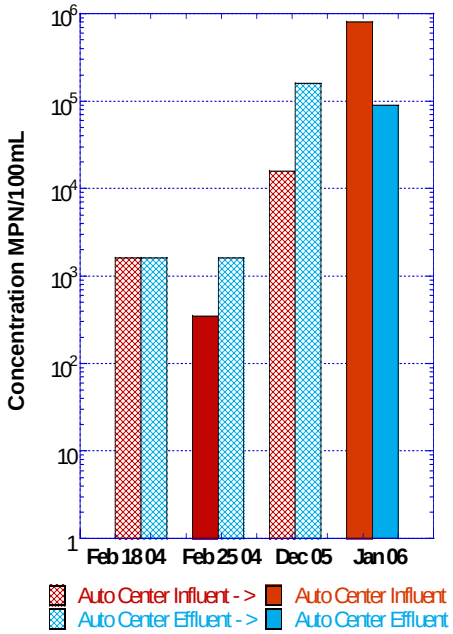


Figure 13 Auto Center Detention Basin Total Coliform Concentration

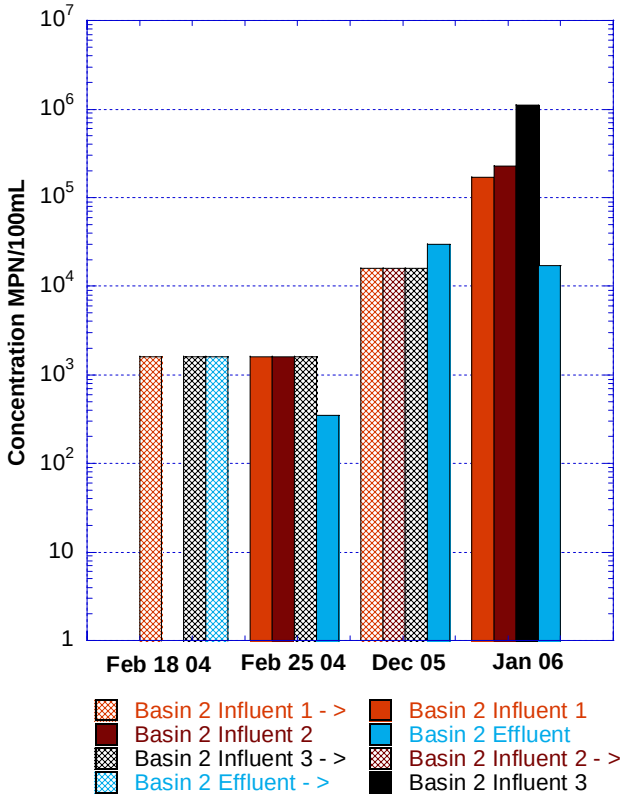


Figure 14. Basin 2 Detention Basin Total Coliform Concentrations

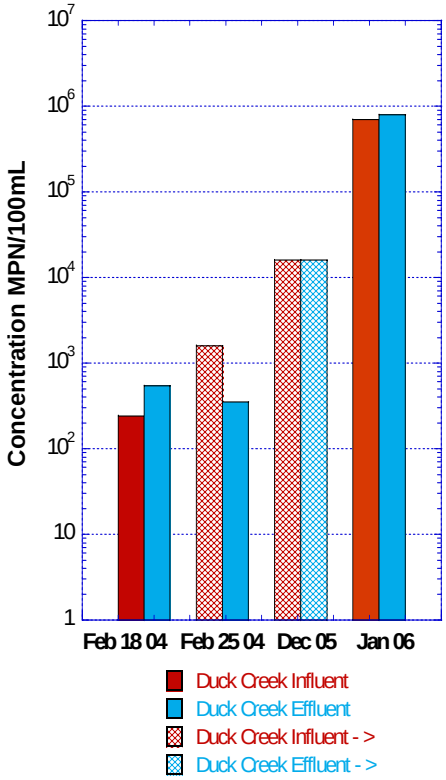


Figure 15. Duck Creek Detention Basin Total Coliform Concentration

ND in graphs stands for non-detect values which are less than or equal to the give value "> " stands for concentrations that are greater than the given value.

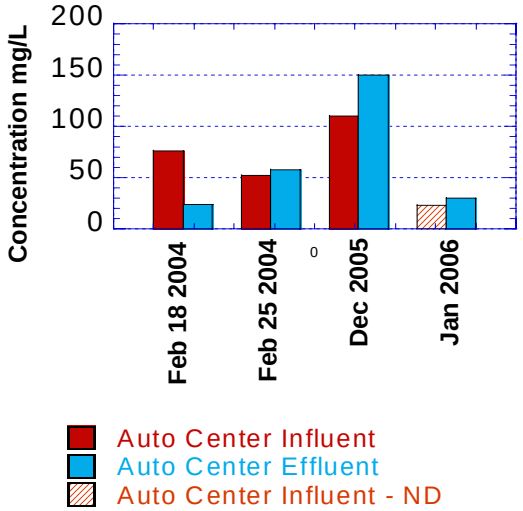
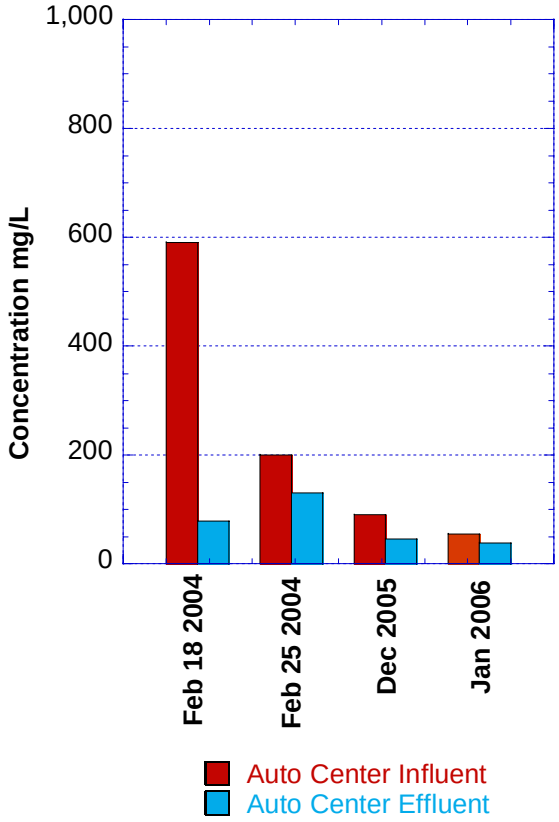
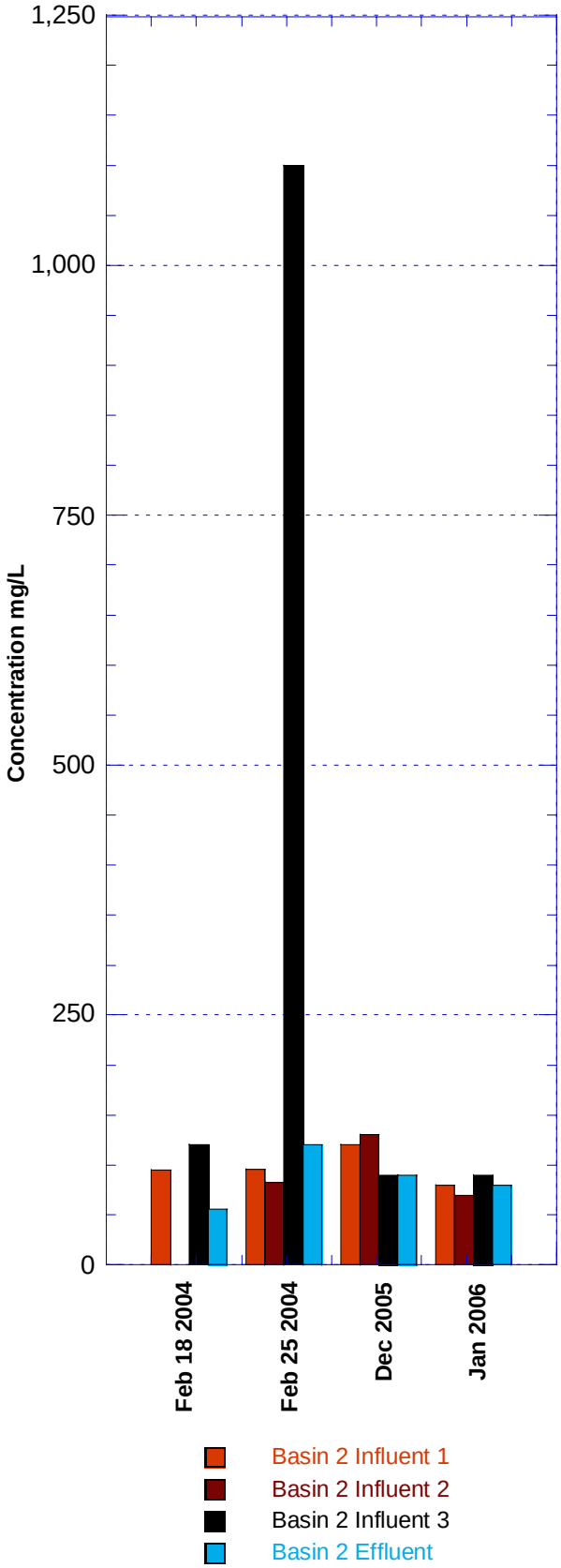


Figure 16. Auto Center Detention Basin Total Dissolved Solids Concentration

Figure 17. Basin 2 Detention Basin Total Dissolved Solids Concentration (AT RIGHT)

Figure 18. Duck Creek Detention Basin Total Dissolved Solids Concentration (BELOW)





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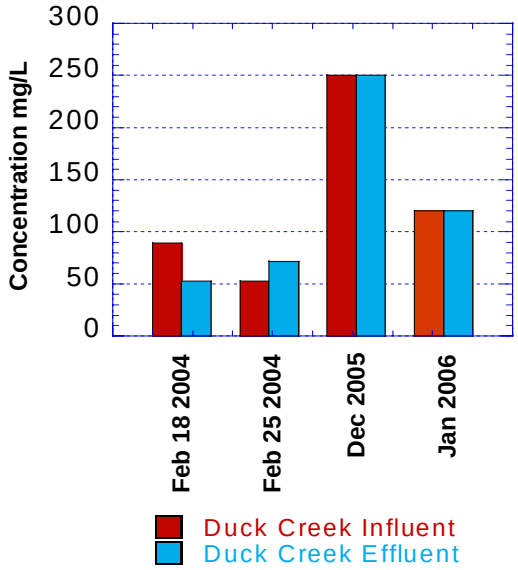

Figure 19. Auto Center Detention Basin Suspended Solids Concentration

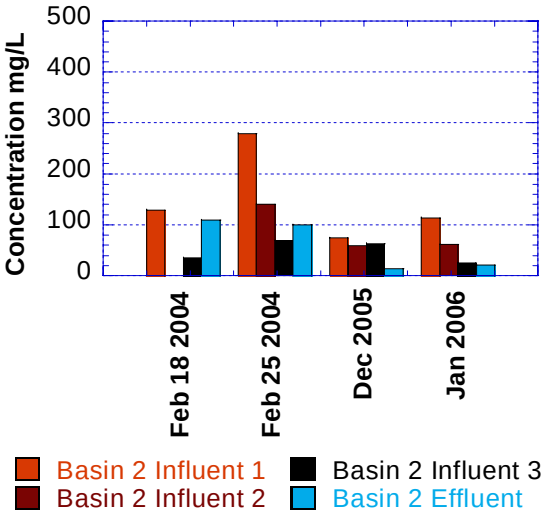

Figure 20. Basin 2 Detention Basin Total Suspended Solids Concentration

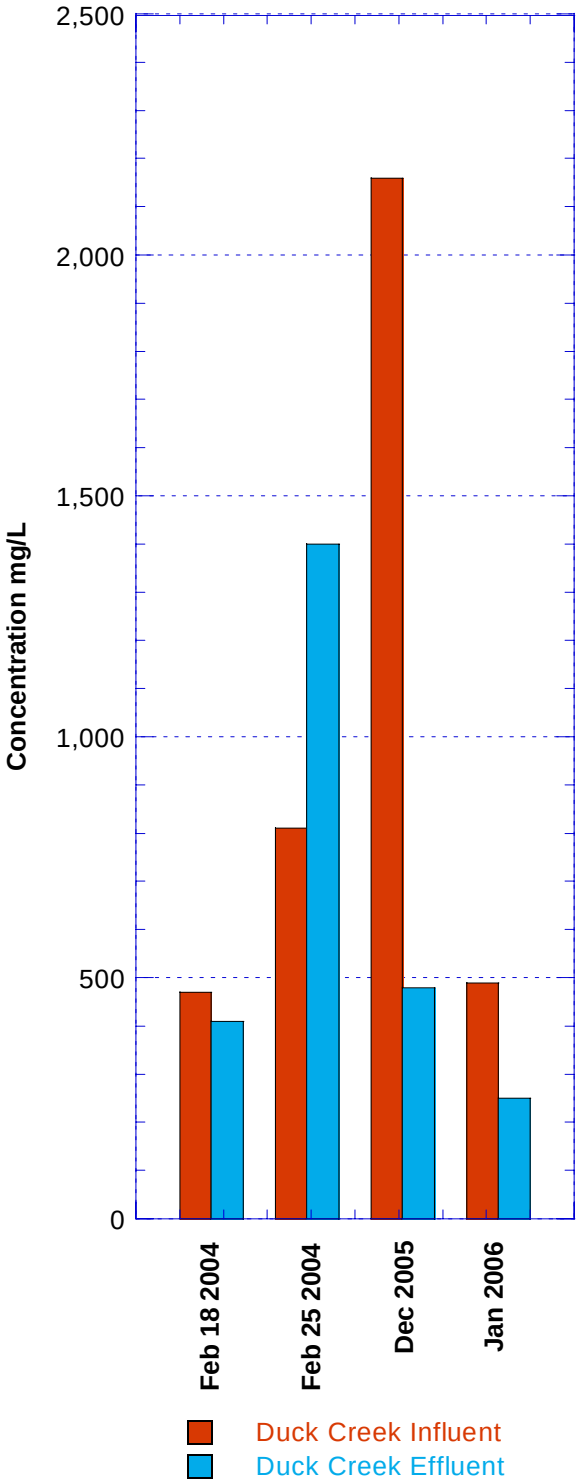

Figure 21. Duck Creek Detention Basin Total Suspended Solids Concentration

ND in graphs stands for non-detect values which are less than or equal to the give value "> " stands for concentrations that are greater than the given value.

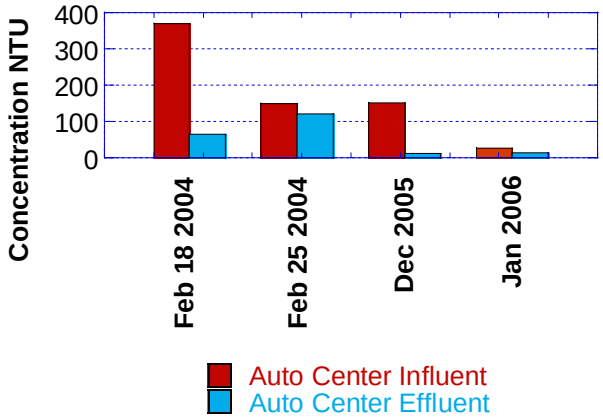

Figure 22. Auto Center Detention Basin Turbidity Concentration

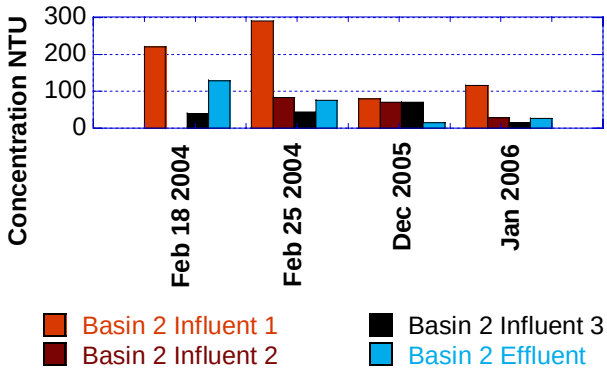

Figure 23. Basin 2 Detention Basin Turbidity Concentrations

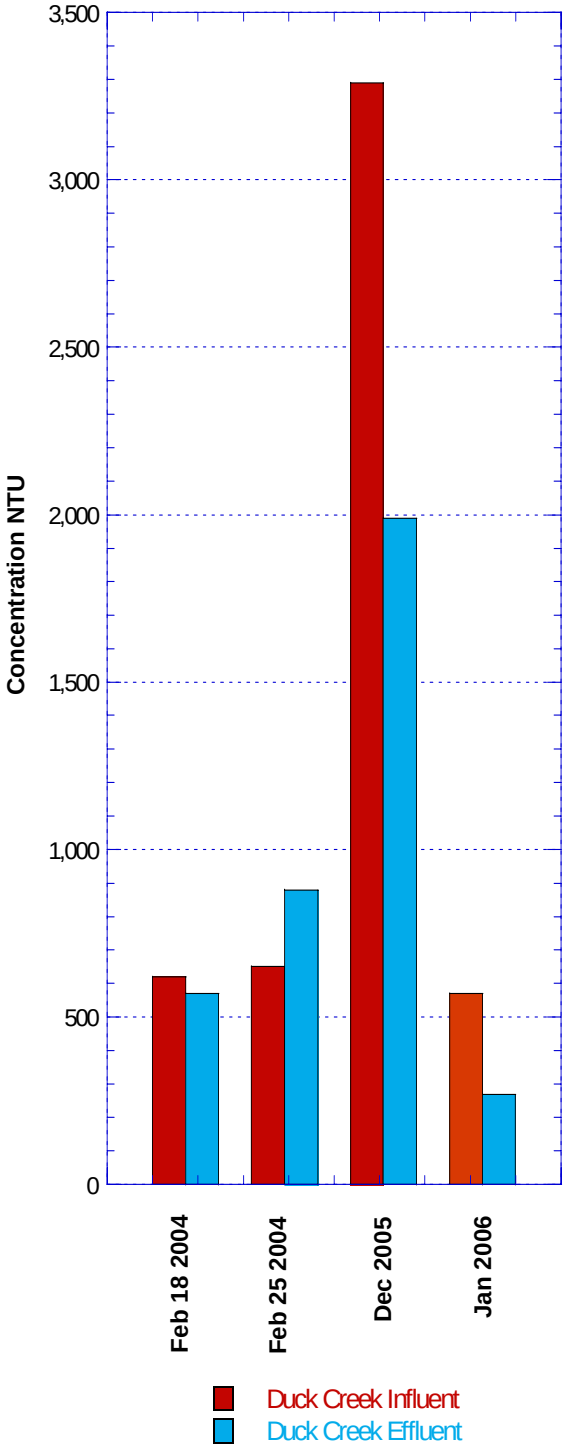

Figure 24. Duck Creek Detention Basin Turbidity Concentrations

ND in graphs stands for non-detect values which are less than or equal to the give value "> " stands for concentrations that are greater than the given value.

LEGION PARK BMP REVISED STUDY PLAN

The current National Pollutant Discharge Elimination System (NPDES) area-wide Municipal Separate Storm Sewer Systems (MS4) permit issued in 2007, Order No. R5-2007-0173, Monitoring and Reporting Program, Provision III.B, requires permittees to conduct Best Management Practice (BMP) effectiveness studies. Specifically, Provision III.B requires permittees to:

> "…conduct or participate with Modesto and Sacramento area Permittees in two studies (e.g., low impact development) to evaluate the effectiveness of source or treatment control BMPs. The Permittees may choose to conduct one BMP study each or may choose to contribute to studies by one of the Permittees. The objective of this study shall include the following:
> 1) Monitor the reduction of pollutants of concern in storm water including, but not limited to, pathogen indicators, nutrients, heavy metals, and pesticides from a minimum of one BMP that has been properly installed within the year preceding monitoring. Monitoring shall be continued until the effectiveness of the BMP can be determined;
> 2) Evaluate the requirements for and installation and maintenance cost of each BMP; and
> 3) Develop recommendations for appropriate BMPs for the reduction of pollutants of concern in storm water in the Stockton Urbanized Area."

One of the two BMP effectiveness studies required by the NPDES area-wide MS4 permit may be met through the continued evaluation of the Legion Park BMP. The second BMP effectiveness study is addressed in a separate document, BMP Effectiveness Study Plan Memorandum dated May 1, 2008. The purpose of this document is to layout the information necessary to continue monitoring of the Legion Park BMP. The memorandum is organized as follows:

1) Site and BMP Description
2) Past Monitoring Efforts
3) Monitoring Efforts for the Current NPDES MS4 Permit
4) Reporting and Assessing Effectiveness
5) Next Steps
6) References

1) SITE AND BMP DESCRIPTION

In response to 2002-2007 NPDES MS4 Permit Monitoring and Reporting Requirements and the Smith Canal Dissolved Oxygen Work Plan, the City installed a media filter stormwater treatment (MFST) system at the Legion Park Pump Station (LPPS) in late 2005. The LPPS includes five pumps that discharge effluent from the station's wet well into Yosemite Lake. The LPPS also includes a low-flow pump that discharges dry weather flow, light precipitation runoff and early portions of larger storm events. The MFST System is connected to and is designed to provide continuous treatment of discharges from the low-flow pump.

The MFST System is a structural stormwater treatment control measure consisting of 156 perlite filled cartridges designed to reduce the loading of pollutants, particularly those associated with solids, in discharges of urban runoff from the LPPS to the Yosemite Lake/Smith Canal receiving water system.

2) PAST MONITORING EFFORTS

In 2006, the City began a monitoring program to evaluate the effectiveness of the MFST System at removing pollutants, including metals, pesticides, bacteria, and nutrients. Results at this time have indicated an export of metals, nitrate, phosphate and total coliform. An export of pollutants indicates that the filter may not be functioning correctly and may be clogged. As a result, the City is working with the manufacturer of the MFST System to replace the media cartridges and ensure proper maintenance is conducted to prevent future clogging. This maintenance activity will take place before any additional monitoring is conducted.

3) MONITORING EFFORTS FOR THE CURRENT NPDES MS4 PERMIT

Once the media cartridges have been replaced, the City should proceed with monitoring efforts. Due to the malfunction of the old media cartridges, past monitoring data should be reviewed carefully and possibly not used to assess the effectiveness of the filter.

Monitoring Schedule

Composite-based sampling will be conducted at the MFST System's influent and effluent boxes. The low flow pump should be turned on immediately prior to sampling and allowed to run for approximately three to five minutes. Grab samples will be collected at equal time intervals of approximately two minutes over the course of each discharge event. The laboratory will composite the collected grab samples in order to assess event mean concentrations (EMCs) of influent versus effluent. During the 2008/2009 wet season and possibly into the 2009 dry season, sampling will be collected during the early flush of two storm events and five dry weather sampling events. Wet weather sampling will only be conducted for storms forecasted to produce 0.25 inches or more rainfall. Dry weather sampling will only be conducted after five consecutive days with no measurable rainfall.

Incoming storms will be tracked and evaluated as candidates for storm water monitoring. Prior to each sampling event (wet or dry weather), the appropriate analytical laboratory will be contacted to order pre-cleaned, labeled and preserved sample containers (including quality control samples) and coordinate sample transportation details. In addition, the Stockton Municipal Utilities Department (MUD) and/or OMI Thames Water, Stockton, Inc. (OMI/Thames) will be notified in advance of a sampling event in order for a representative to be available to activate/de-activate the low flow pump to ensure that the MFS is in operation during sample collection.

Target Pollutants and Field Parameters for Monitoring

The NPDES MS4 permit requires BMP effectiveness studies to monitor the reduction of pollutants of concern in storm water including, but not limited to, pathogen indicators, nutrients, heavy metals, and pesticides. These requirements along with City of Stockton/ County of San Joaquin's target pollutants will be monitored and are outlined in Table 1.

Additional information on monitoring procedures (e.g., equipment and health and safety) can be found in the Legion Park Pump Station Best Management Practice Effectiveness Study Monitoring and Reporting Plan (Condor Earth Technologies, 2006).This plan should be updated to reflect the 2008 Stormwater Management Plan (SWMP).

Table 1. Analytes, Methods, Reporting Limits and Holding Times

Analyte	EPA Method*	Units	Target Reporting Limit	Holding Time
Field[1]				
Dissolved Oxygen (DO)	Field	mg/L	0.1 mg/L	Field
Oxidation Reduction Potential (ORP)	Field	mV	---	Field
pH	Field	Std. pH Units	0 – 14.0	Field
Specific Conductance (EC)	Field	µmhos/cm	1 µmhos/cm	Field
Temperature	Field	^{o}C	0.1^{o}C	Field
Turbidity	Field	NTU	0.1 NTU	Field
Nutrients				
Nitrate	300.0	mg/L	0.1 mg/L	48 days
Nitrite	300.0	mg/L	0.1 mg/L	48 days
Kjeldahl Nitrogen (TKN)	351.1	mg/L	0.1 mg/L	28 days
Total Phosphorous	4500-P,E	mg/L	0.05 mg/L	28 days
Phosphate	300.0	mg/L	0.5 mg/L	48 hours
Bacteria				
Total and Fecal Coliform	SM9221B	MPN/100 ml	2 – 1,600,000	6 hours
E. coli	SM9223B	MPN/100 ml	2 – 1,600,000	6 hours
General				
Total Suspended Solids (TSS)	2540D	mg/L	2 mg/L	7 days
Total Dissolved Solids (TDS)	Field /2540C,E	mg/L	2 mg/L	7 days
Biological Oxygen Demand (BOD)	5210B	mg/L	5 mg/L	48 hours
Hardness	Calculated	mg/L	2.0 mg/L	6 months
Oil & Grease	1664	mg/L	3 mg/L	28 days
Metals				
Total Aluminum	200.7	mg/L	0.1 mg/L	6 months
Total Calcium	200.7	mg/L	1.0 mg/L	6 months
Total Cadmium	200.7	mg/L	0.00025 mg/L	6 months
Total Chromium	200.7	mg/L	0.0005 mg/L	6 months
Total Copper	200.7	mg/L	0.001 mg/L	2 hours[2]
Total Iron	200.7	mg/L	0.05 mg/L	6 months
Total Manganese	200.7	mg/L	1.0 mg/L	6 months
Total Nickel	200.7	mg/L	1.0 mg/L	6 months
Total Lead	200.7	mg/L	0.0002 mg/L	2 hours[2]
Total Zinc	200.7	mg/L	1.0 mg/L	6 months
Methylmercury	1630	ng/L	0.05 ng/L	48 hours[3]
Pesticides				
Organochlorine Pesticides	625m	µg/L	0.01 µg/L	7 days[4]
Organophosphate Pesticides	625m	µg/L	0.01 µg/L	7 days[4]
Pyrethroids	8270MOD	ng/L	5 ng/L	3 days

1: Field parameters will be collected using an YSI 556 and Hach 2100P meters.
2: 2 hour hold time to preserve sample. After preservation, the holding time is 6 months.
3: 48 hour hold time to preserve sample. After preservation, the holding time is 90 days.
4: Maximum holding time prior to extraction. Extracted sample may be held up to 40 days before analysis.

4) REPORTING AND ASSESSING EFFECTIVENESS

Monitoring data will be reviewed and summarized for inclusion in the City's annual stormwater reports. Effectiveness of the MFST System may be assessed and reported by focusing on the following:

- Is there a statistically significant reduction between influent and effluent concentrations (e.g., is the reduction in reported means real?)?
- Is the performance of the MFST System consistent with that of other media filter BMPs?

Table 2 provides typical median average influent and effluent concentrations of other media filter BMPs for select analytes. As noted above, these concentrations may be used to assess the performance of the MFST System. Percent removal may be reported but will not be used in the final evaluation of MFST System's performance. Percent removal will not be used because it is a function of influent quality and high influent pollutant concentrations can result in reporting of higher pollutant removals than those with cleaner influent. Using of percent removal may be more reflective of how "dirty" the influent water is rather than how well the BMP is actually performing.

Table 2. Typical Median Average Influent and Effluent Concentrations of Media Filters
(Source: Clary , et al., 2008 and Geosyntec and Wright Water Engineers, 2007)

Analyte	Median of Average Influent Concentration	Median of Average Effluent Concentration
Total Cadmium (µg/L)	0.25	0.19
Total Chromium (µg/L)	2.18	1.48
Total Copper (µg/L)	14.57	7.63
Total Lead (µg/L)	11.29	2.62
Total Zinc (µg/L)	92.34	32.23
Nitrate (mg/L)	0.41	0.66
Kjeldahl Nitrogen (TKN) (mg/L)	1.52	1.16
Total Phosphorous (mg/L)	0.20	0.11
Total Suspended Solids (TSS) (mg/L)	43.27	10.85
Fecal Coliform (#/100mL)	583	200

5) Next Steps

Next steps for implementing the Legion Park BMP Revised Study Plan include:

- Replacing clogged media cartridges by July 2008.
- Updating monitoring plan to reflect 2008 SWMP by August 2008.
- Resuming monitoring by October 2008 (beginning of wet season).
- Reporting and assess effectiveness of the system annually.

6) REFERENCES

Clary, J., J. Jones, B. Urbonas, M. Quigley, E. Strecker, and T. Wagner. 2008. Can Stormwater BMPs Remove Bacteria? New Findings from the International Stormwater BMP Database. *Stormwater Magazine* 9(3): 60-67.

Condor Earth Technologies. 2006. Legion Park Pump Station Media Filter Effectiveness Study Monitoring and Reporting Plan. Prepared for City of Stockton.

Geosyntec Consultants and Wright Water Engineers. 2007. Overview of Performance by BMP Category and Common Pollutant Type. International Stormwater Best Management Practices Database [1999-2007].

BMP EFFECTIVENESS STUDY PLAN

The current National Pollutant Discharge Elimination System (NPDES) area-wide Municipal Separate Storm Sewer Systems (MS4) permit issued in 2007, Order No. R5-2007-0173, Monitoring and Reporting Program, Provision III.B, requires permittees to conduct Best Management Practice (BMP) effectiveness studies.

Provision III.B specifically requires the permittees to:

> "…conduct or participate with Modesto and Sacramento area Permittees in two studies (e.g., low impact development) to evaluate the effectiveness of source or treatment control BMPs. The Permittees may choose to conduct one BMP study each or may choose to contribute to studies by one of the Permittees. The objective of this study shall include the following:
>
> 1) Monitor the reduction of pollutants of concern in storm water including, but not limited to, pathogen indicators, nutrients, heavy metals, and pesticides from a minimum of one BMP that has been properly installed within the year preceding monitoring. Monitoring shall be continued until the effectiveness of the BMP can be determined;
> 2) Evaluate the requirements for and installation and maintenance cost of each BMP; and
> 3) Develop recommendations for appropriate BMPs for the reduction of pollutants of concern in storm water in the Stockton Urbanized Area."

One of the two BMP effectiveness studies required by the NPDES area-wide MS4 permit may be met through continued evaluation of the Legion Park BMP (see Appendix H-6 of the April 2009 Stormwater Management Plan). Permittees have identified the Morelli Park Swale A as a viable option to meet the BMP Effectiveness Study requirements.

This document serves as the Study Plan for the Effectiveness Study of the Morelli Park Swale A. The document is organized around the following sections:

1) Monitoring Locations and Approach
2) Sampling Plan
3) Technical Report
4) Schedule
5) References

MONITORING LOCATIONS AND APPROACH

Morelli Park Boat Launching Facility is a recent downtown Stockton redevelopment effort of the City's and includes a parking lot, boat ramps, access road, sidewalks and restroom facilities (Figure 1). Stormwater management is provided onsite by three grassy swales (Figure 2). Permittees will evaluate one of the swales, Swale A, for pollutant removal effectiveness and volume reduction (Figure 3).

Morelli Park Swale A will be monitored within Permit years 3 - 5. Influent and effluent will be monitored each year for a total of ten storm events during the permit term. In addition, the ability of Swale A to reduce runoff volume will be monitored as this has an impact on the overall pollutant load.

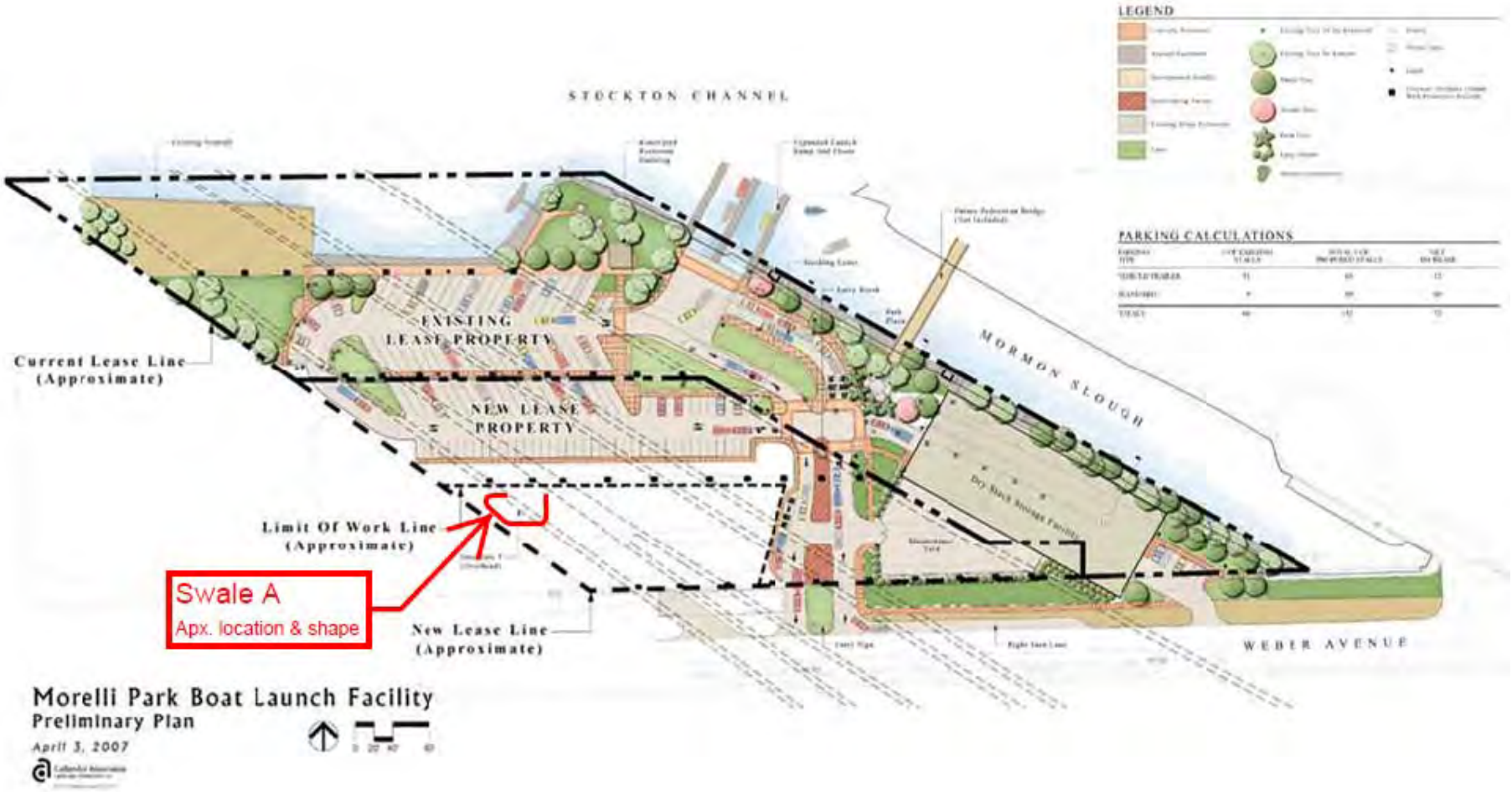

Figure 1. Approximate location and shape of Swale A at Morelli Park
(Source: City of Stockton Morelli Park Project Website: http://www.stocktongov.com/Redevelopment/MorelliParkProject.cfm)

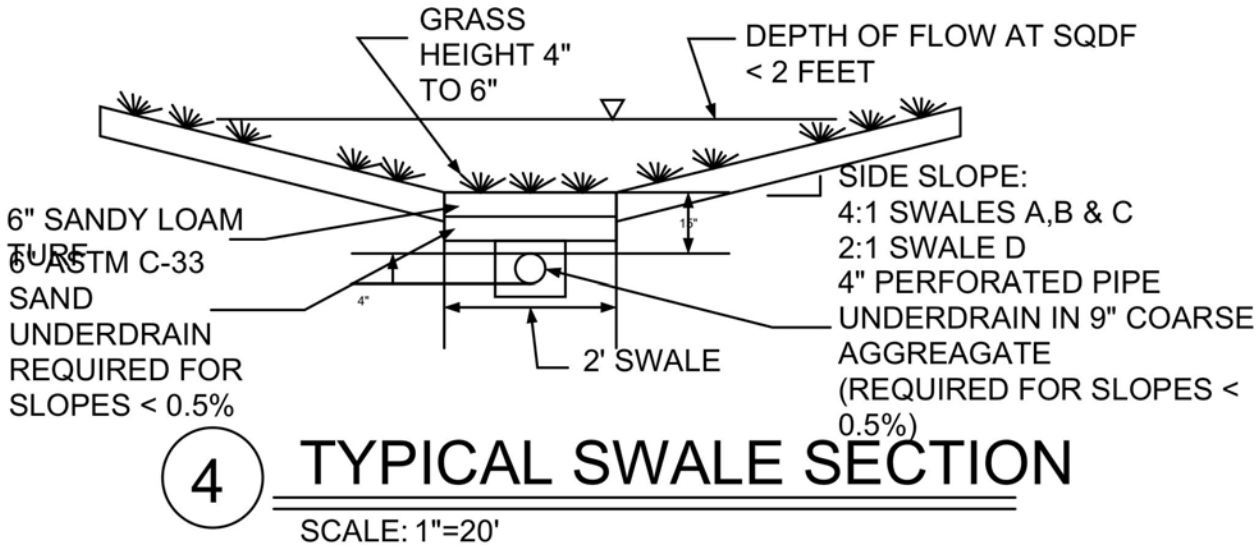

Figure 2. Typical Swale Cross Section at Morelli Park (Source: Morelli Park Drainage Plan)

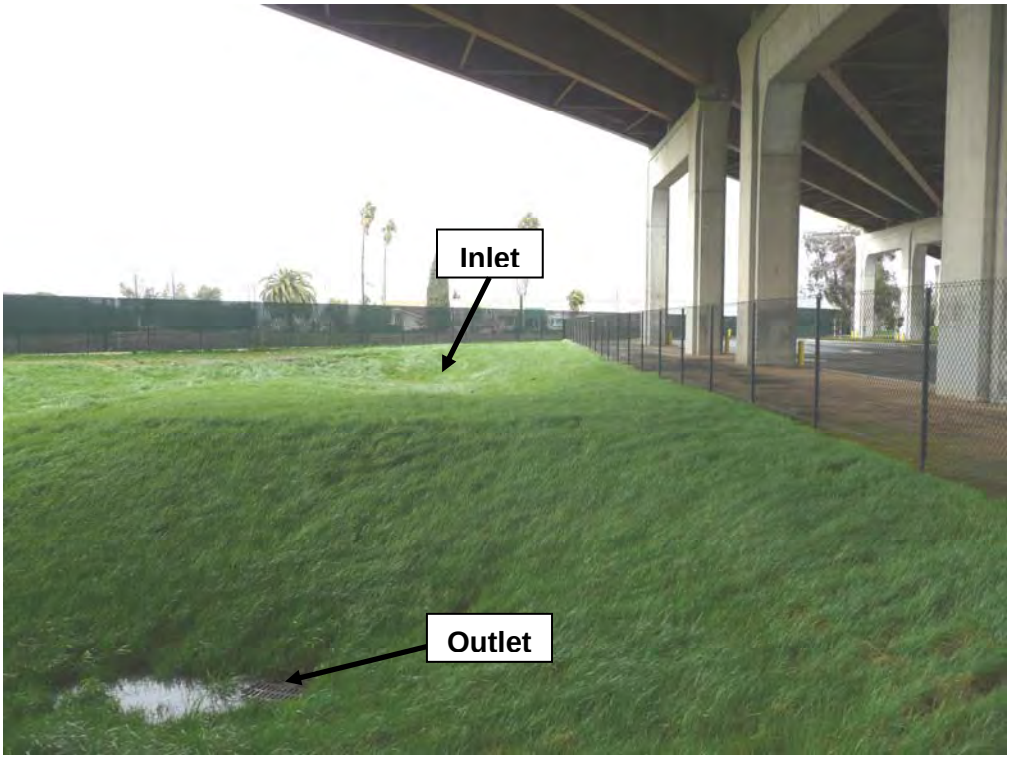

Figure 3. Morelli Park Swale A

Stormwater Monitoring

The BMP will be monitored for the constituents outlined in **Table 1**.

Table 1. List of Constituents to Monitor

Constituent	City of Stockton/ County of San Joaquin Pollutants of Concern
Conventional	
Oil and Grease	✓
pH	∗
Nutrients[1]	
Nitrate	✓
Nitrite	✓
Kjeldahl Nitrogen (TKN)	✓
Total Phosphorus	✓
Phosphate	✓
Bacteria	
Fecal coliform	✓
E. coli	✓
General	
Total Suspended Solids	∗
Metals	
Aluminum, Total	✓
Aluminum, Dissolved	∗
Copper, Dissolved	∗
Copper, Total	✓
Iron, Total	✓
Iron, Dissolved	∗
Lead, Dissolved	∗
Lead, Total	✓
Mercury	∗
Methylmercury	∗
Pesticides	
Pyrethroids	✓[2]

1: Nutrients are not included in Permittees' Pollutants of Concern, however they were added to this list since nutrients are called out within BMP Effectiveness MRP requirements
2: Pyrethroids are not included in City of Stockton/County of San Joaquin's Pollutants of Concern, however they were added to this list since pesticides are called out within the current permit's BMP Effectiveness MRP requirements
∗Recommended that this constituent be added to the monitor list even though it is not currently called out on any existing list.

Measuring BMP Effectiveness

BMP monitoring will be conducted at influent and effluent stations. Effectiveness of Swale A will be based on the following variables:

- Runoff volume reduction
- Volume of runoff treated (versus bypassed or conveyed)
- Statistical difference in effluent quality compared to influent quality
- Distribution of effluent quality achieved

The Effluent Probability Method will be used to determine pollutant removal effectiveness. The Effluent Probability Method determines whether the influent and effluent mean EMCs are statistically different from one another and then examine either a cumulative distribution function of influent and effluent quality.

The entire BMP should be taken into account when measuring effectiveness. Overflow and bypassing of BMPs affect the long-term performance of the stormwater control measure. In order to accurately assess the efficiency of the BMP system, the bypass flow should be taken into consideration. If necessary, a third flow monitor may be installed to measure by-passed flow directly (ASCE, 2002).

SAMPLING PLAN

A sampling and analysis plan for compliance monitoring will be developed and submitted in year 2 of the permit term. The plan will include specification of the following:

- Sampling Stations
- Sampling Protocols
- Event Preparation
- Personal Safety
- Quality Assurance/Quality Control
- Data Analysis and Reporting

TECHNICAL REPORT

A technical report will be submitted at the conclusion of the study describing the results of the water quality monitoring, BMP effectiveness and runoff reduction. The report will document installation and maintenance costs and make recommendations regarding future use and applicability of the BMP within the Stockton Permittee area.

SCHEDULE

A schedule is provided in Table 2.

Table 2. Schedule for Pilot Watershed New Development BMP Effectiveness Evaluation

Task	Timeframe
Develop a Sampling and Analysis Plan for Swale A	Year 2
Monitor Effectiveness	Years 3 – 5
Develop summary Technical Report	Year 5

REFERENCES

American Society of Civil Engineers. 2002. Urban Stormwater BMP Performance Monitoring. Prepared for the US EPA. Available online: www.bmpdatabase.org.

SEDIMENT TOXICITY WORK PLAN

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Condor Project No. 5418

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TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 OVERVIEW 2

2.1 PESTICIDE IMPAIRED WATERBODIES 2

3.0 SEDIMENT WORK PLAN OBJECTIVE 4

4.0 PROPOSED SEDIMENT WORK PLAN MONITORING LOCATIONS 5

4.1 MOSHER SLOUGH 6

4.2 CALAVERAS RIVER 9

4.3 SMITH CANAL 12

4.4 FIVE-MILE SLOUGH 14

4.5 MORMON SLOUGH 15

4.6 DUCK CREEK/WALKER SLOUGH 17

5.0 SEDIMENT MONITORING WORK PLAN 18

5.1 SAMPLING FREQUENCY 18

5.2 SEDIMENT SAMPLING PROCEDURES 19

5.2.1 Laboratory Analyses 20

5.2.2 Health and Safety Procedures 22

6.0 REPORTING 22

7.0 PROPOSED SCHEDULE 23

LIST OF INSETS

Inset 1: Mosher Slough Sediment Toxicity Downstream Monitoring Location (MS-14R) 6
Inset 2: Mosher Slough Sediment Toxicity Upstream Monitoring Location (MS-5R) 8
Inset 3: Calaveras River Sediment Toxicity Downstream Monitoring Location (CR-39R) 10
Inset 4: Calaveras River Sediment Toxicity Upstream Monitoring Location (CR-46R) 11
Inset 5: Smith Canal/Yosemite Lake Sediment Toxicity Monitoring Location (SC-5R) 13
Inset 6: Five-Mile Slough Sediment Toxicity Monitoring Location (5M-27R) 14
Inset 7: Mormon Slough Sediment Toxicity Monitoring Location (MR-2R) 16
Inset 8: Duck Creek/Walker Slough Sediment Toxicity Monitoring Location (WK-64R) 17

LIST OF PHOTOS

Photo 1: Mosher Slough (MS-14R) Downstream Monitoring Location (May 12, 2008) 7
Photo 2: Mosher Slough (MS-5R) Upstream Monitoring Location (May 12, 2008) 8
Photo 3: Calaveras River/Brookside (CR-39) Discharge Outfall (April 22, 2008) 10
Photo 4: Calaveras River (CR-46R) at West Lane (April 1, 2008) 12
Photo 5: Smith Canal (SC-5R) Yosemite Lake Monitoring Location (March 26, 2008) 13
Photo 6: Five-Mile Slough (5M-27R) Swenson Park Monitoring Location (May 13, 2008) 15
Photo 7: Mormon Slough (MR-2R) Commerce Street Monitoring Location (March 6, 2006) 16
Photo 8: Walker Slough (WK-64R) Manthey Road Bridge Monitoring Location (May 13, 2008) 18

LIST OF TABLES

Table 1: Pesticide Impaired Waterways within the SUA 3
Table 2: Proposed SUA Sediment Toxicity Monitoring Locations 5
Table 3: Sediment Work Plan Initial Analytical Constituents and Limits 20
Table 4: Sediment Work Plan Follow-Up Analytical Constituents and Limits 21
Table 5: Proposed Sediment Work Plan Monitoring Schedule 23

ATTACHMENTS

ATTACHMENT A

- Figure 1: San Joaquin Waterways within the Greater Stockton Urbanized Area, Stockton, California
- Figure 2: Stormwater Discharge Locations within the Greater Stockton Urbanized Area, Stockton, California
- Figure 3: Impaired Portions of Stockton Waterways 303(d)-Listed for Pesticides within the Greater Stockton Urbanized Area, Stockton, California
- Figure 4: Proposed Sediment Plan Monitoring Locations within the Greater Stockton Urbanized Area, Stockton, California

SEDIMENT TOXICITY WORK PLAN

1.0 INTRODUCTION

Preparation of this work plan is directed by the California Regional Water Quality Control Board, Central Valley Region (Regional Water Board) National Pollutant Discharge Elimination System (NPDES) Permit No. CAS083470, Order R5-2007-0173 (Permit), approved December 6, 2007. The City of Stockton (City) and the County of San Joaquin (County) (collectively, Permittees) are required to submit a sediment toxicity work plan (Sediment Work Plan) and to commence sediment quality characterization sampling for sediment toxicity in order to characterize sediment/water quality conditions, determine the significance of the increase in urban pyrethroid usage, and assess the impact of the best management practices (BMPs) implemented as part of the Permittees Stormwater Management Plan (SWMP).

Ambient sediment water quality monitoring by the Surface Water Ambient Monitoring Program (SWAMP-Sacramento Basin) identified a high incidence of sediment toxicity in several urban creeks that drain the suburbs of Roseville, California (Weston et al., 2005)[1]. Another study by the Sacramento River Watershed Program (SRWP) observed sediment toxicity in almost every Sacramento area urban creek that was tested (Amweg et al., 2006)[2]. The sediment toxicity observed in the above mentioned studies was localized to within tens to hundreds of meters downstream of stormwater outfalls draining residential areas.

Aquatic organisms are exposed to sediment pollutants through transport across biological membranes either from dissolved contaminants in sediment pore water or ingestion of contaminants adhered to sediment particles (U.S. EPA, 2000b)[3]. The chemical partitioning characteristics of the contaminant and the nature of the sediment affects whether the contaminant is dissolved in sediment pore water or attached to sediment particles. The speciation of pollutants, especially metals, in the sediment and the way in which they behave in an aquatic environment may affect the degree of toxicity observed. Factors that affect bioavailability of contaminants in sediment include (U.S. EPA, 2000b):

Organic matter content	Grain size
Hydrogen ion activity (pH)	Aerobic state and sulfides concentration
Microbiological activity	Receptor
Sediment composition and mineralogy	Degree of bioturbation or physical mixing.

Organic matter in sediments is often associated with fine particles and, in general, the smaller the grain size the greater the potential for high concentrations of pollutants. Organic matter is a food source for sediment ingesters; consequently, sediments that contain smaller, organic particles are more likely to contain pollutants that are bioavailable to sediment ingesters through consumption.

---

[1] Weston, D.P., R.W. Holmes, J. You, and M.J. Lydy. 2005. Aquatic toxicity due to residential use of pyrethroid insecticides. Environ. Sci. & Technol. 39: 9778-9784.

[2] Amweg, E.L., D.P. Weston, J. You, and M.J. Lydy. 2006. Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee. *Environ. Sci. & Technol*. Published on web 1/31/2006.

[3] United States Environmental Protection Agency (U.S. EPA). 2000b. Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment Status and Needs. EPA-823-R-00-001.

2.0 OVERVIEW

Stockton is located within California's Central Valley approximately 83 miles east of San Francisco and 45 miles south of Sacramento (Figure 1, Attachment A). Stockton encompasses approximately 60 square miles with an average elevation of 15 feet; the western portion of the city lies within the boundary of the Sacramento-San Joaquin Delta.

Stockton area waterways[4] drain westerly to the San Joaquin River (SJR), which flows northward along the western portion of the Stockton Urbanized Area[5] (SUA). Tidal variation generally ranges from 0 feet mean sea level (msl) to approximately four feet above msl. Besides direct groundwater inputs and tidal exchange, all inputs to Smith Canal, Five-Mile Slough, and the urbanized portion of Mormon Slough are from the SUA's stormwater system. In addition to urban runoff, Bear Creek, Mosher Slough, the Calaveras River, and Walker Slough/Duck Creek receive inflow from upstream agricultural runoff and agricultural return (tail water). In general, the urbanized portion of the Calaveras River receives upstream flow predominantly from the Stockton Diversion Canal (Figure 1, Attachment A). In most areas of the SUA, dry weather flow and stormwater runoff discharge by gravity to pump stations where the flows are released to sloughs and rivers. The quality and quantity of these discharges vary considerably and are affected by hydrology, geology, land use, season, and sequence and duration of precipitation events.

Due to the proximity of the County's urbanized areas to the City and the physical interconnection with the City's storm drain system, portions of the County are designated as Phase I in accordance with 40 Code of Federal Regulations (CFR) 122.26 (b)(4)(iii). The Permittees own and operate the municipal separate storm drain system (MS4) which collects stormwater and surface water runoff within the SUA. The City has identified approximately 400 miles of storm drain lines. The City and County have identified 158 and 47 outfalls, respectively, within their jurisdictions that discharge stormwater and surface runoff generated from various land uses (Figure 2, Attachment A).

2.1 PESTICIDE IMPAIRED WATERBODIES

Based on water quality sampling results, five waterways within the SUA have been classified as pesticide-impaired waterbodies under the Federal Clean Water Act Section 303(d) [303(d)]: Mosher Slough, Five-Mile Slough, the Calaveras River, Smith Canal, and the Stockton Deep Water Ship Channel (DWSC) (Table 1, on the following page, and Figure 3, Attachment A). In addition, the Regional Water Board Toxic Hot Spots Clean-Up Plan (California Water Code Section 13394) has identified hot spots[6] related to organophosphate pesticides, diazinon and chlorpyrifos, in Mosher Slough, Five Mile Slough, the Calaveras River, and Mormon Slough.

In 2000, the United States Environmental Protection Agency (U.S. EPA) announced agreements with manufacturers to phase out most urban uses of diazinon and chlorpyrifos. In addition, the U.S. EPA developed agreements outlining effective dates for diazinon and chlorpyrifos containing products. Non-agricultural uses of chlorpyrifos allowed to continue included residential use of containerized baits and indoor/certain outdoor areas where children would not be exposed.

---

[4] The major drainage watersheds in the SUA are Bear Creek, Mosher Slough, Five Mile Slough, Fourteen Mile Slough, the Calaveras River, Smith Canal, Stockton Deep Water Ship Channel/Stockton Shipping Channel, Mormon Slough, Walker Slough/Duck Creek, and Littlejohns Creek.
[5] The SUA includes the City and Phase I portions of County of San Joaquin.
[6] Regional Water Board NPDES Permit No. CAS083470, Order R5-2007-0173, Finding 70.

Although, results of the Permittees' 2004-2006 Pesticide Plan[7] monitoring program suggested that diazinon and chlorpyrifos are no longer SUA stormwater pollutants of concern (POCs), the Regional Water Board directed that continued monitoring[8] is needed to determine the significance of the Permittees' contribution to diazinon and chlorpyrifos concentrations in 303(d)-listed waters and the toxic hot spots. The Permittees are currently conducting detention basin and pesticide monitoring programs in compliance with the Permit and the Regional Water Board 13267 Letter[9]; the data from these monitoring programs will be incorporated in the Sediment Work Plan analyses and reporting.

Table 1: Pesticide Impaired Waterways within the SUA

Waterbody	Reach	Estimated Size Affected	Potential Toxicity Source
Mosher Slough	Downstream of Interstate 5	1.3 Miles	Chlorpyrifos Diazinon
Five-Mile Slough	Alexandria Place to Fourteen Mile Slough	1.6 Miles	Chlorpyrifos Diazinon
Calaveras River	Lower	5.8 Miles	Diazinon
Smith Canal	Entirety	2.3 Miles	OP Pesticides
Delta Waterways	Stockton DWSC	1,603 Acres	Chlorpyrifos DDT Diazinon Dioxin/Furans Group A Pesticides PCBs Unknown Toxicity

Note: DWSC = Stockton Deep Water Ship Channel
PCBs = Polychlorinated Biphenyls
DDT = Dichlorodiphenyltrichloroethane
OP Pesticides = Organophosphate Pesticides

The phase-out on the sale of diazinon and chlorpyrifos for most residential and commercial uses resulted in an increase in the use of pyrethroid pesticides. Pyrethroid pesticides are persistent, hydrophobic, and rapidly sorb to sediments in aquatic environments. As per Finding 81 of the Permit, the Regional Water Board determined that monitoring of sediment quality (sediment toxicity testing) and water column toxicity of urban runoff/discharges is needed to characterize sediment/water quality conditions, determine the significance of the increase in urban pyrethroid usage, and assess management practice effectiveness.

[7] City of Stockton and County of San Joaquin Pesticide Plan, dated April 1, 2004.
[8] Regional Water Board NPDES Permit No. CAS083470, Order R5-2007-0173, Finding 73(g).
[9] *Requirement for Technical Report Pursuant to California Water Code Section 13267*, dated November 14, 2007. The 13267 Letter directs pesticide monitoring consistent with the Permittees' Pesticide Plan dated April 1, 2004 (revisions September 22, 2004).

3.0 SEDIMENT WORK PLAN OBJECTIVE

The purpose of the Sediment Work Plan is to characterize sediment toxicity in areas subject to urban discharge and, based on the results, identify BMPs for controlling sources of sediment toxicity. Consistent with the requirements of Permit Provision D(26)(a-i) and Monitoring and Reporting Program (MRP), Provision II(G), this Sediment Work Plan is a component of the Permittees' SWMP and will address the following:

- Conducting characterization monitoring of sediment quality within the SUA waterways, including detention basins[10], which receive stormwater discharges.
- Selection of sample sites based on the following criteria: (1) select sediment depositional areas downstream and within close proximity (within 25-100 meters) of representative stormwater outfalls; (2) assess a variety of land uses including residential, suburban residential, commercial, industrial, and mixed; and 3) capture a range of ages of residential and suburban neighborhood drainage areas (less than 10 years old, 10 to 25 years old, or older than 25 years old.
- Sampling of sediment consistent with SWAMP Quality Assurance Management Plan (QAMP) protocols.
- Analyses of sediment samples from one post first flush storm[11] event and one dry weather monitoring event.
  - Use of United Stated Environmental Protection Agency (U.S. EPA) standardized ten-day sediment toxicity testing method (U.S. EPA, 2000)[12] for freshwaters using Hyalella azteca.
  - Analyses will include sediment total organic carbon (TOC) and grain size with the sediment toxicity testing data summary.
- Follow-up testing if characterization of sediment quality has identified toxicity at a given station including sediment Toxicity Identification Evaluation (TIE) approaches and chemical analyses of the sediments, including chlorpyrifos and pyrethroid pesticide analyses, will be conducted.
  - Pyrethroid analyses to include bifenthrin, cyfluthrin, deltamethrin, esfenvalerate / fenvalerate, lambda cyhalothrin, permethrin, and tralomethrin.
  - Toxicity testing and sediment chemistry for chlorpyrifos and pyrethroids will continue until the nature and cause(s) of the toxicity are defined.
- Identification, development, implementation, and assessment of BMPs to address controllable discharges of sediment-bound contaminants that may be linked to sediment toxicity to the maximum extent practicable (MEP)[13]
- Development and adoption of policies, procedures, and/or ordinances to implement the Sediment Work Plan (contained in SWMP protocol; Section 4).
- Development of a time schedule for implementation and assessment.

---

[10] Detention basin sediment toxicity monitoring is addressed in the updated *Detention Basin Work Plan*, dated April 2009

[11] Post first flush timeframe is within two weeks of the qualifying storm event.

[12] U.S. EPA 2000. Methods for measuring the toxicity and bioaccumulation of sediment-associated contaminants with freshwater invertebrates. EPA 600/R-99/064. Office of Research and Development. Washington, DC.

[13] The definition for MEP is provided in Attachment C – Definitions of the Permit (Order No. R5-2007-0173).

4.0 PROPOSED SEDIMENT WORK PLAN MONITORING LOCATIONS

Sediment toxicity monitoring locations will be located within SUA waterways, including one detention basin, which receive stormwater discharges. Sediment toxicity monitoring locations are based on the site selection requirements summarized in the previous section. Sediment toxicity monitoring locations are also based on studies[14] conducted by the Regional Water Board and Delta Keeper from 1994 to 2001 which found toxicity in Mosher Slough, Five-Mile Slough, the Calaveras River, Smith Canal, and Duck Creek.

Sediment toxicity monitoring will be coordinated to the greatest extent possible with the existing Detention Basin Monitoring Program[15] and applicable Regional Water Board 13267 Letter Special Studies. Proposed sediment characterization monitoring locations consist of receiving water locations on the following SUA waterways: Mosher Slough, Five-Mile Slough, the Lower Calaveras River, Smith Canal, Mormon Slough, and Walker Slough/Duck Creek; and will include the La Morada Detention Basin which receives urban discharge from a relatively young (generally less than five years), largely residential land use area. Sediment toxicity monitoring locations located within the SUA are provided in Table 2, below, and shown in Figure 4, Attachment A).

Table 2: Proposed SUA Sediment Toxicity Monitoring Locations

Waterbody	Monitoring Location*	Receiving Water Site ID	Land Use	Approximate Development Age
Mosher Slough	Mariner's Bridge	MS-14R	Residential/Commercial	10 – 25 years
Mosher Slough	La Morada Basin	MS-5R	Residential	< 10 years
NA	La Morada Detention Basin[16]	NA	Residential	< 10 years
Five-Mile Slough	Swenson Park Golf Course	5M-27R	Residential/Recreational	≥ 25 years
Calaveras River	Brookside Road	CR-39R	Residential/Recreational	< 10 years
Calaveras River	West Lane Bridge	CR-46R	Mixed Use	< 5 to > 25 years
Smith Canal	Yosemite Lake	SC-5R	Residential/Commercial	≥ 25 years
Mormon Slough	Commerce Street	MR-2R	Mixed Use	≥ 25 years
Duck Creek / Walker Slough	Manthey Road Bridge	WK-64R	Mixed Use	≥ 25 years

*Nearest cross street or urban feature NA = Not Applicable

Mixed Use = Residential/Commercial/Industrial Uses

[14] Review of the City of Stockton Urban Stormwater Runoff, Aquatic Life Toxicity Studies Conducted by the CVRWQCB, DeltaKeeper, and the University of California, Davis, Aquatic Toxicology Laboratory, between 1994 and 2000. G. Fred Lee, PhD, DEE and Anne Jones-Lee, PhD.

[15] The updated *Detention Basin Monitoring Work Plan*, revised June 2008, is a component of the Permittees' current SWMP, dated June 2008.

[16] Detention basin sediment toxicity monitoring will be addressed in the Detention Basin Work Plan, updated April 2009.

4.1 MOSHER SLOUGH

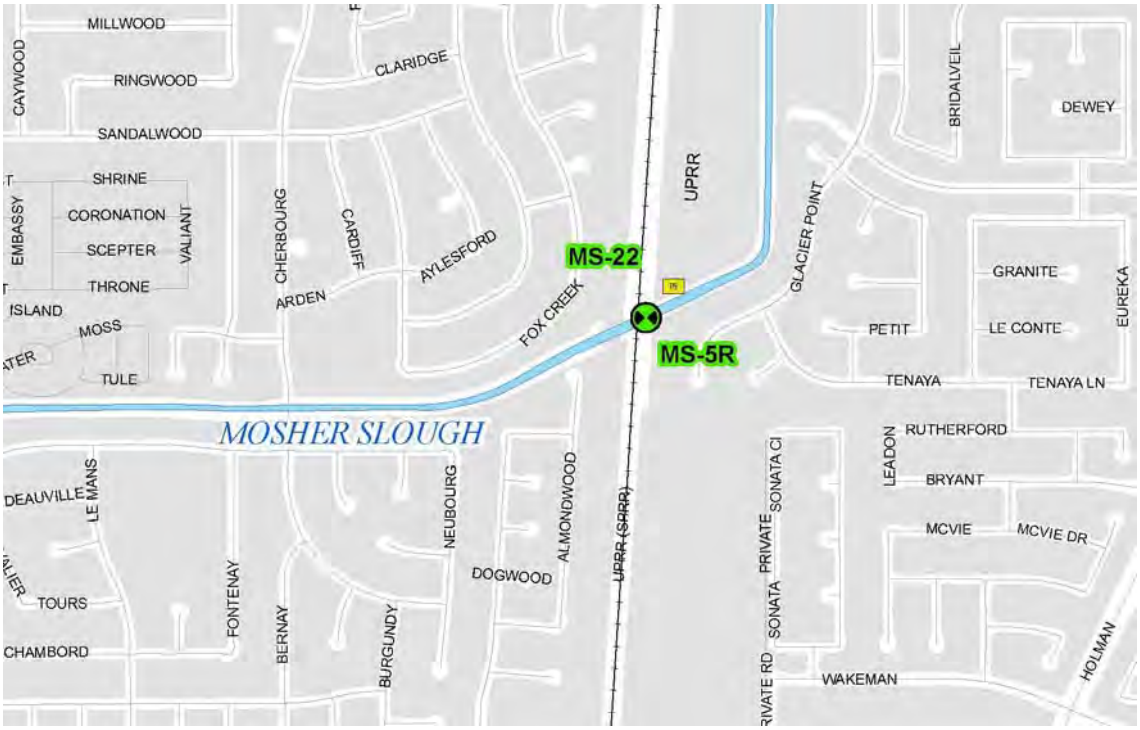
Mosher Slough is one of Stockton's least-improved waterways and is located in the northern portion of the SUA. A 1.3 mile section of Mosher Slough downstream of I-5 is 303(d)-listed for diazinon and chlorpyrifos and is entirely downstream of the SUA. Mosher Slough (Mosher Creek) flows southwest from the Sierra Nevada foothills to the SJR; but within the SUA, the waterway is oriented roughly east/west. South Bear Creek flows southwest into the western portion of the slough. Prior to entering the City limits, the slough receives limited inflow from agricultural runoff and tail waters. A small water control structure diverts water from the Calaveras River downstream of the Calaveras Headworks (built in 1933 and located approximately 20 miles east of Stockton) to the slough for irrigation purposes. Mosher Slough flows naturally only when it receives input from surface runoff. In general, Mosher Slough is a very shallow waterway which increases in depth west of the SUA to its confluence with Bear Creek to the north. At high tide, the water level immediately west of I-5 is approximately four to five feet above msl. Land use within the urbanized portion of the Mosher Slough watershed is dominantly residential with a small percentage being commercial and public lands.

Two receiving water sediment toxicity monitoring locations will be sited on Mosher Slough and are shown in Figure 4, Attachment A. The downstream sediment sampling location will be located as close as possible to the waterway's confluence with the SJR and will be downstream of essentially all urban discharges. The downstream sediment sampling location (MS-14R) will be sited west of Mariner's Bridge (Inset 1, below, and Photo 1, on the following page) and represents the eastern extent of the 1.3 mile portion of Mosher Slough 303(d)-listed for pesticide impairment. The MS-14R monitoring location receives discharge from a large catchment area (approximately 530 acres) via the Kelly Drive Pump Station (MS-14). The MS-14 pump station discharges an urbanized watershed, approximately 10 to 25 years old, consisting predominantly of mixed residential/commercial land uses.

Inset 1: Mosher Slough Sediment Toxicity Downstream Monitoring Location (MS-14R)

Photo 1: Mosher Slough (MS-14R) Downstream Monitoring Location (May 12, 2008)
View is from Mariner's Bridge looking west (downstream) of the SUA. This area represents the upstream extent of Mosher Slough's 303(d)-listed segment for pesticide impairment.

An upstream sediment sampling location (MS-5R) is located as close as possible to the eastern boundary of the SUA. MS-5R (Inset 2, on the following page) is located west of the La Morada Detention Basin pump station (MS-22) discharge outfall (Photo 2, on the following page). The MS-22 pump station discharges a large catchment area (approximately 761 acres) representing a younger residential area less than ten years old.



Inset 2: Mosher Slough Sediment Toxicity Upstream Monitoring Location (MS-5R)

Photo 2: Mosher Slough (MS-5R) Upstream Monitoring Location (May 12, 2008)
View is from the north bank of the slough looking to the southwest. This site is directly downstream of the La Morada Detention Basin MS-22 discharge outfall and east of the Union Pacific Railroad tracks.

4.2 CALAVERAS RIVER

The Calaveras River watershed[17] is a tributary to the SJR Delta System flowing southwest from the Sierra Nevada foothills through Calaveras, Stanislaus, and San Joaquin Counties. The Calaveras River Basin drains a total of 470 square miles located in the northwestern region of Calaveras County, the westernmost portion of San Joaquin County, and a small, southwestern portion of Stanislaus County.

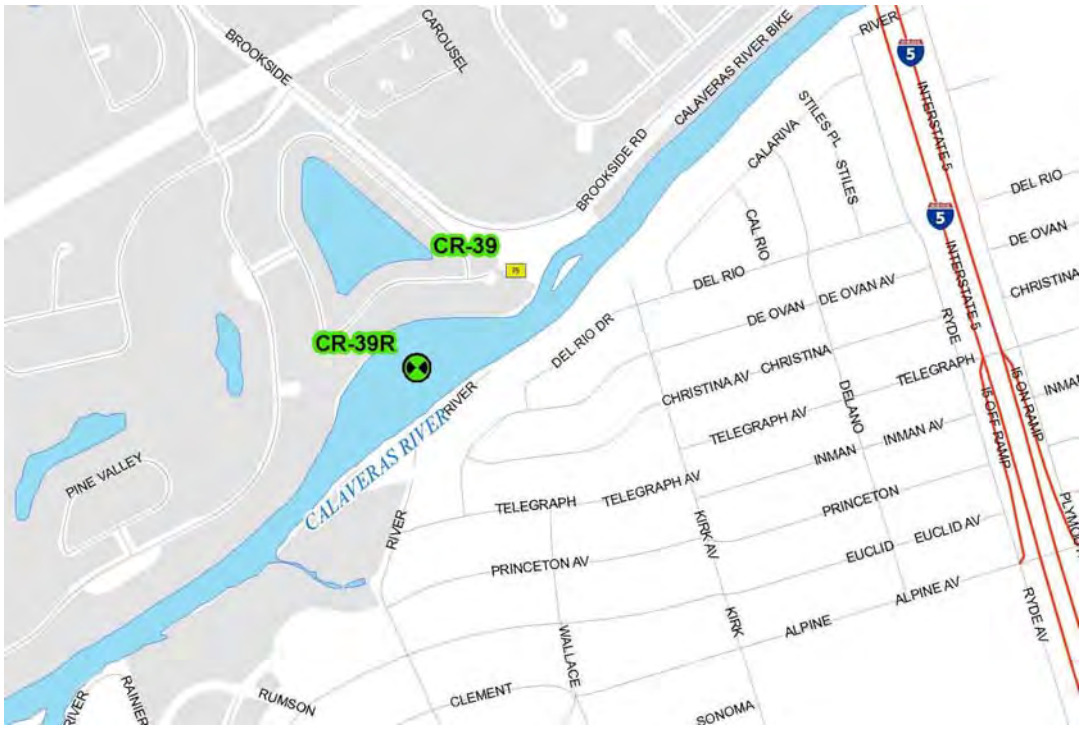
The construction of New Hogan Dam and Reservoir, located approximately 38 miles upstream from the confluence with the SJR at an approximate elevation of 700 feet, substantially altered flows in the river. Water is used for irrigation and municipal purposes with the water right permit held by the United States Bureau of Reclamation (USBR). In 1970, Stockton East Water District (SEWD) and the Calaveras County Water District contracted with USBR for the project's entire water supply. In 1978, SEWD began to divert water at Bellota Weir to SEWD's municipal water treatment plant, further altering water flow patterns in the river system. The Stockton Diversion Canal was built in 1910 to carry flows from Mormon Slough around the east side of Stockton and back to the Calaveras River.

Flow is not released downstream of Bellota in Mormon Slough or downstream of the Calaveras Headworks in the "old" Calaveras River channel except when flood releases are made from New Hogan Dam or when storm runoff flows into the river and channels. In general, the "old" Calaveras channel downstream of the Calaveras Headworks receives only storm runoff between November and March. During the April to October irrigation season, the Calaveras River receives input to supply irrigation needs.

Within the SUA, land use along the Calaveras River is predominantly residential and commercial, but also includes industrial uses. The entire urbanized length of the Calaveras River (approximately 5.8 miles from the SJR confluence to the Stockton Diversion Canal) is 303(d)-listed for pesticides (Figure 3, Attachment A).

One upstream and one downstream receiving water sediment sampling monitoring locations are proposed along the urbanized portion of the Calaveras River (Figure 4, Attachment A). The downstream sediment sampling location will be located as close as possible to the waterway's confluence with the SJR and downstream of essentially all urban discharges within the Permittees' jurisdiction (Inset 3, on the following page). Sediment sampling location (CR-39R) will be located approximately 1.2 miles upstream (east) of the SJR/Calaveras River confluence (Photo 3, on the following page) and approximately 300 feet downstream (west) of the Brookside Pump Station (CR-39). The CR-39 pump station discharges a predominantly residential development of approximately 297 acres and represents a relatively young (less than ten years), upscale residential and golf course/country club urban area.

[17] Department of Water Resources, *Calaveras River Fish Migration Barriers Assessment Report*, September 2007



Inset 3: Calaveras River Sediment Toxicity Downstream Monitoring Location (CR-39R)

Photo 3: Calaveras River/Brookside (CR-39) Discharge Outfall (April 22, 2008)
View is looking south from the Lower Calaveras River north levee (west of I-5) approximately 1.2 miles east of the confluence with the SJR.

Within the SUA, an upstream sediment sample will be located as close as possible to the waterway's confluence with the "old" Calaveras River channel and the Stockton Diversion Canal. The CR-46R sampling location (Inset 4, below, and Photo 4, on the following page) is sited downstream of the CR-43 and CR-46 West Lane Pump Stations. These two West Lane pump stations discharge a mixed use area located between two Union Pacific Railroad lines whose development ranges in age from approximately five to older than 25 years.

Inset 4: Calaveras River Sediment Toxicity Upstream Monitoring Location (CR-46R)

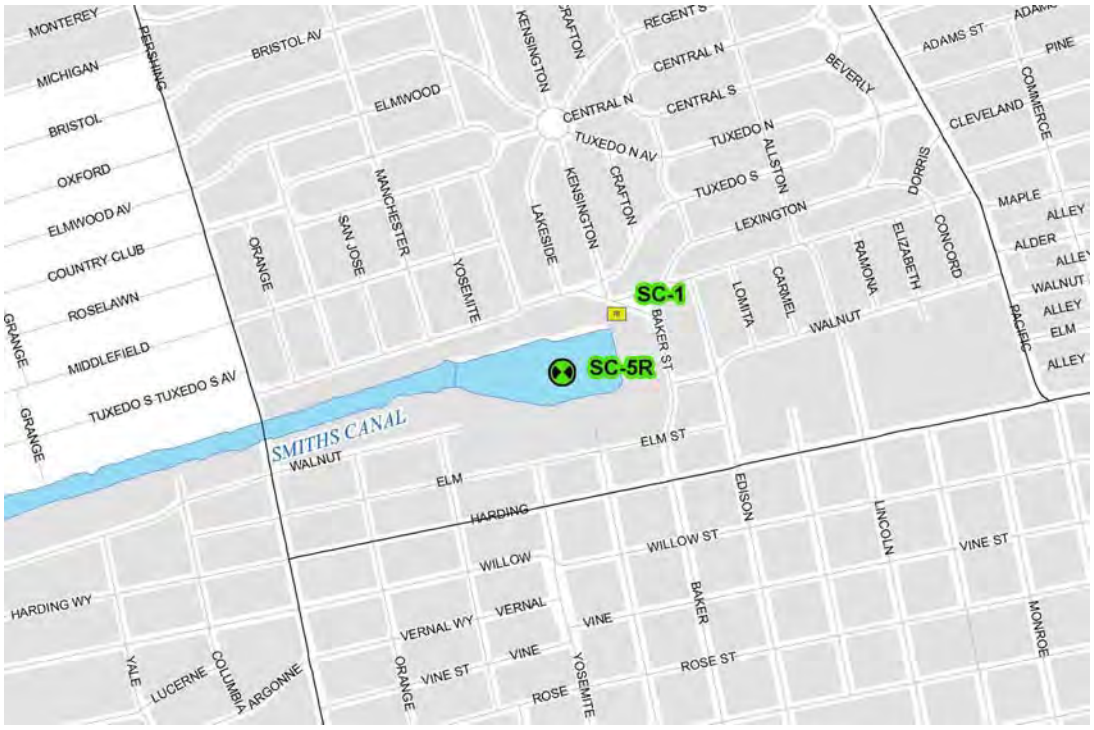
Photo 4: Calaveras River (CR-46R) at West Lane (April 1, 2008)
The view is from the east side of the West Lane Bridge looking east (upstream).

4.3 SMITH CANAL

In a staff report dated April 2, 2002, the Regional Water Board recommended the addition of Smith Canal to California's Clean Water Act Section 303(d) list due to impairment by low dissolved oxygen (DO), organophosphate pesticides, and pathogens. Smith Canal is a tidally influenced, shallow, east/west-constructed, freshwater slough that extends approximately 2.6 miles east from its confluence with the SJR to its upstream terminus at Yosemite Lake in central Stockton, California. The canal averages approximately 105 feet in width with an average depth of four to six feet (with an approximately ten foot maximum depth at the mouth) and an approximate ebb to flood stage difference of up to approximately four feet.

Besides direct groundwater inputs and tidal exchange, all inputs to Smith Canal are from stormwater runoff draining from an urbanized watershed that encompasses approximately 3,306 acres. Approximately 62% of the Smith Canal watershed (approximately 1,866 acres) drains to the Legion Park Pump Station (LPPS) SC-1 discharge outfall located in the northeast corner of Yosemite Lake.

Stormwater discharge is predominantly from residential and commercial property with a small percentage of public land use, with all land uses generally greater than 25 years old. One receiving water sediment sampling monitoring location will be situated in the approximate center of Yosemite Lake (SC-5R) located at the eastern terminus of Smith Canal approximately 2.3 miles upstream of the confluence with the SJR (Inset 5 and Photo 5, on the following page).



Inset 5: Smith Canal/Yosemite Lake Sediment Toxicity Monitoring Location (SC-5R)

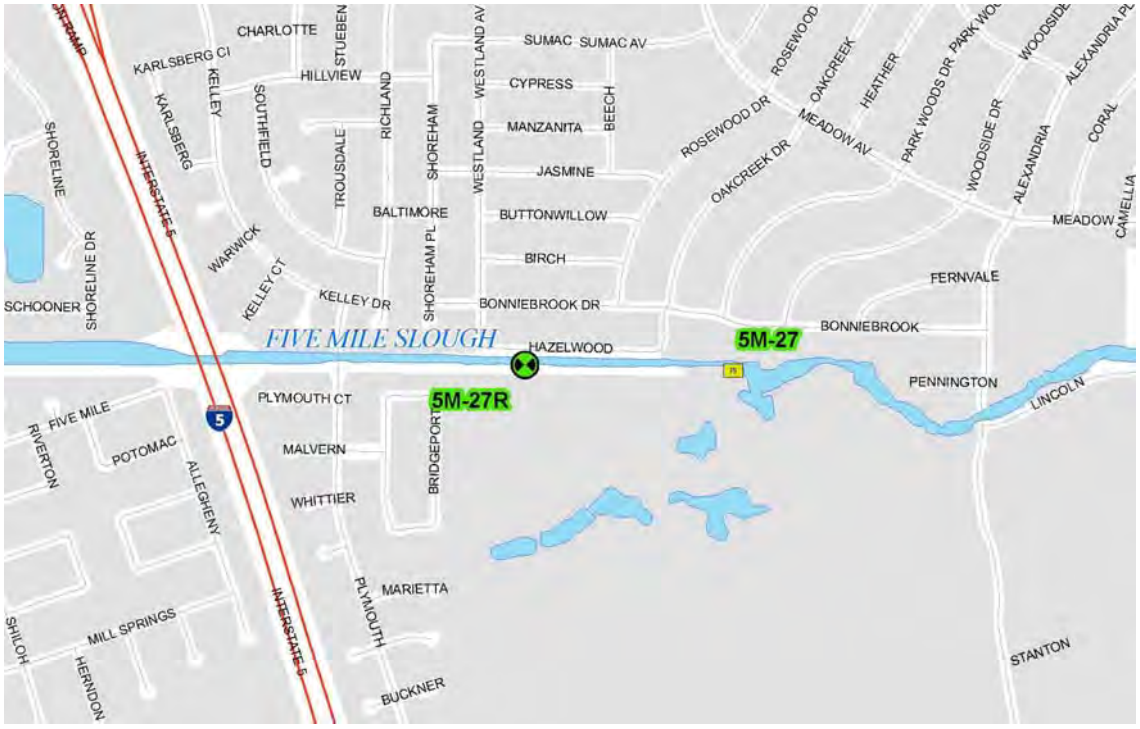
Photo 5: Smith Canal (SC-5R) Yosemite Lake Monitoring Location (March 26, 2008)
Yosemite Lake is the upstream terminus of Smith Canal. At low tide, the lake at SC-5R is approximately 3.5 feet deep.

4.4 FIVE-MILE SLOUGH

Five-Mile Slough is a tidally influenced, urban waterway beginning at Rivara Road and Pacific Avenue. The waterway meanders westward through residential areas, including the City's Swenson Park Golf Course, and unincorporated areas to Fourteen-Mile Slough where a weir controls the tidal flow from Fourteen-Mile Slough into Five-Mile Slough. During the summer, flow is reduced by diversion of irrigation water from Five-Mile Slough to the park and golf course. Besides direct groundwater inputs and tidal exchange, all other inputs to Five-Mile Slough are from stormwater runoff

The width of Five-Mile Slough varies from around three feet at Rivara Road and Pacific Avenue to up to 45 feet (Friends of Five-Mile Creek website)[18]. The mean depth of the channel at the confluence of Five-Mile Slough and Fourteen-Mile Slough west of Interstate 5 (I-5) is estimated to be approximately ten feet. East of I-5, the slough is very shallow; water depth generally does not exceed four feet in the deepest portion of the waterway. During the dry season (April to November), about one quarter of the easternmost channel is dry.

One receiving water sediment sampling monitoring location will be sited on Five-Mile Slough near the western extent of the City's Swenson Park Golf Course (5M-27R; Inset 6, below, and Photo 6, on the following page). The proposed sediment sampling location will be located downstream of the 5M-27 pump station which receives discharge from a large catchment area (approximately 670 acres) from a predominantly upscale residential area, including the golf course and park. Development in this area of Five-Mile Slough is approximately 25 years old.



Inset 6: Five-Mile Slough Sediment Toxicity Monitoring Location (5M-27R)

[18] http://www.friendsoffivemilecreek.com/CreekDescription.html

Photo 6: Five-Mile Slough (5M-27R) Swenson Park Monitoring Location (May 13, 2008)
View is from the Swenson Park Golf Course on the south side of Five-Mile Slough looking east.

4.5 MORMON SLOUGH

Mormon Slough originally extended from its confluence with the Stockton DWSC to the Calaveras River at the Bellota Weir. The Stockton Diversion Canal was built in 1910 to carry flows from Mormon Slough around the east side of the City and back to the Calaveras River. In 1969 the USACE modified Mormon Slough from its confluence with the Stockton Diversion Canal upstream to Bellota Weir to convey additional flood flows. Flow is not released downstream of Bellota in Mormon Slough except when flood releases are made from New Hogan Dam or when storm runoff flows into the river and channels. Consequently, stretches of Mormon Slough and the Stockton Diversion Canal remain dry for days, weeks, or months at a time during winter and early spring. During the April to October irrigation season, Mormon Slough upstream of the SUA receives input to supply irrigation needs.

West of the Stockton Diversion Canal, Mormon Slough no longer receives flow from upstream sources. Portions of the slough from approximately South Golden Gate Avenue east to the Stockton Diversion Canal have been converted to orchards. Upstream of the urbanized area, Mormon Slough receives dominantly residential and agricultural runoff from unincorporated areas; within the SUA, the slough receives stormwater discharge from residential, commercial, and industrial properties. East of the Lincoln Street Bridge the waterway is extremely shallow.

Mormon Slough from the Weber Avenue overcrossing to Commerce Street is predominantly a steep-sided, concrete constructed channel which is inaccessible to foot or boat traffic. East of Commerce Street to Wilson Way, the slough has been modified from an open channel to an enclosed culvert. One receiving water sediment sampling monitoring location (MR-2R) is proposed west of Commerce Street adjacent to the enclosed culvert (Inset 7 and Photo 7, on the following page). The proposed sampling location is located approximately 500 feet downstream of the MM-150 lift station which receives discharge from the largest watershed to Mormon Slough (approximately 955 acres) from an older (greater than 25 years old) mixed use (residential, commercial, and industrial) area.

Inset 7: Mormon Slough Sediment Toxicity Monitoring Location (MR-2R)

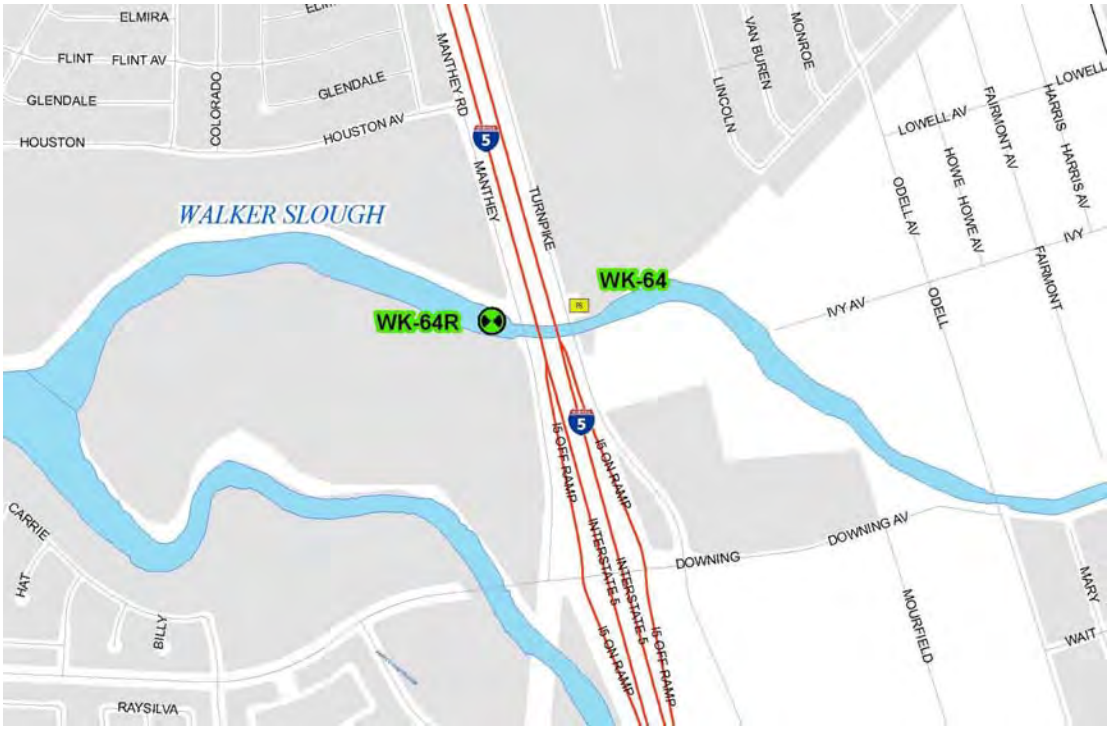
Photo 7: Mormon Slough (MR-2R) Commerce Street Monitoring Location (March 6, 2006)
View is looking west/southwest (downstream) from the point where Mormon Slough is channeled underground, immediately west of Commerce Street.

4.6 DUCK CREEK/WALKER SLOUGH

The Duck Creek watershed is a tributary to the SJR Delta System flowing southwest from the Sierra Nevada foothills through Stanislaus and San Joaquin Counties. Duck Creek's headwaters are in Stanislaus County from which it meanders westerly approximately 33 miles before ending approximately three miles south/southwest of downtown Stockton. East of the SUA, Duck Creek flows through predominantly open space and agricultural lands. Within the SUA, the Duck Creek watershed consists of relatively recent (less than five years old) industrial and older residential (greater than 25 years old) developments east of El Dorado Street. Duck Creek also receives irrigation water flows from upstream of the SUA.

Between El Dorado Street and I-5, Duck Creek drains into Walker Slough which continues approximately 700 feet west to its confluence with French Camp Slough, which is formed by the convergence of Littlejohns Creek and Lone Tree Creek. From the convergent point of Walker Slough and French Camp Slough, the merged waterways extend approximately 600 feet westward to their confluence with the SJR. Although tidally influenced, the Duck Creek/Walker Slough waterway east of El Dorado Street is generally relatively shallow.

Two receiving water sediment sampling locations were selected on the Duck Creek/Walker Slough waterway generally consistent with baseline receiving water sampling locations. The downstream sediment sampling location will be located on Walker Slough approximately 1.5 miles east (upstream) of the confluence with the SJR. Sediment sampling location WK-64R (Inset 8, below, and Photo 8, on the following page) is located immediately west of I-5 and downstream of the Turnpike and Walker Slough Pump Station which discharges a large catchment area (approximately 1,490 acres) servicing a predominantly older mixed land use (commercial, industrial, and residential) area.



Inset 8: Duck Creek/Walker Slough Sediment Toxicity Monitoring Location (WK-64R)

Photo 8: Walker Slough (WK-64R) Manthey Road Bridge Monitoring Location (May 13, 2008)
View is looking west (downstream) from the Manthey Road Bridge located immediately west of Interstate 5. At the time of the photo, the water level was approximately three to four feet deep.

5.0 SEDIMENT MONITORING WORK PLAN

This section describes Sediment Work Plan sampling procedures and proposed monitoring parameters. Sediment samples from proposed sampling locations (discussed in Section 4 and depicted in Figure 4, Attachment A). In general, sediment toxicity monitoring will be conducted in wadeable streams; deeper water locations are anticipated at the Lower Calaveras River (CR-3R), Yosemite Lake (SC-5R), and Manthey Road Bridge (WK-64R). Sediment sampling will be conducted consistent with SWAMP QAMP protocols. All sediment samples will be analyzed using the U.S. EPA standardized ten-day sediment toxicity testing method (U.S. EPA, 2000)[19] for freshwaters using Hyalella azteca and will report sediment TOC and grain size with each sediment toxicity testing data summary. If toxicity is determined to be statistically significant and greater than or equal to 50% increase in Hyalella azteca mortality is observed, follow-up testing consisting of chemical analyses for chlorpyrifos and pyrethroid pesticides, and possibly including sediment TIE approaches (described in Section 5.2.1), will be conducted until the nature and cause(s) of the toxicity are determined. Pyrethroid constituents will include: Bifenthrin, Cyfluthrin, Cypermethrin, Deltamethrin, Esfenvalerate/ Fenvalerate, Lambda-Cyhalothrin, and Permethrin.

5.1 SAMPLING FREQUENCY

The Sediment Work Plan will include annual sample collection from one post first flush storm event (within two weeks of the qualifying storm event) and one dry weather monitoring event. A qualifying storm event is characterized as a rain event forecasted with at least a 75% probability to produce at least 0.25 inches of precipitation. The post first flush storm event will be preceded by a continuous three (3) day period with no measurable precipitation (defined as less than 0.10 inch of precipitation during the

[19] U.S. EPA 2000. Methods for measuring the toxicity and bioaccumulation of sediment-associated contaminants with freshwater invertebrates. EPA 600/R-99/064. Office of Research and Development. Washington, DC.

previous 72 hours). Sediment Plan dry weather events may be conducted throughout the permit year (July 1 through June 30) and will be coordinated with *Detention Basin Monitoring Work Plan* and *Low Dissolved Oxygen Monitoring and Assessment Work Plan* monitoring events to the maximum extent possible. Dry weather monitoring events will be preceded by at least seven (7) days of no measurable rainfall. A day with a storm event too small to generate runoff (typically 0.10 inches of rainfall or less) shall be considered a dry weather day.

Where active flow (receiving water) or standing water (detention basin) is observed, the following field parameters will be collected from the water column at mid-depth at each location: date, time, weather, water temperature, specific conductivity (EC), pH, oxidation-reduction potential (ORP), DO, and total dissolved solids (TDS). Field parameters will be collected using a calibrated YSI 556 MPS (or equivalent). Turbidity will be measured using a Hach 2100P (or equivalent) turbidity meter. Prior to each sampling event, all field equipment will be calibrated according to manufacturer's standards and recommendations. Calibration methods and records are kept with each meter. Field observations will be recorded during each event.

5.2 SEDIMENT SAMPLING PROCEDURES

A single composite sample[20] of unconsolidated fine-grain sediment from wadeable and non-wadeable waters will be obtained from each of the sediment sampling locations shown in Figure 4, Attachment A. Sediment sampling sites will be located using a hand-held global positioning system (GPS) unit to provide site consistency between sampling events. Since pyrethroids are found primarily in the organic carbon fraction of sediments, sample locations will be selected on the basis of availability of soft, fine-grained sediments, excluding the more commonly available areas with coarse-grained sediments or rock substrates. Downstream (deeper water) sediment sampling events will be scheduled to coincide with low tide. Prior to sample collection, the water depth at each receiving water location will be measured to the nearest 0.01-foot with a weighted tape measure.

For wadeable waters, sediment samples will be collected utilizing a Birge-Ekman (or equivalent) grab or hand-operated push sampler or stainless steel scoop/shovel (for waters less than two feet deep). Field personnel will move and stand on the downstream side of the sample site in order to create the least disturbance to the sampling site as possible due to wading or disturbance of the sediment from currents induced by wading. Samples will be collected by skimming the upper one to three centimeters (cm) (to a maximum of six inches) of surface sediment. In general, sediment samples will be collected from mid-channel locations from the deepest portion at each waterway location. However, dependent upon availability of soft substrate, samples will be collected either from a single mid-channel location or from an area of approximately 5 square meters (m^2) from the streambed.

For non-wadeable waters, sampling will utilize a Birge-Ekman (or equivalent) grab or hand-operated push sampler. At each designated monitoring site, the boat will be tied off or anchored to prevent drifting. If deploying an anchor is necessary, care will be taken to limit artificial increase of the turbidity in the area. When using a boat, all engines will be turned off and the samples collected upstream from the engines or any other machinery that may release exhaust fume/oils into the sample. In general, grab samples will be collected from the upper six inches of surface sediment within an approximately 5 m^2 area (dependent upon the availability of soft substrate). If a push sampler is utilized, sediment cores will be collected in a consecutive fashion within a 5 m^2 area from the surface (0 - six inches); the upper three centimeters of surface sediment from a sufficient number of cores will serve to make-up the composite sample for analysis. Sampling will be conducted with standard care to minimize disturbance of the sediment during

[20] Sediment sample volumes to be collected will be based on laboratory analytical requirements.

collection and loss of fines during sampler ascent. Samples will be composited in the field, although a sample may be collected from a single location based on the availability of soft substrate. All sediment samples will be homogenized by hand mixing, then stored in the dark at approximately 0-6° Celsius (C) prior to delivery to the laboratory for analyses.

Sediment samples collected using a stainless steel scoop/shovel, Birge-Ekman (or equivalent) grab sampler, or push sampler will be transferred directly into pre-cleaned, laboratory-supplied high density polyethylene (HDPE), polytetrafluoroethylene (PTFE), or clear, wide-mouth (CWM) glass (with PTFE/Teflon-lined lids) containers. Each container will be labeled for sample identification, stored and transported in coolers chilled to approximately 0-6° C with ice, and delivered under chain-of custody to a State-certified laboratory for sample preparation and laboratory analyses in time to allow analysis of constituents with the shortest holding times. Sample locations and the numbers of sample containers collected will be listed on the Sediment Monitoring Chain-of-Custody forms.

All field analytical and sampling equipment will be decontaminated with a solution of laboratory-grade, non-phosphate detergent and deionized water, and rinsed with deionized water prior to use at individual sample locations. All rinsates will be properly disposed of.

5.2.1 Laboratory Analyses

Analyses and preparations will be conducted consistent with State, EPA, and USACE method protocols. Initial laboratory analyses and analytical methods are listed in Table 3, below.

Table 3: Sediment Work Plan Initial Analytical Constituents and Limits

ANALYTICAL CONSTITUENTS	TARGET REPORTING LIMIT / MLs[1]
SEDIMENT MONITORING PARAMETERS	**mg/kg**
Total Organic Carbon	1
Grain Size	-
***HYALELLA AZTECA* (U.S. EPA 2000)**	**10 day survival and growth test**

[1] Order No. R5-2007-0173, City of Stockton and County of San Joaquin Municipal Separate Storm Sewer System.
Units: mg/kg = milligrams per kilogram (parts per million)
- = not applicable

Quality assurance/quality control (QA/QC) grab samples consisting of laboratory duplicates or laboratory blanks will be collected from various monitoring locations during the monitoring program. For laboratory duplicate analyses, an additional sample volume must be collected, per laboratory requirements, for each analysis.

Toxicity testing for the amphipod *Hyalella azteca* is based on the procedures outlined in "*Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates*" (US EPA, 2000). As previously stated in Section 5.0, if at a given monitoring station, toxicity is determined to be statistically significant and greater than or equal to 50% increase in *Hyalella azteca* mortality is observed, follow-up testing consisting of chemical analyses for chlorpyrifos and pyrethroid pesticides (as listed in Table 4, on the following page), will be implemented and continue until the nature and cause(s) of the toxicity are defined.

Table 4: Sediment Work Plan Follow-Up Analytical Constituents and Limits

ANALYTICAL CONSTITUENTS	TARGET REPORTING LIMIT / MLs[1]
ORGANOPHOSPHATE PESTICIDES	**µg/kg**
Chlorpyrifos	0.01
PYRETHROID PESTICIDES IN SEDIMENT [2]	**(ng/g)**
Bifenthrin	1
Cyfluthrin-1, -2, -3, -4	3
Cypermethrin-1, -2, -3, -4	3
Deltamethrin	2
Esfenvalerate/Fenvalerate-1	2
Esfenvalerate/Fenvalerate-2	1
Lambda-cyhalothrin-1	1
Lambda-cyhalothrin-2	4
Permethrin-1	4
Permethrin-2	1
Tralomethrin[3]	1
Supplemental Follow-Up Testing	**Test Species**
Phase I Whole Freshwater Sediment Toxicity Index Evaluation (TIE)	*Hyalella azteca*

[1] Order No. R5-2007-0173, City of Stockton and County of San Joaquin Municipal Separate Storm Sewer System.

[2] Pyrethroid isomers are typically reported as totals instead of the individual isomers except where individual isomers may be obtained.

[3] If the laboratory is capable of analyzing for Tralomethrin.

Units: µg/kg = micrograms per kilogram (parts per billion)
ng/g = nanograms per gram (parts per billion)

Follow-up testing may include Phase I whole freshwater sediment TIE approaches using static-renewal methods with *Hyalella azteca* as the test organism. The specific manipulations and toxicity test methods will use ten-day renewal methods for freshwater sediments Sample measurements taken at the beginning of each Phase I TIE test will include interstitial/overlying water measurements of pH, DO, salinity, hardness and ammonia. The Phase I suite of sediment manipulations will target three types of toxicants commonly found in sediments: ammonia, cationic metals (including cadmium, copper, nickel, lead, and zinc), and organic chemicals (e.g. pesticides). The Phase I characterization will include a sand (or an equivalent, relatively inert, material) dilution blank test to determine if volume alone would change the results of the toxicity test.

5.2.2 Health and Safety Procedures

All personnel who participate in fieldwork during the Sediment Work Plan monitoring program will attend a safety indoctrination. Copies of a program specific Health and Safety Plan (HASP) shall be available to all field crews and will be located in each on-site field vehicle.

- Field crews will consist of at least two persons wearing clean, powder-free nitrile gloves and appropriate personal protective equipment (life vest, safety glasses, reflective vests, hard hats, steel toes, etc.) for the specific monitoring/sampling location.
- "Clean sampling" techniques are required to minimize the potential for cross-contamination of the samples. To minimize the potential of sample contamination and personnel exposure, crew members will change gloves whenever something not known to be clean has been touched and/or between sampling locations.
- No smoking, eating, or drinking will be allowed during sample collection. Field personnel should refrain from touching their face while sampling until thoroughly washing their hands. Liquids should be kept in, and consumed at, the field vehicle. Field crew members should wash their hand with antibacterial soap (located in the field vehicle) prior to consuming any food or drinks.
- A drowning hazard exists at the shoreline, along streams, and at waterbodies. If fieldwork is required in water greater than three feet deep or without any protective structure (such as a guard rail) to prevent falling into the waterway, appropriate safety equipment (personal floatation device) will be worn. Adequate swimming ability will be required of all field crew members conducting receiving water monitoring.
- All electronic equipment will be kept as dry as possible.
- Heat stress will be a hazard during hot weather and will be intensified when personnel are in protective clothing (if necessary). To prevent heat stress, personnel will be required to take breaks as needed, and consume adequate quantities of liquid.

6.0 REPORTING

The Permittees will provide Sediment Work Plan monitoring program updates in the forthcoming Annual Reports. The SWMP will also be updated to reflect any changes to reduce the pollutants causing toxicity or increase pollutant monitoring. A comprehensive final report for the Sediment Work Plan will be submitted to the Regional Water Board in the Annual 2012 Report due September 1, 2012. The final report will include:

- A summary of the project;
- Map of sampling locations;
- Description of activities performed; methods used;
- Project results and conclusions; and,
- BMP assessment, selection, and implementation program.

7.0 PROPOSED SCHEDULE

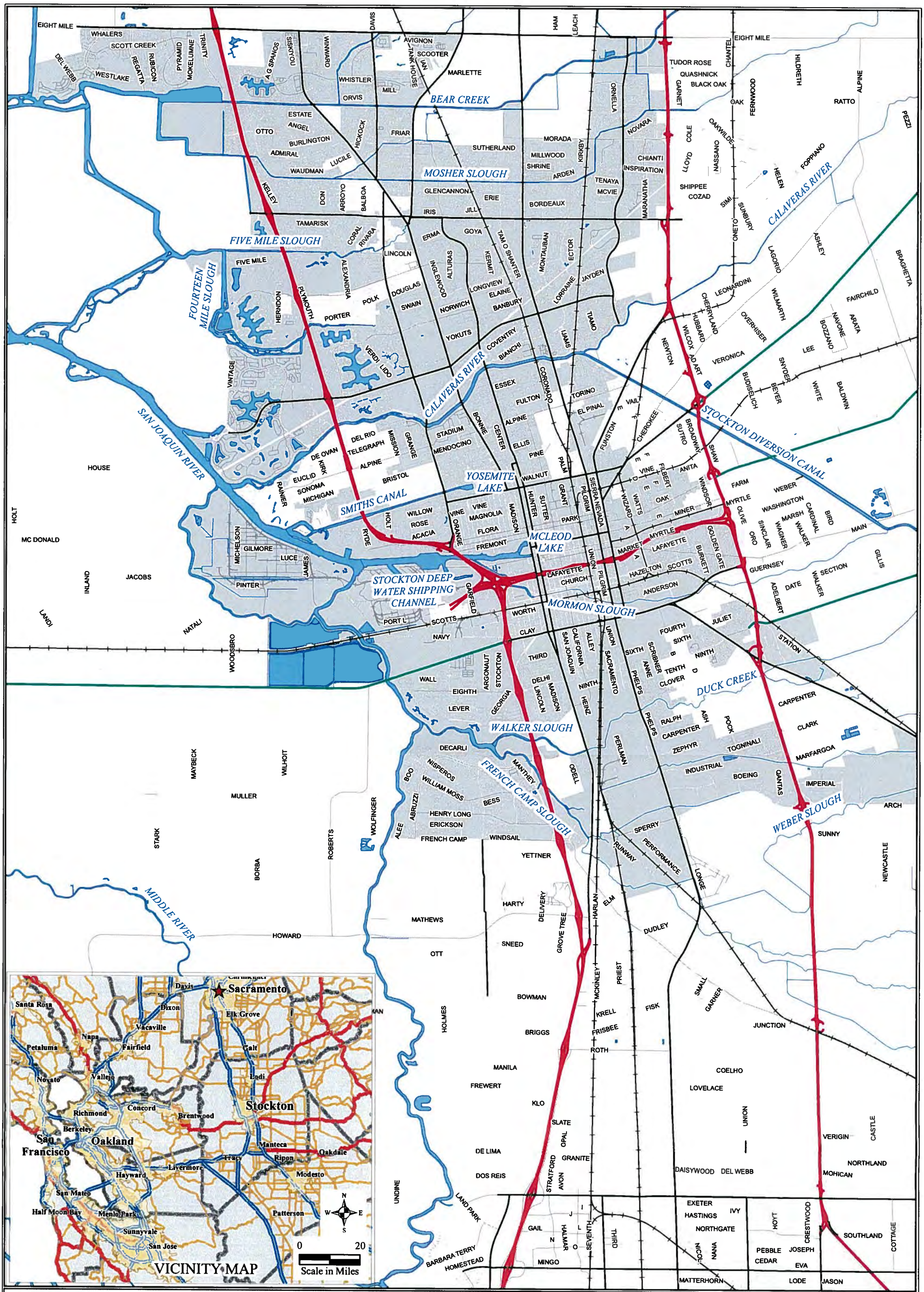
The Sediment Work Plan proposes a staggered schedule for the sediment toxicity monitoring program to commence during the 2008/2009 wet season as shown in Table 5, below. Short-term sediment toxicity testing will consist of annual sediment sample collection from one post first flush storm event (within two weeks of the qualifying storm event) and one dry weather monitoring event through the Permit term. Dry weather sediment toxicity monitoring will be conducted concomitantly with the Permittees' *Low Dissolved Oxygen Monitoring and Assessment Work Plan* and the *Pathogen Plan* monitoring programs to the greatest extent possible. Detention basin sediment toxicity monitoring will be addressed in the *Detention Basin Work Plan*, updated June 2008.

Table 5: Proposed Sediment Work Plan Monitoring Schedule

Permit Field Year →	2007/2008	2008/2009		2009/2010		2010/2011		2011/2012		
		Start	End	Start	End	Start	End	Start	End	
		7/01/08	6/30/09	7/01/09	6/30/10	7/01/10	6/30/11	7/01/11	6/30/12	
Season →		Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	
Work Plan Submittal										
Sediment Toxicity Work Plan	6/06/08									
Waterbodies										
Mosher Slough (MS-14R)		X	X							
Mosher Slough (MS-5R)		X	X							
La Morada Detention Basin		X	X							
Calaveras River (CR-39R)				X	X					
Calaveras River (CR-46R)				X	X					
Smith Canal (SC-5R)						X	X			
Five-Mile Slough (5M-27R)						X	X			
Mormon Slough (MR-2R)								X	X	
Duck Creek/Walker Slough (WK-64R)								X	X	
Final Report Submittal										
Sediment Toxicity Work Plan Final Report										12/01/12

Notes: X = one sampling event at each proposed sediment toxicity sampling location

ATTACHMENTS



LEGEND

Approximate Boundary of Stockton Urbanized Area (2007)

Water Bodies

Map compiled at scale indicated and in color. Projection: Lambert Conformal Conic NAD 1983 California State Plane Coordinate System, Zone III.
All zoning, street, and water body data created by County of San Joaquin and City of Stockton GIS Departments (data current as of 8/07).

N
W E
S

SEDIMENT PLAN
SAN JOAQUIN WATERWAYS WITHIN THE
GREATER STOCKTON
URBANIZED AREA
STOCKTON, CALIFORNIA

0 0.625 1.25 2.5
Scale in Miles

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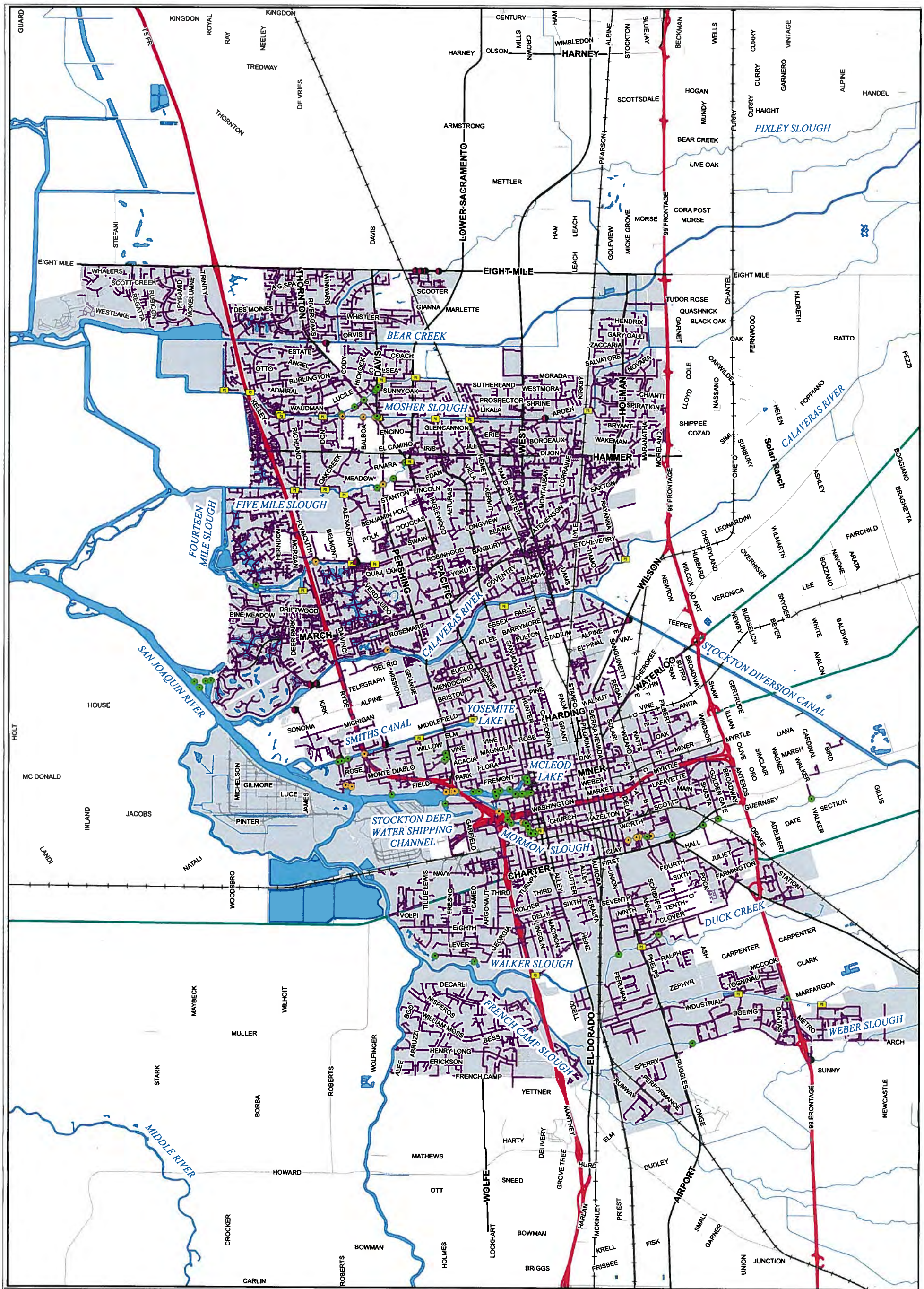
FIGURE
1

5418_F1.MXD



LEGEND

- Gravity Outfall, City
- Pump & Lift Station, County/Other
- Gravity Outfall, Other
- Pump Station
- Stormwater line
- Approximate Boundary of Stockton Urbanized Area (2007)
- Water Bodies

Map compiled at scale indicated and in color. Projection: Lambert Conformal Conic NAD 1983 California State Plane Coordinate System, Zone III.
All zoning, street, and water body data created by County of San Joaquin and City of Stockton GIS Departments (data current as of 8/07).

STORMWATER DISCHARGE LOCATIONS WITHIN THE GREATER STOCKTON URBANIZED AREA STOCKTON, CALIFORNIA

N W E S

0 0.625 1.25 2.5
Scale in Miles

FIGURE 2

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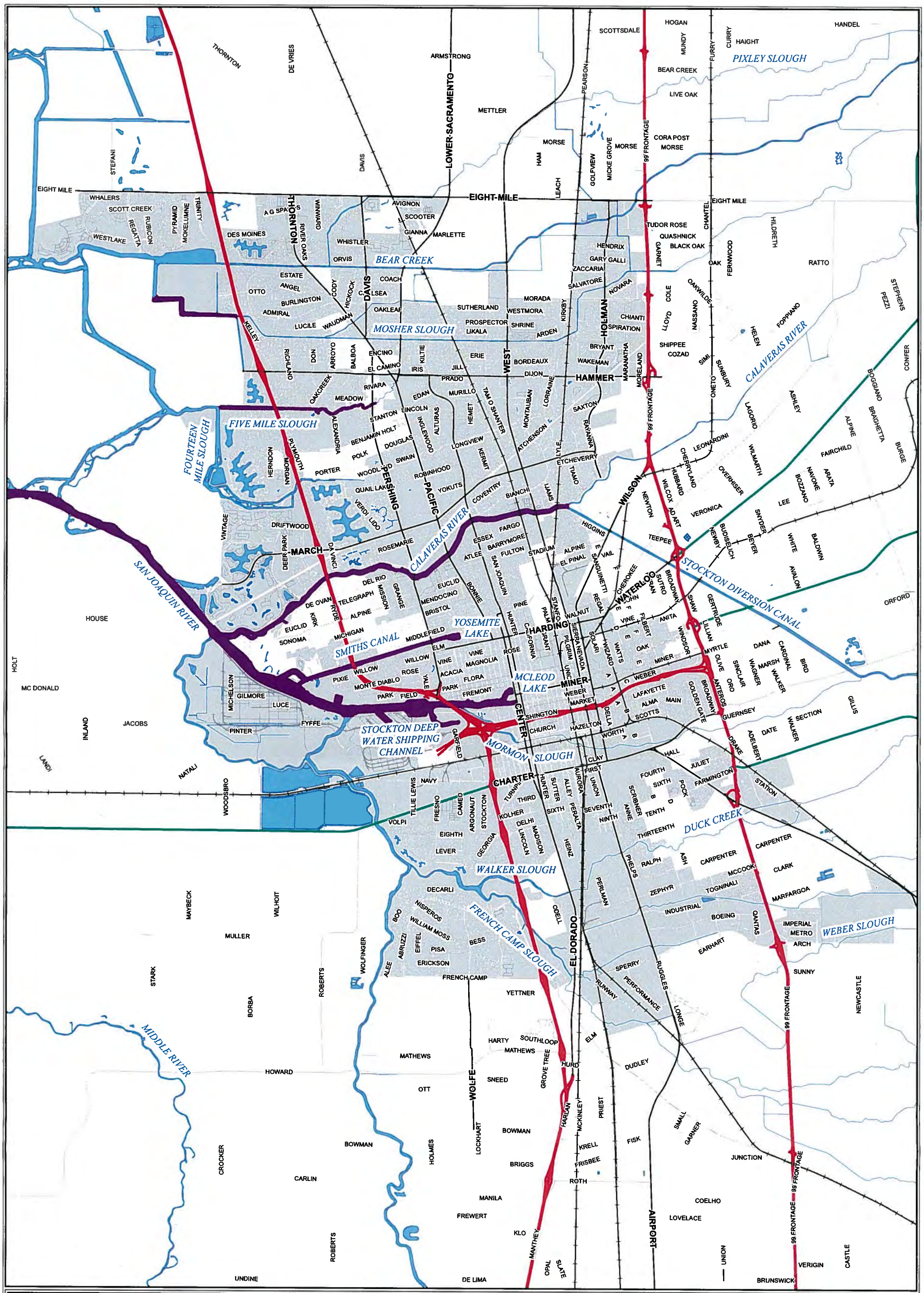
5418_F2.MXD



LEGEND

Waterway Segments 303(d)-Listed for Pesticides

Approximate Boundary of Stockton Urbanized Area (2007)

Water Bodies

Map compiled at scale indicated and in color. Projection: Lambert Conformal Conic NAD 1983 California State Plane Coordinate System, Zone III. All zoning, street, and water body data created by County of San Joaquin and City of Stockton GIS Departments (data current as of 8/07).

IMPAIRED PORTIONS OF STOCKTON WATERWAYS
303(d) - LISTED FOR PESTICIDES
WITHIN THE GREATER STOCKTON URBANIZED AREA
STOCKTON, CALIFORNIA

N W E S

0 0.625 1.25 2.5
Scale in Miles

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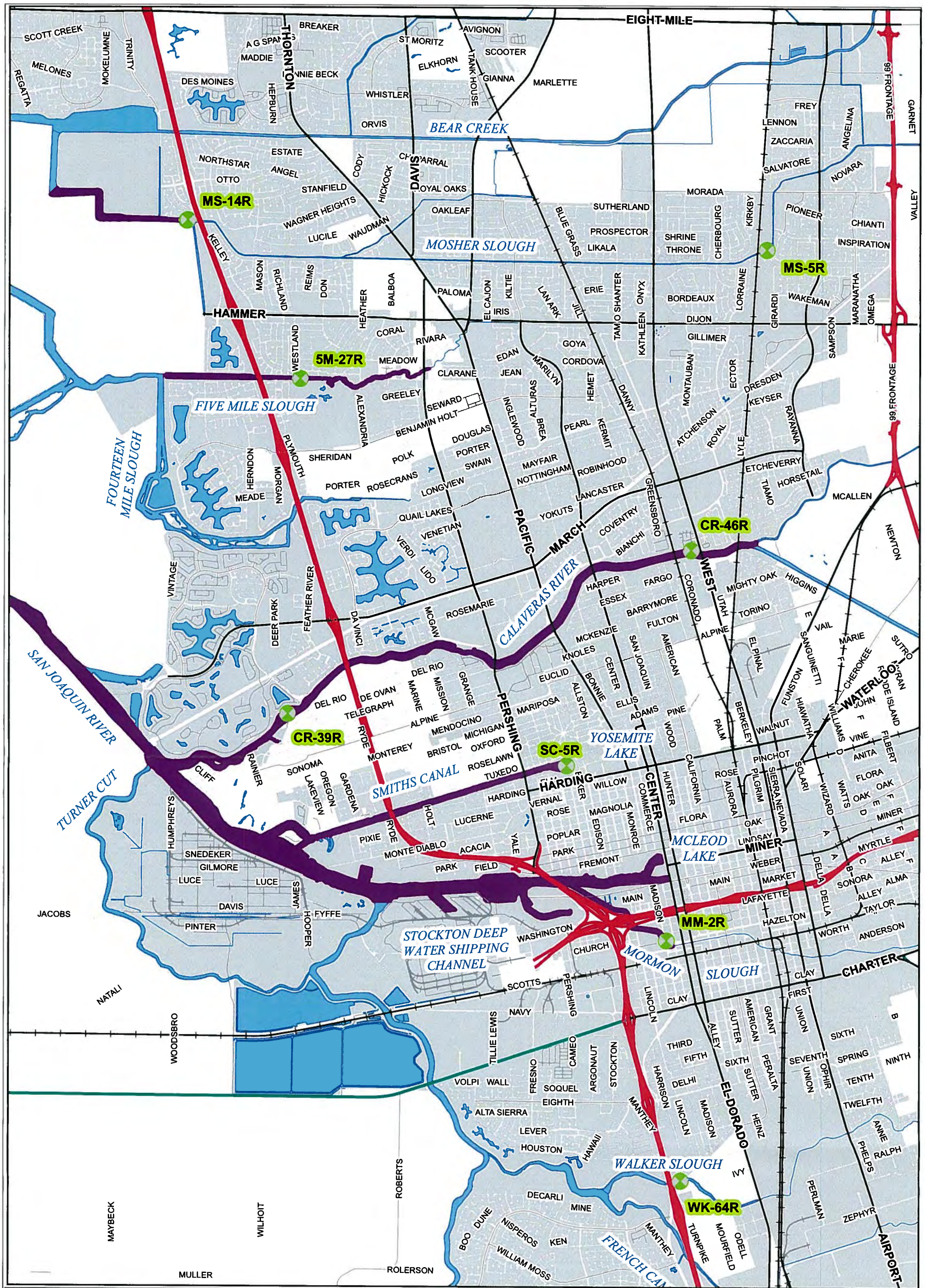
FIGURE 3

5418_F3.MXD



LEGEND

SC-5R Proposed Sediment Sample Monitoring Locations

Waterway Segments 303(d)-Listed for Pesticides

Approximate Boundary of Stockton Urbanized Area (2007)

Water Bodies

Map compiled at scale indicated and in color. Projection: Lambert Conformal Conic NAD 1983 California State Plane Coordinate System, Zone III.
All zoning, street, and water body data created by County of San Joaquin and City of Stockton GIS Departments (data current as of 8/07).

PROPOSED SEDIMENT TOXICITY MONITORING LOCATIONS WITHIN THE GREATER STOCKTON URBANIZED AREA STOCKTON, CALIFORNIA

0 2,000 4,000 8,000
Feet

N W E S

FIGURE 4

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5418_F4.MXD

APRIL 15, 2009

City of Stockton
County of San Joaquin

Pesticide Plan Update – Revised April 2009

prepared by

LARRY WALKER ASSOCIATES

Table of Contents

1.0 BACKGROUND 1
1.1 Organophosphate Pesticides 1
1.2 Pesticide TMDL in Delta Urban Waterways 2
2.0 PESTICIDE PLAN 2004-2007 4
2.1 Integrated Pest Management (IPM) 4
2.2 Public Education and Outreach 5
2.3 Monitoring 6
3.0 PESTICIDE PLAN 2007-2012 17
3.1 Public Education and Outreach 18
3.2 Municipal Operations 19
3.3 Effectiveness Assessment 20
3.4 Monitoring 20
3.5 Implementation Schedule 23

List of Tables and Figures

Table 1. City and County acres managed under the IPM Program 4
Table 2. Education and outreach materials distributed 5
Table 3. Timing and Frequency of Pesticide Plan Monitoring Events 10
Table 4. Frequency of Detections and WQO Exceedances during the Pesticide Plan 11
Table 5. Diazinon Concentrations Observed during Pesticide Plan Monitoring 14
Table 6. Chlorpyrifos Concentrations Observed during Pesticide Plan Monitoring 15
Table 7. Pyrethroid Concentrations Observed during Pesticide Plan Monitoring 16

Figure 1. 2004 Pesticide Plan Monitoring Locations 7
Figure 2. Diagram of the Pesticide Plan Approach 18
Figure 3. Pesticide Plan Monitoring Locations for 2007-2012 22

1.0 BACKGROUND

The City of Stockton (City) and County of San Joaquin (County) (collectively Permittees) previously identified organophosphate pesticides (and in particular diazinon and chlorpyrifos) as problematic pollutants that impact local waterbodies. In order to address the organophosphate (OP) pesticide impairment of urban streams, and as specified in Provision D.18.a.v. of their 2002-2007 municipal stormwater National Pollutant Discharge Elimination Systems (NPDES) Permit (Order No. R5-2002-0181), the Permittees developed a Pesticide Plan that addressed the use of diazinon and chlorpyrifos by the City/County and others. The Pesticide Plan was provided to the public, interested parties, and the Regional Water Board for review, and after addressing submitted comments, finalized with an addendum letter to Regional Water Board on September 22, 2004.

According to requirements in the 2002 Permit, the following elements were incorporated into the Plan:

- Public education and outreach programs
- Coordination with Household Hazardous Waste collection agencies
- Landscaping alternatives
- Assessment of the relative contribution of urban stormwater runoff to diazinon and chlorpyrifos levels in waterbodies of concern within the City's jurisdiction
- A diazinon and chlorpyrifos mitigation program should City stormwater be a significant contributor

The City and County have implemented the Pesticide Plan since 2004. The Pesticide Plan results were summarized in detail in the 2005-2006 Annual Report.

In December 2007, the Permittees received a new municipal stormwater permit (Order No. R5-2007-0173) (permit term 2007-2012) which included a requirement for the continued implementation of the Pesticide Plan, specified in Provision D.28.a. The focus of the plan is public outreach and integrated pest management (IPM), to protect water quality and promote safe, and minimal, pesticide use. The Permit also requires the Permittees to continue to monitor diazinon, chlorpyrifos and pyrethroids. This document is an update to the 2004 Pesticide Plan to reflect past efforts and identify future efforts in conformance with the 2007 NPDES Permit. The updated Pesticide Plan incorporates progress and results made since the 2004 Pesticide Plan has been in place, identifies the Permittees' efforts for IPM and municipal operations, enhancements to the public education and outreach program, as well as modifications in the monitoring approach to satisfy monitoring requirements.

1.1 Organophosphate Pesticides

Organophosphate pesticides (including diazinon and chlorpyrifos) act by compromising the nervous systems of exposed organisms. They are broad-spectrum pesticides, used to kill a wide variety of insect pests, including ants, fleas, cockroaches, aphids, spiders, and wasps. However, they can also be highly toxic to birds, honeybees, other beneficial insects, and mammals. Following their widespread use in the 1990s, diazinon and chlorpyrifos became major urban

pollution problems. They are among the most commonly found pesticides in air, rain, and fog, with the highest concentrations near major cities.

In June 2000, the U.S. Environmental Protection Agency (EPA) announced an agreement with pesticide manufacturers to remove most products containing chlorpyrifos (Dursban) from retail sale and phase out most residential and selected professional uses by the end of 2001. Under terms of an agreement with pesticide manufacturers released in December 2000, residential outdoor and indoor uses and sales were to be phased out by the end of 2004. Additionally, most urban uses of diazinon were phased out by the EPA on December 31, 2005.

1.2 Pesticide TMDL in Delta Urban Waterways

Water samples collected starting from the mid-1990s from streams, sumps, and sloughs in Stockton during storm runoff events indicated that Stockton urban waterways contained concentrations of chlorpyrifos and diazinon in excess of California Department of Fish and Game recommended values, and caused toxicity to invertebrates. In 2002, the Regional Water Board identified urban creeks in the Stockton areas as being impaired for diazinon and chlorpyrifos, and placed them on the 2002 303 (d) list[1]. The historic pesticide impairment of Sacramento-San Joaquin Delta (Delta) waterways led to the development of a Sacramento-San Joaquin Delta (SSJD) Diazinon and Chlorpyrifos Total Maximum Daily Load (TMDL). The Basin Plan Amendment for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta (Amendment) was adopted by the Central Valley Water Board on June 23, 2006[2].

The TMDL recognized that the USEPA phase-out of urban diazinon and chlorpyrifos uses was expected to significantly reduce the concentrations of those pesticides in urban runoff. Since the City and County already had a Pesticide Plan that had been developed and implemented, the Regional Water Board identified that the Basin Plan Amendment would not likely require the Permittees to implement additional management measures or treatment technology to control diazinon or chlorpyrifos, nor increase the monitoring of those pesticides. The water quality targets for chlorpyrifos and diazinon presented in the Sacramento-San Joaquin Delta Diazinon and Chlorpyrifos TMDL are as follows:

Pesticide	Acute (1-hour average) Maximum Concentration[1]	Chronic (4-day average) Maximum Concentration[1]
Chlorpyrifos	0.025 µg/L	0.015 µg/L
Diazinon	0.16 µg/L	0.10 µg/L

1 Not to be exceeded more than once in a three year period.

[1] SWRCB. 2003. Final 2002 Clean Water Act Section 303(d) List of Water Quality Limited Segments (Region 5). State Water Resources Control Board (SWRCB). Sacramento, California. Available at: http://www.waterboards.ca.gov/tmdl/docs/2002reg5303dlist.pdf.

[2] SWRCB. 2006. Delta Diazinon and Chlorpyrifos TMDL-Final Basin Plan Amendment Staff Report, June 2006. State Water Resources Control Board (SWRCB). Sacramento, California. Available at: http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_op_pesticide/index.shtml

In order to ensure that pesticide impairment of Stockton urban waterways is diminishing as expected, the 2007 NPDES Permit requires the City and County to update and continue to implement the Pesticide Plan.

2.0 PESTICIDE PLAN 2004-2007

The 2004-2007 Pesticide Plan efforts involved public education, promoting IPM and monitoring urban waterbodies to identify trends in pesticide concentrations. The specific goals included:

- Promotion of IPM through identification of less toxic pesticide alternatives,
- Tracking pesticide applications and uses,
- Conducting public outreach to educate pesticide users on proper handling and disposal, as well as landscaping alternatives,
- Monitoring impaired Stockton urban waterbodies to identify trends in pesticide concentrations.

The IPM program, public outreach, and monitoring efforts conducted under the Pesticide Plan from 2004-2007 are summarized below.

2.1 Integrated Pest Management

The Permittees have developed and implemented an IPM program that promotes the use of less toxic or non-toxic approaches to pest management. The Permittees have made many efforts to promote IPM for municipal activities, including the use of IPM at City parks. City and County acres utilizing IPM are summarized in Table 1.

Table 1. City and County acres managed under the IPM Program[3]

Year	Number of Acres Under the IPM Program			
	Parks	Golf Courses	Total City acres	County acres
2004-2005	573	390	963	2,000
2005-2006	614	390	1,004	2,171

The specific alternatives to pesticides that were employed by City and County pest control crews as components of the IPM program are listed below:

Weeds	Diseases	Insects
• Hand weeding/hoeing	• Irrigation	• Plant selection
• Mulch for suppression	• Plant selection	• Pruning
• Adjust mowing height	• Pruning	• Physical removal
• Improve drainage	• Fertilization	• Landscape design
	• Landscape design	

[3] City of Stockton and County of San Joaquin National Pollutant Discharge Elimination System Municipal Stormwater Program 2005-2006 Annual Report.

2.2 Public Education and Outreach

The Pesticide Plan relies heavily on education and outreach efforts that promote less toxic pest control methods and use of IPM. The City participates in the University of California (UC) Statewide Integrated Pest Management Program with Orchard Supply Hardware (OSH) to encourage the use of less toxic products and proper disposal of pesticides. Known as the "Our Water Our World" (OWOW) program, the program is now supported in all 82 California OSH stores. The City's focus is specifically at the sole Stockton store. The program provides over 20 different fact sheets on less-toxic pest management strategies to retail outlets that sell pesticides; holds community outreach events in stores to promote less toxic methods and products; and trains store personnel in IPM principles. The OWOW program is also part of the outreach efforts at community events.

The public education and outreach program distributed a number of educational materials for various target audiences and activities. The City distributed approximately one thousand pieces per year at OSH. Materials are summarized in Table 2.

Table 2. Education and outreach materials distributed

Name of Material	Target audience
Brochures	
County Household Hazardous Waste Consolidation Facility	General public
Parks and Recreation Turf Management Tips & Techniques	Urban pest control professionals, Municipal parks, golf courses and recreation managers
Residential Pest Control Landscape Management Tips & Techniques	Residential gardeners
Fact Sheets	
Our Water Our World IPM Fact Sheets	General public
U.C. California-Davis 14 IPM and Website Cards	General public

2.2.1 Public Education and Outreach Effectiveness Assessment

Because the Pesticide Plan relies heavily on public outreach and education, public surveys are used to evaluate the program effectiveness. Questions to assess the awareness and impact of the pesticide education program were incorporated into head-of-household surveys conducted in 2005 and 2007. Survey data was compared with data collected from the baseline survey, established in 2003. The survey results from 2005 and 2007 suggest that Pesticide Plan has been successful in educating the general public about the impacts of pesticide use and the importance of proper disposal. When compared to baseline survey results:

- A greater percentage of respondents knew to take the leftover pesticides or weed killers to the HHW Facility or a collection event (2007: 29%; 2005: 29%; 2003: 23%)[4];

[4] City of Stockton and County of San Joaquin National Pollutant Discharge Elimination System Municipal Stormwater Program 2005-2006 Annual Report.

- Fewer respondents reported that they disposed of remaining pesticide products in the trash (2007: 12%; 2005: 10%; 2003: 21%); and
- Similar numbers of respondents reported that garden care products can contribute to storm drain pollution (2007: 7%; 2005: 12%; 2003: 6%).

Insight gained from the survey will be incorporated into outreach and education efforts to improve community awareness of proper pesticide use and disposal. Specifically, outreach efforts should focus on informing the public that garden care products can contribute to storm drain pollution. Section 3.1 of this document outlines the Permittees enhancements to the Public Education and Outreach program to improve pesticide knowledge in the community.

2.3 Monitoring

The Permittees conducted an assessment of the relative contribution of OP pesticides (diazinon and chlorpyrifos) to waters within its jurisdiction that are identified as a toxic hot spot (per § 13394 of Porter-Cologne) or are on the Clean Water Act (CWA) 303(d) list for pesticide impairment. The 2002 NPDES Permit required the Permittees to: (1) identify trends in the levels of diazinon and chlorpyrifos in all CWA 303(d) listed waters within the Permittees' jurisdiction; and, (2) examine the concentration of diazinon and chlorpyrifos in rainwater at sites within and outside of the Stockton Urbanized Area. Based on these requirements, and comments received during the public comment period, a targeted monitoring program for diazinon, chlorpyrifos, and pyrethroids was developed. The Permittees added pyrethroids to the analyte list because pyrethroids are replacing OP pesticides as the pesticide most used by urban and agricultural users.

2.3.1 Location of Pesticide Plan Monitoring Sites

The Pesticide Plan identified a monitoring program that targeted rainwater within and outside of the Stockton area (labeled "NE Rain" and "NW Rain"), and local San Joaquin River tributary receiving waters that were classified as impaired due to elevated levels of pesticides (Figure 1). The receiving water sites were located in Mosher Slough (MS), Five-Mile Slough (5M), Calaveras River (CR), Smith Canal (SC), and Mormon Slough (MR).

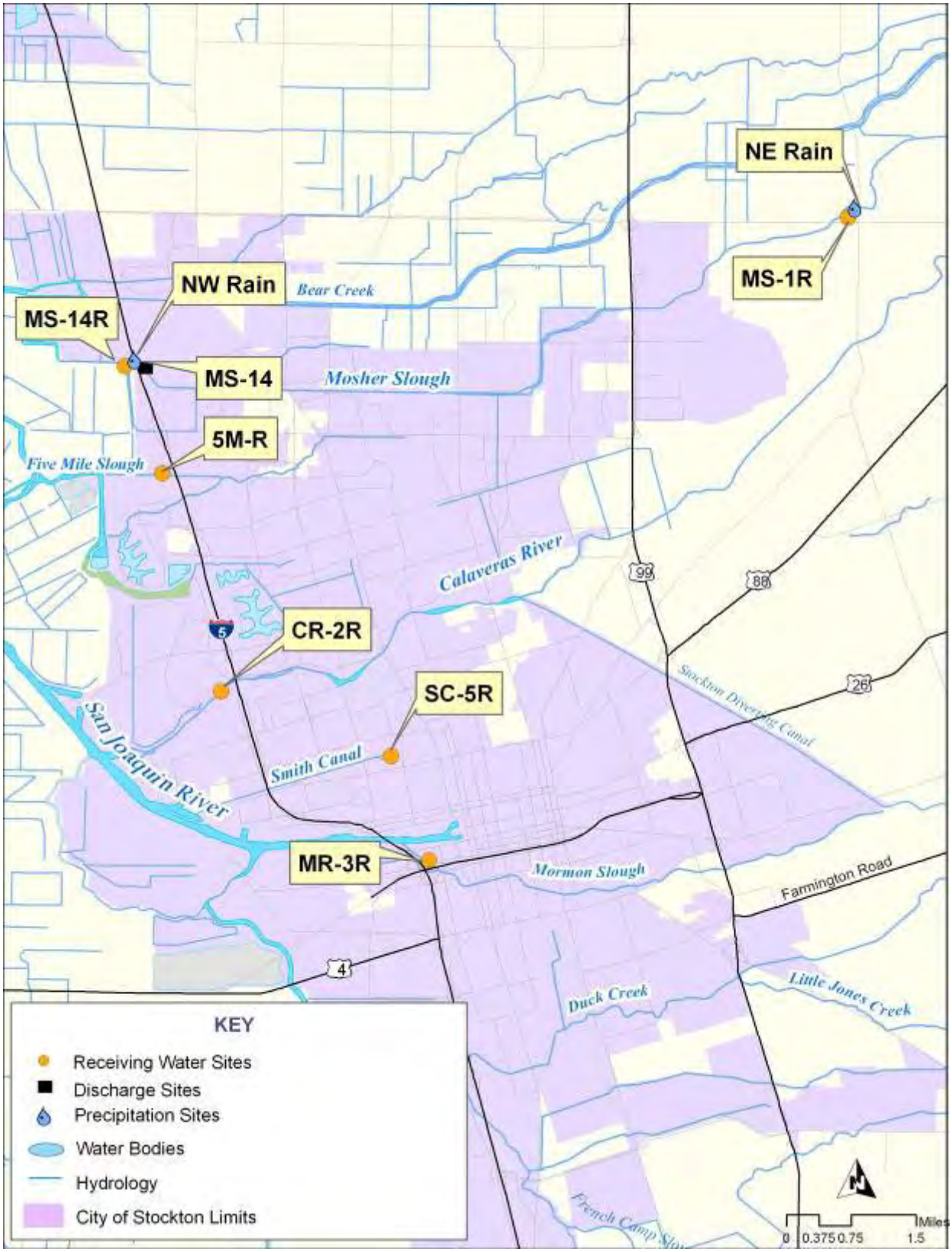

Figure 1. 2004 Pesticide Plan Monitoring Locations

2.3.2 Timing of Pesticide Monitoring

The timing of the monitoring was coordinated with annual cycles in pesticide application by agricultural and urban users. Application of pesticides, particularly to orchards, often revolves around the dormant season. Though spraying periods are variable based on weather conditions and crop type, the following periods are the approximate "spray seasons":

- Pre-dormant spray season: October – December
- Dormant spray season: December – March
- Post-dormant spray season: March – June
- Dry Season: June – October

The timing of the monitoring with respect to growing seasons is shown in Table 3. Spraying pesticides during the dormant season reduces wintering populations of pests during vulnerable periods of their lifecycles, while reducing exposure of non-target organisms, such as natural enemies. Dormant sprays can also serve as an effective preventative measure to reduce or eliminate the need for multiple insecticide applications for target pests over the course the growing season. It should be noted, however, that using pesticides during the dormant season, which is the rainiest time of the year, has led to many of the water quality impacts associated with the enrichment of OP pesticides in runoff from agricultural and urban areas. Therefore, an important goal of Pesticide Plan monitoring was to characterize the differences in water quality during different spray seasons.

2.3.3 Frequency of Pesticide Monitoring

All monitoring locations, including precipitation sites (NE Rain and NW Rain), were monitored for OP pesticides and pyrethroids during:

- One storm event during the dormant spray application season (1/14/06); and
- One storm event after the dormant spray application season (3/19/05); and
- One event during the dry season (6/15/05) (except for precipitation sites).

In addition, three sites – 2 receiving water and 1 discharge– along Mosher Slough were monitored during additional events, for a total of:

- Two storm events during the dormant spray application season (1/14/06 and1/30/06);
- Two storm events after the dormant spray application season (3/19/05 and 4/28/05) ; and
- Two events during the dry season (6/15/05 and 8/30/05).

Also, benthic sediment samples from the downstream Mosher Slough receiving water site (MS-14R) were analyzed for pyrethroids during:

- One event before the dormant spray application season (12/1/05);
- One storm event during the dormant spray application season (1/14/06); and

Benthic sediments were analyzed for pyrethroids because, unlike diazinon and chlorpyrifos, pyrethroids are hydrophobic and therefore tend to bind to sediments as opposed to remaining in the water column.

The frequency of the monitoring is also shown in Table 3.

Much of the pesticide loading to Mosher Slough may be due to upstream inputs by agricultural land uses. Monitoring was conducted more frequently in Mosher Slough in order to better define OP pesticide concentration trends, and to quantify relative upstream/downstream differences and thereby characterize the impacts of upstream (and out-of-City) agricultural inputs. Monitoring was conducted at a pump station (MS-14) and two in-stream locations in Mosher Slough; one upstream of the City (MS-1R) and one downstream of urban influence (MS-14R). In addition, both rainwater stations were located along Mosher Slough, one site within the City limits (NW Rain) and one site outside of the City limits (NE Rain). Finally, as noted above, Mosher Slough (MS-14R) was the site used for testing of benthic sediment for pyrethroids.

It should also be noted that, as discussed in the 2004/05 Annual Report, monitoring events were also conducted during dormant spray storm events on 12/7/04, 1/705, and 1/26/05. However, the laboratory achieved poor reporting limits (RL) of 2.0 µg/L and OP pesticides were non-detect. The laboratory that analyzed water column pyrethroids achieved satisfactory RLs.

Table 3. Timing and Frequency of Pesticide Plan Monitoring Events

Waterbody	Site Type and Name	2004/2005 Monitoring Year					2005/2006 Monitoring Year				
		Dormant Spray Season Storm (12/7/04)[1]	Dormant Spray Season Storm (1/7/05)[1]	Dormant Spray Season Storm (1/26/05)[1]	Post Dormant Spray Season Storm (3/19/05)	Post Dormant Spray Season Storm (4/28/05)	Dry Season (6/14/05)	Dry Season (8/30/05)	Pre Dormant Spray Season (12/1/05)*	Dormant Spray Season Storm (1/14/06)*	Dormant Spray Season Storm (1/30/06)
Mosher Slough - urban discharge	Pump Station: MS-14	√	√	---	√	√	√	√	√	**X , O**	**X** , √
Mosher Slough - upstream	Receiving Water: MS-1R	√	√	---	√	√	√	√	√	√	√
Mosher Slough - down stream	Receiving Water: MS-14R	√	√	---	√	√	√	√	---	√	√
Five Mile Slough	Receiving Water: 5M-1R	√	---	---	√	---	√	---	---	√	---
Mormon Slough	Receiving Water: MR-3R	√	---	---	√	---	√	---	---	√	---
Calaveras River	Receiving Water: CR-2R	√	---	---	√	---	√	---	---	√	---
Smith Canal	Receiving Water: SC-5R	√	---	---	√	---	√	---	---	√	---
Rainwater Within City Limits	Rainwater collection site: NW Rain	√	---	√	√	---	---	---	√	---	---
Rainwater Outside City Limits	Rainwater collection site: NE Rain	√	---	√	√	---	---	---	**O ,** √	---	---

1 = For samples collected on this date the laboratory reported very high reporting limits for diazinon and chlorpyrifos, which guaranteed that they would be non-detect.

Pyrethroids were analyzed with satisfactory reporting limits and were also non-detect.

√ = Sample collected –diazinon and chlorpyrifos were below DFG WQOs and pyrethroids were non-detect, unless otherwise indicated

X = Sample collected – diazinon was above WQO of 0.160 µg/L but pyrethroids were non-detect

O = Sample collected – chlorpyrifos was above WQOs of 0.025 µg/L but pyrethroids were non-detect

--- = No sample collected on this date

* = On this date, benthic sediment was collected from MS-14R and analyzed for pyrethroids, which were non-detect.

2.3.4 Pesticide Plan Monitoring Results

During monitoring efforts, a total of approximately 50 samples – 31 water samples during 2004/05, and 17 water and 2 sediment samples during 2005/06 – were collected and analyzed for diazinon, chlorpyrifos, and pyrethroids, as shown in Table 5, Table 6, and Table 7, respectively. In cases of non-detection, results are reported as "less than" the RL. While analytical RLs for diazinon and chlorpyrifos were relatively high during the December 2004 and January 2005 events (a total of 12 samples), all samples collected after these dates (36 samples) were analyzed by CRG Marine Laboratories of Torrance, CA with ultra-low method detection limits (MDL = 0.005 micrograms per liter (µg/L)). It is common for other labs to only be able to achieve RLs that are twice as high (MDL = 0.01 µg/L). Also, note that samples from all events, even those in 2004/05, were analyzed by Caltest Laboratory in Napa, CA using ultra-low detection limits for pyrethroids (see Table 7 for pyrethroids detection limits). Using ultra-low detection limits maximized the ability of the Program to detect and quantify pesticide concentrations, and characterize spatial and temporal trends.

Overall, the frequency of pesticide detections was low, and Water Quality Objectives (WQO) for diazinon, chlorpyrifos, and pyrethroids were regularly achieved in the Stockton Area waterways that were monitored. This was especially the case for chlorpyrifos and pyrethroids, which were detected in only 14% and 0% of samples, respectively. The frequency of detection and the rate of WQO exceedances are shown in Table 4. The WQOs for diazinon and chlorpyrifos were considered to be the Department of Fish and Game (DFG) revised criteria of 0.16 µg/L and 0.025 µg/L, respectively, which are also the targets of the SSJD Diazinon and Chlorpyrifos TMDL. While in the case of diazinon, detection rates were much higher, 15 of 36 samples (41%), WQO exceedances were observed in only 6% of the collected samples. It should be noted that buildup of diazinon and chlorpyrifos in benthic sediments, and impacts on benthic organisms were not analyzed. However, pyrethroids, which were analyzed in two sediment samples from Mosher Slough at MS-14, were not detected in sediment.

Table 4. Frequency of Detections and WQO Exceedances during the Pesticide Plan

Pesticide	Number of Samples[1]	Number of Detections	Detection Rate	Number of Samples above the WQO[2]	WQO Exceedance Rate
Diazinon	36	15	41%	2	6%
Chlorpyrifos	36	5	14%	2 [3]	6%
Pyrethroids	50 [4]	0	0%	0	0%

1 = Only samples analyzed with ultra-low method detection limits are considered in this table.

2 = WQOs for diazinon and chlorpyrifos are 0.16 µg/L and 0.025 µg/L, respectively.

3 = One of these WQO exceedances occurred in rainwater that was collected outside of the Stockton Urbanized Area.

4 = This includes 2 benthic sediment samples collected from MS-14R at Mosher Slough

Trends Observed during Pesticide Plan Monitoring

To display the diazinon and chlorpyrifos data collected during the Pesticide Plan, and elucidate spatial and temporal variations in pesticide concentrations, a geographic information systems (GIS) tool was utilized. Due to the fact that pesticides were detected relatively infrequently, it is difficult to develop comprehensive conceptual models regarding the transport of pesticides in the Stockton area. In fact, no pyrethroids were detected in any of 50 samples, even though ultra-low detection limits were used. Nonetheless, a few general trends were observed, as discussed in the sections below.

Diazinon

While diazinon was determined to be a stormwater Pollutant of Concern (POC) in 2003/04, data collected from 2004-2006 suggest that WQOs are regularly attained in Stockton waterways. There were only two exceptions for diazinon, and both WQO exceedances occurred in urban runoff collected at the Mosher Slough pump station (MS-14) during the dormant spray season (January 2006). It is also worth noting that during each storm event during the dormant spray season (January 2006) and the post-dormant spray season (March/April 2005), diazinon concentrations increased in Mosher Slough from the upstream site MS-1R to the downstream site MS-14R. However, zero receiving water WQO exceedances were observed during the entire study. Observed concentrations of diazinon at Five Mile Slough and Smith Canal were also highest during the dormant spray season. At the same time, diazinon was detected (concentration = 0.0253 μg/L) in precipitation collected outside of the urban area during the post-dormant spray season (March 2005). Therefore, it is possible that agricultural spray drift from outside of the City enriches rainwater before it even falls to the ground. However, the detection in rainwater occurred before the phase-out by USEPA was complete, and it is unknown if diazinon is still present in rainwater. Regardless, there were zero receiving water WQO exceedances observed during the Pesticide Plan, and thus diazinon impacts by stormwater may have been greatly reduced by the phase-out by USEPA, which was completed in December 2005. As described in the SSJC Diazinon and Chlorpyrifos TMDL, due to the completed phase-out, as time goes on it is expected that diazinon concentrations in Stockton area waterways will be reduced even further.

Chlorpyrifos

Chlorpyrifos was detected even less frequently than diazinon. In fact, chlorpyrifos was only detected in 5 of 36 samples, even with ultra low detection limits, and for those samples in which chlorpyrifos was detected, only two were observed above the water quality objective. The first occurrence was in the sample collected from the Mosher Slough (MS-14) pump station during the dormant spray season in January 2006. The second occurrence was during the pre-dormant spray season in December 2005, when chlorpyrifos was detected in rainwater outside of the City at concentrations above the WQO. Therefore, as with diazinon, it is possible that agricultural spray drift from outside of the City enriches rainwater, and in the case of chlorpyrifos, monitoring suggests that in some cases rainwater may have already been enriched above the WQO before it even falls to the ground. However, like the detection of diazinon in rainwater, the detection of chlorpyrifos in rainwater occurred before the phase-out by USEPA was complete, and it is unknown if chlorpyrifos is still present in rainwater. Overall, chlorpyrifos was detected very infrequently, zero receiving water WQO exceedances were observed, and thus (like

diazinon) its impacts by stormwater may have already been greatly reduced by the phase-out by USEPA.

Pyrethroids

Pyrethroids, the most likely replacement for recently phased-out OP pesticides (diazinon and chlorpyrifos), were analyzed during the Pesticide Plan in response to comments received during the public comment period. Very sensitive reporting limits were used for all pyrethroids analyses, yet no pyrethroids were detected in any of the 48 water and 2 sediment samples collected during the Pesticide Plan. Therefore, it appears that pyrethroids are not generally present in Stockton-area discharge or receiving waters. However, it is acknowledged that over the past few years it has become relatively well-known that pyrethroids are normally tightly-bound by sediments (and thus not present in the water column), and only a few sediment samples were collected during the Pesticide Plan.

Table 5. Diazinon Concentrations Observed during Pesticide Plan Monitoring (µg/L)

Waterbody	Site Type and Name	2004/2005 Monitoring Year					2005/2006 Monitoring Year				
		Dormant Spray Season Storm (12/7/04)[1]	Dormant Spray Season Storm (1/7/05)[1]	Dormant Spray Season Storm (1/26/05)[1]	Post Dormant Spray Season Storm (3/19/05)	Post Dormant Spray Season Storm (4/28/05)	Dry Season (6/14/05)	Dry Season (8/30/05)	Pre Dormant Spray Season (12/1/05)	Dormant Spray Season Storm (1/14/06)	Dormant Spray Season Storm (1/30/06)
Mosher Slough - urban discharge	Pump Station: MS-14	<2.0+	<2.0+	-----	**0.046**	**0.030**	<0.005	<0.005	<0.005	***0.178***	***0.374***
Mosher Slough – upstream	Receiving Water: MS-1R	<2.0+	<2.0+	-----	<0.005	<0.005	<0.005	<0.005	-----	**0.044**	**0.0571**
Mosher Slough - down stream	Receiving Water: MS-14R	<2.0+	<2.0+	-----	**0.0196**	**0.0275**	<0.005	<0.005	<0.005	**0.090**	**0.138**
Five Mile Slough	Receiving Water: 5M-1R	<2.0+	-----	-----	**0.0129**	-----	<0.005	-----	-----	**0.303**	-----
Mormon Slough	Receiving Water: MR-3R	<2.0+	-----	-----	<0.005	-----	<0.005	-----	-----	<0.005	-----
Calaveras River	Receiving Water: CR-2R	<2.0+	-----	-----	<0.005	-----	<0.005	-----	-----	<0.005	-----
Smith Canal	Receiving Water: SC-5R	<2.0+	-----	-----	**0.0333**	-----	<0.005	-----	-----	**0.113**	-----
Rainwater Within City Limits	Rainwater collection site: NW Rain	-----	-----	<2.0+	<0.005	-----	-----	-----	<0.005	-----	-----
Rainwater Outside City Limits	Rainwater collection site: NE Rain	-----	-----	<2.0+	**0.0253**	-----	-----	-----	<0.005	-----	-----

1 = For samples collected on this date the laboratory reported very high reporting limits for diazinon and chlorpyrifos, which guaranteed that they would be non-detect..

Pyrethroids were analyzed with satisfactory reporting limits and were also non-detect.

--- = No sample collected on this date

+ = This reporting limit was below data quality objectives, and therefore additional samples were collected during the following dormant spray season.

RED = Concentration above WQO of 0.160 µg/L

Table 6. Chlorpyrifos Concentrations Observed during Pesticide Plan Monitoring (µg/L)

Waterbody	Site Type and Name	2004/2005 Monitoring Year					2005/2006 Monitoring Year				
		Dormant Spray Season Storm (12/7/04)[1]	Dormant Spray Season Storm (1/7/05)[1]	Dormant Spray Season Storm (1/26/05)[1]	Post Dormant Spray Season Storm (3/19/05)	Post Dormant Spray Season Storm (4/28/05)	Dry Season (6/14/05)	Dry Season (8/30/05)	Pre Dormant Spray Season (12/1/05)	Dormant Spray Season Storm (1/14/06)	Dormant Spray Season Storm (1/30/06)
Mosher Slough - urban discharge	Pump Station: MS-14	<2.0+	<2.0+	-----	<0.005	<0.005	<0.005	<0.005	<0.005	***0.0849***	**0.0178**
Mosher Slough - upstream	Receiving Water: MS-1R	<2.0+	<2.0+	-----	<0.005	<0.005	<0.005	<0.005	-----	<0.005	<0.005
Mosher Slough - down stream	Receiving Water: MS-14R	<2.0+	<2.0+	-----	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.0161**
Five Mile Slough	Receiving Water: 5M-1R	<2.0+	-----	-----	**0.0174**	-----	<0.005	-----	-----	<0.005	-----
Mormon Slough	Receiving Water: MR-3R	<2.0+	-----	-----	<0.005	-----	<0.005	-----	-----	<0.005	-----
Calaveras River	Receiving Water: CR-2R	<2.0+	-----	-----	<0.005	-----	<0.005	-----	-----	<0.005	-----
Smith Canal	Receiving Water: SC-5R	<2.0+	-----	-----	<0.005	-----	<0.005	-----	-----	<0.005	-----
Rainwater Within City Limits	Rainwater collection site: NW Rain	-----	-----	<2.0+	<0.005	-----	-----	-----	<0.005	-----	-----
Rainwater Outside City Limits	Rainwater collection site: NE Rain	-----	-----	<2.0+	<0.005	-----	-----	-----	0.0615	-----	-----

1 = For samples collected on this date the laboratory reported very high reporting limits for diazinon and chlorpyrifos, which guaranteed that they would be non-detect..

Pyrethroids were analyzed with satisfactory reporting limits and were also non-detect.

--- = No sample collected on this date

+ = This reporting limit was below data quality objectives, and therefore additional samples were collected during the following dormant spray season.

RED = Concentration above WQO of 0.160 µg/L

Table 7. Pyrethroid Concentrations Observed during Pesticide Plan Monitoring

Waterbody	Site Type and Name	2004/2005 Monitoring Year					2005/2006 Monitoring Year				
		Dormant Spray Season Storm (12/7/04)	Dormant Spray Season Storm (1/7/05)	Dormant Spray Season Storm (1/26/05)	Post Dormant Spray Season Storm (3/19/05)	Post Dormant Spray Season Storm (4/28/05)	Dry Season (6/14/05)	Dry Season (8/30/05)	Pre Dormant Spray Season (12/1/05) *	Dormant Spray Season Storm (1/14/06)*	Dormant Spray Season Storm (1/30/06)
Mosher Slough - urban discharge	Pump Station: MS-14	ND	ND	---	ND	ND	ND	ND	ND	ND	ND
Mosher Slough - upstream	Receiving Water: MS-1R	ND	ND	---	ND	ND	ND	ND	---	ND	ND
Mosher Slough - down stream	Receiving Water: MS-14R	ND	ND	---	ND	ND	ND	ND	ND	ND	ND
Five Mile Slough	Receiving Water: 5M-1R	ND	---	---	ND	---	ND	---	---	ND	---
Mormon Slough	Receiving Water: MR-3R	ND	---	---	ND	---	ND	---	---	ND	---
Calaveras River	Receiving Water: CR-2R	ND	---	---	ND	---	ND	---	---	ND	---
Smith Canal	Receiving Water: SC-5R	ND	---	---	ND	---	ND	---	---	ND	---
Rainwater Within City Limits	Rainwater collection site: NW Rain	---	---	---	---	---	---	---	---	---	---
Rainwater Outside City Limits	Rainwater collection site: NE Rain	---	---	---	---	---	---	---	---	---	---

* = On this date, benthic sediment was collected from MS-14R and analyzed for pyrethroids, all of which were non-detect.

--- = No sample collected on this date

RED = Concentration above WQO of 0.025 µg/L

ND = Sample was non-detect for all pyrethroids; for most samples the reporting limits were (µg/L):

Bifenthrin	< 0.0050	Fenvalerate	< 0.0050
Cyfluthrin	< 0.0080	Fluvalinate	< 0.0050
Cyhalothrin	< 0.0080	Permethrin	< 0.0050
Cypermethrin	< 0.0050	Resmethrin	< 0.0060
Danitol	< 0.024	Tralomethrin	< 0.0080

3.0 PESTICIDE PLAN 2007-2012

The Pesticide Plan will continue the public outreach and promotion of IPM that was implemented during the 2004-2007 Plan, and will extend its monitoring efforts to track OP pesticide concentrations. As the OP pesticides diazinon and chlorpyrifos are phased out, a new generation of chemicals (e.g., pyrethroids) will replace them as the most commonly used pesticides. As such, the most important component of the Pesticide Plan may be the promotion of IPM, which is applicable to all types of pesticides.

The overall goal of the Pesticide Plan is to protect water quality by implementing IPM, and the associated Best Management Practices (BMPs) to minimize or eliminate pesticides in stormwater runoff. The Pesticide Plan proposes to accomplish this goal (and address permit requirements) with both water quality monitoring and the implementation of IPM in public and municipal activities. The Pesticide Plan includes the following components:

- Public education and outreach
- IPM and municipal operations
- Effectiveness assessment
- Water quality monitoring

The Pesticide Plan approach is summarized in Figure 2.

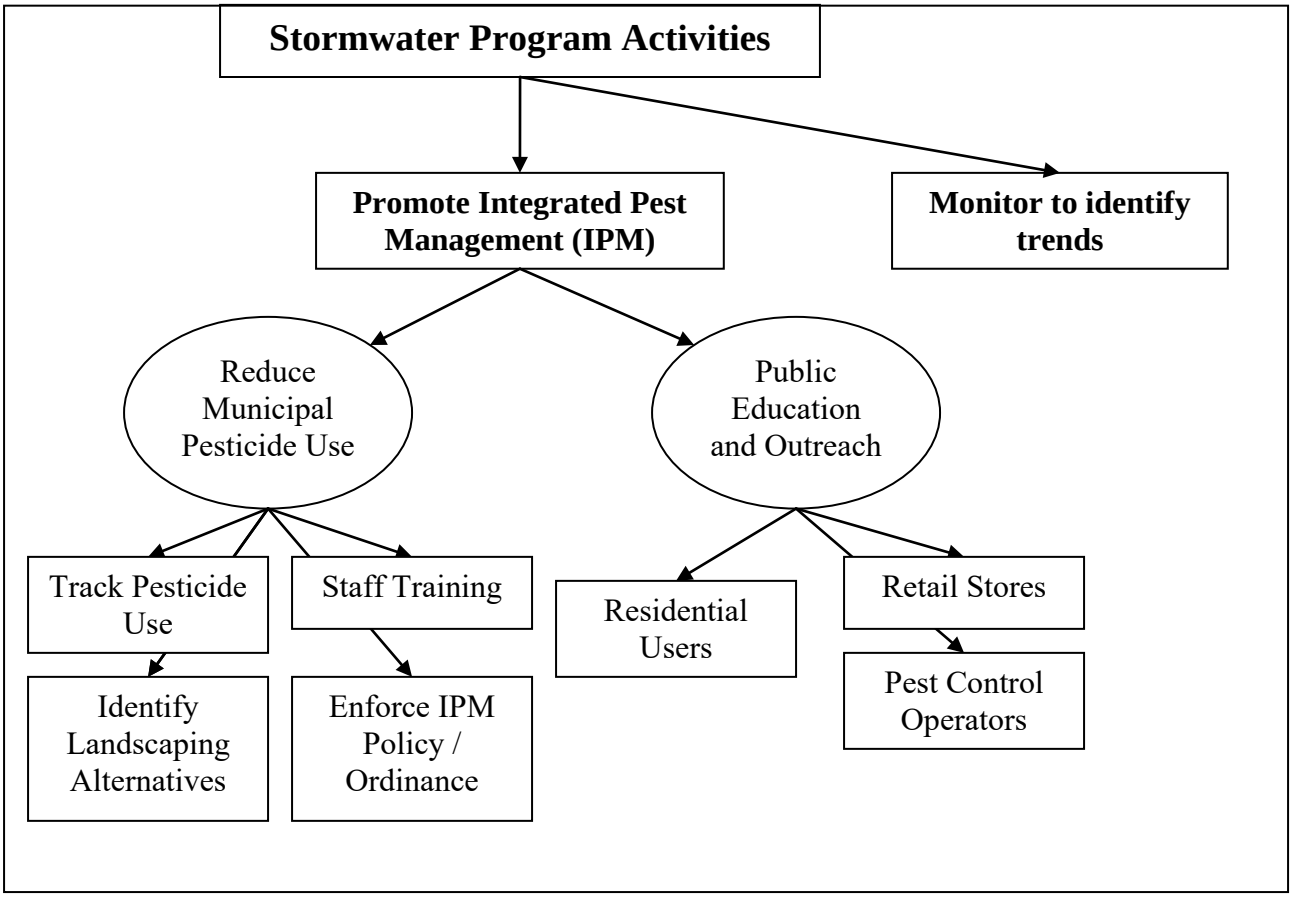

Figure 2. Diagram of the Pesticide Plan Approach

3.1 Public Education and Outreach

The Permittees will continue to coordinate with the County Agriculture Commission and Extension Service, environmental organizations, and interested stakeholders to provide targeted information to the public about safe pesticide use and disposal, as well as less toxic pest control alternatives. Education and outreach programs that have been conducted as components of the Pesticide Plan thus far will continue to be implemented. Key outreach forums/mechanisms include:

3.1.1 "Our Water Our World" Program Outreach

The OWOW program began in 1997 by Central Contra Costa Sanitary District in cooperation with the Bay Area Regional Water Quality Control Board and grant support from the California Department of Pesticide Regulation and the National Foundation for Integrated Pest Management Education (USEPA funding). The pilot project was implemented in various nurseries and other retail outlets in Contra Costa County, the city of Palo Alto and Marin County in 1998. Since then, the program has expanded to include additional California communities and participation by OSH stores throughout California. The program provides over 20 different fact sheets on less-toxic pest management strategies to retail outlets that sell pesticides; holds

community outreach events in stores to promote less toxic methods and products; and trains store personnel in IPM principles.

The Permittees have supported the OWOW Program through Orchard Supply Hardware. During the 2007-2012 Permit term, the Permittees will involve other local garden-supply retailers in the OWOW program. The City and County will report the number of new retailers which adopt IPM promotion programs in its Annual Reports.

3.1.2 Annual Public Outreach Messages

Prior to the wet season, the City and County will promote IPM and proper pesticide handling through the following mechanisms, which are already in practice:

- Inclusion of brochures promoting IPM in City and County publications
- Public service announcements on radio and television
- Newspaper articles

These outreach mechanisms will be employed annually. The Permittees will conduct a survey of the regional sales of residential and commercial pesticides which are available for the public on a bi-annual basis (i.e. once every two years). This survey will allow the Permittees to identify potential pesticide use and impacts before they occur.

3.1.3 City-Sponsored Workshops

The City will hold annual public workshops in the summer in order to promote safer pest control. These workshops will follow a similar format to the OWOW Program classes, but will be more widely advertised and will target the general public. Municipal staff and/or consultants will provide training on safer pesticide use, less-toxic pesticide alternatives, and the use of native plants to minimize the need for pesticides and reduce water use.

Additional, more in-depth training workshops will target pest control operators and municipal staff who deal with landscape management (detailed in section 3.2.2).

The Green Gardener Program, an effort of the City and County of Santa Barbara and Ecology Action of Santa Cruz, incorporates a comprehensive curriculum to promote improved sustainability of urban landscapes. The Green Gardener Program[5] will be integrated into the program as an additional resource for the workshop curriculum and educational materials.

3.2 Municipal Operations

The Permittees will review, and if appropriate, modify their pesticide, herbicide, and fertilizer application protocols at park sites, landscaped medians, and golf courses. The internal inventory on pesticide use will be expanded, and the Permittees will continue to track pesticide use by the Department of Parks and Recreation. In order to standardize IPM implementation, the City will review and update its specific IPM protocols in the 2009-2010 Permit year, which will be used public agencies and/or contractors hired by the public agencies to control pests. These IPM policies will include the components outlined below.

[5] http://www.californiagreensolutions.com/cgi-bin/gt/tpl.h,content=113

3.2.1 IPM Components

The IPM approach focuses on the long-term prevention and elimination of pests through a combination of tactics. The components of the IPM program are:

- Develop and implement IPM protocols, including proper handling, application, and disposal of pesticides;
- Train municipal staff and pest control operators;
- Develop landscape alternative standards; and
- Develop contract language for outside landscape contractors to use IPM.

3.2.2 Implementation Steps

The Permittees will review and update its policies which promote IPM in municipal use. The City and County will ensure that staff involved in pest management and landscape maintenance is trained in proper pest control by holding annual training, and that pesticide operator license requirements are followed. The Permittees will track the numbers of employees trained each year and the city acreage operated under IPM, and present them yearly in the Annual Reports.

3.3 Effectiveness Assessment

Municipal pesticide use and acreage operated under IPM will be tracked yearly to assess the effectiveness of the municipal component of the Pesticide Plan. The municipal pesticide usage will be reported in Annual Reports. The Education and Outreach component will be assessed by reporting the following:

- Number of retail stores supporting OWOW or similar programs,
- Distribution of outreach messages, including numbers of brochures, television commercials, and newspaper articles, with an estimation of the number of people who were reached,
- Number of public workshops, with comments collected from attendees, and
- Number of pest control operators and municipal employees who participated in training workshops.

3.4 Monitoring

Consistent with the 2004 Pesticide Plan, the Pesticide Plan monitoring will continue for Calaveras River, Mosher Slough, Five-Mile Slough, and Smith Canal. Monitoring is no longer required for Mormon Slough. Monitoring locations are shown in Figure 3. Monitoring will be conducted for chlorpyrifos and diazinon in all waterbodies, and for pyrethroids in urban runoff/discharges, during the following time periods:

- 1 Storm event during the dormant spray season: December – March
- 1 Storm event following the dormant spray season: March – June
- Once during the dry Season: June – October

Monitoring requirements allow the Permittees to discontinue monitoring if the Regional Water Board is satisfied that water quality objectives are met. The monitoring effort will be reconsidered two years into the Permit (2009-2010).

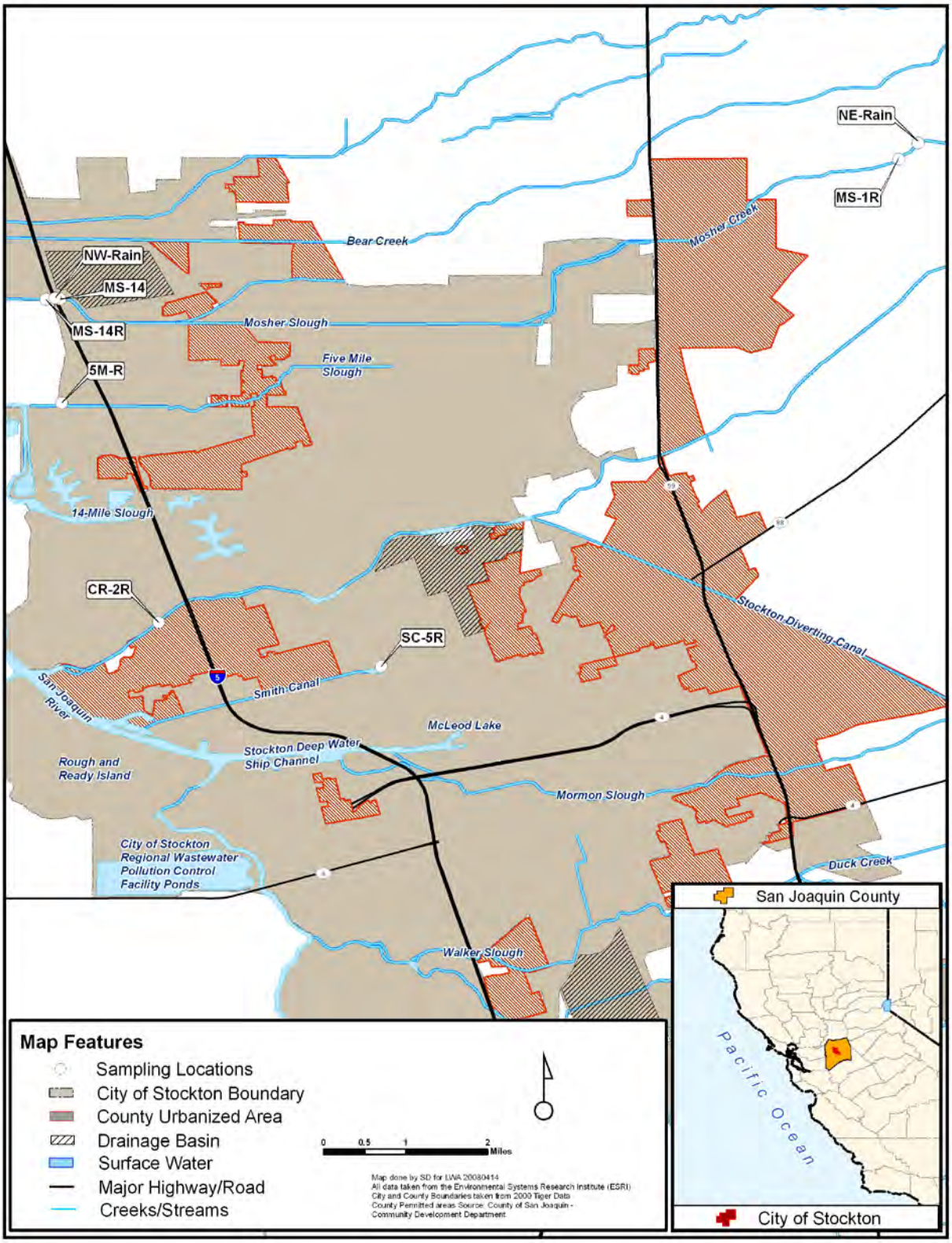

Figure 3. Pesticide Plan Monitoring Locations for 2007-2012.

MS=Mosher Slough, 5M=Five-Mile Slough, SC=Smith Canal; R=Receiving Water

3.5 Implementation Schedule

Plan Component	Type of Component[1]	Implementation Schedule[2]																			
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Pesticide monitoring	C													X							
Public education and outreach																					
OWOW Program outreach	N																				X
Annual public outreach messages	E					X				X				X				X			
Pest control workshops	N				X	X			X	X			X	X			X	X			X
Conduct survey of pesticides available for the public	N																	X			
Municipal Operations																					
Review pesticide application protocols	C								X												
Implement IPM protocols	C																				X
Train municipal employees	E								X				X				X				X
Review and implement landscaping standards	C																				X
Enforce IPM standards for contracted landscapers	C																				X
Effectiveness assessment																					
Track municipal pesticide use and IPM	C																				X
Track OWOW participation	C																				X
Track outreach material distribution and workshop attendance	E																				X
Track PCO and municipal employee training	E																				X

Notes: 1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
X = Plan element will be completed during this quarter.
☐ = Plan element will be completed during this timeframe as specified

APRIL 15, 2009

City of Stockton
County of San Joaquin

Pathogen Plan Update – Revised April 2009

prepared by

LARRY WALKER ASSOCIATES

Table of Contents

1.0 Background 1
1.1 Pathogen Total Maximum Daily Load 1
2.0 Pathogen Plan Summary 2
2.1 Pathogen Plan Objectives 2
2.2 Approach 3
2.3 Phase I Results 7
3.0 Modifications to the Pathogen Plan Approach 17
3.1 Revised schedule 17
3.2 Microbial Source Tracking Methods 18
3.3 Enhanced BMP Implementation 20
4.0 Pathogen Plan Phase II Monitoring 22
4.1 Characterization Monitoring 23
4.2 Source Identification Monitoring 26

List of Tables and Figures

Table 1. Water Quality Targets for Indicator Bacteria 2
Table 2. 2004 Pathogen Plan Implementation Schedule. 3
Table 3. Source identification monitoring events conducted to date under Phase I. 13
Table 4. Revised Pathogen Plan Implementation Schedule..... 18
Table 5. Monitoring Implementation Schedule[1] 18
Table 6. BMP Implementation Schedule 21
Table 7. Land Usage for Phase II Discharge Site Drainage Basins..... 22
Table 8. Phase II Monitoring Sites 23
Table 9. Modified Source Identification Monitoring Approach 26

Figure 1. Phase I Pathogen Plan Monitoring Approach 5
Figure 2. Phase I Monitoring Locations 6
Figure 3. Dry Weather Indicator Bacteria Concentrations Observed during Phase I Characterization Monitoring for Smith Canal 3
Figure 4. Wet Weather Indicator Bacteria Concentrations Observed during Phase I Characterization Monitoring for Smith Canal 10
Figure 5. Dry Weather Indicator Bacteria Concentrations Observed during Phase I Characterization Monitoring at Mormon Slough..... 11
Figure 6. Wet Weather Indicator Bacteria Concentrations Observed during Phase I Characterization Monitoring at Mormon Slough..... 12
Figure 7. Microbial Source Tracking results at all Phase I sampling events for each species-specific *Bacteroidales* marker..... 14
Figure 8. Phase II Monitoring Locations. 25

1.0 BACKGROUND

Six urban waterbodies in the Stockton Urbanized Area (SUA) are listed as impaired on the Clean Water Act (CWA) §303(d) list due to high levels of fecal indicator bacteria. Although fecal indicator bacteria do not generally cause illness themselves, they are widely measured as representative surrogates for pathogenic microorganisms.

In order to address bacteria impairment, the City of Stockton and County of San Joaquin (Permittees) developed the Pathogen Plan in accordance with Provision D.18.b of their 2002 municipal stormwater National Pollutant Discharge Elimination Systems (NPDES) Permit (Order No. R5-2002-0181), which required them to develop and implement a plan to identify, monitor and mitigate bacteria sources. The Pathogen Plan was provided to the public, interested parties, and the Central Valley Regional Water Quality Control Board (Regional Water Board) for review. After submitted comments were addressed by the Permittees, a revised Pathogen Plan was provide to the Regional Water Board on August 18, 2004. The focus of the Pathogen Plan is on the following tributaries to the San Joaquin River (SJR) which are classified as impaired due to high levels of fecal indicator bacteria:

- Mormon Slough
- Smith Canal
- Mosher Slough
- Five-Mile Slough
- Walker Slough
- Lower Calaveras River

The Permittees have implemented the Pathogen Plan since 2004. Preliminary Pathogen Plan results were summarized in detail in the 2005-2006 Annual Report, and in the 2007 Report of Waste Discharge.

In December 2007, the Permittees received a new municipal stormwater NPDES Permit (Order No.R5-2007-0173), which included a requirement for the continued implementation of the Pathogen Plan. This document is an update to the 2004 Pathogen Plan, to reflect progress to date, and to evaluate the Pathogen Plan approach for future Plan phases.

1.1 Pathogen Total Maximum Daily Load

In 2002, the Regional Water Board designated six waterbodies within the SUA as impaired by pathogen indicator bacteria. As a result of this designation, the Regional Water Board developed the Stockton Urban Waterways Pathogen Total Maximum Daily Load (TMDL) for pathogen indicator bacteria in Five-Mile Slough, Lower Calaveras River, Mormon Slough, Mosher Slough, Smith Canal and Walker Slough[1]. The Regional Water Board released a Public Review Draft Staff Report in December 2007, and Resolution No. R5-2008-0030, approving the TMDL was adopted on March 14, 2008. Implementation of the TMDL is incorporated through the City of Stockton's municipal stormwater NPDES Permit and associated Pathogen Plan. The

[1] SWRCB, 2008. Total Maximum Daily Loads of Pathogens in Stockton Urban Waterbodies, San Joaquin County. State Water Resources Control Board (SWRCB). Sacramento, California.

Pathogen TMDL establishes the following water quality targets for indicator bacteria, shown in Table 1:

Table 1. Water Quality Targets for Indicator Bacteria

Indicator organism	Waterbody Usage Designation	Water Quality Target	Criteria Source
Fecal coliform	REC-1	• Geometric Mean not to exceed 200 MPN/100 ml for any 30-day period • Geometric mean of 90% of samples must be below 400 MPN/100 ml	Basin Plan Objective
E. coli	REC-1	• Geometric Mean not to exceed 126 MPN/100 ml for any 30-day period • Any single sample not to exceed 235 MPN/100 ml	Basin Plan Objective, USEPA Ambient Water Quality Criteria[2]

2.0 PATHOGEN PLAN SUMMARY

The Pathogen Plan addresses indicator bacteria impairment in urban waterbodies in the Stockton area. To assist with source assessment and to address some of the issues associated with using traditional indicator bacteria, one of the major goals of the Pathogen Plan is to apply novel techniques that quantify source-specific bacteria to obtain information regarding specific sources (e.g., human or non-human) of fecal contamination to the impaired waterbodies.

2.1 Pathogen Plan Objectives

The overall goals of the Pathogen Plan are to monitor, identify, and mitigate, the controllable sources of indicator bacteria to the impaired Stockton urban waterbodies. The specific components of the Pathogen Plan are:

- Develop a monitoring program to assess the contribution of pathogens from both natural and anthropogenic sources;
- Identify areas and/or activities which contribute high pathogen concentrations in stormwater;
- Identify, develop and implement best management practices (BMPs) to address controllable discharges;
- Identify and develop policies, procedures and/or ordinances to implement the above objectives; and
- Develop recommendations and/or performance standards for assessing effectiveness.

[2] USEPA. 1986. Ambient Water Quality Criteria for Bacteria – 1986.

2.2 Approach

The Pathogen Plan was designed to accomplish the Permit objectives and address its overall goal of monitoring, identifying, and mitigating bacteria impairment through the components described below. The Plan reflects a three-phased approach (summarized as a flow-chart in Figure 1), with each phase encompassing the following sequential components:

- Characterization Monitoring
- Source Identification Monitoring
- BMP Implementation
- Effectiveness Monitoring

The approach is applied to two waterbodies per phase. The initial schedule is shown below in Table 2.

Table 2. 2004 Pathogen Plan Implementation Schedule.

Implementation Phase	Waterbody	Start Date	End Date
Phase I	Smith Canal	July 1, 2004	June 30, 2007
	Mormon Slough		
Phase II	Mosher Slough	July 1, 2007	June 30, 2010
	5 Mile Slough		
Phase III	Lower Calaveras River	July 1, 2010	June 30, 2013
	Walker Slough		

2.2.1 Characterization Monitoring

Traditional indicator bacteria (fecal coliform and *E. coli*) are monitored for one year to determine trends in bacteria loading, and identify any "hot spots" where concentrations of indicator bacteria are particularly high. Specific sites that consistently exceed water quality objectives for indicator bacteria are candidates for source identification monitoring.

2.2.2 Source Identification (ID) Monitoring

Specific sites identified during characterization monitoring are subjected to additional monitoring to determine sources contributing fecal contamination. In addition to monitoring traditional indicator bacteria (fecal coliform and *E.* coli), microbial source tracking (MST) analytical techniques are employed. The MST method targets species-specific deoxyribonucleic acid (DNA) sequences in *Bacteroidales-Prevotella (Bacteroidales)*, which are anaerobic bacteria that are highly abundant in the intestines of warm-blooded animals. Their anaerobic nature is desirable because their environmental persistence is thought to be much less than aerobic microbes (e.g., fecal coliform) which can survive for years, and perhaps even re-grow in the environment. Researchers at the University of California, Davis, have developed the quantitative polymerase chain reaction (qPCR) methods to allow quantification of unique DNA sequences from specific hosts. Methods are currently available to detect bacteria from all animals (Universal), humans, dogs, and cows or horses (cow/horse). During source ID monitoring, large volumes of water are collected and concentrated by filtration in order to detect human-specific viruses (entero- and adenoviruses). These viruses are known to be epidemiologically-relevant

indicators of water that has been impacted by human waste[3]. Direct quantification of viruses (instead of bacteria only) will provide important information about health risks.

2.2.3 BMP Implementation

The ultimate goal of the Pathogen Plan is to mitigate bacterial impairment by gaining specific information about sources of fecal bacterial contamination, and implementing BMPs which focus on specific sources. Targeted BMPs are selected based on the dominant controllable sources of fecal contamination determined from source ID monitoring.

2.2.4 Effectiveness Monitoring

After BMPs have been implemented for a sufficient time period, the effectiveness of control programs is assessed. Assessment includes monitoring fecal indicator bacteria levels to determine if BMPs impacted the impairment of the waterbodies.

[3] E.D. Schroeder, W.M. Stallard, D.E. Thompson, F.J. Loge, M.A. Deshussess, H.H.J Cox, May 2002. *A Report Prepared for the Division of Environmental Analysis California Department of Transportation Interagency Agreement.* No. 43A0073.

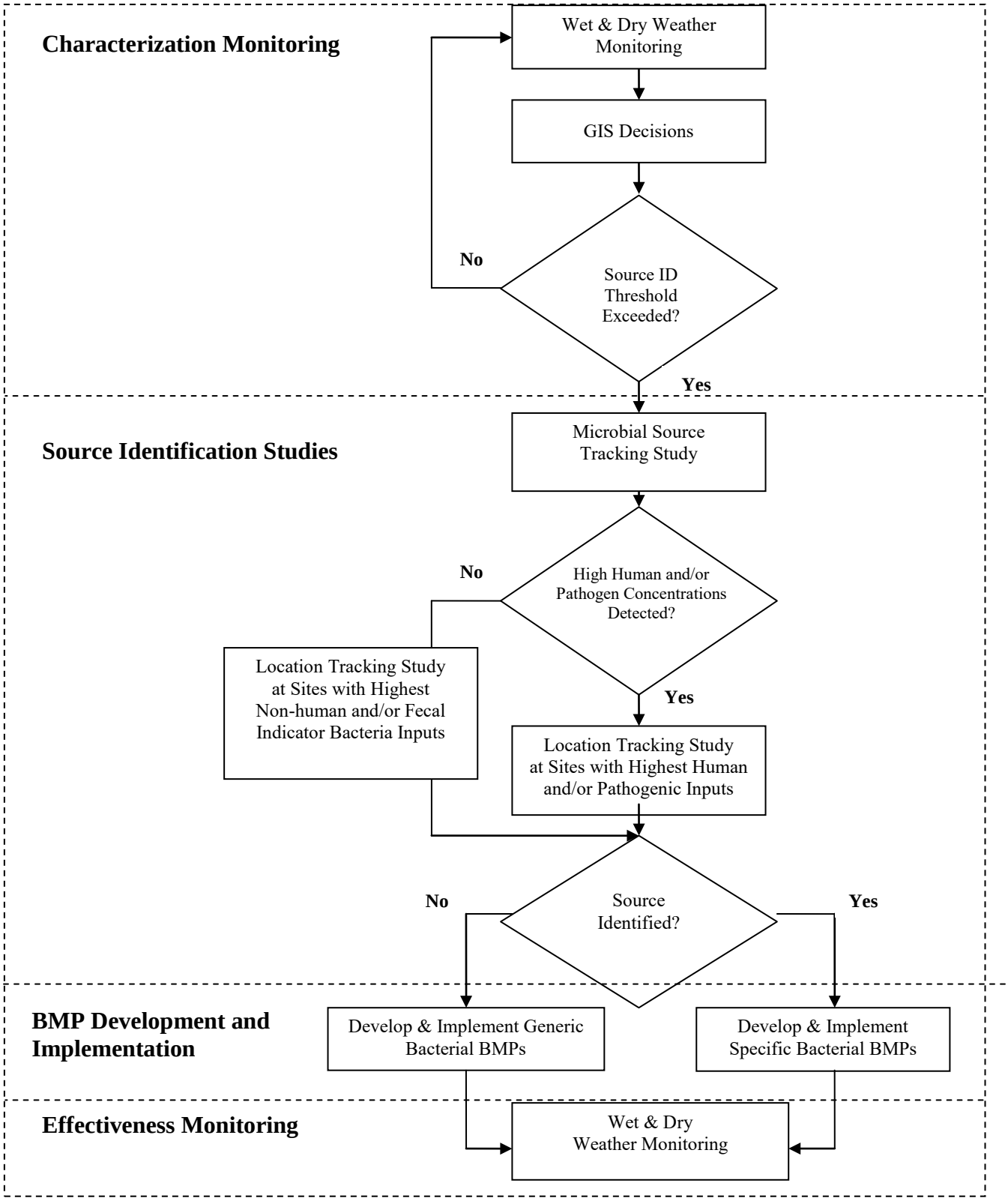

Figure 1. Phase I Pathogen Plan Monitoring Approach

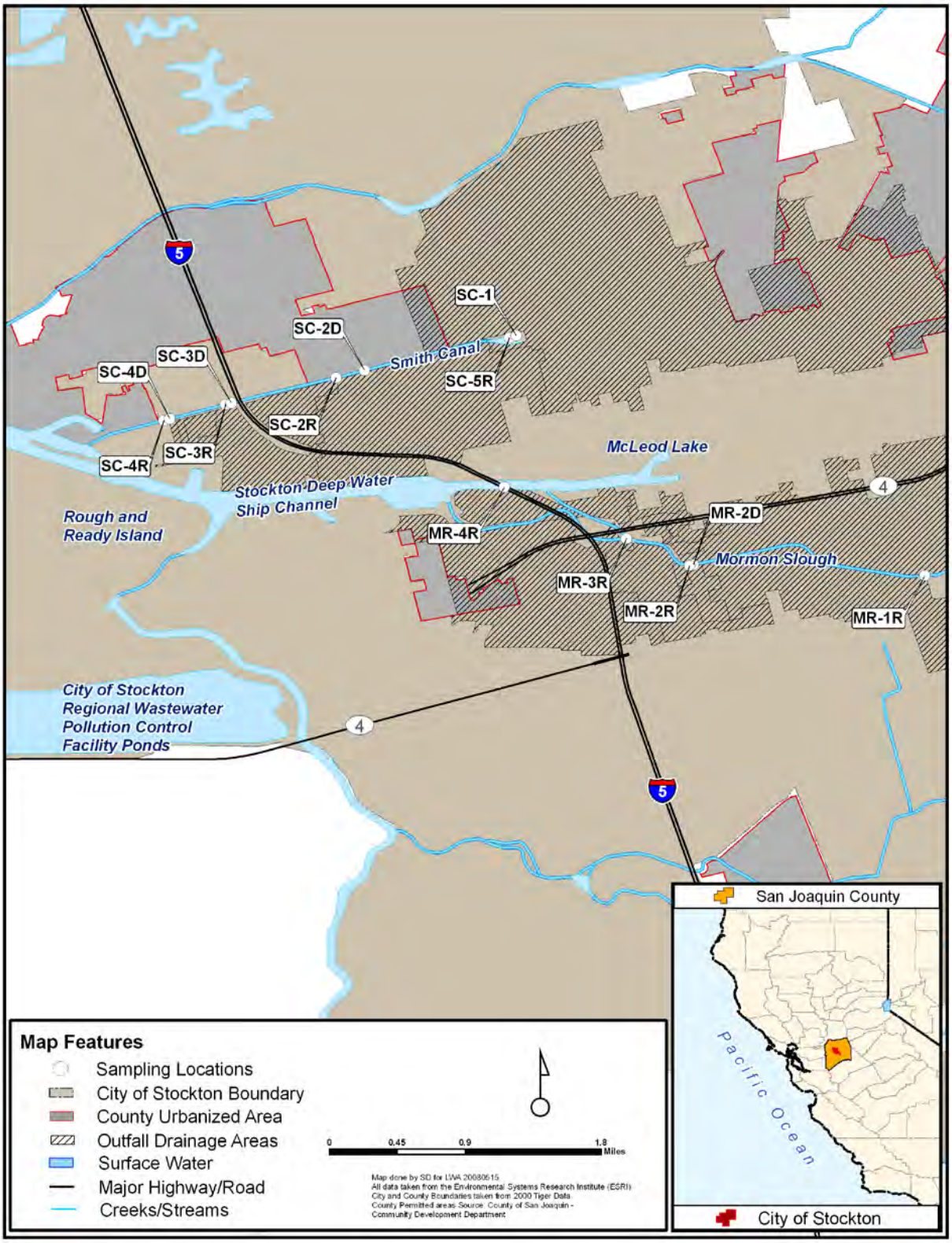

Figure 2. Phase I Monitoring Locations

2.3 Phase I Results

Phase I of the Pathogen Plan has been implemented since 2004. The locations monitored during Phase I are shown in Figure 2. To date, characterization monitoring has been completed, source identification monitoring is near completion, and BMP implementation is ongoing. The results are summarized below.

2.3.1 Characterization Monitoring

Characterization monitoring for Phase I waterbodies, Smith Canal and Mormon Slough, was conducted from December 2004 until December 2005.

Smith Canal characterization monitoring took place at four receiving water and four discharge locations. In the Mormon Slough watershed, four receiving water sites and one discharge site were monitored. For most sites, seven wet weather monitoring events and 14 dry weather events were conducted. The results are shown separately for dry weather and wet weather events for each waterbody in Figures 3 to 6.

Overall, when compared to single sample WQOs (400 MPN/100mL for fecal coliform and 235 MPN/100mL for *E. coli*), the frequency of exceedances was relatively high, especially during wet weather:

Dry Weather

- During dry weather, 91 of 143 total samples (64%) of collected samples were above single sample WQOs
- For Smith Canal, 49 of 83 (59%) were above single sample WQOs
- For Mormon Slough, 42 of 60 (70%) of samples were above single sample WQOs.
- Every dry weather sample collected at the following sites was above WQOs:
    - SC-1
    - MR-1R

Wet Weather

- During wet weather, 76 of 90 total samples (84%) of collected samples were above single sample WQOs
- For Smith Canal, 48 of 54 (89%) were above single sample WQOs
- For Mormon Slough, 28 of 36 (78%) of samples were above single sample WQOs.
- Every wet weather sample collected at the following sites was above WQOs:
    - SC-5R
    - SC-2R
    - SC-4R
    - SC-1
    - SC-2D
    - SC-3D
    - MR-1R
    - MR-2R

To highlight the spatial and temporal patterns of fecal indicator bacteria concentrations in the Smith Canal and Mormon Slough watersheds, indicator data collected during 2004-2005 characterization monitoring were entered into a GIS decision-support tool. The GIS-tool allows the indicator data to be easily compared among sites and types of monitoring events (dry and wet weather). The GIS-tool was used to display the dry and wet weather indicator data collected from Smith Canal. The results are presented in the Figures 3 to 6.

The receiving water indicator data exhibit a pattern where geometric mean concentrations increase as distance from the SJR increased. The concentrations toward the terminal end of the Smith Canal and Mormon Slough are consistently higher than relevant WQO's. At the sites near the SJR, however, indicator concentrations in receiving waters are lower; geometric mean concentrations of fecal coliform at the downstream (near the SJR) sites SC-4R and MR-4R were below the fecal coliform WQO of 200 MPN/100mL during both dry and wet weather. Similarly, *E. coli* geometric mean concentrations were below the WQO of 126 MPN/100 mL for the downstream receiving water sites SC- 3R, SC-4R, and MR-4R during dry weather only.

The patterns in Smith Canal suggest that bacteria sources to the stormwater system are ubiquitous. The statistics for each discharge station are relatively similar, and the geometric mean concentrations observed at all discharge sites were above the relevant WQOs. In Mormon Slough, due to accessibility and insufficient flow issues, only one discharge site was consistently monitored during characterization monitoring, so it is unknown how indicator concentrations varied between discharge sites. However, as noted above, MR-2D fecal coliform concentrations were relatively low and in compliance with geometric mean WQOs, although *E. coli* concentrations at the same site were above geometric mean WQOs. Moreover, based on current knowledge, there are no known stormwater outfalls that flow during dry weather upstream of MR-1R, which exhibited some of the highest bacteria concentrations observed during the characterization study. Together these observations suggest that sources other that stormwater, including homeless encampments, which are common along Mormon Slough, may be the most important. At the same time, however, in the Smith Canal watershed, there are very few (if any) homeless encampments, so different sources of bacteria may be dominant in each watershed. The goal of the source ID monitoring, discussed in the next section, is to differentiate among these different types of sources.

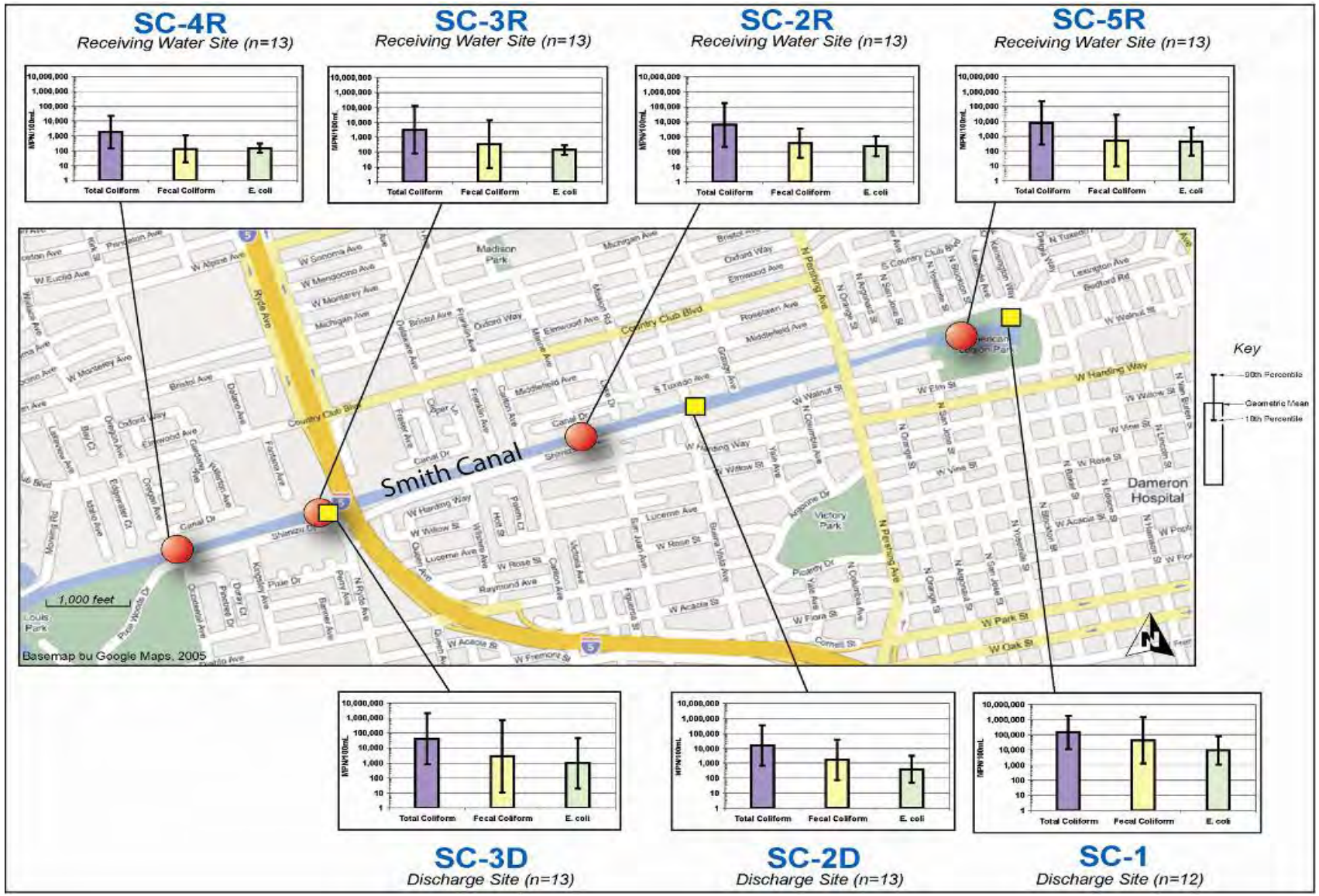

Figure 3. Dry Weather Indicator Bacteria Concentrations Observed during Phase I Characterization Monitoring for Smith Canal

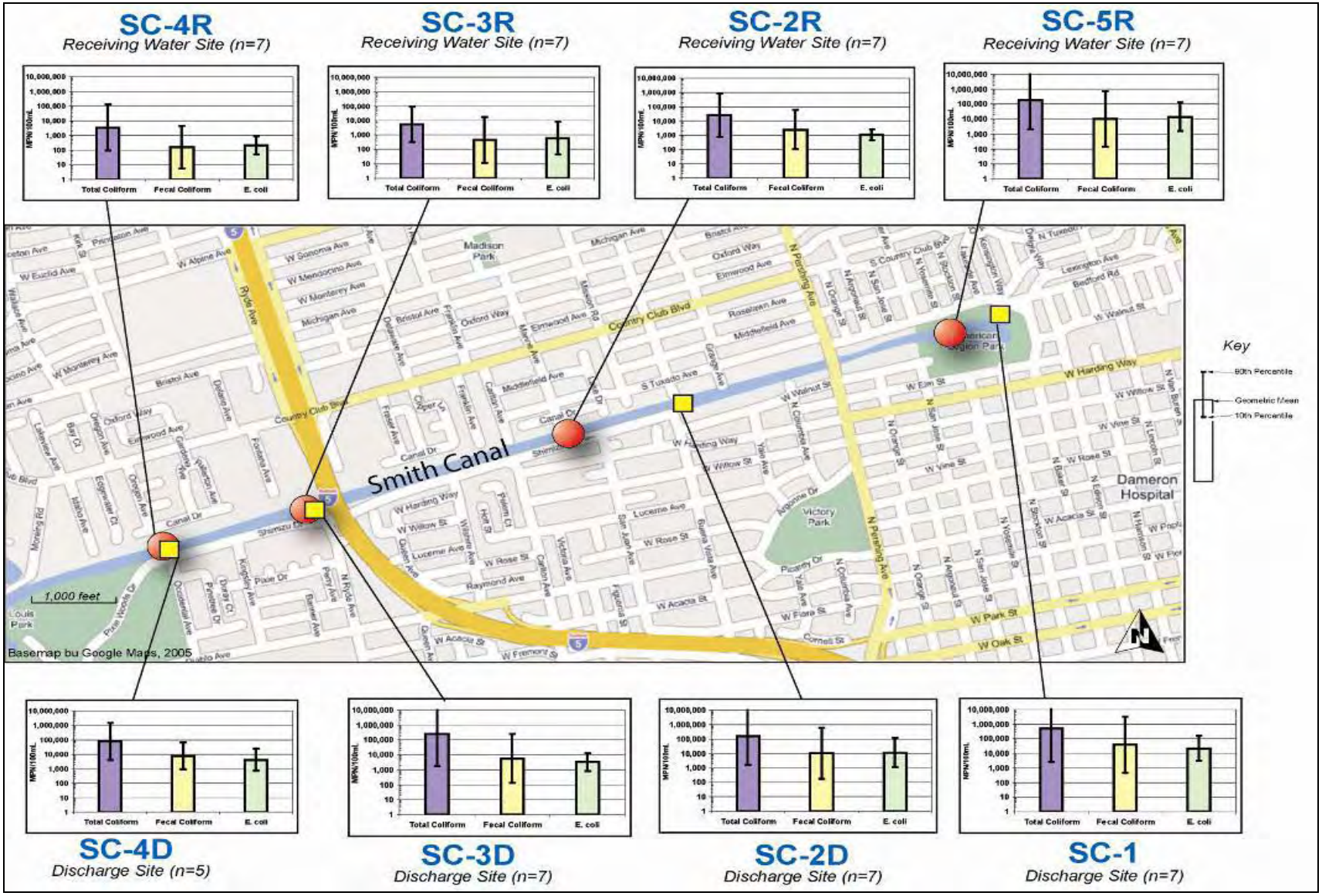

Figure 4. Wet Weather Indicator Bacteria Concentrations Observed during Phase I Characterization Monitoring for Smith Canal

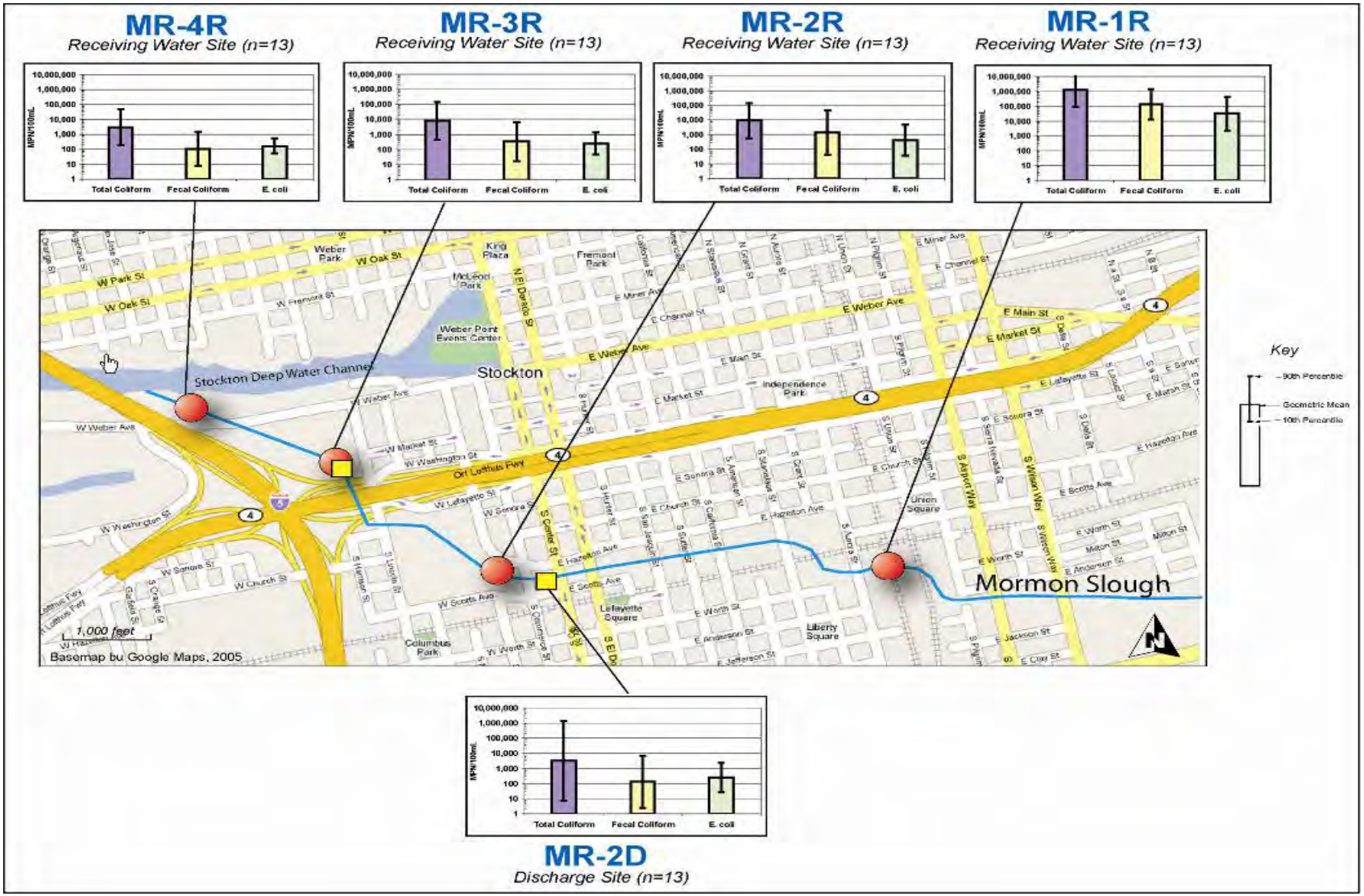

Figure 5. Dry Weather Indicator Bacteria Concentrations Observed during Phase I Characterization Monitoring at Mormon Slough

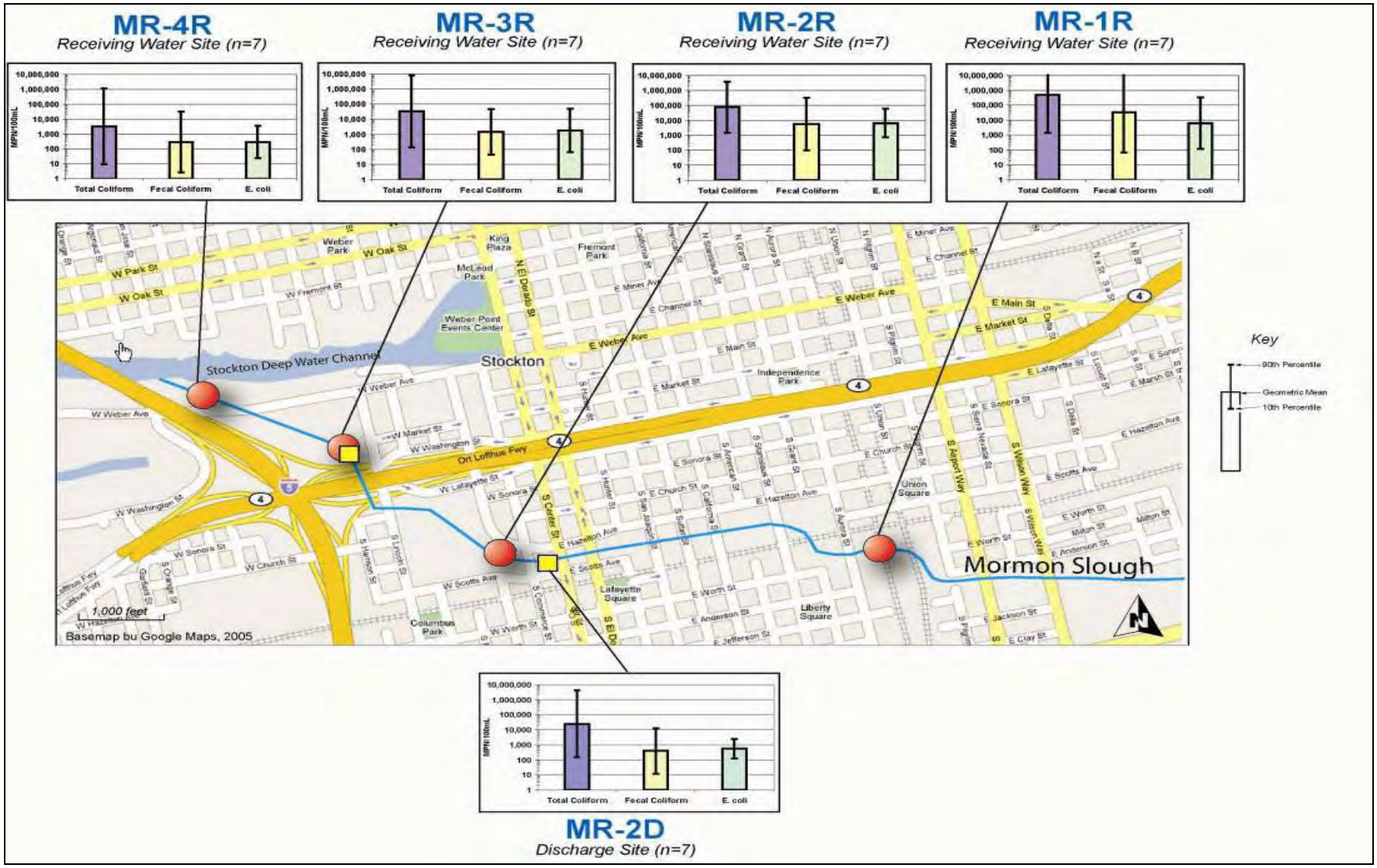

Figure 6. Wet Weather Indicator Bacteria Concentrations Observed during Phase I Characterization Monitoring at Mormon Slough

2.3.2 Source Identification Monitoring

After Phase I characterization monitoring was completed, sites were selected for Source ID studies, and MST monitoring began in January 2006. The site locations selected for Phase I Source ID monitoring were based on both accessibility and patterns observed during characterization monitoring. The source ID monitoring events conducted to date are shown in Table 3. The results of Source ID monitoring, grouped by individual site, are shown in Figure 7.

Table 3. Source identification monitoring events conducted to date under Phase I.

Water Body	Site Name	Site Type	Source Identification Monitoring Events					
			Wet Season Dry Weather (1/25/06)	Wet Season Wet Weather (3/6/06)	Wet Season Wet Weather (4/12/06)	Dry Season Dry Weather (5/10/06)	Dry Season Dry Weather (6/7/06)	Wet Season Dry Weather (1/30/07)
Smith Canal	SC-1	Urban Discharge	✓	✓	✓	✓	✓	✓
	SC-2D		✓	✓	✓	✓	✓	✓
	SC-3D		✓	✓	✓	✓	✓	✓
	SC-2R	Receiving Water	✓	✓	✓	✓	✓	✓
Mormon Slough	MR-2D	Urban Discharge	✓	✓	✓	✓	✓	✓
	MR-1R	Receiving Water	✓	✓	✓	✓	---	✓
	MR-2R		✓	✓	✓	✓	✓	✓
	MR-4R		✓	✓	✓	✓	✓	✓

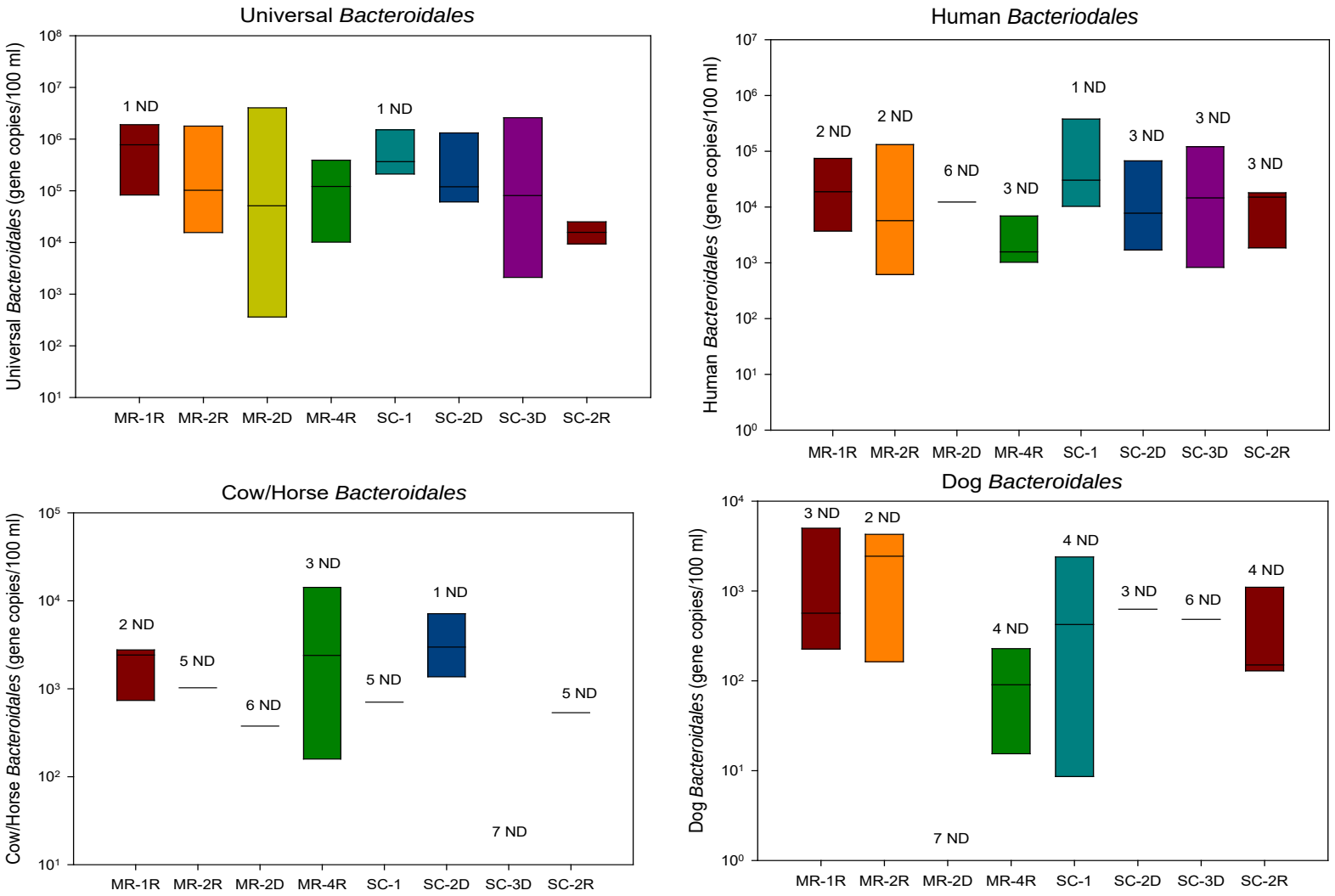

Figure 7. Microbial Source Tracking results at all Phase I sampling events for each species-specific *Bacteroidales* marker. The center-line in each plot indicates the median, the top boundary of each box marks the 75th percentile, and the bottom boundary of each box marks the 25th percentile. The number of samples with *Bacteroidales* markers below the detection limit is indicated by the number of non-detects (ND).

Universal Bacteroidales

Universal *Bacteroidales*, which are representative of inputs by all warm-blooded animals, were detected in nearly every sample. This is typical of studies in other watersheds.

Human Bacteroidales

Human *Bacteroidales* are generally present in mixed-sources of human contamination. A small proportion of fecal samples from "individual humans" may be non-detect, but the human marker is nearly always detected in mixed sources like wastewater influent. Samples from SC-1 (Legion Park pump station) were generally highest of all sites, and human *Bacteroidales* were detected in every sample. An important part of the BMP implementation component of the Pathogen Plan will be to collect information regarding sanitary sewer overflows (SSOs).

Cow/Horse Bacteroidales

Cow/horse *Bacteroidales* are generally present in fecal samples from both cows and horses. It is surprising that cow/horse *Bacteroidales* were regularly detected at SC-2D. An effort will be made to determine possible sources of cows or horse fecal input within the Smith Canal watershed.

Dog Bacteroidales

Dog *Bacteroidales* are generally present in mixed fecal samples from dogs. Some individual fecal samples from dogs will be non-detect, and there is slight overlap with human sequences. In Mormon Slough, dog sequences were detected in every sample from MR-2R, but there were no detections at the Mormon Slough discharge site MR-2D. The most interesting pattern with respect to dog *Bacteroidales* was the relative level of concentrations/detection during the wet weather events; 7 of 9 detected samples in Smith Canal were during wet weather, while 22 out of 23 non-detected samples in Smith Canal occurred during dry weather events, suggesting that dogs may be an important source of bacteria during storm events.

All Bacteroidales markers

It is should be noted that calculated ratios of host-specific: universal *Bacteroidales* (e.g., the ratio of the measured human concentration to the measured universal concentration in a sample) can provide important information regarding the relative impact of sources of space and time. It is important to note that the ratios should not be compared across different hosts. For example, ratios of human:universal are useful for determining the relative impact of human sources at different times and locations. But the value of the human:universal ratio is meaningless when compared to the value of a dog:universal ratio.

Human Viruses

Human virus concentrations (enterovirus and adenovirus) are measured with each collected sample. Virus detections further confirm the presence of human, or high-risk, fecal sources. Since viruses are generally present in such low numbers, 100 liter samples are collected during the MST studies, and subsequently filtered to concentrate samples. Quantification of viruses requires time-consuming assays based on cell culturing and counting of a surrogate bacteriophage (a virus that infects bacteria), which is used to calculate recovery after filtering.

Virus assays for four types of adenovirus and for enterovirus have been performed for Phase I samples. Adenovirus 40/41 was detected in the Mormon Slough receiving water sites MR-1R on two occasions; MR-2R and MR-4R each on one occasion; and in a sample from Smith Canal discharge site SC-3D for one sampling event. Adenovirus 40 and adenovirus 41 (detected together using the adenovirus 40/41 assay) are both enteric viral pathogens, which commonly cause diarrhea in infants and children. No adenovirus A, B, or C, or enterovirus, were detected in any samples. Detection of viruses indicates the risk associated with fecal contamination in a waterbody.

2.3.3 BMP Implementation

Pet Waste Disposal

To date, the Permittees have undertaken many BMP, public education, and outreach efforts while the Pathogen Plan monitoring and source assessment activities have been in progress. In 2004-2005, in cooperation with the City of Stockton's Parks and Recreation Department, pet waste disposal stations were installed in the new parks at Fong, Nelson, Long, Equinoa, Garrigan and Baxter. In 2005-2006, six pet waste disposal stations were also installed at the City's new park in Weston Ranch, which opened in June 2006. There are now pet waste disposal stations in 14 of the City's 61 parks. The City's Stormwater Program intends to continue its partnership with the Parks and Recreation Department to install pet waste stations in new City parks as they are developed. The City also plans to install Pet Waste Signs at approximately 50 existing parks. Additionally, the County of San Joaquin in conjunction with the City of Stockton is planning to install pet waste stations at several marinas within San Joaquin County, pursuant to the Keep the Delta Clean Grant. Even though the marinas are not located in the Phase I area, the placement of the pet waste stations and accompanying Keep the Delta Clean campaign will spread the Phase I message of reducing non point source pollution in rivers, streams, and other Delta waterbodies. The location and number of pet waste stations to be installed as part of the Keep the Delta Clean campaign are:

- Tiki Lagoon Resort and Marina – 4 pet waste stations
- H & H Marina Resort – 3 pet waste stations
- Tower Park Marina – 3 pet waste stations
- Tracy Oasis Marina – 4 pet waste stations
- King Island Resort – 3 pet waste stations
- Turner Cut Resort – 4 pet waste stations
- Paradise Point Marina – 3 pet waste stations
- Wimpy's Marina – 2 pet waste stations

Once installed, these pet waste stations will be managed by the SUA marinas for a 20-year period.

Additional pet waste disposal outreach was accomplished through mailings. In 2004-2005, the bilingual (English/Spanish) "Water Is Vital to Life" mailer was sent to all zip codes in the SUA.

The distribution reached an estimated 115,000 residences to ensure that all Phase I City areas would receive the mailer. The mailer featured various ways to reduce deleterious impacts on local water quality, including the proper cleanup and disposal of domestic pet waste. A similar mailing was conducted in 2006-2007 for utility customers, distributed to approximately half of the estimated residents.

Finally, during 2004-2005 inspections, six commercial kennels within the City were inspected. In addition to the inspection, each facility received a copy of the business-specific fact sheet for kennels. The second and final round of inspections of commercial businesses, including commercial kennels, was conducted in 2006-2007.

3.0 MODIFICATIONS TO THE PATHOGEN PLAN APPROACH

At this point in Pathogen Plan implementation, it is appropriate to evaluate the current approach and determine if modifications would improve its effectiveness. Because the approach is novel and science-based, it is expected that periodic modifications will be necessary to reflect advances in microbial source tracking technology.

The following modifications to the original Pathogen Plan approach are proposed:

- Revised schedule to reflect increased time for BMP implementation,
- Revised monitoring approach, with overlapping characterization and source ID monitoring,
- Modified source ID approach using a new *Bacteroidales* assay that detects live cells,
- Enhanced BMP implementation.

3.1 Revised schedule

The August 2004 version of the Plan included a schedule based on monitoring (characterization, source identification, and BMP effectiveness), but provided limited time for the Permittees to evaluate and implement BMPs. For example, BMP effectiveness monitoring was scheduled to begin immediately after the source identification studies. In review of the Plan, it has become apparent that such a schedule is not reasonable, as it does not provide sufficient time for the Permittees to begin implementation of BMPs and effectively address bacteria impacts.

To increase the likelihood of effective control of bacteria sources, the City and County requested a revision to the originally proposed Pathogen Plan schedule in a letter to the Regional Water Board in November 2006. The proposed revision extends the time period for each phase by five additional years, including three-year periods for the City and County to evaluate and begin implementation of BMPs (Table 4). Based on experiences during Phase I, the revised schedule also provides additional time for source identification monitoring. To allow for efficient characterization of SUA waterbody impairments (and to prevent delays), the revised Pathogen Plan schedule allows for overlap among the three phases. For example, once source identification monitoring is completed for Phase I waterbodies, BMP evaluation/implementation for Phase I will begin along with characterization monitoring for Phase II.

Table 4. Revised Pathogen Plan Implementation Schedule

Implementation Phase	Waterbodies	Start Date	End Date[1]
Phase I	Smith Canal	July 1, 2004	June 30, 2012
	Mormon Slough		
Phase II	Mosher Slough	July 1, 2007	June 30, 2015
	Five Mile Slough		
Phase III	Lower Calaveras River	July 1, 2010	June 30, 2018
	Walker Slough		

[1] Schedule will be reconsidered based on results of BMP implementation and effectiveness assessment

The revised implementation schedule depicting the timing of the components within each monitoring phase is presented in Table 5.

Table 5. Monitoring Implementation Schedule[1]

[1] Schedule will be reconsidered based on results of BMP implementation and effectiveness assessment

3.2 Microbial Source Tracking Methods

The use of *Bacteroidales* genetic markers for MST is a new, rapidly evolving science. Therefore, it is necessary to periodically re-evaluate the MST methods employed by the Pathogen Plan.

3.2.1 New Bacteroidales Approach

Since MST was implemented in Phase I, there have been new advances in the methods available. One critical advance is an analytical method with allows *Bacteroidales* genetic markers from *viable, intact* cells to be distinguished from *extracellular DNA.*

Current MST assays do not directly discriminate between viable and non-viable cells since DNA of both live and dead cells, as well as extracellular DNA, can be amplified. Yet, it is paramount for a meaningful interpretation of source tracking data to distinguish between recent and older contamination events. Although *Bacteroidales* cannot survive for prolonged periods in the aerobic environment, their DNA can persist in the environment after cells have died. It is known that DNA of selected pathogens can persist after cell death for up 3 weeks.

Researchers at UC Davis recently developed an assay to detect sequences only from live cells, based on application of a compound that penetrates dead cell membranes and inhibits polymerase chain reaction (PCR) amplification. Recent data from UC Davis suggested that the assay for viable *Bacteroidales* cells detects fecal contamination that occurred within the previous 28 hours, whereas assays for all *Bacteroidales* could detect extracellular DNA that persists in the environment for as long as 177 hours[4]. Therefore, the detection of viable *Bacteroidales* would provide more useful information for MST.

Both methods provide information about the source of fecal contamination, but will give different information about the concentration of genetic markers present in a waterbody.

- All *Bacteroidales* markers – the MST approach employed to date – quantify genetic material derived from *Bacteroidales* present in the waterbody. This genetic material can come from inside of cells, or from free DNA released by dead cells. Free DNA can persist in the environment for prolonged time periods under certain conditions.
- Live *Bacteroidales* markers quantify genetic material from <u>intact</u> cells, indicating that the fecal pollution is recent. This provides more information about the risk of illness from fecal pollution.

Because the point of conducting source ID monitoring is both to identify sources of fecal contamination (which can be determined with either *Bacteroidales* assay) and to provide an indication of health risk by measuring actual fecal bacteria, it seems prudent to incorporate the detection of viable *Bacteroidales* into the MST approach.

For consistency between Phase I and subsequent phases, the Phase I approach of detecting all *Bacteroidales* markers will be implemented at all source ID sites, and viable markers will be monitored along with all markers at selected sites. One or two sites per waterbody will be selected for analysis of both all and viable *Bacteroidales.*

3.2.2 Selective Virus Sampling

During Phase I, samples for virus detection were collected during all source ID monitoring events and locations. Virus detection relies on a large sample volume (100 liter (L)), which requires extensive and costly filtration steps. Because the focus of the Pathogen Plan source ID

[4] Unpublished results from Wuertz, S. and Bae, S. University of California, Davis. 2008.

monitoring is on *Bacteroidales* marker quantification, and not virus detection, it would make sense to focus resources on *Bacteroidales* detection. Viruses should still be quantified at select sites in all monitored waterbodies, downstream of stormwater discharge, in order to assess pathogen impairment and health risk in the Stockton waterbodies. For each monitored waterbody, one or two receiving sites will be selected for virus detection.

3.3 Enhanced BMP Implementation

Targeted BMPs, based on results from source ID monitoring will be identified and begin implementation in late 2008. A schedule for BMPimplementation is given in Table 6. The BMP implementation schedule includes ongoing BMPs, carried over from the 2004 Pathogen Plan, as well as the targeted BMPs which are outlined below. Source-specific BMPs will address:

Human Fecal Contamination in Smith Canal and Mormon Slough

- Discharge from station SC-1 contributes a consistent level of human-derived fecal bacteria. The City will investigate whether sanitary sewer overflows occur in the area or illicit discharges occur in the storm drain system.

- Houseboats are present on Smith Canal, which could be a source of human fecal bacteria if waste is not properly disposed of. Permittees will provide outreach materials to houseboats that promote proper disposal of waste.

- Sites MR-2R and MR-1R have high concentrations of human *Bacteroidales* markers. Mormon Slough has a substantial homeless population, along with a high concentration of litter and debris. The Permittees will develop and implement a strategy to periodically clear debris in the Mormon Slough, and address sources of human-derived fecal matter.

Dog Fecal Contamination

Dog fecal contamination in Smith Canal and Mormon Slough will be addressed by providing additional public outreach messages through educational materials (e.g., fact sheets) that address proper disposal of pet waste, and signage at City parks. The City will work with the City of Stockton Animal Control and Pet Licensing to provide outreach and literature on the proper disposal of pet waste to pet owners and adoption agencies.

Cow/Horse Fecal Contamination

Smith Canal SC-2D, Mormon Slough MR-1R, and MR-4R discharge sites have a consistent presence of cow/horse markers. Possible sources of cow or horse fecal input to the stormwater drain system will be investigated.

Overall, the BMP implementation efforts conducted during the Pathogen Plan are considered preliminary, and the effectiveness monitoring is simply intended to evaluate whether BMP implementation has possible improved bacteriological water quality. The success of BMP implementation is made difficult due to the complexity in dealing with bacteria sources, the ubiquity of bacterial inputs, and the high variability of stormwater quality.

Table 6. BMP Implementation Schedule

Pathogen Plan BMP	Type of Component[1]	Implementation Schedule[2]																			
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Human-specific BMPs																					
Investigate SSO and Illicit Connections in Smith Canal drainage area	N											X	X								
Provide outreach material to houseboats on Smith Canal on proper disposal of waste	N									X	X										
Investigate clearing of debris from Mormon Slough	N															X					
Dog-specific BMPs																					
Install pet waste stations in new City parks, and marinas (under the Keep the Delta Clean grant)	C																				
Ensure that educational materials address proper disposal of pet waste	C									X				X				X			
Develop outreach materials specifically targeted at pet owners regarding the proper disposal of pet waste	N													X							
Install Pet Waste Signs at approximately 50 existing parks	N																				
Livestock-specific (horse/cow) BMPs																					
Identify possible sources of horse/cow fecal contamination to Smith Canal and Mormon Slough	N														X						

Notes: 1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
3. P = Primary Responsibility; S = Secondary Responsibility
X = Performance Standard will be completed during this quarter
☐ = Performance standard will be completed during this timeframe as specified.
MUD = Municipal Utilities Department

4.0 PATHOGEN PLAN PHASE II MONITORING

Phase II of the Pathogen Plan began implementation in 2007. During the 2007-2012 Permit term, characterization monitoring and source identification monitoring will be conducted for the Phase II waterbodies, Mosher Slough and Five-Mile Slough. Drainage basin land usage for sampling locations on Mosher Slough Five-Mile Slough is shown in Table 7.

Mosher Slough

Mosher Slough is located primarily in the residential north side of Stockton and is impaired from the confluence with the DWSC to 3.5-miles upstream of Interstate 5. Land use in the drainage area is dominantly urbanized residential. Commercial land use, industrial land use, and mixed urban land use make up the remainder of land uses in the Mosher Slough drainage area.

Five-Mile Slough

Five-Mile Slough is an indirect tributary to the Deep Water Ship Channel, flowing into Fourteen-Mile Slough. Five-Mile Slough is a dead-end slough, extending through urban Stockton from its confluence with Fourteen-Mile Slough and ending near Pacific Avenue. The land uses within the drainage area include residential (44.4%), commercial (11.2%), mixed urban (22.3%), and open space (22.1%).

Table 7. Land Usage for Phase II Discharge Site Drainage Basins

Discharge Site	Drainage Basin	Drainage Basin Acres	Land Use	Land Use % of Basin Acreage
MS1-D	La Morada and Mosher Slough P.S.	761	Low-Medium Residential	85%
			High Density Residential	4%
			Commercial	10%
MS2-D	Cherbourg and Mosher Slough P.S.	1186	Low-Medium Residential	73%
			Commercial	19%
			Industrial	7%
MS3-D	Cayuga and Mosher Slough P.S.	739	Low-Medium Residential	69%
			High Density Residential	5%
			Administrative Professional	2%
			Commercial	17%
			Performance Industrial	5%
MS4-D	Don and Mosher Slough P.S.	389	Low-Medium Residential	90%
			High Density Residential	3%
			Commercial	6%
MS14-D	Kelly and Mosher	530	Low-Medium Residential	99%

	Slough P.S.			
FM-1D	Alexandria and Five Mile Slough P.S.	671	Low-Medium Residential	67%
			High Density Residential	1%
			Commercial	1%
			Parks and Recreation	30%
FM-2D	Plymouth Road and Five Mile Slough P.S.	186	Low-Medium Residential	84%
			High Density Residential	2%
			Commercial	13%
FM-3D	Lighthouse and Five Mile Slough P.S.	185	Low-Medium Residential	70%
			High Density Residential	7%
			Administrative Professional	6%
			Commercial	12%

4.1 Characterization Monitoring

Characterization monitoring is underway for Phase II, and is being conducted as described in the 2004 Pathogen Plan. Phase II characterization monitoring locations are presented in Figure 8, and described in Table 8.

Wet weather monitoring is conducted during 5 storms, including first flush when possible. Sites are also monitored twice monthly during dry weather.

Table 8. Phase II Monitoring Sites

Waterbody and Monitoring Location	Bacteria Monitoring Sites	
	Discharge Site ID	Receiving Water Site ID
Mosher Slough		
Morada Basin	MS1-D	MS5-R
Cherbourg Way	MS2-D	MS2-R
Hudson Dr., by Railroad tracks	MS3-D	MS3-R
Don Ave.	MS4-D	MS4-R
Kelly Drive P.S. and Mariners Drive by Interstate 5	MS-14 (D)	MS14-R
Five-Mile Slough		
Swenson Park, at Alexandria Pl.	FM-1D	FM-1R
Plymouth Rd.	FM-2D	FM-2R
Lighthouse Dr.	FM-3D	FM-3R
Upstream locations		
Mosher Slough at Quashnick (immediately upstream of urban area)		MS-14RU
Mosher Slough alternate upstream receiving location, at 8-mile Road bridge		MS-1R

Calaveras River at Solari Ranch Road (old Calaveras River channel)		CR-46RU
Calaveras River at South Main Street (Stockton Diverting Channel)		CR-1R
Duck Creek by Railroad Tracks (near Stagecoach Road)		DC-65RU

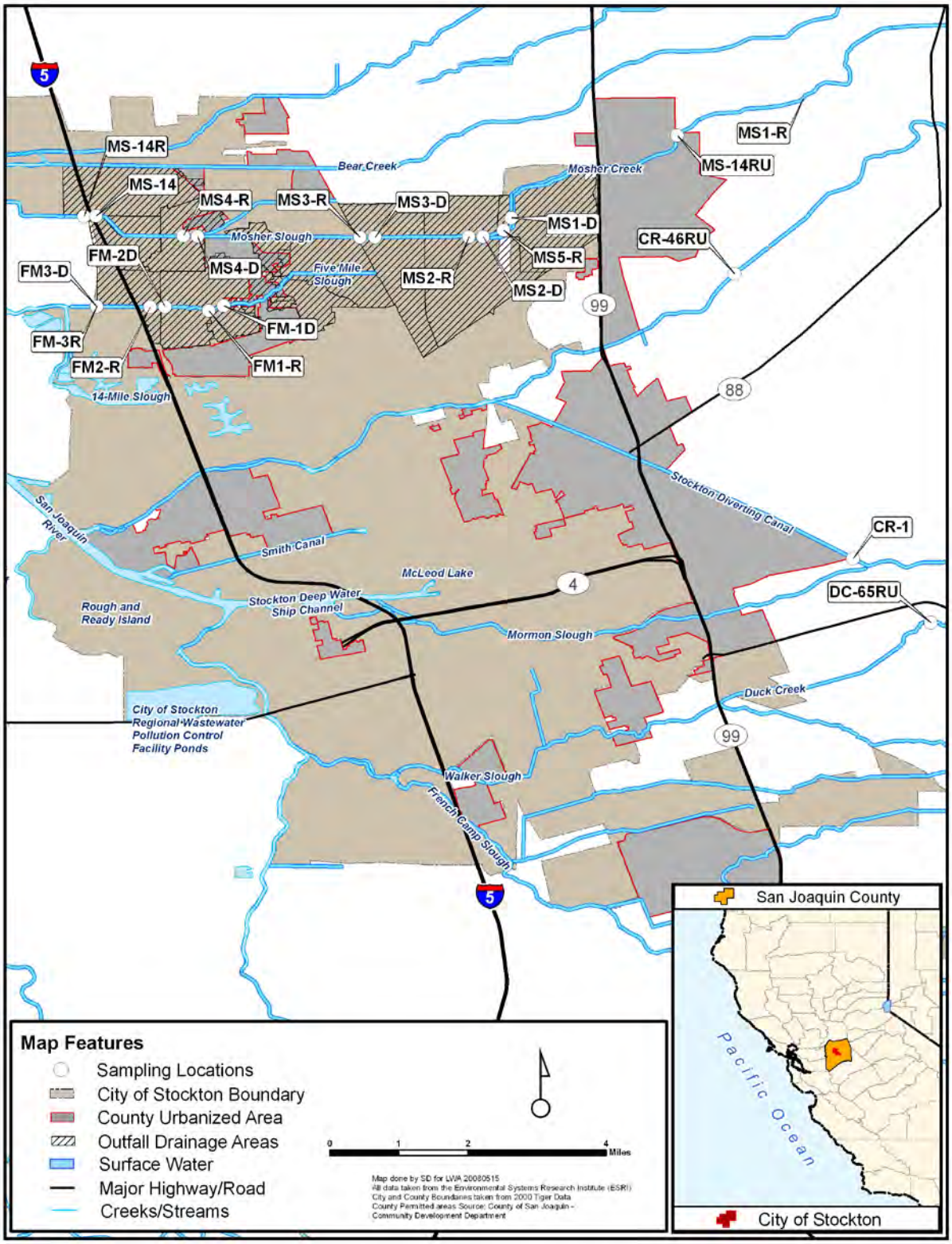

Figure 8. Phase II Monitoring Locations.

4.2 Source Identification Monitoring

Source identification monitoring locations will be selected based on results of characterization monitoring. Monitoring will focus on eight locations with particularly high and/or consistent concentrations of fecal indicator bacteria. As discussed previously, the source ID approach for Phase II will incorporate the detection species-specific sequences from live *Bacteroidales* cells along with the Phase I approach of monitoring all *Bacteroidales* cells. Selected sites and sampling events are monitored for both viable *Bacteroidales* and all *Bacteroidales* DNA. To be consistent when comparing results between Phase I and Phase II, the Phase I approach of monitoring all *Bacteroidales* will continue to be implemented at all sampling locations. An example source ID monitoring approach for Phase II is shown in Table 7; monitoring combinations of virus (V), all *Bacteroidales* (AB), or viable *Bacteroidales* (VB) are given for example only, as the monitoring approach will depend on resources available during each sampling event for the intensive filtration required for virus sampling. Fecal indicator bacteria are also be monitored during all source ID monitoring events at all source ID locations.

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Table 9. Modified Source Identification Monitoring Approach

Sample Site	Sampling Frequency								
	Wet Season Dry Weather Winter/Spring 2009	Wet Season Storm Event Winter/Spring 2009	Wet Season Storm Event Spring 2009/Fall 2009	Wet Season Dry Weather Spring 2009	Dry Season Dry Weather Summer 2009	Wet Season Storm Event Winter 2009/2010	Wet Season Storm Event Winter 2009/2010	Wet Season Storm Event Spring 2010/Fall 2010	Wet Season Storm Event Fall/Winter 2010
MS-2D	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB
MS-3D	AB, VB	AB	AB	AB	AB	AB, VB	AB	AB	AB
MS-4D	AB, VB	AB	AB	AB	AB	AB, VB	AB	AB	AB
MS-14	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB
MS-14RU	AB, VB	AB	AB	AB	AB	AB, VB	AB	AB	AB
FM-1D	AB, VB	AB	AB	AB	AB	AB, VB	AB	AB	AB
FM-2R	AB, VB	AB	AB	AB	AB	AB, VB	AB	AB	AB
FM-2D	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB	V, VB, AB

V=Virus
AB=All *Bacteroidales*
VB=Viable *Bacteroidales*

APRIL 15, 2009

City of Stockton
County of San Joaquin

Mercury Plan – Revised April 2009

prepared by

LARRY WALKER ASSOCIATES

LARRY WALKER ASSOCIATES

Table of Contents

1.0 INTRODUCTION 1
1.1 Mercury in the Environment 1
1.2 Regulatory Background 4
1.3 Current Conditions of Mercury in Delta Stormwater 6
1.4 Related Mercury Reduction Efforts 9
2.0 THE MERCURY PLAN 10
2.1 Public Outreach and Education 11
2.2 Municipal Operations 13
2.3 Sediment and Erosion Control 13
2.4 Methylmercury Characterization Monitoring 14
2.5 Reporting 18
2.6 Implementation Schedule 19

List of Tables and Figures

Table 1. Common mercury-containing products for consumer and commercial uses 4

Table 2. Mercury (total and dissolved) measured in Stockton urban runoff and receiving water, 2002-2006. 6

Table 3. Average methylmercury concentrations in Stockton pump outfalls sampled during the 2003/2004 wet season. 7

Table 4. Mercury (total and methyl) measured in Sacramento urban runoff, 2002-2007 7

Table 5. Mercury Plan Monitoring Locations..... 18

Figure 1. The Aquatic Mercury Cycle 2

Figure 2. Contributions by Source Categories to Methylmercury Loads in the Delta 9

Figure 3. The Mercury Plan Approach 11

Figure 4. Proposed Monitoring Locations 15

1.0 INTRODUCTION

The Sacramento-San Joaquin Delta Estuary (the Delta) is on the Clean Water Act Section 303(d) List of Impaired Water Bodies because of elevated levels of methylmercury in fish. To address mercury impairment in the Delta, Provision 28.d of the City of Stockton (City) and County of San Joaquin (County) (Permittees) Municipal Stormwater National Pollutant Discharge Elimination Systems (NPDES) Permit (Order No. R5-2007-0173) requires the Permittees to develop and implement a mercury plan that identifies the Permittees' strategy to reduce methylmercury exposure to human and wildlife in the Delta and to prevent the creation or maintenance of toxic hot spots.

This document outlines the Permittees' mercury pollution prevention strategy. The mercury pollution prevention program (Mercury Plan) presented here provides background information on mercury pollution in Delta waters, describes related mercury reduction efforts, identifies possible sources of mercury to urban runoff, and provides strategies to address the controllable sources of mercury pollution.

1.1 Mercury in the Environment

Mercury is primarily a concern because of the highly toxic and bioaccumulative nature of methylmercury. The environmental processes that affect the transformation of mercury between its ionic and methylated forms are discussed below.

1.1.1 Mercury Cycle

In the environment, mercury naturally cycles among its elemental, ionic, and methylated forms (Figure 1). Once mercury is released in the environment, local environmental conditions determine its transformations. Bacteria that process sulfate in the environment can take up mercury in its inorganic form, and through metabolic processes convert it to methylmercury. Factors such as dissolved oxygen, pH, nutrient, sulfide and sulfate concentrations affect methylation rates (USEPA, 1997). Concentrations of methylmercury increase in the food web, from primary producers to higher trophic level fish to wildlife and humans, thereby causing a greater risk to consumers at the highest trophic level. Methylmercury is a neurotoxin that affects the brain and central nervous system, with long term exposure leading to loss of physical coordination and mental deficiencies. Developing fetuses and young children are most susceptible to its toxic effects.

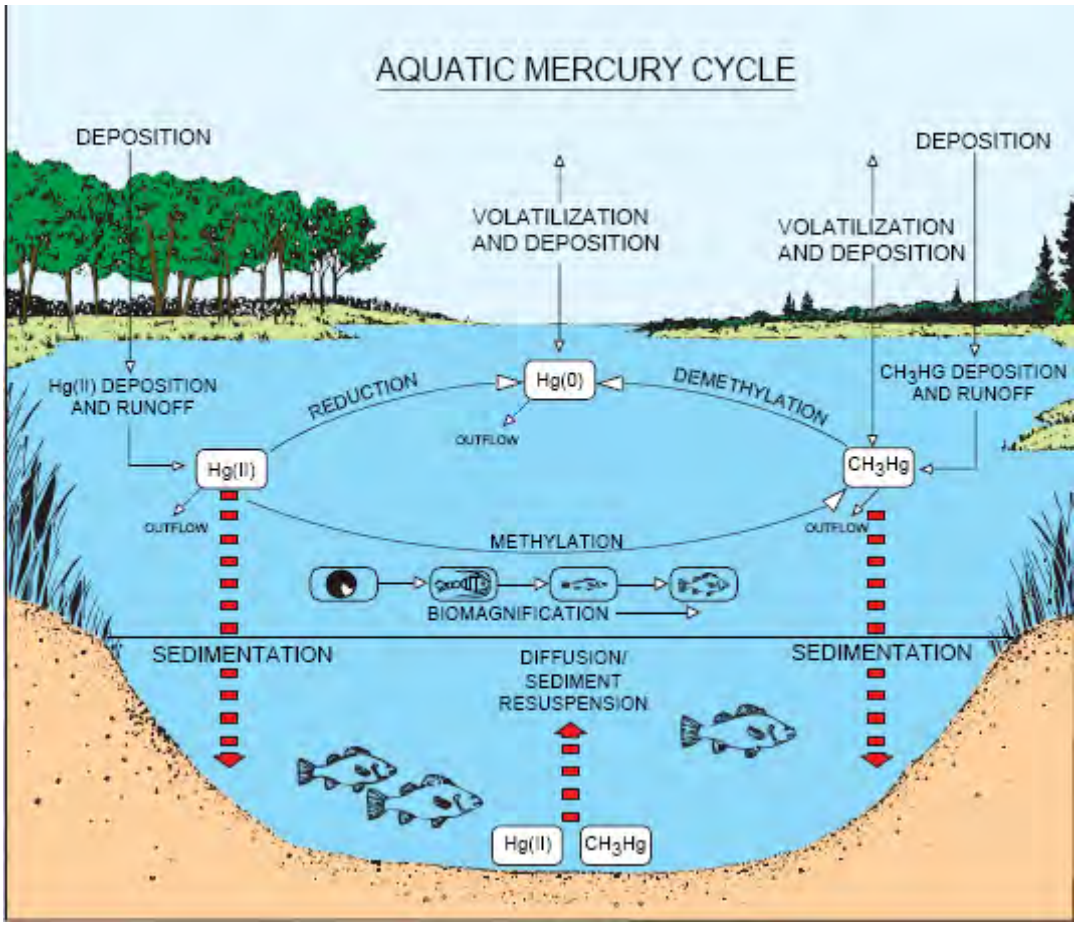

Figure 1. The Aquatic Mercury Cycle[1]

In the past decade, studies have focused on the bioaccumulative effects of mercury concentration in fish in Delta waterways. A 1998 study examined fish tissue concentrations of mercury in the Delta region, identifying elevated tissue mercury concentrations in sport fish along with regional variation in mercury concentrations -- with higher concentrations in tributaries (including the Feather, Sacramento, American, and San Joaquin Rivers) and lower concentrations in the Central Delta (Davis et al., 2000). A recently published study systematically evaluated mercury concentrations in Delta sport fish, to determine baseline levels of mercury in fish and evaluate spatial patterns of mercury accumulation (Davis et al., 2008). The report underscored the complexity of mercury dynamics in the Delta, reporting variations in methylmercury levels among fish species, along with correlations between fish tissue and water column methylmercury but no relationship between fish tissue and sediment methylmercury.

[1] From: Mercury Pollution: Integration and Synthesis. Copyright Lewis Publishers, an imprint of CRC Press., as shown in http://wi.water.usgs.gov/pubs/FS-216-95/mercury.pg3.pdf

1.1.2 Sources of Mercury

Mercury enters the environment through natural sources, such as the natural breakdown of minerals in rocks and soils, as well as human activities such as mining, burning fossil fuels, and consumer product use. Mercury from these sources enters waterways through atmospheric deposition and direct contamination of water entering waterways.

Atmospheric Deposition

Vapor released from mercury sources is transported in the atmosphere and deposited on land and water, either directly or through precipitation. The U.S. EPA estimates that combustion of mercury-containing material accounts for 86% of atmospheric mercury emissions in the U.S., with coal-fired electric utility boilers, municipal waste combustion, and coal and oil-fired commercial/industrial boilers being the primary contributors (USEPA, 2001). Atmospheric deposition is the primary source of mercury in most locations, and can contaminate even pristine watersheds (Fitzgerald et al., 1998). A study by the San Francisco Estuary Institute (SFEI) found total mercury in ambient air samples in the San Francisco Bay Area ranged from 1.5 to 4.2 nanograms per cubic meter ($ng/m^{3)}$, with an average concentration of 2.1 ng/m^3, which is twice the global background concentration (SFEI, 2001). They concluded that direct atmospheric deposition contributed 27 kilograms (kg) of total mercury to the San Francisco Bay Estuary, with direct wet deposition contributing 18% of the total atmospheric deposition.

Sediment-Associated Mercury

In areas where gold and mercury have been mined extensively, watersheds contain elevated mercury levels. Sediment-associated elemental mercury from historic mining activity is likely the most prevalent mercury source within the Central Valley (Domagalski, 2001).

Mercury-Containing Products

Mercury has useful properties which have been applied in many products and applications historically, and is still widely used (Table 1). Thermometers, barometers and other scientific instruments can contain mercury. Its electrical conductivity has been utilized in silent, position-dependent switches. Mercury vapor is used in streetlights, fluorescent light bulbs, computer equipment and advertising signs. Its ability to easily form amalgams with other metals such as gold, silver, zinc and cadmium led to use of mercury in dental fillings and dry cell batteries. Mercury can form compounds with other elements, to create cleaning chemicals, disinfectants, and paints. Improper disposal of these chemicals can contribute mercury directly to wastewater, stormwater, and the atmosphere.

Table 1. Common mercury-containing products for consumer and commercial uses

Product Type	Mercury-containing Products
Consumer Products	
Home items	Airflow/thermostat controls, antique instruments (barometers, mirrors, organs), appliances, button cell batteries, clothes irons, light switches, latex paint, tilt switches, fluorescent light bulbs
Medical Pharmaceutical Products	Thimerasol (preservative in vaccines, antibiotics), contact lens solution, dental amalgam, thermometers, ear and eye drops, skin cream
Automotive parts	Switches in pre-2003 cars – light switches, heated car rear windows, acceleration sensors, school bus braking systems; switches in new cars' navigation screens and HID headlights
Commercial Products	
Medical Products	Antibiotics, batteries, alarms, blood pressure cuffs, hearing aids, pacemakers, scales, ultrasound, tubes, vaccines
Electrical Products	Tilt switches, security systems, pressure controls, silent light switches, temperature control, thermometers, laptop computers, computer monitors
Manufacturing Products	Laboratory reagents (i.e., Mercury chloride, Mercury iodide, Mercury nitrate, Hitachi Chem Analyzer reagent, Golgi;s, Takata's reagent)

1.2 Regulatory Background

The Delta is impaired due to elevated levels of methylmercury in fish and is on the Clean Water Act 303(d) list for mercury. The State Board has also designated the Delta as a toxic hot spot under the Bay Protection and Toxic Hot Spot Cleanup Program.

1.2.1 Permit Requirements

The Municipal Stormwater NPDES Permit (Order No. R5-2007-0173), Provision 28.d, requires the Permittees to develop a mercury pollution prevention plan, and identifies the following key components which must be addressed:

- Reduction of mercury from controllable sources in stormwater, including the identification of mercury-containing products used by the Permittees and a schedule for their timely control;
- Study feasibility and benefits to local stormwater quality of residential and commercial programs for diverting mercury-containing waste products (potentially including thermometers and gauges, batteries, fluorescent and other lamps, switches, relays, sensors, and thermostats) from the waste stream;
- Coordination with Central Valley Regional Water Quality Control Board (Regional Water Board) staff to assess the contribution of air pollution sources to mercury in stormwater;

- Public education, outreach and participation program designed to reach residential, commercial and industrial users or sources of mercury-containing products or emissions;
- Participation with other organizations to develop programs to reduce or eliminate sources of mercury within the Stockton Urbanized Area (SUA); and
- Development and adoption of policies, procedures and/or ordinances to implement the Mercury Plan.

1.2.2 Delta Mercury TMDL

The Regional Water Board has proposed an amendment to the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins to address the regulation of methylmercury and total mercury in the Delta.

The draft Sacramento-San Joaquin Delta Estuary TMDL for Methylmercury (TMDL)[2] aims to reduce methylmercury concentrations in fish by implementing wasteload allocations for total and methylmercury. The proposed fish tissue objectives are as follows:

Matrix	MeHg Objective
Trophic level 3 fish tissue (150-500 mm length)	0.08 mg MeHg/kg
Trophic level 4 fish tissue (150-500 mm length)	0.24 mg MeHg/kg
Small fish (<50 mm length)	0.03 mg MeHg/kg

The draft TMDL specifies methylmercury wasteload allocations which apply to runoff from urban areas within Municipal Separate Storm Sewer System (MS4) service areas within the Delta and Yolo Bypass.

The Permittees expect to work with Regional Water Board staff to support the methylmercury and total mercury reduction efforts identified in the final approved Mercury TMDL.

1.2.3 Additional Legislative and Regulatory Efforts

Additional legislative and regulatory efforts to reduce mercury loading to the Delta and San Francisco Bay and to control mercury-containing products include the following:

- Bay Protection and Toxic Cleanup Program and Consolidated Toxic Hot Spots Cleanup Plan, which identified mercury in the Delta as a toxic hot spot;
- Mercury control program for San Francisco Bay, which assigned mercury reductions to Central Valley outflows to the Bay to address the Bay's mercury impairment;
- California Mercury Reduction Act of 2001 (Senate Bill 633), which limits or prohibits the sale and/or use of several types of mercury-containing products in California;

[2] Wood, M., P. Morris, J. Cooke, S. Louie and D. Bosworth. 2008a. Amendments to The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methylmercury and Total Mercury in the Sacramento-San Joaquin Delta Estuary. Central Valley Regional Water Quality Control Board, Draft Staff Report for Public Review. Sacramento. February. Available at: http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hg/staff_report_feb08/bpa_full_rpt.pdf

- California Department of Toxic Substances Control's 2002 Universal Waste Rule (UWR), which established special management standards for three types of hazardous waste called "universal wastes" (batteries [except automotive lead acid type]; thermostats containing mercury, and lamps such as fluorescent tubes and mercury vapor lamps); and
- Energy Independence and Security Act of 2007, which requires the most common screw base incandescent household bulbs to be phased out in the United States over the next six years.

These legislative and regulatory efforts will be tracked by the Permittees to provide context and benefit their local mercury control program. In particular, the UWR and Mercury Reduction Act will serve as guidelines for promoting proper use and handling of mercury-containing products by the Permittees.

1.3 Current Conditions of Mercury in Delta Stormwater

Total mercury and methylmercury have been monitored in Stockton and Sacramento urban runoff and receiving waters. The results of those monitoring efforts are presented below.

1.3.1 Mercury in Stockton Urban Runoff and Receiving Waters

Dissolved and total mercury were monitored in Stockton urban runoff and receiving water sites in the Calaveras River, Smith Canal, Duck Creek, and Mormon Slough from 2002-2006 (Table 2). The California Toxics Rule (CTR) specifies a criterion for total recoverable mercury for freshwater sources of drinking water. The CTR does not specify duration or frequency, but the Regional Water Board has previously employed a 30-day averaging period with an allowable exceedance frequency of once every three years. Mercury in urban runoff can be compared to CTR standards, but there may be too little urban runoff and receiving water concentration data to evaluate compliance with the CTR.

Total mercury in urban runoff was measured in exceedance of the 50 nanograms per liter (ng/l) CTR standard on three occasions (once in each waterbody except Mosher Slough). Total mercury in receiving water consistently exceeded the 50 ng/l standard in all waterbodies except Mosher Slough. In general, receiving water had approximately an order of magnitude higher concentrations of both total and dissolved mercury compared to urban runoff. However, far fewer receiving water samples were collected than urban runoff samples – only one to three samples were collected at each of the monitoring locations, so any comparisons to urban runoff concentrations could be biased by aberrantly high or low concentrations.

Table 2. Mercury (total and dissolved) measured in Stockton urban runoff and receiving water, 2002-2006.

Constituent	Location	Urban Runoff				Receiving Water			
		n	Mean	Min	Max	n	Mean	Min	Max
Total Mercury (ng/l)	All Sites	52	34	1.4	540	7	627	32	1,400
	Calaveras River CR-46	13	41	2.5	300	2	737	74	1,400
	Duck Creek DC-65	13	56	1.4	540	1	290		
	Mosher Slough	13	17	1.6	32	1	32		

	MS-14								
	Smith Canal at Legion Park SC-1	13	21	2.3	87	3	863	410	1200
Dissolved Mercury (ng/l)	All Sites	25	5.3	1.2	17	2	455	340	570
	Calaveras River CR-46	6	7.1	1.2	12	1	570		
	Duck Creek DC-65	6	3.6	1.6	7				
	Mosher Slough MS-14	7	4.3	2	8	1	340		
	Smith Canal at Legion Park SC-1	6	6.6	2.8	17				

1.3.2 Methylmercury in Stockton Urban Runoff

Urban runoff from four Stockton pump station outfalls sampled during the 2003/2004 wet season contained methylmercury levels ranging from 0.084 to 0.533 ng/l. Average values are presented in Table 3.

Table 3. Average methylmercury concentrations in Stockton pump outfalls sampled during the 2003/2004 wet season.

Pump Outfall	*n* samples	Average methylmercury concentration (ng/l)[a]
Calaveras River Pump Station CR-46	5	0.167
Duck Creek Pump Station DC-65	1	0.103
Mosher Slough Pump Station MS-14	4	0.125
Smith Canal Pump Station SC-57	4	0.263

a. Data Source: 2008 Draft Delta Mercury TMDL Staff Report

1.3.3 Total and Methylmercury in Sacramento Urban Runoff

The City of Sacramento has measured total mercury and methylmercury in its urban watersheds since 2002 (Table 4)**.** The average total mercury concentrations measured at Strong Ranch Slough exceeded the water quality objective of 50 ng/l total mercury in stormwater. However, as discussed previously, the CTR might be difficult to assess for urban discharge

Table 4. Mercury (total and methyl) measured in Sacramento urban runoff, 2002-2007[3]

Parameter	Strong Ranch Slough (a)	Sump 111 (b)	Sump 104 (c)

[3] SSQP. 2002/2003 – 2007/2008 Joint Program Annual Report. Prepared by: County of Sacramento and the Cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova.

	n det (d)	Mean (e)	Min det (f)	Max det (g)	n det (d)	Mean (e)	Min det (f)	Max det (g)	n det (d)	mean (e)	Min det (f)	Max det (g)
Dissolved Mercury (ng/L)	17	4.32	1.7	10.2	19	3.8	1.1	9	19	3	0.6.	7
Total Mercury (n/L)	18	58.8	3.5	609	19	22.7	2.9	71	19	14.5	2	41
Methylmercury (ng/L)	18	0.48	0.07	2	18	0.3	0.09	0.9	18	0.2	0.05	0.6

(a) Strong Ranch Slough - drains a 5,162 acre mixed-use area of the County of Sacramento
(b) Sump 111 – drains an industrialized 420 acre area of the City of Sacramento
(c) Sump 104 - drains a 2,220 acre area of mixed residential/commercial land use in the City of Sacramento
(d) Number of samples in which analyte was detected
(e) Arithmetic mean value; "ID" indicates insufficient data detected to calculate value
(f) Minimum value reported; "ND" if no detected values
(g) Maximum value reported; "ND" if no detected values

1.3.4 Contribution of Stormwater to Methylmercury Load

The draft Mercury TMDL presents the source contributions for methylmercury loads in the Sacramento-San Joaquin Delta Estuary. The various mercury source contributions are presented in Figure 2. Stormwater discharges within the Delta are estimated to contribute 0.37% of the total methylmercury load to the Delta. It should be noted that the majority of urban area managed by the Sacramento and Stockton MS4s is immediately outside the legal Delta boundary.

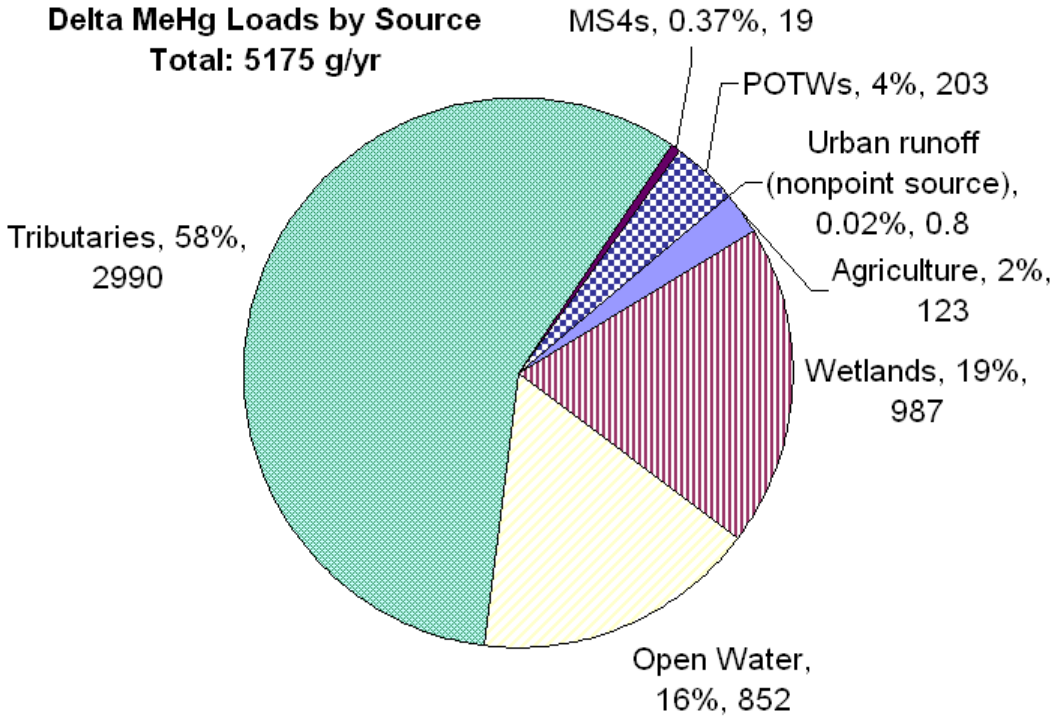

Figure 2. Contributions by Source Categories to Methylmercury Loads in the Delta (presented in the February 2008 Delta Methylmercury and Total Mercury Basin Plan Amendment Draft Staff Report)

1.4 Related Mercury Reduction Efforts

1.4.1 Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)

The SCVURPPP developed a mercury pollution prevention plan per requirements in its 2001 NPDES permit. They developed guidelines on mercury containing products for use by the Santa Clara permit agencies; prepared a survey of mercury containing product use, handling, and disposal; developed a model policy on eliminating the use of mercury containing products by permittees; and conducted a public outreach media campaign, coordinating with household hazardous waste collection centers on proper disposal of mercury containing products. The efforts outlined in their mercury pollution prevention plan served as a model for the Sacramento Stormwater Management Program mercury plan.

1.4.2 Sacramento Stormwater Management Program (SSMP)

The SSMP was required in its 2002 NPDES permit to implement mercury pollution prevention strategies in the Sacramento area. The Sacramento Program has conducted monitoring for total mercury and methylmercury in Sacramento waterways since 2002. Additionally, they executed several mercury source reduction activities, including industrial inspections to promote safe handling and disposal of mercury containing devices, household hazardous waste collection

program support, and public outreach efforts. They also conducted a survey of municipal use of mercury containing products, and reported the results[4]. The survey results reported what mercury-containing products are used, how many products are disposed of, and whether the disposal methods are in conformance with the UWR. Information on UWR requirements was transmitted to all surveyed personnel. When the survey was initially conducted in 2004, many permittee departments were in conformance with the UWR, while some departments were unaware of UWR requirements, and altered their existing procedures to come into conformance. The primary value of survey results was to ensure that the largest quantities of breakable mercury-containing products are disposed of as universal waste rather than as solid waste, where breakage could contribute mercury to urban runoff. The Sacramento survey concluded that the largest volume of breakable mercury-containing products was fluorescent lamps, which were properly disposed of as universal/hazardous waste in almost all cases.

1.4.3 Delta Mercury Tributaries Council (DMTC)

The DTMC is a stakeholder group of representatives of various federal, state and county agencies, academic institutions, consulting firms and citizen stakeholders. It was formed in 1999, and meets quarterly to evaluate the status of knowledge of mercury within the Sacramento-San Joaquin and San Francisco Bay Area. Participants report regularly on mercury monitoring, dispersion, methylation, accumulation in biota and its potential effects on wildlife and humans; discuss projects intended to attain safe mercury levels in waterways; and make recommendations for regulatory agencies in support of those reduction efforts.

2.0 THE MERCURY PLAN

The goal of the Delta-wide mercury reduction effort is to minimize methylmercury exposure to humans and wildlife in the Delta and to prevent the creation or maintenance of toxic hot spots. The Mercury Plan serves as a component of this reduction strategy, with the objective of reducing total and methylmercury conveyed to Delta waterways through stormwater from the SUA. Stormwater conveys mercury, by transporting mercury from atmospheric deposition and mercury resuspended from sediments. Stormwater can also contain mercury from improperly disposed chemicals and mercury-containing devices. The Mercury Plan focuses on addressing controllable sources of mercury to stormwater. The Mercury Plan aims to reduce mercury discharged to the Delta by reducing the input of mercury-containing waste to stormwater discharge, and reducing mercury conveyance through sediment erosion control.

The Mercury Plan includes the following components:

- Public outreach to promote proper use and disposal of products containing mercury, including coordination with household hazardous waste facilities and commercial and industrial outreach;
- Assessment and reduction of municipal use of mercury-containing products;
- Support of sediment and erosion control efforts; and
- Characterization of total mercury and methylmercury in SUA waterbodies and stormwater discharges.

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[4] SSQP. 2005. Municipal Mercury Survey Technical Memorandum. Prepared by Archibald & Wallberg Consultants for the Sacramento Stormwater Quality Partnership. March 2005.

The Mercury Plan approach is summarized in Figure 3.

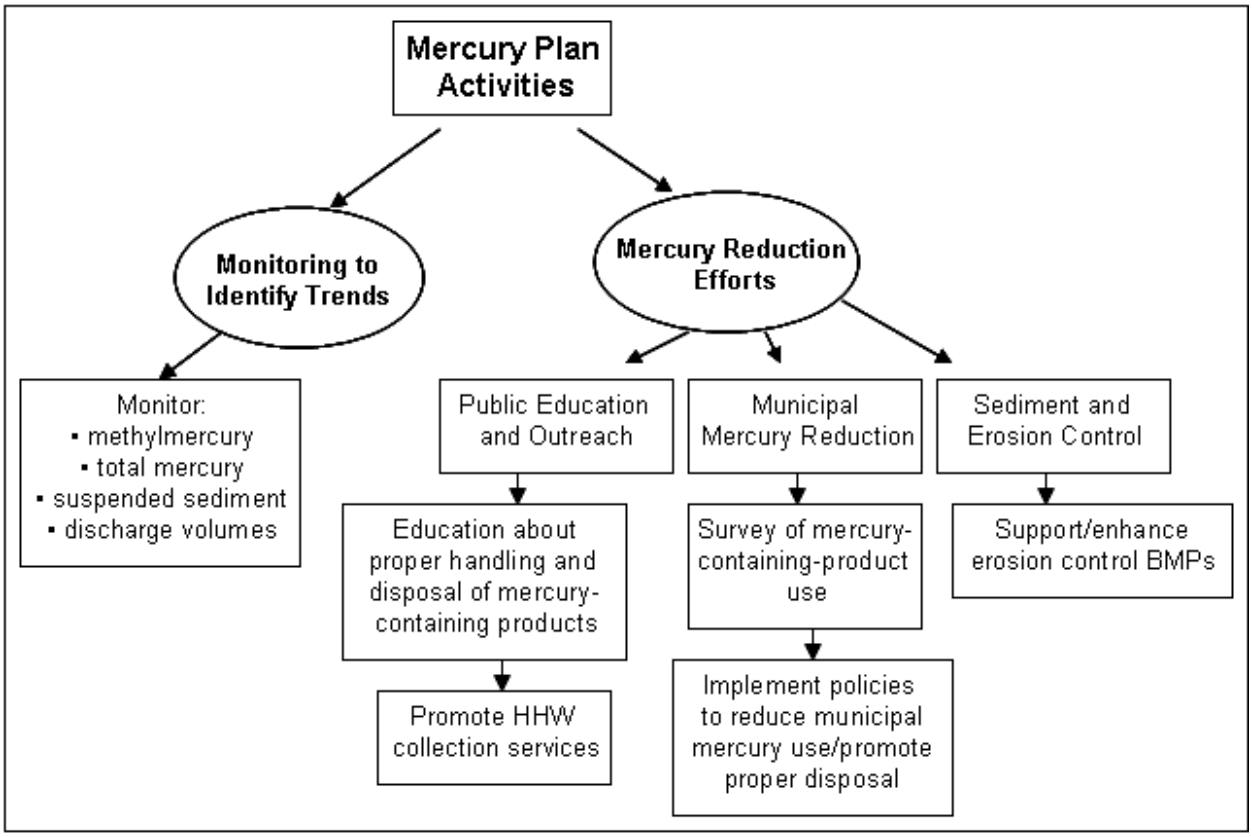

Figure 3. The Mercury Plan Approach

2.1 Public Outreach and Education

The goal of public outreach is to promote public awareness about mercury pollution prevention, as well as inform the public of the health risk of mercury contamination in fish and Office of Environmental Health Hazard Assessment (OEHHA) fish consumption advisories.

One major component will be to inform the public about common products that contain mercury and safe disposal options using various media. The public outreach effort will identify common products containing mercury**.** A focus on mercury education will be incorporated into the SUA stormwater outreach program. Existing programs which will incorporate messages about mercury include:

- Stormwater pollution prevention in the classroom
- Community presentations
- Earth Day Festival

The City maintains a Stormwater Program website which details their outreach efforts[5]. A link will be added to a webpage providing information about mercury. The page will contain information on common household products that contain mercury, alternatives to mercury-containing products, safe disposal of mercury-containing products (with a link to the household hazardous waste program), the health effects of methylmercury, and information on fish consumption advisories (with a link to the health advisories on the OEHHA website[6]).

2.1.1 Household Hazardous Waste Collection Programs

The County operates a Household Hazardous Waste (HHW) Facility which accepts mercury-containing products. The facility is open to the public Thursday-Saturday. Their outreach brochure lists accepted products, including fluorescent bulbs, mercury thermometers, mercury thermostats and other devices containing mercury. Information about HHW collection is made available to the public through their website[7] and brochures. The Mercury Plan will support the HHW program to encourage proper disposal of products containing mercury.

The County also operates a free electronic waste (e-waste) collection event on the second Saturday of every month at the San Joaquin Delta College parking lot. The Mercury Plan will focus efforts to include this e-waste collection in outreach materials promoting proper disposal of mercury-containing products.

The Permittees will track the amount of mercury-containing products which are disposed of through these programs.

2.1.2 Commercial and Industrial Outreach

The Permittees currently provide pollution prevention information for businesses in order to focus on minimizing pollutants in stormwater runoff. Information is disseminated through various media, including fact-sheets which detail best management practices (BMPs) specific to business type. Information specific to business type, listing products that contain mercury, along with proper handling and disposal procedures, is available and will be expanded to include:

- Lists of commonly used products that contain mercury, along with mercury-free alternative products;
- Information on proper handling of mercury-containing products;
- Disposal information for mercury-containing products; and
- Information on UWR participation in the Conditionally Exempt Small Quantity Generator (CESQG) program for generators of small quantities of hazardous waste (up to 220 lbs. or 27 gallons), and the Hazardous Waste Generator Program for generators of larger quantities of hazardous waste.

The diversion of mercury-containing waste products from the waste stream by participation of commercial and industrial businesses in UWR and CESQG programs will be tracked.

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[5] http://www.stocktongov.com/MUD/General/stormwater/stormwater_outreach.cfm

[6] http://oehha.ca.gov/fish.html

[7] http://www.sjgov.org/solidwaste/pdf%20folder/HHW%20brochure.pdf

The City also contracts inspections of commercial and industrial operations, with the purpose of helping local businesses become better aware of what can be done to reduce or eliminate stormwater pollutants. The City provides an evaluation checklist for types of BMPs addressed during the visit. The evaluations will be modified to include a discussion regarding mercury-containing products, along with proper handling and disposal procedures.

2.2 Municipal Operations

2.2.1 Identification and Control of Mercury-containing Products

The Permittees are required to identify the extent of their use of mercury containing products. This will be accomplished through a mercury use survey, administered to municipal departments. The process of assessing municipal uses of mercury will include:

- Develop and administer a survey (based on Santa Clara Mercury Pollution Prevention Plan and Sacramento Stormwater Mercury Plan) to identify the types of mercury-containing products used by municipal departments. The survey results will be included in the Annual Report, and made available on the City's stormwater website.
- Identify products with a potential to enter stormwater runoff. Determine possible alternative products, or proper disposal procedures.

The Permittees will develop recommendations for City/County Departments regarding the management of mercury containing products.

2.2.2 Storm Drain Maintenance

The Permittees will continue to implement a Storm Drainage System Maintenance Control Measure, which prioritizes catch basins for cleaning based on the required level of maintenance, labels all catch basins with a storm drain message, and includes special event requirements to prevent debris accumulation in catch basins and storm drains.

2.2.3 Collaboration with and Tracking of Regional Mercury Programs

The Permittees will collaborate with and track regional programs related to mercury control. The Permittees will participate in the Delta Tributaries Mercury Council, and will track the progress of the CalFed Mercury Program. In addition, the Permittees will collaborate with Delta MS4s, in particular Sacramento and Modesto, to promote consistency and improve knowledge and effectiveness within their respective mercury control programs.

2.3 Sediment and Erosion Control

Construction sites in the SUA employ BMPs to minimize the conveyance of pollutants through mobilized sediments. Erosion control measures are in place to avoid increased erosion and transport of contaminated soil into receiving waters via runoff. Specific erosion control measures include preservation of existing vegetation, rolled erosion control products such as blankets or mats, earth dikes, drainage swales, and limitations on construction activities during wet weather. Sediment control measures include, but are not limited to, sediment basins, sediment traps, fiber rolls, gravel bag berms, sandbag barriers, and storm drain inlet protection. Additional measures employed in the Stockton area are discussed below.

Construction Projects

During construction projects, a number of activities may generate or mobilize pollutants. The Permittees implement the Construction Program Element (Program) to coordinate City/County programs and resources to effectively reduce pollutants in runoff from construction sites during all construction phases. The Program provides inspection to ensure proper BMP implementation. Specific practices which minimize sediment runoff from construction sites, and minimize the potential for erosion in the construction of new development, include:

- Preserve, and where possible, create or restore riparian corridors and buffer zones.
- Limit disturbances of natural water bodies and natural drainage systems.
- Use methods available to estimate increases in pollutant loads in runoff flows resulting from construction projects and projected future development. Require incorporation of structural and non-structural BMPs to mitigate the projected increases in pollutant loads.
- Identify and avoid development in areas that are particularly susceptible to erosion and sediment loss, or establish development guidance that protects areas from erosion and sediment loss.
- Coordinate with local traffic management programs to reduce pollutants associated with vehicles and increased traffic resulting from construction and development.
- Implement source and structural controls as necessary to protect downstream receiving water quality from increased pollutant loads and flows from new development and significant redevelopment.

2.4 Methylmercury Characterization Monitoring

Order No. R5-2007-0173 requires monitoring to characterize the concentrations and loads of methylmercury entering the Delta from Stockton urban runoff. Receiving water, outfall discharges, and one detention basin will be monitored for total mercury and methylmercury. Additionally, suspended sediment concentrations[8] (SSC) will be measured in the water column. The discharged loads will be estimated at sampling locations.

Characterization monitoring will be conducted for three (3) years, capturing two dry weather events and three wet weather events (over a range of storm intensities) per year[9]. The monitoring locations are shown in Figure 4.

[8] American Society for Testing and Materials Method D 3977-97, "Standard Test Method for Determining Sediment Concentration in Water Samples," will be used to determine suspended sediment concentrations.

[9] Characterization monitoring is described in more detail in the Mercury Monitoring Plan, which is a monitoring plan included as a separate document in support of the Mercury Plan.

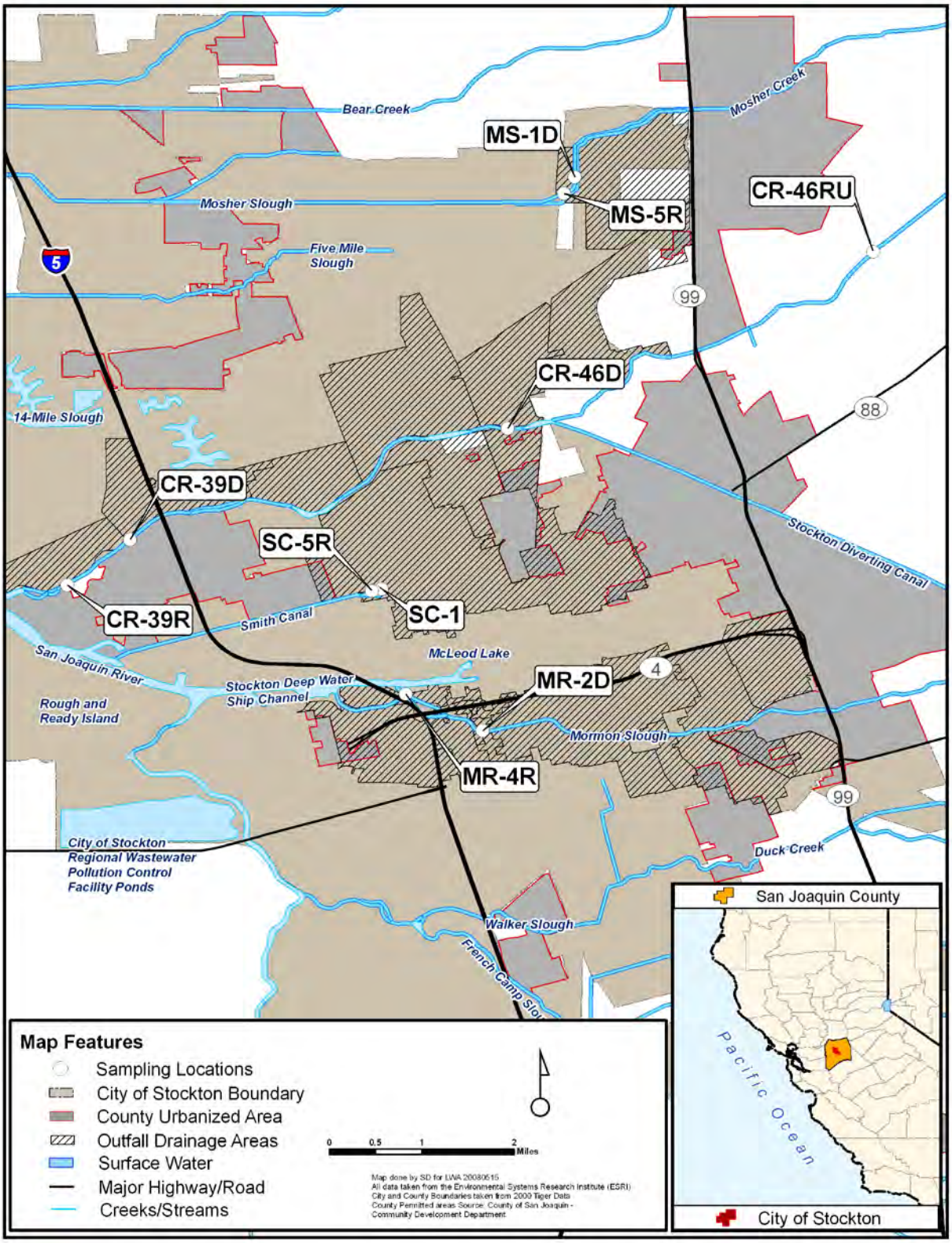

Figure 4. Proposed Monitoring Locations

2.4.1 Monitoring Locations

The SUA discharges to a series of freshwater rivers, sloughs, and man-made canals via numerous pump stations and gravity lines. Some of the gravity discharge lines are tidally influenced; the subsidiary waterways to the San Joaquin River generally experience a one to three foot tide. These relatively shallow, tidally influenced waterbodies generally flow west/southwest to the lower San Joaquin River and include Mosher Slough, Five-Mile Slough, the Calaveras River, Smith Canal, and Mormon Slough (Figure 4). The Mercury Plan is required to sample locations representative of conditions in the SUA.

The Permittees used the following criteria to select sites:

- Representative of land use and activities in the SUA;
- Accessible to monitoring;
- Spatially representative of waterbodies in the SUA; and
- Overlap with ongoing and/or proposed studies whenever possible.

The intention of site selections for the Mercury Plan is to coordinate when possible with existing data sources and programs, while maximizing the effectiveness of the individual programs. Proposed specific sampling sites are listed in Table 5 and discussed below.

Calaveras River

The Calaveras River originates in the eastern Sierra Nevada Mountains, and receives upstream runoff primarily from open spaces, forest lands, pasture lands and agriculture. It receives high flows during late fall, winter, and early spring, while summer and early fall flows can be minimal. The Calaveras River drainage area is primarily residential with some open space.ites were chosen along the Calaveras River to represent background mercury conditions prior to impact from the SUA; stormwater discharged from an older residential and commercial area; stormwater discharged from a newer, more upscale residential; and mercury conditions in downstream receiving water. The City of Stockton's stormwater baseline monitoring program has collected data for total mercury at discharge and receiving water stations on the Calaveras River at site CR-46, which will be compared with the Mercury Plan data to provide a longer-term perspective.

Smith Canal

Smith Canal is a dead-end slough connecting the San Joaquin River with Yosemite Lake in downtown Stockton. It receives stormwater runoff only from urban downtown Stockton. Land uses in Smith Canal are dominantly residential (71.5%), with some commercial (18.3%), with industrial, mixed urban, and open space comprising the remaining 10.2%. The Legion Park station is the 2nd largest pump station in Stockton, and represents dominantly residential and commercial land uses. Discharge from the Legion Park pump station will be sampled, along with receiving water in Yosemite Lake.

Mosher Slough

Mosher Slough is located primarily in the residential north side of Stockton. Land uses in the drainage area are primarily residential, with a smaller percentage of commercial and open space. The residential areas consist primarily of new development in the eastern portion of the SUA. A detention basin on Mosher Slough will be monitored for total mercury and methylmercury as a

component of the Permittees' Detention Basin Monitoring program. Results from detention basin monitoring will be compiled with results from other Mercury Plan sites, in order to compare mercury levels at other sampled locations in Stockton.

Mormon Slough

Lower Mormon Slough is a direct tributary to the Deep Water Ship Channel, and is located in the southern area of Stockton. Sampling locations on Mormon Slough were chosen to represent a predominantly older, more industrialized portion of Stockton. The land uses within the drainage area include residential (39.2%), commercial (31.2%), industrial (12.9%), mixed urban (12.1%) and open space (4.6%).

2.4.2 Air Pollution Source Assessment

The Permittees will coordinate with Regional Water Board staff to assess the contribution of air pollution sources to mercury in Stockton stormwater. This assessment will also include tracking air pollution studies that may provide information on air emissions and deposition as a source of mercury to the Stockton area.

In addition, total mercury concentrations in rainwater will be analyzed during scheduled rainwater sampling events (see Appendix I-1, Pesticide Plan sampling schedule).

Table 5. Mercury Plan Monitoring Locations

Waterbody	Monitoring Location	Monitoring Sites	
		Discharge Site ID	Receiving Water Site ID
Smith Canal	Legion Park pump station at Yosemite Lake	SC-1	SC-5R
Mosher Slough	Morada Basin	MS1-D	MS5-R
Calaveras River	Upstream receiving location at Solari Ranch Road		CR-46RU
	West Lane (South side of river)	CR-46D	
	Downstream discharge and receiving location, at Brookside	CR-39D	CR-39R
Mormon Slough	Weber Avenue Overpass		MR-4R
	Lift station wet well at Commerce Street	MR-2D	

2.5 Reporting

Implementation progress and monitoring results will be reported to the Regional Water Board annually in a Mercury Plan Progress Report submitted with the Permittees' Annual Report. In addition, a final baseline report will be submitted to the Regional Water Board by December 1, 2011.

2.6 Implementation Schedule

Mercury Plan Component	Type of Component[1]	Implementation Schedule[2]																			
		2007-2008				2008-2009				2009-2010				2010-2011				2011-2012			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Monitor methylmercury and total mercury	N																				
Public education and outreach																					
Modify City's website to include information re. mercury	N																				
Coordinate with HHW Program to publicize mercury-containing product information and disposal	E																				
Commercial and industrial outreach																					
Distribute fact sheet for businesses	N																				X
Business inspections (Industrial stormwater inspection program)	E																				X
Track commercial and industrial business' participation in UWR and CESQG programs	N												X								X
Municipal operations																					
Develop survey to identify use of mercury-containing products	N								X												
Administer survey	N																	X			
Develop recommendations for City Departments	N											X									
Implement recommendations	N																				
Track mercury-containing products disposed through the HHW and e-waste collection events	C								X				X				X				X
Estimate increases in mercury loads in runoff from construction and projected future development	N								X	X			X	X			X	X			X

Collaboration with Delta MS4s and tracking regional mercury programs	N							X		X		X		X		X		X		X	
Coordinate with Regional Water Board staff to assess air pollution sources to mercury in stormwater	N													X				X			
Erosion/Sediment Control																					
Implement Construction Program Element	C																				X
Reporting																					
Report annual monitoring results and implementation progress in Annual Report	N					X				X				X				X			
Develop annual urban runoff mercury load estimates	N																		X		
Characterization Baseline Report	N																	X	X		

Notes:
1. C = Continue; E = Enhance; N = New
2. Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
X = Plan component will be completed during this quarter.
= Plan element will be completed during this timeframe as specified

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APRIL 15, 2009

City of Stockton
County of San Joaquin

Mercury Monitoring Plan – Revised April 2009

prepared by

LARRY WALKER ASSOCIATES

Table of Contents

1.0 Objective 1
2.0 Scope of the Monitoring Plan 1
3.0 Monitoring Locations 1
4.0 Sampled Parameters 5
5.0 Reporting and Mercury Load Assessment 6
6.0 Monitoring Schedule 7
6.1 Wet-Weather Monitoring 7
6.2 Dry-Weather Monitoring 7
7.0 Monitoring Procedures 8
7.1 Sampling Event Preparation 8
7.2 Sample Collection 10
7.3 Field Observations 12
7.4 Chain of Custody 12
7.5 Transport to Lab 12
7.6 Field Protocols 12
8.0 Quality Assurance/Quality Control 13
8.1 Field Blank 13
8.2 Field and Laboratory Duplicates 13
8.3 Method Blanks 14
8.4 Matrix Spikes and Matrix Spike Duplicates 14
Attachment 1 ..... **Example Event Summary Sheet 16**
Attachment 2 ..... **Daily Field Report 18**
Attachment 3 ..... **Example Chain of Custody Form 20**

List of Tables and Figures

Table 1. Proposed Monitoring Site Locations 4
Table 2. Summary of Land Uses within Drainage Areas for Monitored Waterbodies..... 5
Table 3. Constituents and Monitoring Methods 6
Table 4. Quarterly Schedule for Targeting Wet-Weather and Dry-Weather Monitoring Events... 7
Table 5. Field Equipment Checklist..... 9
Table 6. QA/QC Sample Collection Schedule..... 13

Figure 1. Proposed Methylmercury Monitoring Locations 3

1.0 OBJECTIVE

The primary objective of this Mercury Monitoring Plan is to determine the extent to which the Stockton urban area discharges contribute methylmercury and total mercury to the Delta. Based on the monitoring results, future efforts will identify methylmercury and total mercury sources, and evaluate best management practices (BMPs) to reduce the mercury in the Stockton Urbanized Area (SUA) discharges.

The goal of the Mercury Monitoring Plan is to conduct baseline monitoring to determine the methylmercury and total mercury concentrations and loads discharged to the Delta by the SUA.

2.0 SCOPE OF THE MONITORING PLAN

To address mercury impairment in the Delta, Provision 28.d of the City of Stockton (City) and County of San Joaquin (County) (collectively, Permittees) Municipal Stormwater National Pollutant Discharge Elimination Systems (NPDES) Permit (Order No. R5-2007-0173) requires the Permittees to develop and implement a mercury plan that identifies the Permittees' strategy to reduce methylmercury exposure to humans and wildlife in the Delta and to prevent the creation or maintenance of toxic hot spots. This monitoring plan supports the Permittees Mercury Plan by characterizing the concentrations and loads of methylmercury entering the Delta from SUA discharges.

Receiving water and outfall discharges will be monitored for total mercury, methylmercury, and suspended sediment concentrations (SSC). Characterization monitoring will be conducted for three years, capturing two dry-weather events and three wet-weather events (over a range of storm intensities) per year.

3.0 MONITORING LOCATIONS

Mercury and methylmercury monitoring will be conducted at eight strategic locations, representative of conditions throughout the watersheds in the SUA. The SUA discharges to a series of freshwater rivers, sloughs, and constructed canals via numerous pump stations and gravity lines. Some of the gravity discharge lines are tidally influenced; the subsidiary waterways to the San Joaquin River generally experience a one to three foot tide. These relatively shallow, tidally influenced waterbodies generally flow west/southwest to the lower San Joaquin River and include Mosher Slough, Five-Mile Slough, the Calaveras River, Smith Canal, and Mormon Slough. Tidal effects at receiving water monitoring locations will be addressed by recording direction and rate of flow during each sampling event.

The Mercury Plan is required to sample locations representative of conditions in the SUA. The Permittees used the following criteria to select sites:

- Representative of land uses and activities in the SUA;
- Accessible to monitoring;
- Spatially representative of waterbodies in Stockton; and
- Overlap with ongoing and/or proposed studies whenever possible.

The intention is to coordinate, when possible, with existing data sources and monitoring programs. Proposed specific sampling locations on four waterbodies in the SUA are shown in Figure 1, described in Table 1 and discussed below.

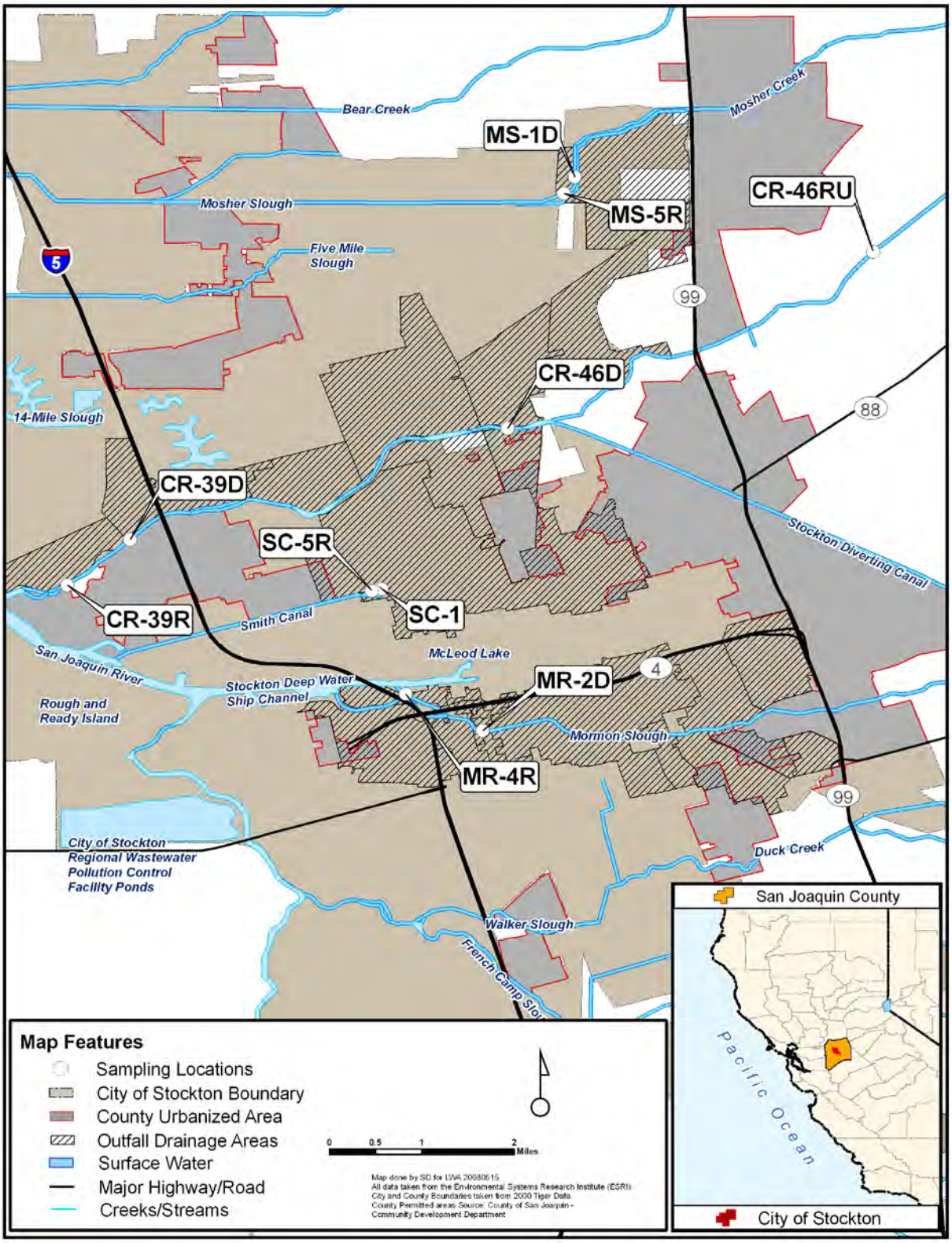

Figure 1. Proposed Mercury Plan Monitoring Locations

Table 1. Proposed Monitoring Site Locations

Waterbody	Monitoring Location	Monitoring Sites	
		Discharge Site ID	Receiving Water Site ID
Smith Canal	Legion Park pump station in Yosemite Lake	SC-1	SC-5R
Mosher Slough[a]	Morada Basin	MS1-D	MS5-R
Calaveras River	Upstream receiving location at Solari Ranch Road		CR-46RU
	West Lane (South side of river)	CR-46D	
	Downstream discharge and receiving location at Brookside	CR-39D	CR-39R
Mormon Slough	Weber Avenue Overpass		MR-4R
	Lift station wet well at Commerce Street	MR-2D	

a. Morada Basin on Mosher Slough is sampled for the Detention Basin Monitoring Plan. Total and methylmercury concentrations reported for those sites will be included with the Mercury Monitoring Plan results.

Smith Canal

Smith Canal is a dead-end slough connecting the San Joaquin River with Yosemite Lake in downtown Stockton. It receives stormwater runoff only from downtown Stockton. Land uses in the drainage areas of each monitored waterbody are shown in Table 2. Land uses in the Smith Canal drainage area are dominantly residential (71.5%), with some commercial (18.3%), with industrial, mixed urban, and open space comprising the remaining 10.2%. The Legion Park pump station is the 2nd largest pump station in Stockton, and represents dominantly residential and commercial land uses. Discharge from the Legion Park pump station will be sampled, along with receiving water in Yosemite Lake.

Mosher Slough

Mosher Slough is located primarily in the residential north side of Stockton. Land uses in the drainage area are primarily residential and open space. Thee residential areas consist primarily of new development. Commercial land use, industrial land use, and mixed urban land use make up the other a small percentage (<10%) of land uses in the Mosher Slough drainage area. A detention basin on Mosher Slough will be monitored for total mercury and methylmercury as a component of the Permitees' Detention Basin Monitoring program. Results from detention basin monitoring will be compiled with results from other Mercury Plan sites, in order to compare mercury levels at all sampled sites in Stockton.

Calaveras River

The Calaveras River originates in the eastern Sierra Nevada Mountains, receiving upstream input primarily from open spaces, forest lands, pasture lands and agriculture. It receives high flows

during late fall, winter, and early spring, while summer and early fall flows can be minimal. The Calaveras River drainage area is largely open space and residential. Sites were chosen along the Calaveras River to represent background mercury conditions upstream of the SUA; stormwater discharged from an older residential and commercial area; stormwater discharged from a newer, more upscale residential; and mercury conditions in downstream receiving water. The Permittees' stormwater baseline monitoring program has collected data for total mercury at discharge and receiving water stations on the Calaveras River at site CR-46, which will be compared with the Mercury Plan data to provide a longer-term perspective.

Mormon Slough

Lower Mormon Slough, located in the southern area of Stockton, is a direct tributary to the Deep Water Ship Channel. Sampling sites on Mormon Slough were chosen to represent a predominantly older more industrialized portion of Stockton. The land uses within the Mormon Slough drainage area include residential (~40%), commercial (~30%), industrial (~13%), mixed urban (~12%) and open space (~5%).

Table 2. Summary of Land Uses within Drainage Areas for Monitored Waterbodies

Waterbody	Urbanized Drainage Area (Acres)	Land Uses					Comments
		Residential %	Commercial %	Industrial %	Mixed Urban %	Open Space[a] %	
Smith Canal	36,342	71.5	18.3	2.1	7.0	1.2	No upstream contribution
Mosher Slough	51,524	21.1	3.2	0.5	2.6	72.6	Moderate upstream contribution
Calaveras River	48,210	37.5	9.9	0.7	8.3	43.6	Moderate upstream contribution
Mormon Slough	33,319	39.2	31.2	12.9	12.1	4.6	No upstream contribution

a. Can include cropland, pasture, herbaceous rangeland, orchards, groves, vineyards, nurseries, streams, and canals.

4.0 SAMPLED PARAMETERS

Table 3 lists the specific parameters to be tested, analytical methods, reporting limits, and holding times. The analyses will be performed by a National Environmental Laboratory Accreditation Program (NELAP)-certified laboratory for the relevant methods. Because the analytical method and laboratory selection are critical steps in any monitoring program, all analyses must meet data quality objectives. The analytical method may change during the study if a different method is found to yield better results (better quality assurance/quality control results (QA/QC) and/or a lower detection limit).

Table 3. Constituents and Monitoring Methods

Constituent	Analytical Method	Container	Preservative	Method Detection Limit	Reporting Limit	Hold Time
Methylmercury	EPA 1630M	500 ml, glass, double bagged	4°C + HCl or H_2SO_4*	0.02 ng/l	0.05 ng/l	48 hrs/ 90 days **
Total Mercury	EPA 1631M	500 ml, glass, double bagged	4°C +HCl	0.2 ng/l	0.5 ng/l	48 hrs/ 90 days **
Suspended Sediment Concentration	ASTM Method D 3977-97[1]	125 ml, polycarbonate	None	3 mg/l	3 mg/l	7 days

* Preserve with HCl if less than 10 ppth salinity OR preserve with H_2SO_4 if greater than 10 ppth salinity
** 48 hrs until preservation/90 days once preserved

Unfiltered samples will be collected and analyzed. In addition to total mercury and methylmercury, suspended sediment concentrations will be monitored at each sampling location. Discharge flows will be estimated at the sampling locations.

For measurements less than the method detection limit (MDL), regression on order statistics will be used to calculate values below the MDL for load calculations. In cases where there are non-detect values, the regression on order statistics (ROS) method[2] uses the non-detect values to calculate the order statistic value, but fits the curve only to the order statistics and concentrations of detected values. This statistical approach is considered superior to arbitrarily assuming one-half the detection limit because it distributes non-detect values below the detection limit according to the observed distribution.

5.0 REPORTING AND MERCURY LOAD ASSESSMENT

Monitoring results will be reported in the Permittees' Annual Reports. Load estimates for the urban runoff mercury contribution will be developed once sufficient data is collected, and included in the final baseline monitoring report. The final baseline monitoring report will be submitted to the Regional Water Board by December, 2011, which will include estimates of the total mercury and methylmercury concentrations and loads discharged to the Delta by the SUA.

Annual runoff volume will be estimated in order to calculate the annual loads of mercury and methylmercury. At the sampling locations, it is impractical to directly measure urban runoff flow since discharge points are not easily or safely accessible. Therefore, urban annual runoff volume will be estimated using the following methodology: Data on run-times for the pumps at

[1] "Standard Test Method for Determining Sediment Concentration in Water Samples" (American Society for Testing and Materials, 2000)

[2] Dennis R. Helsel (2005), Nondetects And Data Analysis: John Wiley and Sons, New York.

the discharge locations will gathered and, along with pump capacity, age of pump, and percentage of power that the pump operated (if pump operates on a variable frequency drive), will be used to estimate annual discharge volumes.

6.0 MONITORING SCHEDULE

Three wet-weather and two dry-weather monitoring events will be targeted per year for three monitoring years, according to the schedule shown in Table 4. Wet and dry-weather monitoring is described below. Monitoring events will be targeted during the quarters shown in Table 4; however, depending on weather conditions, up to two events may occur each quarter.

Table 4. Quarterly Schedule for Targeting Wet-Weather and Dry-Weather Monitoring Events

Monitoring Events	2008-2009				2009-2010				2010-2011				2011-2012			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Wet-weather Monitoring		X	X	X		X	X	X		X	X	X				
Dry-weather Monitoring		X		X	X	X		X	X	X		X	X	X		

Q1 = Jan-March; Q2 = April-June; Q3 = July-Sep; Q4 = Oct-Dec
X = Monitoring events are targeted during this quarter. Depending on weather conditions, zero, one or two events may occur during the quarter.

6.1 Wet-Weather Monitoring

Three wet-weather samples will be collected annually for three monitoring years during targeted storm events of variable intensity. In order to capture storms of varying intensity, one wet-weather event will be defined as a storm with at least a 75% probability of greater than 0.1 inch of precipitation. The additional two wet-weather events will be defined as a storm with at least a 75% probability of greater than 0.25 inches of precipitation. In order to be a qualifying event, a storm must show 75% probability of the appropriate rainfall amount at least 72 hours prior to occurring in order to have sampling crews and labs on alert. All wet-weather monitoring will consist of grab samples. Wet-weather monitoring will be coordinated, if possible, with other ongoing water quality monitoring programs. Specific wet-weather sampling criteria are:

- Attempts will be made to monitor three storms per year (if possible, including the "first flush," after one or more months with no precipitation greater than 0.1 inch)
- Storms will be targeted throughout the rainy season, from fall to spring.
- If conditions permit, samples will be collected with a minimum of at least three weeks between storm events.
- Wet-weather monitoring will only take place after a dry period, defined as a continuous three day period with no measurable precipitation (defined here as less than 0.1 inch).

6.2 Dry-Weather Monitoring

Two dry-weather samples will be collected annually for three monitoring years. Dry-weather monitoring will be conducted during dry weather from spring to early fall and will be coordinated with other ongoing water quality sampling programs. The events will be scheduled

to allow for at least seven days without measurable precipitation prior to sampling (storm events which produce less than 0.10 inches of rain). All dry-weather monitoring will consist of grab samples.

7.0 MONITORING PROCEDURES

This section describes the procedures for each sampling event, including the preparation, collection, and field procedures.

7.1 Sampling Event Preparation

Sample event preparation includes preparing field equipment, placing bottle orders, and contacting necessary personnel regarding site access and personnel availability. The following steps will be completed prior to each sampling event:

1. Contact laboratories to order bottles and to coordinate sample delivery.
2. Confirm scheduled sampling date with field crew, and set-up sampling day itinerary including sample drop-off.
3. Prepare equipment.
4. Prepare sample labels.
5. Prepare the sampling event summary and field log sheet to indicate the type of field measurements, field observations and samples to be taken at each of the stations.
6. Calibrate field measurement equipment.

Table 5 provides a field equipment checklist of equipment to mobilize prior to each sampling event.

Table 5. Field Equipment Checklist

✓	Monitoring Plan (this document)	✓	Coolers w/ Ice
✓	Sample Bottles w/ Pre-Printed and Extra Labels	✓	Powder-Free Gloves
✓	Event Summary Sheets	✓	Pens
✓	Field Log Forms	✓	First Aid Kit
✓	Chain of Custody Forms	✓	Cellular Telephone
✓	Watch	✓	Gate Keys (if necessary)
✓	Camera	✓	Paper Towels or Rags in a Box
✓	Tape Measure	✓	Plastic Trash Bags
✓	Grab Sample Collection Devices	✓	Distilled/DI Wash Bottles
✓	Distilled/DI Water Blanks (provided by the laboratory)	✓	Grab Pole
✓	Sealable Plastic Bags	✓	Safety Equipment
✓	Flow meter		

7.1.1 Sampling Event Summary

A sampling event summary sheet will be produced for the sampling crew prior to each sampling event. The summary will outline sampling requirements at each sampling station, including a list of samples to be collected and QA/QC requirements. This summary will help field crews prepare for and track sample collection during each event. An example event summary is shown in **Attachment 1**.

7.1.2 Sample Bottle Order and Preparation

Sample bottle orders will be placed with the appropriate analytical laboratory at least two weeks prior to each sampling event. Bottles will be ordered for all samples, including quality control samples. The proper bottle volume, immediate processing and storage needs are presented in Table 3. The field crew will inventory sample bottles upon receipt from the laboratory to ensure that adequate bottles have been provided to meet analytical requirements for each sampling event.

7.1.3 Sample Bottle Labeling

All samples will be pre-labeled before each sampling event to the extent practicable. Pre-labeling sample bottles simplifies field activities, leaving only sample collection time, sample

number, and the names of sampling personnel to be filled out in the field. Custom water-proof labels will be produced. Using this approach will allow the stations and analytical constituent information to be entered into the computer program in advance, and printed as needed prior to each sampling event.

Labels shall be placed on the appropriate bottles in a dry environment; attempting to apply labels to sample bottles after filling will cause problems, as labels usually do not adhere to wet bottles. The labels will be applied to the bottles or individual zip-lock bags. Field labels shall contain the following information:

- Program Name
- Station ID
- Event Number
- Date
- Time
- Sampling Personnel
- Sample ID (see next section for ID conventions)
- Analytical Requirements

7.2 Sample Collection

This section describes the procedures involved in sample collection.

7.2.1 Clean Sample Handling

"Clean sampling" techniques are required to collect and handle water samples in a way that results in neither contamination, loss, nor change in the chemical form of the analytes of interest. Samples are collected using protocols based on EPA Method 1669, as summarized below:

- Samples are collected only into pre-cleaned sample bottles.
- At least two persons, wearing clean, powder-free nitrile gloves at all times, are required on a sampling crew.
- One person ("dirty hands") touches and opens only the outer bag of all double bagged items (such as sample bottles, tubing, strainers and lids), avoiding touching the inside of the bag.
- The other person ("clean hands") reaches into the outer bag, opens the inner bag, and removes the clean item (sample bottle, tubing, lid, strainer, etc.).
- After a grab sample is collected, or when a clean item must be re-bagged, it is done in the opposite order from which it was removed.
- Clean, powder-free nitrile gloves are changed whenever something not known to be clean has been touched.
- For this program, clean techniques must be employed whenever handling the double-bagged aliquot bottles or mercury grab sample bottles.
- In order to reduce potential contamination, sample collection personnel will adhere to the following rules while collecting stormwater samples:
    - No smoking;
    - Never sample near a running vehicle. Do not park vehicles in immediate sample collection area (even non-running vehicles);

- Avoid allowing rainwater to drip from rain gear into sample bottles;
- Do not eat or drink during sample collection; and
- Do not breath, sneeze or cough in the direction of an open sample bottle.

7.2.2 Sample Collection

All samples will be collected as grab samples. At most stations, grab samples will be collected at approximately mid-stream, mid-depth at the location of greatest flow (where feasible). For mid-depth, mid-channel receiving water grab samples, a horizontal lake (discrete depth) sampler will be used. For very shallow receiving waters, a dipping cup or long-handled sampling container will be used. A disposable (single-use) bailer will be used to sample from pump station wet wells. After collection, samples will then be transferred to sample bottles. This is the preferred method for grab sample collection; however, due to sampling station configurations and safety concerns, sampling station configuration may dictate grab sample collection technique. Grab samples will be collected and transferred into the appropriate bottles (containing the required preservations) as outlined in Table 3.

All grab samples will be collected using the following procedures.

1. Wear clean powder-free nitrile gloves when handling bottles and caps. Change gloves if soiled or if the potential for cross-contamination occurs from handling sampling materials or samples. Change gloves between sampling locations;
2. Pre-label sample containers as described in **Sample Bottle Labeling** and **Sample ID Conventions**;
3. Collect grab sample at mid-stream/mid-depth;
4. Rinse sample bottles three times with sample water, and then fill with sample. Preservative may be added at this time, or within 48-hours at the laboratory;
5. Place sample on ice;
6. Collect remaining samples including control samples, if needed, using the same protocols described above;
7. Fill out COC form, note sample collection on field form, and deliver to appropriate lab.

7.2.3 Health and Safety Procedures

All personnel who participate in fieldwork will attend a safety introduction. Copies of a program specific Health and Safety Plan will be available to all field crews and will be located in each field vehicle.

Field crews will consist of at least two persons wearing clean, powder-free nitrile gloves and appropriate personal protective equipment (life vest, safety glasses, reflective vests, hard hats, steel toes, etc.) for the specific monitoring/sampling event.

A drowning hazard exists at the shoreline, along streams, and at water bodies. Adequate swimming ability will be required of all field crew members conducting receiving water monitoring. If fieldwork is required in water greater than three feet deep or without any protective structure (such as a guard rail) to prevent falling into the waterway, appropriate safety equipment (personal floatation device) will be worn.

To minimize the potential of sample contamination and personnel exposure, crew members will change gloves whenever something not known to be clean has been touched and/or between sampling locations.

Field personnel should refrain from touching their face while sampling until thoroughly washing their hands. Liquids should be kept in, and consumed at, the field vehicle. Field crew members should wash their hand with antibacterial soap (located in the field vehicle) prior to consuming any food or drinks.

All electronic equipment will be kept as dry as possible.

Heat stress will be a hazard during hot weather and will be intensified when personnel are in protective clothing (if necessary). To prevent heat stress, personnel will be required to take breaks as needed, and consume adequate quantities of liquid.

No field personnel will enter a manhole or storm pipe without first obtaining an approved confined-space entry permit.

In the event traffic control is necessary, traffic control must be set up before conducting any work where field personnel may be exposed to traffic. Standard traffic control measures include parking vehicles to shield personnel from traffic or using hazard lights or traffic safety cones to identify work areas.

7.3 Field Observations

In addition to collection of the constituents listed in Table 3, field observations will be made at each sampling station. Observations will include color, odor, floating materials, presence of wildlife, as well as observations of contact and non-contact recreation. All comments on field observations will be recorded in the field log presented in **Attachment 2**.

7.4 Chain of Custody

Chain-of-custody (COC) forms will be filled out for all samples submitted to each laboratory. Sample date, sample station, and analysis requested shall be noted on each COC. An example COC form is shown in **Attachment 3**.

7.5 Transport to Lab

Samples will be stored in coolers with ice and delivered to the appropriate NELAP-certified analytical laboratories. Samples will be analyzed according to the methods listed in Table 3. In addition, Table 3 provides detection limits and holding times.

7.6 Field Protocols

Field crews (2 persons per crew, minimum) will only be mobilized for sampling when weather conditions and flow conditions are considered to be safe. For after-hour sampling, 72 hour notification and identification of a qualifying storm are required. A sampling event should proceed in the following manner:

1. Before leaving the sampling crew base of operations, notify laboratory, confirm number and type of sample bottles as well as the complete equipment list.
2. Proceed to the first sampling station.
3. Fill-out the general information on the field log sheet.

4. Take field measurements and observations, and record on the field log sheet.
5. Take the samples indicated on the field log sheet in the manner described in this study plan. Take additional volume and blank samples for field-initiated QA/QC samples, if required. Place bottles in the coolers with ice. Double check against the log sheet that all appropriate bottles were filled.
6. Repeat the procedures in steps 3, 4, and 5 for each of the remaining sampling stations.
7. Complete the chain of custody forms using the field notes.
8. After collection is completed, deliver the samples to laboratory within sample holding time.

8.0 QUALITY ASSURANCE/QUALITY CONTROL

This section details the QA/QC measures that will be implemented.

8.1 Field Blank

The purpose of analyzing field blanks is to demonstrate that sampling procedures do not result in contamination of the environmental samples collected at the same time. Field blanks will be prepared and analyzed according to the schedule in Table 6. Blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through clean sampling equipment using the same procedures used for environmental samples.

Field blanks will be collected first, immediately prior to the collection of normal grab samples. The field crew will use the blank water provided and will fill each grab sample container according to standard procedures. Field blanks will be submitted "blind" to the laboratory using the station name pseudonym "FB".

8.2 Field and Laboratory Duplicates

The purpose of analyzing laboratory duplicates is to demonstrate the precision of the sample preparation and analytical methods. Laboratory duplicates will consist of either replicate environmental samples or duplicate laboratory fortified method blanks. If the Relative Percent Difference (RPD) of field duplicate results is greater the required value of 25%, the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared and analyzed again, if possible. A pair of field duplicates is two samples taken at the same time, in the same manner, into two unique containers. If an RPD exceeds 25%, the associated data will be flagged as "not reproducible" for high variability.

Lab duplicates and field duplicates will be collected according to the schedule in Table 6. Field duplicates will be collected immediately following and in the same manner as the environmental grab samples. Field duplicates will be submitted "blind" to the laboratory using the station name pseudonym "FD". The date and time of sampling should be noted on the log sheet.

Table 6. QA/QC Sample Collection Schedule

Site Name	Station ID	Event														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Smith Canal	SC-1	FB					FB					FB				
	SC-5R	FD					LD					FD				

Mosher Slough	MS1-D	LD						FD						LD				
	MS5-R	FB						FB						FB				
Calaveras River	CR-46RU		FB						FB						FB			
	CR-46D		FD						LD						FD			
	CR-39D			FB						FB						FB		
	CR-39RU			LD						FD						LD		
Mormon Slough	MR-4R				FD						LD						FD	
	MR-2D				FB						FB						FB	

FB = Field Blank
LD = Lab Duplicate
FD = Field Duplicate

8.3 Method Blanks

The purpose of analyzing method blanks is to demonstrate that sample preparation and analytical procedures do not result in sample contamination. Method blanks will be prepared and analyzed by the contract laboratory at a rate of at least one for each analytical batch. Method blanks will consist of laboratory-prepared blank water processed along with the batch of environmental samples. If the result for a single method blank is greater than the MDL, the source(s) of contamination should be identified and eliminated, and the sample batch should be prepared and analyzed again, if possible. If this is not possible, the data should be qualified accordingly. If method blank contamination is consistently reported, the laboratory will be expected to propose to the Program Manager a systematic approach for identifying and eliminating the source of contamination. The laboratory should also be prepared to sub-contract analysis for that method to another qualified laboratory until the contamination issue is resolved.

8.4 Matrix Spikes and Matrix Spike Duplicates

The purpose of analyzing matrix spikes and matrix spike duplicates is to demonstrate the performance of the sample preparation and analytical methods in a particular sample matrix. Each matrix spike and matrix spike duplicate will consist of an aliquot of laboratory-fortified environmental sample. Spike concentrations should be added at five to ten times the reporting limit for the analyte of interest.

If the matrix spike recovery of any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. The acceptable range for matrix spike recoveries is 70% to 130%, with an acceptable RPD of ≤25% for values greater than ten times the MDL. Concentration measurements with recoveries that do not fall within the acceptable range will be flagged low or high bias. If an RPD exceeds 25%, the associated data will be flagged as "not reproducible" for high variability. If recovery of laboratory control samples is acceptable, the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (*e.g.*, by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

If the matrix spike duplicate RPD for any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If the RPD for laboratory duplicates is acceptable, the analytical process is being performed adequately for that analyte, and the

problem is attributable to the sample matrix. An attempt will be made to correct the problem (*e.g.*, by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

Sampling Event #1 – Date_____

Event Summary Sheet

Sample Location	Requirements	Bottles	Lab*
SC1			
Discharge:	Methylmercury + Field Blank	4 X 500 ml, glass, double bagged	
	Total Mercury + Field Blank		
	Suspended Sediment Concentration + Field Blank	2 X 500 ml	
SC5R			
Receiving Water:	Methylmercury + Field Duplicate	4 X 500 ml, glass, double bagged	
	Total Mercury + Field Duplicate		
	Suspended Sediment Concentration + Field Duplicate	2 X 500 ml	
MS1D			
Discharge:	Methylmercury	2 X 500 ml, glass, double bagged	
	Total Mercury		
	Suspended Sediment Concentration	500 ml	
MS5R			
Receiving Water:	Methylmercury	2 X 500 ml, glass, double bagged	
	Total Mercury		
	Suspended Sediment Concentration	500 ml	
CR46-RU			
Upstream Receiving Water:	Methylmercury	2 X 500 ml, glass, double bagged	
	Total Mercury		
	Suspended Sediment Concentration	500 ml	
CR46D			
Discharge:	Methylmercury	2 X 500 ml, glass, double bagged	
	Total Mercury		
	Suspended Sediment Concentration	500 ml	
CR39D			
Discharge:	Methylmercury	2 X 500 ml, glass, double bagged	
	Total Mercury		
	Suspended Sediment Concentration	500 ml	
CR39R			
Receiving Water:	Methylmercury	2 X 500 ml, glass, double bagged	
	Total Mercury		

	Suspended Sediment Concentration	500 ml	
MR4R			
	Methylmercury	2 X 500 ml, glass, double bagged	
	Total Mercury		
	Suspended Sediment Concentration	500 ml	
MR2D			
	Methylmercury	2 X 500 ml, glass, double bagged	
	Total Mercury		
	Suspended Sediment Concentration	500 ml	

* NELAP-certified analytical labs to be determined.

DAILY FIELD REPORT

PROJECT #: _____ PERSONNEL: _____

PROJECT ID: Stockton Mercury__ DATE: _____

Site Location Description: _____

-

Site ID	Sample Time	Temp ºC	pH	EC (µS)	DO (mg/L)	ORP (MV)	TDS (g/L)	Turbidity (NTU)
FM1-D								

OBSERVATIONS: Arrival Time: _____ Departure Time: _____ Receiving Water Flow Rate: _____m/s Pumps

Active: Yes / No__

Weather: _____

_____Floating Material/Debris: _____

_____

_____

Extent of Visible Film (Oils, greases, waxes, etc.) on Water Surface / Stream Bottom:_____

_____Surface Water Color/Odor:_____ Inspection Sample Color/Odor: _____

_____

Photograph # (if taken): _____

_____

Recreation Uses Observed: _____

_____

Aquatic Life Observed: _____

_____

Other Notes (presence of algae, wildlife observations, pump run time, etc.): _____

_____

_____

_____

_____

QA/QC (circle one): FD / LD / FB / NONE C.O.C. Time: _____

_____

_____

Field Personnel (signature)

CHAIN-OF-CUSTODY

Sample Results TAT: ☐ Rush ☐ Standard 10 Day (days)

SHIPPED TO:

_____

_____

_____

SEND RESULTS TO:

NAME: _____

OFFICE: _____

☐ PLEASE FAX/EMAIL RESULTS TO ADDRESS MARKED ABOVE

PROJECT NAME/LOCATION:

EDF RESULTS REQUIRED YES NO

SITE GLOBAL ID:

PROJECT NO.:

SAMPLED BY: (Signature)

Date	Time	Sample Site Name	Sample ID (if different)	Matrix	# of containers	Preservatives (see below)	ANALYSIS/ METHOD:	Field Filtered									REMARKS	LAB ID #

Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Date:	Time:
Relinquished By: (Signature)			Received By: (Signature)		

Matrix: DW Drinking Water; WW Waste Water; HWW Hazardous Waste (Water); S Soil/Solid; SW Stormwater; GW Groundwater

Preservative: 1 4°C; 2 HCL; 3 NaOH; 4 $Na_2S_2O_3$; 5 HNO_3; 6 H_2SO_4; 7 Other _____

Original - Send | Yellow - File | Pink - Log Book

LOW DISSOLVED OXYGEN
MONITORING AND ASSESSMENT WORK PLAN

Prepared for
City of Stockton
Department of Municipal Utilities
2500 Navy Drive
Stockton, CA 95206-1191

and

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TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 OVERVIEW 1

2.1 IMPAIRED WATERBODIES 2

3.0 CURRENT REGIONAL WATER BOARD DISSOLVED OXYGEN REQUIREMENTS FOR STOCKTON 2

3.1 LOW DO WORK PLAN OBJECTIVES 2

4.0 PREVIOUS REGIONAL WATER BOARD DISSOLVED OXYGEN REQUIREMENTS FOR STOCKTON 3

4.1 SUMMARY OF THE 2005 TIDAL MIXING AND EXCHANGE STUDY 3

4.2 SUMMARY OF THE SMITH CANAL/DO WORK PLAN FINAL REPORT 4

5.0 PROPOSED 2007-2012 LOW DO WORK PLAN MONITORING PROGRAM 5

5.1 LIMITING FACTORS TO LOW DO MONITORING LOCATION SELECTION 7

5.1.1 Waterway Geomorphology and Hydrology 7

5.1.2 Limitation: 13267 Letter Specified *In-Situ* Monitoring Locations 9

5.1.3 Security 16

5.2 LOW DO MONITORING LOCATIONS 17

5.2.1 Smith Canal 17

5.2.2 Mosher Slough 20

5.2.3 Lower Calaveras River 24

5.2.4 Stockton Channel 29

5.2.5 Five-Mile Slough 33

5.2.6 Mormon Slough 36

5.3 MONITORING PARAMETERS 39

5.3.1 *In-Situ* Monitoring Parameters 40

5.3.2 Receiving Water/Urban Discharge Grab Sample Collection and Laboratory Analyses 40

5.3.3 Sediment Grab Sample Collection and Laboratory Analyses 42

5.4 FIELD PROCEDURES 43

5.4.1 Health and Safety Procedures 44

6.0 STOCKTON CHANNEL BUBBLER SYSTEM EFFECTIVENESS ASSESSMENT 45

7.0 REPORTING 46

8.0 PROPOSED SCHEDULE 46

LIST OF PHOTOS

Photo 1: DWSC Gravity Discharge Outfall (DW-116) (April 22, 2008) 8
Photo 2: Mormon Slough Gravity Discharge Outfall (MM-140) (April 22, 2008) 8
Photo 3: Mormon Slough Orchard at Gillis Road (April 14, 2008)..... 9
Photo 4: Mosher Slough Immediately Upstream of the SUA (April 1, 2008)..... 10
Photo 5: Mosher Slough Immediately Upstream of the SUA (April 1, 2008)..... 10
Photo 6: The Calaveras River at Solari Ranch Road (April 1, 2008). 11
Photo 7: The Calaveras River at Solari Ranch Road (April 1, 2008). 11
Photo 8: Low Tide at Mosher Slough, Mariner's Drive (April 22, 2008) 12
Photo 9: Low Tide at Mormon Slough, Lincoln Avenue (April 22, 2008)..... 13
Photo 10: Low Tide at Five-Mile Slough, Plymouth Avenue (April 22, 2008) 13
Photo 11: Low Tide at Calaveras River, Pacific Avenue (April 22, 2008)..... 14
Photo 12: Mosher Slough at the La Morada Basin (MS-5R) Outfall Location (March 3, 2008). 14
Photo 13: Five Mile Slough at Alexandria Place (April 1, 2008)..... 15
Photo 14: Calaveras River at West Lane Bridge (April 14, 2008)..... 15
Photo 15: "Tagging" (April 14, 2008) 16
Photo 16: Mormon Slough immediately east of Wilson Way, Stockton (October 21, 2004)..... 17
Photo 17: Yosemite Lake receiving water in-situ monitoring location (SC-5R: March 26, 2008). 19
Photo 18: Legion Park Pump Station (LPPS; SC-1; April 24, 2008) 19
Photo 19: Mosher Slough (MS-6R; March 25, 2008)..... 21
Photo 20: Mosher Slough (MS-14R; April 14, 2008)..... 22
Photo 21: Mosher Slough/Kelly Drive Pump Station (MS-14; April 24, 2008)..... 23
Photo 22: Mosher Slough/La Morada Pump Station (MS-22; May 2, 2008) 23
Photo 23: Calaveras River at Bellota Weir (April 17, 2008) 24
Photo 24: Lower Calaveras River (CR-3R; April 14, 2008)..... 26
Photo 25: Lower Calaveras River at Pacific Avenue, Stockton, CA (CR-4R; April 14, 2008)..... 27
Photo 26: Calaveras River/Brookside Pump Station (CR-39; April 22, 2008)..... 28
Photo 27: Calaveras River/Bianchi Pump Station (CR-42; April 24, 2008)..... 28
Photo 28: Bianchi Pump Station (CR-42; April 24, 2008) 29
Photo 29: Stockton Channel (DW-2R; March 24, 2009)..... 31
Photo 30: McLeod Lake and the Stockton Events Center, Stockton (DW-1R; March 26, 2009) 32
Photo 31: View of Stockton Channel DW-115 at Low Tide (March 26, 2009). 32
Photo 32: View of Five-Mile Slough at Cumberland Place (5M-25R; October 21, 2004)..... 34
Photo 33: Five-Mile Slough at Plymouth Road, Stockton, CA (5M-2R; April 14, 2008)..... 35
Photo 34: Five-Mile Slough/Lighthouse Drive Pump Station (5M-25; April 24, 2008) 35
Photo 35: Five-Mile Slough/Alexandria Drive Pump Station (5M-28; April 24, 2008) 36
Photo 36: Mormon Slough north of the Interstate 5/State Route 4 Interchange (April 22, 2008). 38
Photo 37: Mormon Slough at the Weber Avenue Bridge (MM-4R; April 15, 2008)..... 38
Photo 38: Mormon Slough Commerce Street Lift Station (MM-150: July 21, 2005)..... 39

LIST OF INSETS

Inset 1: Proposed Smith Canal Low DO Work Plan Monitoring Locations 18
Inset 2: Proposed Mosher Slough Low DO Work Plan Monitoring Locations 20
Inset 3: Proposed Lower Calaveras River Low DO Work Plan Monitoring Locations 25
Inset 4: Proposed Stockton DWSC Low DO Work Plan Monitoring Locations 30
Inset 5: Proposed Five-Mile Slough Low DO Work Plan Monitoring Locations 33
Inset 6: Proposed Mormon Slough Low DO Work Plan Monitoring Locations 37

LIST OF TABLES

Table 1: Low DO Impaired Waterways within the SUA 2
Table 2: Proposed SUA Low DO Work Plan In-Situ and Grab Sample Monitoring Locations 6
Table 3. Low DO Work Plan - In-Situ Water Quality Parameters 40
Table 4. Low DO Work Plan Water Quality Laboratory Analyses 41
Table 5. Low DO Work Plan Sediment Sample Laboratory Analyses 42
Table 6: Low DO Work Plan Implementation Schedule 46

ATTACHMENTS

ATTACHMENT A

- Figure 1: San Joaquin Waterways within the Greater Stockton Urbanized Area, Stockton, California
- Figure 2: Stormwater Discharge Locations within the Greater Stockton Urbanized Area, Stockton, California
- Figure 3: Impaired Portions of Stockton Waterways 303(d)-Listed for Low Dissolved Oxygen within the Greater Stockton Urbanized Area, Stockton, California
- Figure 4: Proposed Low DO Monitoring Locations within the Greater Stockton Urbanized Area, Stockton, California

ATTACHMENT B

- Resource Reference List

LOW DISSOLVED OXYGEN
MONITORING AND ASSESSMENT WORK PLAN

1.0 INTRODUCTION

Periodic depletions of DO levels below the Water Quality Control Plan (Basin Plan) water quality objective (WQO) have resulted in the designation of six waterways[1] within the Stockton Urbanized Area[2] (SUA) (Figure 1, Attachment A) as DO-impaired waterbodies under the Federal Clean Water Act Section 303(d) [303(d)]. As directed by the California Regional Water Quality Control Board, Central Valley Region (Regional Water Board) *Requirement for Technical Report Pursuant to California Water Code Section 13267* (13267 Letter), dated November 14, 2007, and referenced in the Regional Water Board's National Pollutant Discharge Elimination System (NPDES) Permit No. CAS083470, Order R5-2007-0173 (Permit), approved December 6, 2007, the City of Stockton (City) and the County of San Joaquin (County) (collectively, Permittees) are required to monitor and assess the DO impairment and toxic hot spots identified in the Stockton Area waterways. This Low Dissolved Oxygen (DO) Monitoring and Assessment Work Plan (Low DO Work Plan) is designed to assess the impacts from urban runoff on receiving water quality with respect to low DO.

2.0 OVERVIEW

Stockton is located within California's Central Valley approximately 83 miles east of San Francisco and 45 miles south of Sacramento. Stockton encompasses approximately 60 square miles with an average elevation of 15 feet; the western portion of the city lies within the boundary of the Sacramento-San Joaquin Delta. The County contains an unincorporated urbanized area which surrounds the city. The Permittees own and operate the municipal storm drain system which collects stormwater and surface water runoff within the SUA. The City has identified approximately 400 miles of storm drain lines. The City and County have identified 158 and 47 outfalls, respectively, within their jurisdictions that discharge stormwater and surface runoff generated from various land uses (Figure 2, Attachment A).

Stockton area waterways drain westerly to the San Joaquin River (SJR), which flows northward along the western portion of the SUA. Tidal variation generally ranges from 0 feet mean sea level (msl) to approximately four feet above msl. Besides direct groundwater inputs and tidal exchange, all inputs to Smith Canal, Five-Mile Slough, and the urbanized portion of Mormon Slough[3] are from the City's urban stormwater system. In addition to urban runoff, the Calaveras River and Mosher Slough receive inflow from upstream agricultural runoff and tailwaters. In general, the urbanized portion of the Calaveras River receives upstream flow exclusively from the Stockton Diversion Canal (Figure 1, Attachment A). In most areas of the SUA, dry weather flow and stormwater runoff discharge by gravity to pump stations where the flows are released to slough and rivers. The quality and quantity of these discharges vary considerably and are affected by hydrology, geology, land use, season, and sequence and duration of precipitation events.

---

[1] The Stockton Deep Water Ship Channel, Calaveras River, Five-Mile Slough, Mormon Slough, Mosher Slough, and Smith Canal have been designated as DO impaired waterways within the SUA. The San Joaquin River (SJR) is also listed as a DO impaired waterway, but is not included within the SUA.

[2] The SUA includes the City and portions of San Joaquin County.

[3] The upstream portion of Mormon Slough within the SUA receives minimal agricultural input due to construction of the Stockton Diversion Canal.

2.1 IMPAIRED WATERBODIES

Six waterways within the greater SUA have been 303(d)-listed as DO impaired waterbodies: the Calaveras River, the Stockton Deep Water Ship Channel (DWSC), Five-Mile Slough, Mormon Slough, Mosher Slough, and Smith Canal (Table 1, below, and Figure 3, Attachment A). The Basin Plan (CRWQCB-CVR-1998) contains a numeric objective which requires that DO levels in SJR waterbodies be maintained above 6.0 milligrams per liter (mg/L) between September 1 and November 30 and above 5.0 mg/L at all other times; this requirement is reiterated in the Permit (Provision C.1.a).

Table 1: Low DO Impaired Waterways within the SUA

Waterbody	Reach	Estimated Size Affected
Calaveras River	Lower	5.8 Miles
Delta Waterways	Stockton DWSC	1,603 Acres
Five-Mile Slough	Alexandria Place to Fourteen Mile Slough	1.6 Miles
Mormon Slough	Commerce Street to Stockton DWSC	0.93 Miles
Mosher Slough	Downstream of Interstate 5	1.3 Miles
Smith Canal	Entirety	2.3 Miles

Source: Regional Water Board 13267 Letter, November 14, 2007
DWSC = Stockton Deep Water Ship Channel

3.0 CURRENT REGIONAL WATER BOARD DISSOLVED OXYGEN REQUIREMENTS FOR STOCKTON

Section 4 of the 13267 Letter and Provision D(28)(b)(i/ii) of the Permit directed the Permittees to develop and implement a low DO monitoring and assessment work plan. The Permittees are directed to identify areas and/or activities which contribute to low DO concentrations in the receiving water, such as unsewered areas within the SUA, natural vegetation, animal and bird waste, discharges of food wastes and other oxygen demanding substances, or direct discharges from existing collection systems due to sanitary sewer system overflow or blockage. A final report, due December 1, 2012, shall include identification of the Best Management Practices (BMPs) that will be implemented to address areas and/or activities as previously identified including assessment of BMPs and a time schedule for implementation.

3.1 LOW DO WORK PLAN OBJECTIVES

Pursuant to Regional Water Board directives, the Low DO Work Plan is a component of the Permittees' Stormwater Management Programs (SWMP) and discusses the following 13267 Letter and Permit requirements:

- Development of a two-year sampling and continuous monitoring program for the Calaveras River, Stockton DWSC near McLeod Lake (Stockton Channel), Five-Mile Slough, Mormon Slough, and Mosher Slough. Smith Canal requires a minimum one-year sampling and continuous monitoring program.
- Identification of monitoring sites consisting of: two urban runoff/discharge locations on each waterbody (one on Smith Canal into Yosemite Lake) and two receiving water monitoring locations on each waterbody (one on Smith Canal).

- Installation of continuous monitoring (+/- 15 minute intervals), *in-situ* water quality data recorders at each receiving water location for the following parameters, at a minimum: date, time, temperature, depth, DO, pH, turbidity, and electrical conductivity (EC).
- Collection and laboratory analyses[4] of monthly grab samples from both receiving water and urban discharge locations for nutrients and oxygen demanding substances. Flow quantity and velocity shall be monitored at the urban discharge locations. In addition, grab samples will be collected and analyzed during a minimum of two storm events per year.
- Collection of the following field parameters at each location (at a minimum) during each grab sampling event: date, time, weather, water temperature, DO, pH, EC, salinity, turbidity, and total dissolved solids (TDS).

4.0 PREVIOUS REGIONAL WATER BOARD DISSOLVED OXYGEN REQUIREMENTS FOR STOCKTON

As directed by their previous NPDES Permit, No. CAS083470, Order R5-2002-0181 (Previous Order) the Permittees implemented a Water Quality Based Program to target specific waterbodies and evaluate the spatial and temporal trends of identified pollutants of concern (POCs) impacting or potentially impacting local water quality, as well as appropriate POC control measures. During 2002-2007, these special programs included a Pathogen Plan; Pesticide Plan; DO Plan, Smith Canal Work Plan; and, Best Management Practices Effectiveness Study. Data from these special studies have been reported in the Permittees' Annual Reports.

With regards to low DO, Provision D(18)(c) and D(18)(d) of the Previous Order required the development of two separate work plans addressing DO impairment of waterbodies within the SUA. In August 2003, the *Smith Canal Drainage Area Analysis - Dissolved Oxygen Work Plan* (Smith Canal Plan) was submitted and subsequently approved by the Regional Water Board in a letter dated December 16, 2003. In March 2004, the *Dissolved Oxygen Plan* (*DO Plan*) was finalized with a revision letter to the Regional Water Board on September 27, 2004. A summary of the field and laboratory analytical data compiled during the 2004/2005 Smith Canal Plan and DO Plan monitoring programs was presented in the *Smith Canal Drainage Area Analysis and Dissolved Oxygen Work Plan Final Report (Smith Canal/DO Work Plan Final Report)*, dated October 2, 2006. Additional low DO reports and monitoring programs conducted by the Permittees are provided in the Resource Reference List, Attachment B.

During the 2007-2012 Permit term, Water Quality Based Program special studies include four work plans, three continued from the Previous Order (Pathogen Plan, Pesticide Plan, and Low DO Plan) and the Mercury Plan. The Low DO Work Plan builds on the previous work that has been completed and is designed to assess the impacts from urban runoff on receiving water quality with respect to low DO.

4.1 SUMMARY OF THE 2005 TIDAL MIXING AND EXCHANGE STUDY

The *Tidal Mixing and Exchange Study* (Circulation Study) completed in February 2005 (Jones & Stokes Associates and Litton, 2005) was designed to assess the tidal exchange and mixing between the SJR and Stockton's urban waterways and evaluate the effect of tidal exchange on pollutant transport, particularly during storm events. Smith Canal and the tidally influenced portion of the Calaveras River channel[5] were studied in this investigation. The Circulation Study indicated that, within the SUA, the upstream ends of Smith Canal and Calaveras River are more strongly influenced by stormwater discharges than tidal action.

[4] List of laboratory analytes are provided in Section 8.3.2 of the Low DO Work Plan.
[5] The upstream end of the Calaveras River tidal channel is located three miles upstream of the mouth of the SJR.

Downstream sections of these waterbodies, particularly within one mile of the confluence with the SJR, are less influenced by stormwater inputs due to higher rates of exchange and dilution from the SJR. Due to very low flushing rates, stormwater discharges to Yosemite Lake have a significant residence time. The Circulation Study indicated that it would take 20 days for stormwater discharged at the upstream end of Smith Canal to be diluted to 50% by SJR tidal exchange alone. In addition, the percentage of SJR water that has mixed all the way to the upstream end at Yosemite Lake is less than 20% (Jones & Stokes Associates and Litton, 2005).

Very limited mixing of SJR water occurs at the upstream end of tidal exchange, approximately three miles upstream from the SJR confluence. However, the Circulation Study indicated that tidal effects did extend farther upstream to the Stockton Diversion Canal. The Circulation Study indicated that, at the end of 20 days, the fraction of SJR water that has mixed one mile upstream due to tidal exchange is about 70% and only about 10% has mixed three miles upstream in the Calaveras River channel.

Due to deeper channel geometry, tidal exchange with the SJR occurs at a slower rate in the Calaveras River than in Smith Canal. Based on Calaveras River dye observation studies, the report concluded that a significant improvement in water quality could be realized if flushing flows of higher quality waters could be engineered into the hydrology of Smith Canal. However, the feasibility of this strategy requires a more detailed investigation.

4.2 SUMMARY OF THE SMITH CANAL/DO WORK PLAN FINAL REPORT

The *Application of Stockton's Water Quality Model to Evaluate Stormwater Impact on Smith Canal*, dated February 23, 1999 (Chen and Tsai, 1999) indicated that, with respect to low DO, the terminal point of Smith Canal at Yosemite Lake was the most severely impacted by stormwater input, due to low flushing and minimal tidal exchange with the SJR. Laboratory analytical data collected during the Smith Canal Plan and DO Plan monitoring programs indicate that overall concentrations of oxygen demanding substances in urban runoff, while potentially a contributor, do not appear to cause an immediate DO impact in the receiving waters. Water samples collected from Mosher Slough and Smith Canal indicate that although concentrations of oxygen-demanding compounds in urban runoff were generally higher than receiving water concentrations, they were generally well below identified water quality objectives. Biostimulants and BOD concentrations were more pronounced during wet season storm events relative to dry season events and were marginally higher downstream of urban discharges in the dry season relative to upstream concentrations.

Previous studies indicated that the acute impact affecting low DO in Smith Canal, primarily at the beginning of the wet season, was the result of turbidity. While potentially a contributing factor, results of the Smith Canal Plan 2004/2005 *in-situ* monitoring program indicate that the primary source of the oxygen sags is not sediment transport from the storm drain system, but likely the result of oxygen demanding substances associated with resuspended, biologically-active (reduced) lake sediments. Sedimentation in Smith Canal has also provided a large reservoir of fine organic particles that are easily suspended during high kinetic energy events, including discharges from the storm drain system triggering resuspension of fine lake and canal sediments proximal to the discharge location(s).

Dissolved oxygen concentrations are dependent upon a variety of control factors; consequently, no single factor can be used to wholly explain the observed DO changes in Smith Canal throughout the year. For instance, resuspension of sediments is likely not responsible for the observed declines in DO concentrations during the dry season, and thus there may be two different mechanisms affecting DO during the wet and dry seasons. The extended periods of low DO below the water quality objective of 5.0

mg/L during the warm dry season months appear to be primarily a function of the canal's morphology, climatic and biological influences.

With respect to Mosher Slough, laboratory analytical results do not indicate that BOD and nutrient loading from urban discharge and upstream agricultural tailwaters significantly contribute to the DO depletion in the 303(d)-listed portion of the slough. In general, detected BOD and biostimulant concentrations in Mosher Slough did not exceed stated CALFED goals and maximum contaminant levels (MCLs). During the DO Plan monitoring program, water quality objectives were not exceeded in any of the field parameters collected the Mosher Slough monitoring locations. Overall, the results of the *DO Plan* monitoring do not support 303(d) listing from a DO perspective of the 1.3 mile section of Mosher Slough west of Interstate 5 (I-5).

5.0 PROPOSED 2007-2012 LOW DO WORK PLAN MONITORING PROGRAM

With the exception of Smith Canal and Mormon Slough (to be discussed in greater detail in Sections 5.2.1 and 5.2.6, respectively), monitoring locations will consist of two urban runoff (discharge) and two receiving water locations on each waterbody (Figure 4, Attachment A). One discharge and one receiving water monitoring location for Smith Canal will be sited at Yosemite Lake. One discharge and one receiving water monitoring location for Mormon Slough will be sited near the confluence with the Stockton Channel.

As discussed in Section 5.1, the shallow and discontinuous nature of the Stockton's waterways preclude placement of receiving water monitoring locations upstream of the SUA. In general, discharge monitoring locations will represent a large catchment area (watershed) upstream of the receiving water locations; the upstream discharge monitoring sites located as close as possible to the eastern SUA boundary (Figure 4, Attachment A).

Due to security/liability and permitting concerns and multi-jurisdictional complications, *in-situ* monitoring equipment will not be installed at mid-channel, mid-depth in the downstream, deeper water receiving water locations (Mosher Slough, the Calaveras River, the Stockton DWSC near McLeod Lake (Stockton Channel), and Mormon Slough). Alternatively, the Permittees will seek to install *in-situ* monitoring equipment on established "permanent" structures (docks, pilings, etc.) away from high risk/high-traffic areas.

The following sections, Table 2, on the following page, and Figure 4 (Attachment A) describe the *in-situ* and urban discharge monitoring locations on the following SUA waterways: Smith Canal, Mosher Slough, the Lower Calaveras River, the Stockton Channel, Five-Mile Slough, and Mormon Slough. The low DO monitoring program must be adaptive. Consequently, the monitoring locations and procedures proposed may require modification to meet the both the requirements of the Permittees' Water Quality Based Program and hydrologic and security concerns.

Table 2: Proposed SUA Low DO Work Plan In-Situ and Grab Sample Monitoring Locations

Waterbody	Monitoring Location (nearest urban/ geographic feature)	Receiving Water *In-Situ* and Grab Sample Monitoring Location (Site ID)	Urban Discharge Monitoring Location (Site ID)
Smith Canal	Yosemite Lake	SC-5R (upstream)	
	Legion Park Pump Station		SC-1 (upstream)
Mosher Slough	Due South of Bear Creek Confluence	MS-6R (downstream)	
	Mariner's Bridge	MS-14R (upstream)	
	Kelly Drive Pump Station		MS-14 (downstream)
	La Morada Basin		MS-22 (upstream)
Calaveras River	SJR Confluence	CR-3R (downstream)	
	Pacific Avenue Bridge	CR-4R (upstream)	
	Brookside Pump Station		CR-39 (downstream)
	Bianchi Pump Station		CR-42 (upstream)
Stockton Channel	East of I-5 and Mormon Slough Confluence	DW-2R (downstream)	
	McLeod Lake	DW-1R (upstream)	
	Harrison Street		DW-115 (downstream)
	McLeod Lake		DW-123 (upstream)
Five-Mile Slough	Fourteen-Mile Slough	5M-25R (downstream)	
	Plymouth Road	5M-2R (upstream)	
	Lighthouse Drive Pump Station		5M-25 (downstream)
	Alexandria Place Pump Station		5M-28 (upstream)
Mormon Slough	Weber Avenue Bridge	MM-4R (downstream)	
	Commerce Street		MM-150 (downstream)

5.1 LIMITING FACTORS TO LOW DO MONITORING LOCATION SELECTION

5.1.1 Waterway Geomorphology and Hydrology

Limitation: 13267 Letter Specified Downstream Monitoring Locations

The 13267 Letter indicates that two discharge monitoring locations will be sited on each waterbody, with the exception of Smith Canal. One urban discharge monitoring site will represent a large downstream catchment area as close as possible to the confluence with the Stockton DWSC and be located just east of the downstream receiving water monitoring location.

Mosher Slough

Discussion:

The portion of Mosher Slough 303(d)-listed as impaired by low DO is entirely downstream of all urban discharge outfalls with the exception of MS-13; a small pump station outfall located approximately 1,600 feet west of I-5. The MS-13 outfall is not considered a representative urban discharge sampling location due to its overall size and location.

Proposed Resolution:

The downstream SUA discharge location that has been identified for Mosher Slough will represent a large catchment area as close as possible to the waterway's confluence with the SJR and upstream of the 303(d)-listed segment for low DO.

Stockton Channel and Mormon Slough

Discussion:

All urban discharge outfalls located along the Stockton Channel and Mormon Slough (Photos 1 and 2, respectively, on the following page) consist of tidally influenced gravity outfalls, with the exception of a lift station (MM-150) on Mormon Slough located at the Commerce Street Overpass (Figure 2, Attachment A).

Proposed Resolution:

With the exception of the Stockton Channel, urban runoff/discharge grab samples for laboratory analyses will be collected from the wet wells of pump stations that discharge directly to a receiving water and represent large catchment areas within the SUA. With respect to the Stockton Channel, urban runoff/discharge grab samples will be collected from exposed/accessible gravity outfalls, conditional upon the presence of discharge and absence of tidal impact. To the greatest extent possible, monthly grab sample events[6] will be scheduled so that tidal events will have a minimal impact (i.e. during low tide); however, grab samples will not be collected if the outfalls are tidally impacted or are not actively discharging during a regularly scheduled sampling event.

[6] Monthly sampling events for the Low DO Work Plan will be conducted exclusively during daylight hours.

Photo 1: DWSC Gravity Discharge Outfall (DW-116) (April 22, 2008)
A low tide view of the DW-116 outfall located along the north shore of the Stockton Channel near the Stockton Arena. Note the waterline above the outfall indicating that the outfall is generally impacted by tidal fluctuations.

Photo 2: Mormon Slough Gravity Discharge Outfall (MM-140) (April 22, 2008)
The MM-140 outfall is located along the eastern wall of the Mormon Slough levee proximal to the Lincoln Avenue Overcrossing

5.1.2 Limitation: 13267 Letter Specified *In-Situ* Monitoring Locations

The 13267 Letter indicates that upstream discharge and receiving water locations will be representative of a large catchment area located as close as possible to the boundary of the SUA. The upstream receiving water location will be representative of what is entering the waterbody from upstream of the SUA or from upstream of the terminus of the waterbody should the terminus be within the urban area boundary.

Upstream Hydrology

Discussion:

During the dry and agricultural irrigation seasons, sections of the upstream portions of Mormon Slough, Mosher Slough, and the Calaveras River are virtually dry or are subject to intermittent irrigation water supply flows. East of the Stockton Diversion Canal, the urbanized portion of Mormon Slough no longer receives upstream flows; east of State Route 99 (approximately), portions of the slough have been converted to orchards (Photo 3, below).

Even during "normal" wet seasons, Mosher Slough (Photos 4 and 5, on the following page) and the Calaveras River (Photos 6 and 7, on the following pages) immediately upstream of the SUA can consist of isolated "puddles" to dry drainages for extended periods of time.

Proposed Resolution:

Upstream receiving water locations will be sited at the farthest upstream extent of each waterway that consistently has sufficient water column to support *in-situ* water quality monitoring. In the normally dry upstream reaches near the SUA boundary, field conditions will be noted and verified through photo documentation and water depth measurements collected (if applicable)

Photo 3: Mormon Slough Orchard at Gillis Road (April 14, 2008).
View is from the southbound lane of Gillis Road (east of State Route 99) looking east.

Photo 4: Mosher Slough Immediately Upstream of the SUA (April 1, 2008).
View is from the creek bottom at the Mosher Slough railroad crossing (east of State Route 99) looking southwest. Note the isolated puddle in photo center.

Photo 5: Mosher Slough Immediately Upstream of the SUA (April 1, 2008).
An isolated puddle located immediately northeast of Photo 4, above.

Photo 6: The Calaveras River at Solari Ranch Road (April 1, 2008).
Located in agricultural lands approximately 1.25 miles upstream of the SUA, the view is from the dry creek bottom looking southwest.

Photo 7: The Calaveras River at Solari Ranch Road (April 1, 2008).
The view is from the same vantage point as Photo 6, above, looking northeast. The structure in the background is believed to be a private agricultural weir for irrigation purposes.

Tidal Impact

Discussion:

Within the SUA, the zone of tidal exchange extends approximately three (3) miles from the confluence with the SJR; however, the zone of significant mixing with the SJR occurs within a more limited extent of approximately one mile. Along the Calaveras River, the effects of tidal fluctuations may extend east to the Stockton Diversion Canal (Jones and Stokes, February 2005).

During low and particularly during spring tides, and with the exception of the Stockton Channel and Smith Canal, the tidally influenced portions of the SUA waterways often resemble boggy mud flats or marshlands (Photo 8, below, and Photo 9, on the following page) to shallow streams (Photo 10 on the following page, and Photo 11, on the following pages). Upstream of the tidal zone, Stockton's waterways (Photos 12, 13, and 14, on the following pages) may seasonally resemble anywhere from a dry drainage channel, to isolated "puddles", to low volume, very shallow, intermittent streams.

Proposed Resolution:

In-situ receiving water monitoring locations will be sited at locations with consistently sufficient depth (water column) during low, and particularly spring, tides for the data recorders to function continuously and securely.

Photo 8: Low Tide at Mosher Slough, Mariner's Drive (April 22, 2008)
View is from Mariner's Drive, immediately west of I-5) at the western extent of the SUA looking west. Mud flats are evident on the north side of the waterway; the deepest portion of the waterway is a meandering channel approximately two to three feet deep on the south side of the waterway.

Photo 9: Low Tide at Mormon Slough, Lincoln Avenue (April 22, 2008)
View is from Lincoln Avenue Bridge looking east. At the time of this photo, the deepest portion of the waterway, located to the right of the photo, was noted to be approximately six inches deep.

Photo 10: Low Tide at Five-Mile Slough, Plymouth Avenue (April 22, 2008)
View is from Plymouth Avenue (just east of I-5) looking east. The deepest portion of the slough at this location, towards the center of the channel, was noted to be approximately two feet deep.

Photo 11: Low Tide at Calaveras River, Pacific Avenue (April 22, 2008)
View is from the north side of the river looking east. A rock "dam" is evident in the background under the northbound span of the Pacific Avenue Bridge. Isolated pools approximately four feet deep (in the foreground) were noted along the river west of the "dam".

Photo 12: Mosher Slough at the La Morada Basin (MS-5R) Outfall Location (March 3, 2008).
View is from the north bank of the levee looking to the northeast. This location is immediately east of the Union Pacific Railroad tracks.

Photo 13: Five Mile Slough at Alexandria Place (April 1, 2008).
View is from the south canal bank in the northeast corner of Swenson Park looking north/northeast.

Photo 14: Calaveras River at West Lane Bridge (April 14, 2008).
View is from the West Lane Bridge looking east. At the time of this photo, the water depth is approximately six to eight inches deep at this location.

5.1.3 Security

Discussion:

In general, equipment and personnel security is a principal concern along all of the SUA waterways. Vandalism (Photo 15, below) is a primary concern especially at locations where access to the waterways is relatively unobstructed and where water levels potentially leave equipment visible during low water episodes. In addition, the entire urbanized length of Mormon Slough has a substantial transient population; west of Commerce Street to Wilson Way (Photo 16, on the following page), Mormon Slough is an underground culvert.

Resolution:

In-situ receiving water monitoring locations will be sited at locations with sufficient water column during low, and particularly spring, tides for the data recorders to function properly and surreptitiously. Receiving water locations will be sited away from known transient encampments. Security for both personnel and equipment will be of the utmost priority in selection of the *in-situ* receiving water locations; consequently, *in-situ* monitoring locations may need to be modified[7] during implementation of the Low DO Work Plan.

Photo 15: "Tagging" (April 14, 2008)
"Tagging" evident along Calaveras River immediately east of confluence with the Stockton Diversion Canal

[7] Prior to any changes to monitoring site locations, the Permittees will seek written concurrence from the Regional Water Board Executive Officer.

Photo 16: Mormon Slough immediately east of Wilson Way, Stockton (October 21, 2004).
View is from the south canal bank looking north.

5.2 LOW DO MONITORING LOCATIONS

5.2.1 Smith Canal

In a staff report dated April 2, 2002, the Regional Water Board recommended the addition of Smith Canal to California's Clean Water Act Section 303(d) list due to impairment by low DO, organophosphate pesticides, and pathogens. Smith Canal is a tidally influenced, shallow, east/west-constructed, freshwater slough that extends approximately 2.6 miles east from its confluence with the SJR to its upstream terminus at Yosemite Lake in central Stockton, California. The canal averages approximately 105 feet in width with an average depth of four to six feet (with an approximately ten foot maximum depth at the SJR confluence) and an approximate ebb to flood stage difference of up to approximately four feet. Besides direct groundwater inputs and tidal exchange, all inputs to Smith Canal are from stormwater runoff draining from an urbanized watershed that encompasses approximately 3,306 acres.

The proposed low DO receiving water *in-situ* and urban discharge monitoring locations for Smith Canal are shown in Inset 1, on the following page, and Figure 4, Attachment A. Site specific details are provided in the following section.

Inset 1: Proposed Smith Canal Low DO Work Plan Monitoring Locations
Receiving Water = SC-5R; Urban Discharge = SC-1

<u>Proposed Smith Canal Low DO Work Plan Monitoring Locations</u>

One receiving water *in-situ*, multi-parameter, water quality monitoring station will be sited in the approximate center of Yosemite Lake (SC-5R) located at the eastern terminus of Smith Canal approximately 2.3 miles upstream of the confluence with the SJR (Photo 17, on the following page). At low tide, the lake at SC-5R is approximately 3.5 feet deep. In order to compensate for tidal influence and the overall shallow depth of Yosemite Lake, the in-situ water quality field equipment will be installed in a fixed position approximately 1.5 feet above the lake substrate.

Discharge grab samples for laboratory analyses will be collected monthly from the Legion Park Pump Station (LPPS; SC-1, Photo 18, on the following page) located in the northeast corner of Yosemite Lake. Approximately 62% of the Smith Canal watershed (approximately 1,866 acres) drains to the LPPS. Stormwater discharge is predominantly from residential and commercial property with a small percentage of public land use.

Photo 17: Yosemite Lake receiving water in-situ monitoring location (SC-5R: March 26, 2008).
Yosemite Lake is the upstream terminus of Smith Canal.

Photo 18: Legion Park Pump Station (LPPS; SC-1[8]; April 24, 2008)
The station's composite sampler is shown in the left-hand foreground; the low flow summer pump is visible in the left-hand background. Wet well access is located in the back center of the photo.

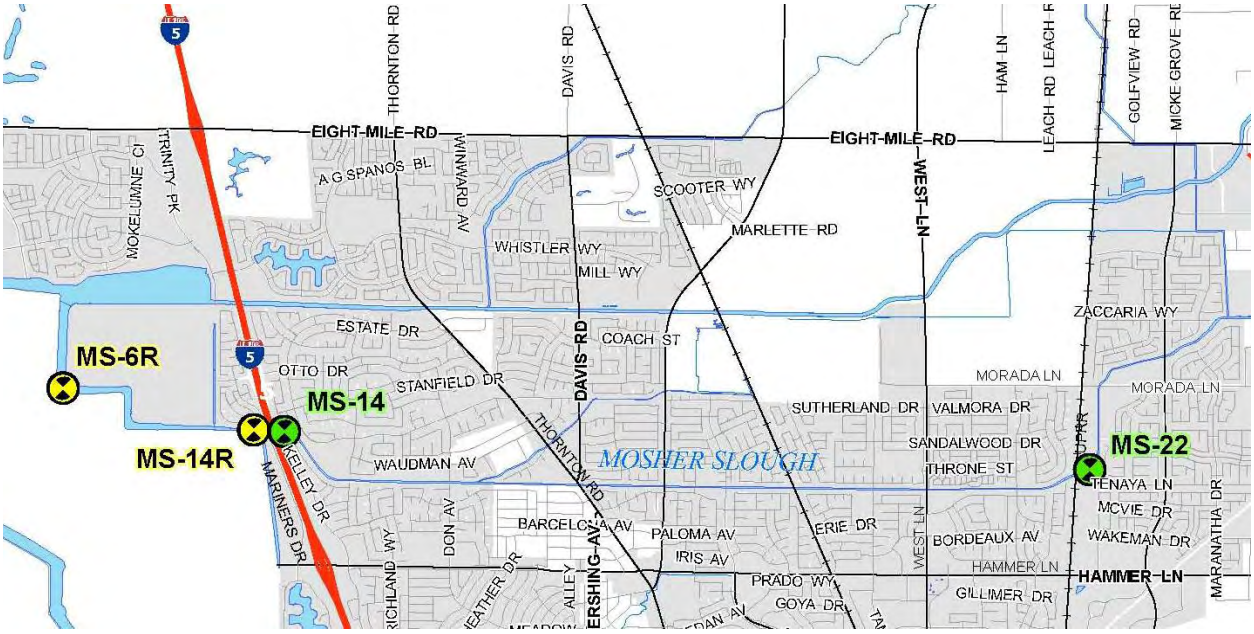
[8] The designated pump station District ID number for the Legion Park Pump Station corresponds to SC-57.

5.2.2 Mosher Slough[9]

Mosher Slough is one of Stockton's least-improved waterways and is located in the northern portion of the SUA. A 1.3 mile section of Mosher Slough downstream of I-5 is 303(d)-listed for organic enrichment/low DO impacts and is entirely downstream of the SUA. Mosher Slough (Mosher Creek) flows southwest from the Sierra Nevada foothills to the SJR; but within the urbanized area, the waterway is oriented roughly east/west. South Bear Creek flows southwest into the western portion of the slough. Land use within the urbanized portion of the Mosher Slough watershed is dominantly residential with a small percentage being commercial and public lands.

Prior to entering the Stockton city limits, the slough receives limited inflow from agricultural runoff and tailwaters. A small water control structure diverts water from the Calaveras River downstream of the Calaveras Headworks (built in 1933 and located approximately 20 miles east of Stockton) for irrigation purposes. Mosher Slough flows naturally only when it receives flow from surface runoff.

Two low DO receiving water *in-situ* and two urban discharge monitoring locations are proposed for Mosher Slough (Inset 2, below, and Figure 4, Attachment A). Site specific details are provided in the following pages.



Inset 2: Proposed Mosher Slough Low DO Work Plan Monitoring Locations
Receiving Water = MS-6R and MS-14R
Urban Discharge = MS-14 and MS-22

[9] In a letter dated December 23, 2008, the Regional Water Board Total Maximum Daily Load (TMDL) staff indicated that the selected Mosher Slough monitoring locations, as proposed in the originally submitted Low DO Work Plan, dated June 3, 2008, are suitable and consistent the requirements of the 13267 Order.

Proposed Mosher Slough Low DO Work Plan Monitoring Locations

Two receiving water *in-situ*, multi-parameter, water quality monitoring stations in Mosher Slough were selected based on channel geomorphology, hydrology and security issues. The downstream *in-situ* receiving water monitoring location (MS-6R) will be sited south of the confluence of Mosher Slough and Bear Creek (Photo 19, below) approximately 1.3 miles west of I-5.

Photo 19: Mosher Slough (MS-6R; March 25, 2008)
View is from the south bank of Mosher Slough, approximately 1.3 miles downstream of I-5, looking north towards the confluence with Bear Creek.

Due to the geomorphology and hydrology of Mosher Slough, location of a receiving water site immediately upstream of the SUA is not feasible. Upstream of Kelly Drive (immediately east of I-5), Mosher Slough does not consistently contain sufficient water to install and support operation of an *in-situ* monitoring device. The "upstream" *in-situ* receiving water monitoring location (MS-14R) will be sited in the area of Mariner's Bridge (Photo 20, on the following page). At low tide, the Mosher Slough at the Mariner's Bridge (MS-14R) location is extremely shallow; the deepest portion of the waterway is represented by a meandering channel with a maximum, intermittent, depth of two to three feet deep. Consequently, the upstream Mosher Slough *in-situ* receiving water location may require limited modification[10] upon further field verification of location suitability and security concerns.

The selected downstream and "upstream" receiving water locations represent the extents of the 1.3 mile portion of Mosher Slough 303(d)-listed for DO impairment. While MS-14R is at the upstream end of the 303(d)-listed segment, it is downstream of essentially all urban discharges.

[10] Prior to any substantial changes to the upstream Mosher Slough *in-situ* monitoring site location, the Permittees will seek written concurrence from the Regional Water Board Executive Officer.

Photo 20: Mosher Slough (MS-14R; April 14, 2008)
View is from Mariner's Bridge looking west (downstream) of the SUA. This point represents the upstream extent of Mosher Slough's 303(d)-listed segment for DO impairment.

Discharge grab samples for laboratory analyses will be collected monthly from the Kelly Drive Pump Station (MS-14) and La Morada Detention Basin Pump Station (MS-22). The MS-14 discharge sampling location (Photo 21, on the following page) represents a large catchment area (approximately 530 acres) as close as possible to the waterway's confluence with the SJR. The MS-22 sampling location (Photo 22, on the following page) represents a large catchment area (approximately 761 acres) located as close as possible to the eastern boundary of the SUA.

Photo 21: Mosher Slough/Kelly Drive Pump Station (MS-14; April 24, 2008)
View is from the north Mosher Slough levee looking northwest at the pump station. Grab samples will be collected from the wet well located in the back center of the photo.

Photo 22: Mosher Slough/La Morada Pump Station (MS-22; May 2, 2008)
View is looking north/northwest with the detention basin visible in the right background. The station's low flow pump is located on the right-hand side of the station; access to the wet well is located behind the pumps.

5.2.3 Lower Calaveras River[11]

The Calaveras River watershed is a tributary to the SJR Delta System flowing southwest from the Sierra Nevada foothills through Calaveras, Stanislaus, and San Joaquin Counties. The Calaveras River Basin drains a total of 470 square miles above the foothill line with its headwaters at approximately 4,365 feet elevation. The majority of the watershed lies in the northwestern region of Calaveras County; the westernmost portion of the watershed lies in San Joaquin County, and a small, southwestern area lies in Stanislaus County.

The most prominent manmade facility is New Hogan Dam and Reservoir located in Valley Springs, Calaveras County, which controls water flow on the lower Calaveras River. Completed in 1963, the dam is located at an elevation of approximately 700 feet approximately 38 miles upstream from the confluence with the SJR. The lower Calaveras River/Mormon Slough area below New Hogan Dam encompasses approximately 115,000 acres and receives up to 90,000 acre-feet of surface water supply from the lower Calaveras River.

New Hogan Dam substantially altered flows in the river; water is used for irrigation and municipal purposes with the water right permit held by the United States Bureau of Reclamation (USBR). In 1970, Stockton East Water District (SEWD) and the Calaveras County Water District contracted with USBR for the project's entire water supply. In 1978, SEWD began to divert water at Bellota Weir (Photo 23, below) to SEWD's municipal water treatment plant, further altering water flow patterns in the river system. Water is released to the SEWD water treatment plant during the non-irrigation season, generally during November to March.

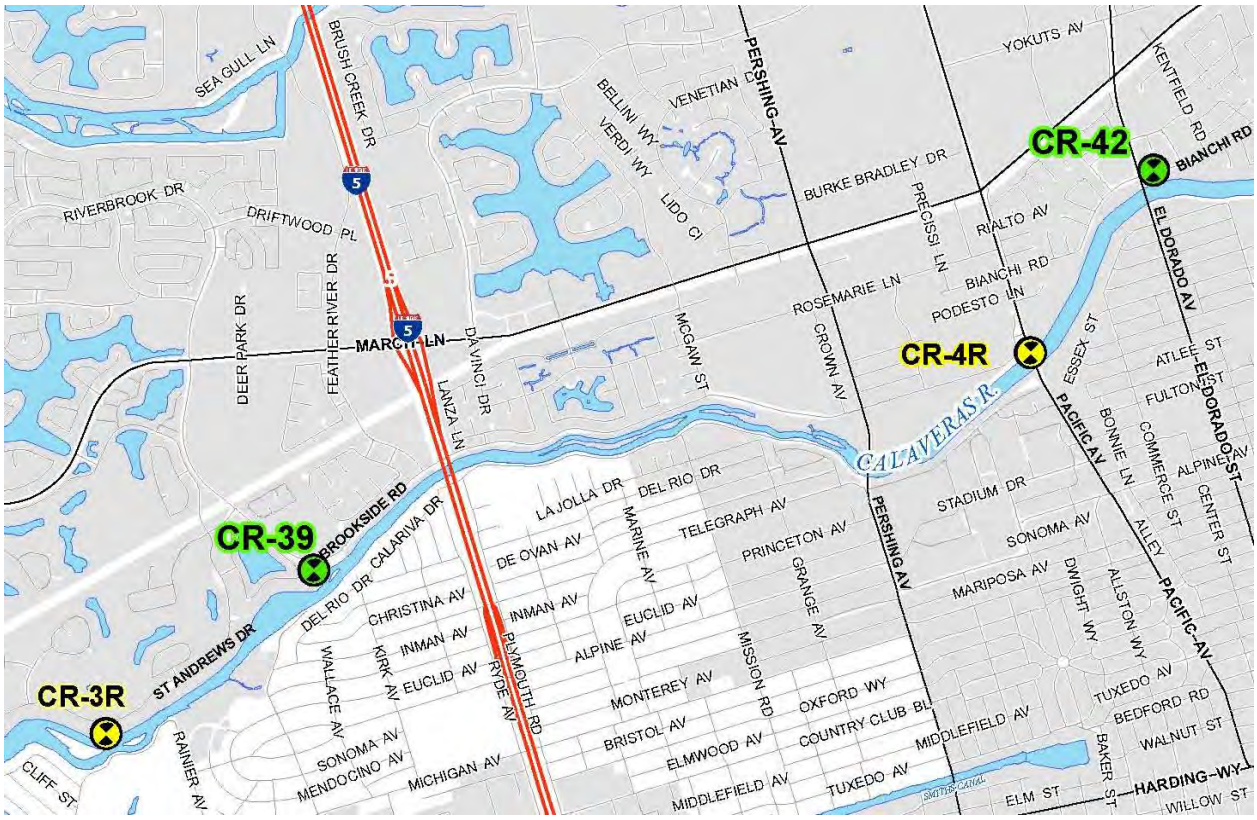
Photo 23: Calaveras River at Bellota Weir (April 17, 2008)
Built in the late 1940s, the Bellota Weir is located approximately 15 miles east of Stockton along Highway 26. The weir is a dam with removable checks and flow control slide-gates at its face with the crest eight feet above the channel. At this point, the Calaveras River is diverted into two main channels, the Old Calaveras River to the north and Mormon Slough to the south.

[11] Department of Water Resources, *Calaveras River Fish Migration Barriers Assessment Report*, September 2007

The Stockton Diversion Canal was built in 1910 to carry flows from Mormon Slough around the east side of Stockton and back to the Calaveras River. In 1969 the United States Army Corp of Engineers (USACE) modified Mormon Slough from its confluence with the Stockton Diversion Canal upstream to Bellota Weir to convey additional flood flows. The 1969 project enlarged and realigned the existing channel to increase its capacity to the New Hogan Lake operation design objective of 12,500 cfs (USACE 1983). Downstream of the Stockton Diversion Canal, the urbanized portion of the Calaveras River watershed is about 4,000 acres.

Flow is not released downstream of Bellota or the Calaveras Headworks in the Calaveras channel except when flood releases are made from New Hogan Dam or when storm runoff flows into the river and channels. The Calaveras channel downstream of the Calaveras Headworks receives only storm runoff between November and March. During the April to October irrigation season, both the Calaveras River channel and Stockton Diversion Canal receive input to supply irrigation needs.

Within the SUA, land use along the Calaveras River is predominantly residential and commercial, but also includes industrial uses. Although the entire urbanized length of the Calaveras River (approximately 5.8 miles from the SJR confluence to the Stockton Diversion Canal) is 303(d)-listed for low DO, the upstream segment from approximately Pacific Avenue to the Stockton Diversion Canal generally contains insufficient water column to support *in-situ* monitoring. Two low DO receiving water *in-situ* and two urban discharge monitoring locations are proposed for the lower Calaveras River (Inset 3, below, and Figure 4, Attachment A). Site specific details are provided in the following pages.



Inset 3: Proposed Lower Calaveras River Low DO Work Plan Monitoring Locations
Receiving Water = CR-3R and CR-4R
Urban Discharge = CR-39 and CR-42

Proposed Lower Calaveras River Low DO Work Plan Monitoring Locations[12]

Two receiving water *in-situ*, multi-parameter, water quality monitoring stations in the lower Calaveras River were selected based on channel geomorphology, hydrology and security issues. The mean water depth of the Calaveras River from the SJR confluence to the Pershing Avenue Bridge is estimated to be approximately ten feet. The downstream *in-situ* receiving water monitoring location will be sited approximately 3,000 feet east of the SJR confluence with the Calaveras River (CR-3R; Photo 24, below).

Photo 24: Lower Calaveras River (CR-3R; April 14, 2008)
View is looking west from River Drive (north of the Stockton Golf and Country Club, west of I-5) approximately 0.5 miles east of the confluence with the SJR.

The upstream *in-situ* receiving water monitoring location (CR-4R) will be sited west of the Pacific Avenue Bridge (Photo 25, on the following page). Initial site reconnaissance indicated that at low tide, the Calaveras River west of the Pacific Avenue Bridge contains sufficient water, approximately four feet (locally), to install and support operation of the *in-situ* monitoring equipment. However, at this location, the river is located adjacent to the Calaveras River Bike Path and, especially during low tide, is readily accessible from either side of the channel (as evidenced by the amount of graffiti on the bridge supports). Consequently, the upstream Calaveras River *in-situ* receiving water location may require modification[13] upon further field verification of location suitability and security concerns.

[12] During field tour conducted on December 12, 2008, the Regional Water Board TMDL staff indicated that the proposed Calaveras River monitoring stations (CR-3R, CR-4R, CR-39, and CR-42) are suitable and consistent with the requirements of the 13267 Letter.

[13] Prior to any substantial changes to the upstream Calaveras River *in-situ* monitoring site location, the Permittees will seek written concurrence from the Regional Water Board Executive Officer.

Photo 25: Lower Calaveras River at Pacific Avenue, Stockton, CA (CR-4R; April 14, 2008)
View is from the Calaveras River Bike Path looking east at the Pacific Avenue Bridge. Water depth appeared to be approximately four (4) feet deep.

Discharge grab samples for laboratory analyses will be collected monthly from the Brookside Pump Station (CR-39) and Bianchi Pump Station (CR-42). The Brookside Pump Station (CR-39) discharge sampling location (Photo 26, on the following page) represents a large catchment area (approximately 297 acres) as close as possible to the river's confluence with the SJR and upstream of the CR-3R receiving water monitoring location. The Bianchi Pump Station (CR-42) discharge sampling location (Photo 27, on the following page, and Photo 28, on the following pages) represents a large catchment area located upstream of the CR-4R receiving water monitoring location, approximately 1.4 miles west of the Stockton Diversion Canal confluence. Approximately 844 acres (21%) discharged through the Bianchi Pump Station.

Photo 26: Calaveras River/Brookside Pump Station (CR-39; April 22, 2008)
View is looking southeast towards the north levee. Wet well of the pump station is in the foreground with the low flow pump visible on the right-hand side.

Photo 27: Calaveras River/Bianchi Pump Station (CR-42; April 24, 2008)
View is looking east from the parking lot. Approximately 21% of the stormwater runoff within the Calaveras River urban watershed is discharged via the Bianchi Pump Station

Photo 28: Bianchi Pump Station (CR-42; April 24, 2008)
Access to the pump station's wet well is provided via the stairway on the left-side of the photo. Two high-volume pumps and a low-flow summer pump are located to the right of the photo.

5.2.4 Stockton Channel

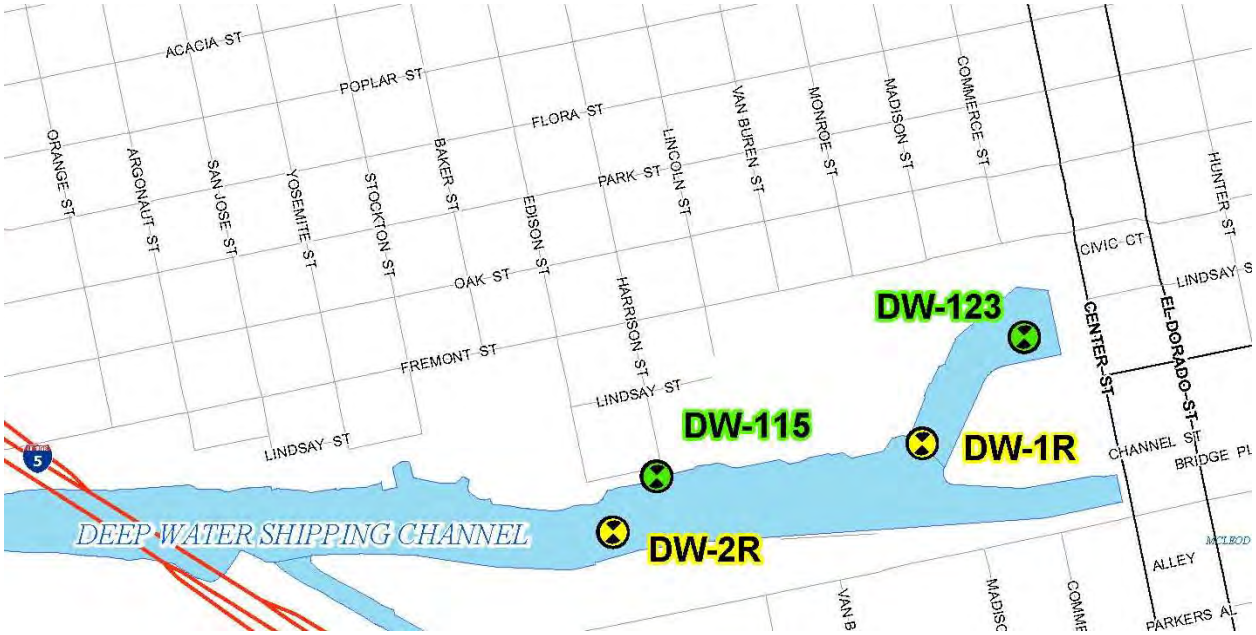
The Stockton DWSC is a USACE maintained portion of the SJR that serves as a commercial shipping lane between Pittsburgh, California, and the Port of Stockton (Port). The DWSC extends downstream from its terminus at the Port's East Complex for 37 miles to the City of Antioch, where the dredged ship channel leaves the main channel of the SJR and follows New York Slough to its mouth on the Sacramento River near Pittsburg. Within the SUA, a sizable turning basin allows the vessels to reverse their orientation before departing. The DWSC is approximately 500 feet wide with a mean depth of 30 feet. Upstream of the DWSC, the SJR is approximately 10 feet deep.

The Stockton Channel covers approximately 43 acres extending east of I-5 into downtown Stockton and McLeod Lake (Figure 1, Attachment A; Inset 4, on the following page) with an average depth ranging from approximately 18 feet (east) to ten feet (McLeod Lake). Watersheds discharging to the Stockton DWSC and Stockton Channel include older residential and commercial districts (downtown Stockton), industrial properties, and the Stockton Downtown Revitalization District.

In 1998, the Stockton DWSC was first identified as 303(d) impaired due to low levels of DO. Dissolved oxygen concentrations in the DWSC drop as low as 2 to 3 mg/L during warmer, low water flow periods in the SJR. Loading by upstream sources of BOD substances, channel geometry, and reduced flow reduces the assimilative capacity of the DWSC by increasing the residence time for loads of oxygen demanding substances and magnifying the effect of oxygen demanding reactions.

The USACE has operated a bubble jet system in the DWSC since the fall of 1993 generally from September 1 through November 30. The aeration system was designed to compensate for a 0.2 mg/l reduction in DO estimated to have resulted from USACE dredging of the DWSC. The aeration system jet, which is lowered to about a 20 foot depth, is designed to inject about 2,000 pounds per day of DO into the

SJR at the confluence with the DWSC, just downstream of the City's Regional Wastewater Control Facility (RWCF) discharge.



Inset 4: Proposed Stockton DWSC Low DO Work Plan Monitoring Locations
Receiving Water = RRI and DWSC-1R
Urban Discharge = DW-115 and DW-123

The Stockton DWSC Demonstration DO project is a multiple-year assessment of the effectiveness of elevating DO concentrations in the channel. The objective of the study is to maintain DO levels above the minimum Basin Plan recommended levels. The project comprises a full-scale aeration system including two (2) 200 foot deep u-tube aeration tubes; two vertical turbine pumps capable of pumping over 11,000 gallons of water each; a liquid-to-gas oxygen supply system; and numerous ancillary equipment and control systems. The aeration system[14] has been sized to deliver approximately 10,000 pounds of oxygen per day into the DWSC. Four DO monitoring locations (Navigation Light NA40, NA42, NA43, and NA48) plus the Department of Water Resources (DWR) RRI station are used to monitor DO levels for the Stockton DWSC Demonstration DO project.

In 2006, the City installed a bubbler system in the Stockton Channel as part of the City's Stockton Channel Water Quality Improvement Project. Interspersed along the reach of the Stockton Channel from McLeod Lake to the I-5 overpass are eight (8) laterals which extend from the south shore of the Stockton Channel roughly 75% across the waterway along its bottom. The laterals are pipes with 1/16'' diameter holes in them every three (3) feet that diffuse air into the water column. The system was designed to prevent thermal stratification and inhibit blue-green algae growth in the waterway. The bubbler system is operated continuously from April to October and intermittently for maintenance-only purposes from November to March.

[14] The aeration system is anticipated to only be operated when DWSC DO levels are below the Basin Plan DO WQOs (approximately 100 days per year)

Two low DO receiving water *in-situ* and two urban discharge monitoring locations are proposed for the Stockton DWSC (Inset 4, previous page, and Figure 4, Attachment A). Site specific details are provided in the following pages.

Proposed Stockton DWSC Low DO Work Plan Monitoring Locations

Two receiving water *in-situ*, multi-parameter, water quality monitoring stations in the Stockton Channel were selected based on Regional Water Board TMDL staff direction[15], channel hydrology, active engineering (City Downtown Redevelopment projects), and private property/jurisdictional considerations (Figure 4, Attachment A). Due to the amount of boat traffic anticipated in the Stockton Channel, the Low DO Work Plan proposes affixing the water quality monitoring device to existing structures. The City is currently in discussion with City Redevelopment Department regarding the methodology of affixing the equipment to the selected marina piles/docks (actively under construction).

The downstream Stockton Channel *in-situ* receiving water monitoring location (DW-2R) will be sited upstream of the Port of Stockton Turning Basin and east (upstream) and the confluence with Mormon Slough. The Stockton Channel/Mormon Slough confluence is located immediately east of the I-5 Bridge on the south shore. The in-situ monitoring equipment will be located as close to the center of the waterway as possible (Photo 29, below). The mean depth of the Stockton Channel in this location is estimated to be approximately 18 feet.

Photo 29: Stockton Channel (DW-2R; March 24, 2009)
View of the west portion of the Stockton Channel taken from south bank of Tuleburg Levee (Marina Project) looking west. The I-5 Bridge is seen the distance.

[15] In a comment and request for additional information letter dated November 13, 2008 and during a field tour conducted on December 12, 2008, the Regional Water Board TMDL staff indicated that the proposed Stockton Channel DO monitoring stations should be located upstream of the Port of Stockton Turning Basin and the confluence of the SJR and the Stockton DWSC, or preferably upstream of the confluence with Mormon Slough confluence.

The upstream Stockton Channel *in-situ* receiving water monitoring location (DW-1R) will be sited immediately downstream (west) of McLeod Lake along the northern shore proximal to the Stockton Events Center (Photo 30, below). The mean depth of the Stockton Channel in this location is estimated to be approximately 8 feet.

Photo 30: McLeod Lake and the Stockton Events Center, Stockton (DW-1R; March 26, 2009)
View is looking northeast from Tuleburg Levee on the south side of the Stockton Channel. McLeod Lake is in the right back corner of the photograph

All of the discharge outfalls along the Stockton DWSC and Stockton Channel are tidally influenced gravity outfalls. With one exception, all of the discharges to the Stockton DWSC from the Permittees' stormwater system are located east of the I-5 Bridge. Discharge grab samples for laboratory analyses will be collected monthly from DW-115, located upstream of the DW-2R *in-situ* receiving water monitoring location and discharge outfall DW-123, which represents the largest watershed into the Stockton Channel via McLeod Lake (Figure 4, Attachment A). Gravity outfall DW-115 represents a very small downtown residential and industrial watershed; DW-123 represents a watershed of approximately 1,120 acres. Access to all of the Stockton Channel outfalls is problematic (DW-115 at low tide; Photo 31, below). Monthly grab sample events will be scheduled to coincide with low tide; however, grab samples will not be collected if the outfalls are tidally impacted or are not actively discharging during a regularly scheduled sampling event.

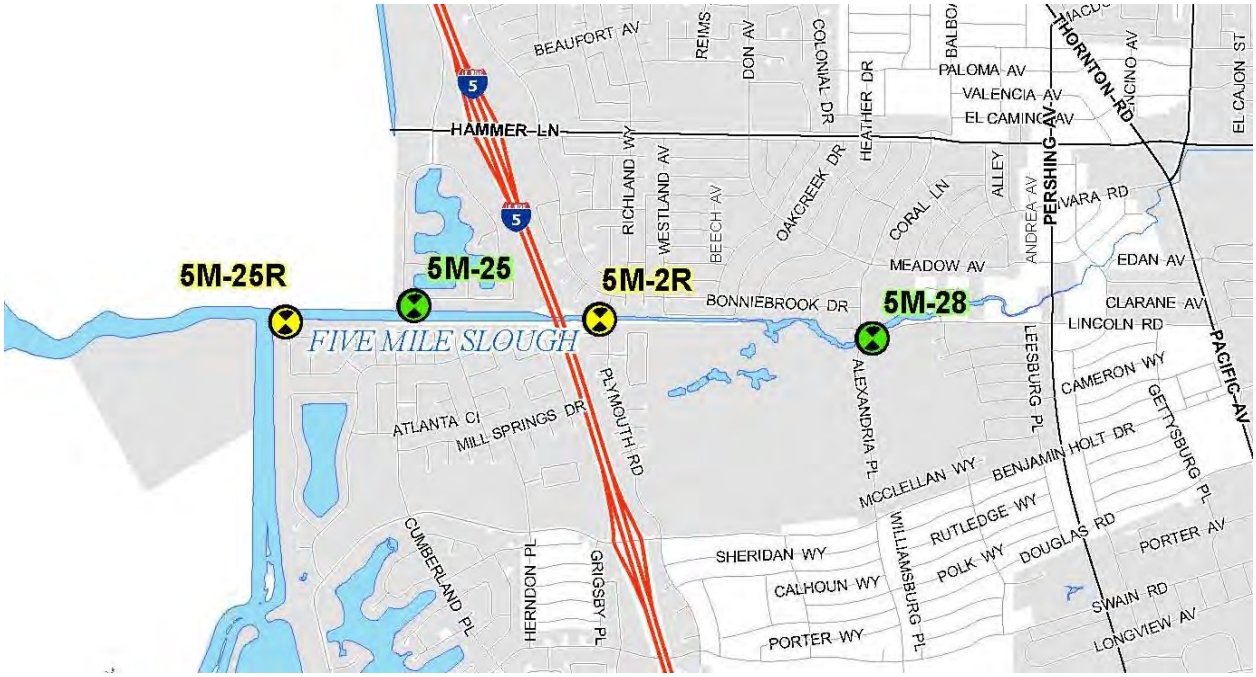
Photo 31: View of Stockton Channel DW-115 at Low Tide (March 26, 2009).

5.2.5 Five-Mile Slough

Five-Mile Slough is a tidally influenced, urban waterway beginning at Rivara Road and Pacific Avenue. The waterway meanders westward through residential areas, including the City's Swenson Park Golf Course, and unincorporated areas to Fourteen-Mile Slough. A weir controls the tidal flow from Fourteen-Mile Slough into Five-Mile Slough. During the summer, flow is reduced by diversion of irrigation water from Five-Mile Slough to the park and golf course. Besides direct groundwater inputs and tidal exchange, all inputs to Five-Mile Slough are from stormwater runoff

The width of Five-Mile Slough varies from around three feet at Rivara Road and Pacific Avenue to up to 45 feet (Friends of Five-Mile Creek website) downstream at its confluence with Fourteen-Mile Slough. East of I-5, the slough is very shallow. During the dry season (April to November), about one quarter of the easternmost channel (east of I-5) is dry; water depth in the remaining three quarters does not exceed four feet at the center of the waterway.

Two low DO receiving water *in-situ* and two urban discharge monitoring locations are proposed for Five-Mile Slough (Inset 5, below, and Figure 4, Attachment A). Site specific details are provided in the following pages.



Inset 5: Proposed Five-Mile Slough Low DO Work Plan Monitoring Locations
Receiving Water = 5M-25R and 5M-2R
Urban Discharge = 5M-25 and 5M-28

<u>Proposed Five-Mile Slough Low DO Work Plan Monitoring Locations</u>

Two receiving water *in-situ*, multi-parameter, water quality monitoring stations in Five-Mile Slough were selected based on channel geomorphology, hydrology and security issues. The downstream *in-situ* receiving water monitoring location will be sited immediately east of the confluence of Five-Mile Slough and the Fourteen-Mile Slough weir (5M-25R; Photo 32, on the following page). The mean depth of the Five-Mile Slough at this location is estimated to be approximately ten feet.

Photo 32: View of Five-Mile Slough at Cumberland Place (5M-25R; October 21, 2004).
View is from the south canal bank looking west.

The upstream *in-situ* receiving water monitoring location (5M-2R) will be sited immediately west of Plymouth Road (Photo 33, on the following page). Initial site reconnaissance indicated that at low tide, Five-Mile Slough at the Plymouth Road (5M-2R) location appeared to contained sufficient water, approximately two to three feet (locally), to install in-situ monitoring equipment. However, this location will be further evaluated prior to the installation of water quality monitoring equipment as this location is accessible from either side of the channel, especially during low tide. Consequently, the upstream Five-Mile Slough *in-situ* receiving water location may require modification[16] upon further field verification of location suitability and security concerns.

Discharge grab samples for laboratory analyses will be collected monthly from the Lighthouse Drive Pump Station (5M-25) and Alexandria Place Pump Station (5M-28). The Lighthouse Drive Pump Station (5M-25) discharge sampling location (Photo 34, on the following page) represents a large catchment area (approximately 185 acres) as close as possible to the waterway's confluence with Fourteen-Mile Slough and immediately upstream of the 5M-3R receiving water monitoring location. The 5M-25 monitoring location represents urban discharges from relatively older (approximately 25 years old) residential developments.

The Alexandria Place Pump Station (5M-28) sampling location (Photo 35, on the following pages) represents the largest catchment area discharging to Five-Mile Slough, approximately 671 acres. The 5M-28 watershed consists of older residential, commercial and public use (park and golf course) properties.

[16] Prior to any substantial changes to the upstream Five-Mile Slough *in-situ* monitoring site location, the Permittees will seek written concurrence from the Regional Water Board Executive Officer.

Photo 33: Five-Mile Slough at Plymouth Road, Stockton, CA (5M-2R; April 14, 2008)
View is from the west side of Plymouth Road looking downstream (west toward I-5).

Photo 34: Five-Mile Slough/Lighthouse Drive Pump Station (5M-25; April 24, 2008)
View is from the northwest corner of the pump station (located west of I-5) looking south/southwest.

Photo 35: Five-Mile Slough/Alexandria Drive Pump Station (5M-28; April 24, 2008)
View is from the northeast corner of Swenson Park looking north. Five-Mile Slough is behind the pump station with Alexandria Drive to the directly to the east of the photograph.

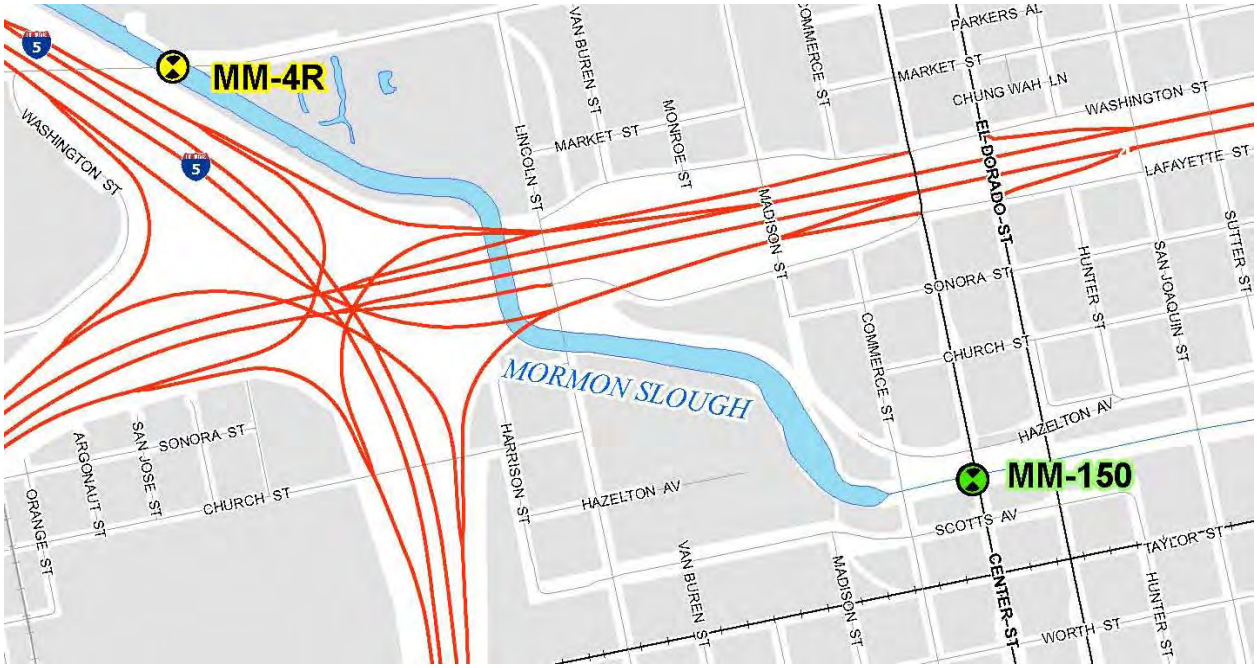
5.2.6 Mormon Slough

Mormon Slough originally extended from its confluence with the Stockton DWSC to the Calaveras River at the Bellota Weir. The Stockton Diversion Canal was built in 1910 to carry flows from Mormon Slough around the east side of Stockton and back to the Calaveras River. In 1969 the USACE modified Mormon Slough from its confluence with the Stockton Diversion Canal upstream to Bellota Weir to convey additional flood flows. Flow is not released downstream of Bellota in Mormon Slough except when flood releases are made from New Hogan Dam or when storm runoff flows into the river and channels. Thus, upstream of the Stockton city limits, stretches of Mormon Slough and the Stockton Diversion Canal remain dry for days, weeks, or months at a time during winter and early spring. During the April to October irrigation season, Mormon Slough, east of the Stockton Diversion Canal, receives input to supply irrigation needs.

West of the Stockton Diversion Canal, Mormon Slough no longer receives flow from upstream sources. Portions of the slough from approximately State Route 99 to the Stockton Diversion Canal have been converted to orchards (Figure 1, Attachment A). Upstream of the urbanized area, Mormon Slough receives dominantly residential and agricultural runoff from unincorporated areas; within the SUA, the slough receives stormwater discharge from residential, commercial, and industrial properties. The portion of Mormon Slough from Commercial Street east to Wilson Way has been modified from an open channel to an enclosed culvert. Mormon Slough is frequented by a substantial transient population throughout the year. Although tidally influenced, the waterway east of Lincoln Street Bridge is extremely shallow.

One receiving water *in-situ*, multi-parameter, water quality monitoring station and one urban discharge monitoring location for Mormon Slough was selected based on channel geomorphology, hydrology and security issues. The proposed low DO receiving water *in-situ* and urban discharge monitoring locations

for Mormon Slough are shown in Inset 6, below, and Figure 4, Attachment A. Site specific details are provided in the following section.



Inset 6: Proposed Mormon Slough Low DO Work Plan Monitoring Locations
Receiving Water = MM-4R; Urban Discharge = MM-150

<u>Proposed Mormon Slough Low DO Work Plan Monitoring Locations</u>[17]

Mormon Slough from the Weber Avenue overcrossing to Commerce Street is predominantly a steep-sided, concrete constructed channel which is inaccessible to foot or boat traffic (Photo 36, on the following page). With the exception of high tide and high stormwater flows, the portion of the slough east of the Lincoln Street Bridge contains insufficient water column to install and operate an *in-situ* monitoring device. In addition, the extent of the slough from the Lincoln Avenue Overcrossing to Wilson Way has a consistently high transient population and security for both equipment and personnel is of paramount concern. The downstream *in-situ* receiving water monitoring location will be sited at the Weber Avenue Bridge (MM-4R; Photo 37, on the following page) approximately 400 feet south of the confluence with the Stockton Channel. Grab samples for laboratory analyses will be collected monthly from the MM-4R receiving water monitoring location.

[17] In a letter dated December 23, 2008, the Regional Water Board TMDL staff indicated that based on the channel geomorphology and hydrology of Mormon Slough, the selected Mormon Slough monitoring stations (MM-150 and MM-4R) as proposed in the originally submitted Low DO Work Plan, dated June 3, 2008, are suitable and consistent the requirements of the 13267 Order.

Photo 36: Mormon Slough north of the Interstate 5/State Route 4 Interchange (April 22, 2008).
View is from the east canal bank looking northwest.

Photo 37: Mormon Slough at the Weber Avenue Bridge (MM-4R; April 15, 2008)
View is from the Weber Avenue Bridge looking north at the confluence with the Deep Water Shipping Channel. The new Morelli Boat Ramp, located at the mouth of the slough, is seen in the distance.

Discharge grab samples for laboratory analyses will be collected monthly from the Commerce Street Lift Station (MM-150); all other urban discharge locations along Mormon Slough are gravity outfalls that are

either tidally influenced or contain sporadic urban flows. The MM-150 discharge sampling location (Photo 38, below) represents the largest watershed to Mormon Slough, approximately 955 acres, and consists of older residential, commercial, and industrial properties.

Photo 38: Mormon Slough Commerce Street Lift Station (MM-150: July 21, 2005)
The Commerce Street Lift Station is located under the south-bound lane of the Center Street Overpass on the north side of the "drainage". At this location, Mormon Slough is completely underground.

5.3 MONITORING PARAMETERS

For Mosher Slough, Five Mile Slough, the Calaveras River, and the Stockton Channel, water quality monitoring will consist of the installation of one *in-situ*, multi-parameter YSI Model 6920 (or equivalent) continuous data recorder at two receiving water locations in conjunction with monthly grab sample collection for laboratory analyses at the two receiving water and two urban discharge locations on each designated waterbody (Figure 4, Attachment A). Water quality monitoring at Smith Canal and Mormon Slough will consist of the installation of an *in-situ*, multi-parameter YSI Model 6920 (or equivalent) continuous data recorder at one receiving water location in conjunction with grab sample collection for laboratory analyses at the receiving water and one urban discharge location on each respective waterbody (Figure 4, Attachment A). Monthly grab sample collection will include a minimum of two storm events per year.

Continuous monitoring can provide data that can be analyzed under various averaging periods to distinguish the effects of diurnal, tidal, seasonal, and other meaningful temporal cycles. In addition, both rapid short-term variations in parameters (such as during storm events) and more long-term cyclic changes can be compared. In order to correlate the *in-situ* water quality data with storm events, precipitation totals will be compiled for the greater Stockton area.

5.3.1 *In-Situ* Monitoring Parameters

In-situ data recorders will be installed at low tide, mid-depth in order to compensate for tidal influence and the overall shallow depth of Stockton's waterways. Data will be recorded on continuous 15-minute intervals for the following water quality field parameters (Table 3, below).

Table 3. Low DO Work Plan - In-Situ Water Quality Parameters

Constituent	Units	Recording Method	Monitoring Schedule and Process
Date	m/d/y	Recorded	Every 15 minutes; field
Time	hh:mm:ss	Recorded	Every 15 minutes; field
Temperature	^{o}C	Recorded	Every 15 minutes; field
Depth	m	Recorded	Every 15 minutes; field
Dissolved Oxygen (DO)	mg/L	Recorded	Every 15 minutes; field
pH	Std. Units	Recorded	Every 15 minutes; field
Oxidation Reduction Potential (ORP)	mV	Recorded	Every 15 minutes; field
Turbidity	NTU	Recorded	Every 15 minutes; field
Salinity	ppt	Recorded	Every 15 minutes; field
Electrical Conductivity (E.C.)	mS/cm	Calculated*	Every 15 minutes; field
Total Dissolved Solids (TDS)	g/L	Calculated*	Every 15 minutes; field
Resistivity	Kohm/cm	Calculated*	Every 15 minutes; field

Units: m/d/y = month/day/year; hh:mm:ss = hour: minute: seconds; ^{o}C = degrees Centigrade; m = meters; mg/L – milligrams per liter; mV = millivolts; NTU – Nephelometric Turbidity Unit; ppt = parts per trillion; mS/cm = milli-Siemens per centimeter; g/L = grams per liter; Kohm/cm = kilo-ohms per centimeter

*Values calculated by the data recorder software

5.3.2 Receiving Water/Urban Discharge Grab Sample Collection and Laboratory Analyses

Sampling Frequency

Monthly grab sampling events will be conducted for two (2) years, including two (2) qualifying storm events per year as per the proposed Schedule presented in Section 8.0. A qualifying[18] storm event is defined as a storm with a predicted rainfall of at least 0.25 inches of precipitation at a 70% probability of rainfall 72 hours prior to the event. Based on water quality data collected during the Smith Canal Plan monitoring program, storm event grab samples will be collected between two (2) and four (4) days following the qualifying storm event. A storm sampling event will be preceded by, at least, a continuous three (3) day period with no measurable precipitation (defined as less than 0.10 inch of precipitation during the previous 72 hours). The first storm event is anticipated to occur between September and December (targeting the "first flush" storm event) with the second anticipated to occur between January and May. Dry weather monitoring events will be preceded by at least seven (7) days of no measurable rainfall. A day with a storm event too small to generate runoff (typically 0.10 inches of rainfall or less) shall be considered a dry weather day. For safety reasons, field crews will consist of a minimum of two Condor personnel and will occur only during daylight hours.

[18] A qualifying storm event occurs when there is sufficient rainfall within a 24-hour period to monitor at least one drainage basin and one corresponding receiving water station.

Water Quality Grab Sample Collection and Laboratory Analyses

Monthly grab samples will be collected at each *in-situ* and discharge monitoring locations for oxygen-demanding substances and nutrient analyses in order to augment the recorder data[19]. During each event, the total midstream/lake depth at the receiving water sites and the wet well levels at the discharge locations will be recorded. In general, receiving water grab samples will be collected at approximately mid-depth, mid-channel (where possible) using a horizontal stream/lake sampler. The sampling apparatus will be decontaminated in a solution of deionized water and phosphate free soap and subsequently rinsed with site water prior to each use.

Monthly grab samples will be collected at each discharge monitoring location from pump station wet wells or from exposed/accessible gravity outfalls, conditional upon active flow and absence of tidal impact. Grab[20] samples will be collected from the pump station wet wells using a single-use, disposable, polyethylene bailer. If a pump station is equipped with an automated sampler (Isco 3710 or equivalent model), grab samples will collected using the sampler to the greatest extent possible. Optimally, grab samples will be collected while the station's are actively discharging.

Water samples will be transferred directly from the sampling apparatus to pre-cleaned, laboratory supplied containers. Each container will be labeled for sample identification and placed in a cooler chilled to approximately 4° Celsius with ice.

Sample locations and the numbers of sample containers collected will be listed on the Groundwater Monitoring Chain-of-Custody forms. Upon completion of the fieldwork, the water samples will be delivered under chain-of-custody procedures to a California certified laboratory in time to allow analysis of constituents with the shortest holding times. Laboratory analyses and analytical methods are listed in Table 4, below.

Table 4. Low DO Work Plan Water Quality Laboratory Analyses

Constituent	Units	Laboratory Analytical Method	Monitoring Schedule and Process[1]
Biochemical Oxygen Demand (BOD5)	mg/L	EPA 5210B	Monthly; grab samples
Chemical Oxygen Demand (COD)	mg/L	EPA 5220D	Monthly; grab samples
Total Suspended Solids (TSS)	mg/L	EPA 2540D	Monthly; grab samples
Total Ammonia-Nitrogen	mg/L	EPA 4500NH_3H	Monthly; grab samples
Nitrate	mg/L	EPA 300.0 / 4500NO_3F	Monthly; grab samples
Nitrate (as Nitrogen)	mg/L	EPA 300.0 / 4500NO_3F	Monthly; grab samples
Nitrite	mg/L	EPA 300.0 / 4500NO_2B	Monthly; grab samples
Nitrite (as Nitrogen)	mg/L	EPA 300.0 / 4500NO_2B	Monthly; grab samples
Phosphate (Ortho)	mg/L	EPA 4500-P,E	Monthly; grab samples
Total Phosphorous	mg/L	EPA 4500-P,E	Monthly; grab samples
Volatile Suspended Solids	mg/L	EPA 160.4 / SM 2540E	Monthly; grab samples

Units: mg/L – milligrams per liter = parts per million (ppm)
[1]Monthly sampling will include two storm events; one anticipated to occur between September and December, the second anticipated to occur between January and May

[19] Grab samples will be collected prior to any maintenance operations on the data recorders.
[20] Where available and operating, grab samples will be collected using the pump stations' automatic samplers.

5.3.3 Sediment Grab Sample Collection and Laboratory Analyses

Sampling Frequency

Semi-annual (wet and dry season, respectively) sediment grab samples will be collected to assess the organic content/oxygen demand at the specified *in-situ* monitoring locations. Based on water quality data collected during the Smith Canal Plan, wet season sediment grab samples will target the "first flush" storm event of the season and one dry weather monitoring event. The "first flush" sediment sampling event will be collected between two (2) and four (4) following the qualifying storm event. Dry weather monitoring events will be preceded by at least seven (7) days of no measurable rainfall. If at all possible, wet season and dry season sediment sampling events will be separated by approximately six (6) months. Sediment grab samples will be collected subsequent to receiving water sample collection. In addition to the single *in-situ* monitoring locations in Smith Canal and Mormon Slough, semi-annual sediment sampling will be conducted at the upstream and downstream *in-situ* monitoring locations of the following waterways: Mosher Slough, Five-Mile Slough, and the Calaveras River as per the proposed schedule in Section 8.0. For safety reasons, field crews will consist of a minimum of two Condor personnel and will occur only during daylight hours.

Sediment Sampling Procedures and Laboratory Analyses

Sediment samples collected using a stainless steel scoop or push sampler will be transferred directly into pre-cleaned, laboratory-supplied clear, wide-mouth (CWM) glass jars and sealed with Teflon-lined lids. Each container will be labeled for sample identification, stored and transported in coolers chilled to approximately 4° Celsius with ice, and delivered under chain-of custody to a State-certified laboratory for sample preparation and laboratory analyses in time to allow analysis of constituents with the shortest holding times. Sample locations and the numbers of sample containers collected will be listed on the Sediment Monitoring Chain-of-Custody forms. Sediment samples will be analyzed according to the analytical methods listed in Table 5, below, or other equivalent approved analytical methods.

Quality assurance/quality control (QA/QC) grab samples consisting of field blanks, field duplicates, or laboratory blanks will be collected from various monitoring locations during the monitoring program. Field blanks will be generated using blank water provided by the laboratory and will be submitted "blind" to the laboratory. In addition, laboratory duplicate analyses may be requested; however, additional sample volume must be collected, per laboratory requirements, for each analysis.

Table 5. Low DO Work Plan Sediment Sample Laboratory Analyses

Constituent	Units	Laboratory Analytical Method	Monitoring Schedule[1] and Process
Biochemical Oxygen Demand (BOD5)	mg/kg	EPA 5210B	Semi-Annual; grab samples
Chemical Oxygen Demand (COD)	mg/kg	EPA 4124	Semi-Annual; grab samples
Sediment Oxygen Demand (SOD)	g/m^2 day	Calculation	Semi-Annual; grab samples
Total Organic Carbon (TOC)	mg/kg	SW 9060	Semi-Annual; grab samples

Units: mg/kg = milligrams per kilogram = parts per million (ppm)
g/m^2 day = grams per meter squared per day

[1]Sediment sampling will occur once following a wet season storm event (anticipated September through December) and once during the dry season (anticipated May through August)

5.4 FIELD PROCEDURES

After approximately 30-days in operation, data download and equipment maintenance and calibration activities will be conducted for each of the *in-situ* data recorders. The deep water *in-situ* monitoring locations anticipated at the downstream Lower Calaveras River, Mosher Slough, Five-Mile Slough, Mormon Slough sites, and the Stockton Channel and Yosemite Lake sites will be accessed by boat. At each designated monitoring site, the boat will be tied off or anchored to prevent drifting. If deploying an anchor is necessary, care will be taken to limit artificial increase of the turbidity in the area. Prior to sample collection, the water depth at each receiving water location will be measured to the nearest 0.01-foot with a weighted tape measure.

Pending field conditions, a vertical DO profile, including temperature and ORP, will be conducted using a weighted tape measure and calibrated YSI 556 MPS (or equivalent) water quality field instrument. Vertical DO profiling will be reported on a quarterly basis at those in-situ monitoring locations where there is sufficient water depth (greater than four feet). In general, strong currents and insufficient water depth preclude vertical DO profiling of the deeper waterways (Stockton Channel and downstream Calaveras River) and the upstream in-situ monitoring locations, respectively. Quarterly vertical DO profiling will be conducted as per the monitoring schedule proposed in Section 8.0.

Grab sample collection for laboratory analyses will occur concomitantly with monthly operations and maintenance activities. During each monthly event, the following field parameters will be collected at each location: date, time, weather, water temperature, DO, pH/oxidation-reduction potential (ORP), specific conductivity (EC), salinity, turbidity, total dissolved solids (TDS), and flow velocity, if possible. Field parameters will be collected using a calibrated YSI 556 MPS (or equivalent) water quality field instrument equipped with sensors to monitor water temperature, DO, pH/ORP, EC, salinity, and TDS. Turbidity will be measured using a Hach 2100P (or equivalent) turbidity meter. If possible, receiving water flow quantity will be estimated by measuring flow velocity and estimating channel geometry. Pump station operation times will be recorded on a monthly basis and during the stormwater sampling events. Prior to each sampling event, all field equipment will be calibrated according to manufacturer's standards and recommendations. Calibration methods and records are kept with each meter. Field observations will be recorded during each event.

To the maximum extent possible, receiving water grab samples will be collected at mid-stream, mid-depth using a discrete depth horizontal lake sampler. At those receiving water locations with minimal water column, a long-handled dipping pole with a collection container will be utilized in order to minimize bottom sediment resuspension. Samples will be transferred from the collection container immediately into the proper sample containers and properly labeled for identification.

Whenever possible, grab samples from discharge locations will be collected using the station's automatic sampler. The unit installed at the LPPS (SC-1) consists of a stainless steel intake strainer, Teflon lined intake tubing, flexible pump tubing, a peristaltic pump, a composite sample bottle, a refrigerated housing unit, and a controller. Grab samples from the remaining pump stations will be collected by manually drawing a sample from the station's wet well using a single-use disposable bailer or long-handled dipping pole with a collection container. Samples will be transferred from the collection container immediately into the proper sample containers and properly labeled for identification.

Sediment sampling sites will be located using a hand-held global positioning system (GPS) unit to provide site consistency between sampling events. In general, sediment samples will be collected from mid-channel locations from the deepest portion of each waterway. Deeper water sediment monitoring locations will be accessed by boat. At each designated monitoring site, the boat will be tied off or

anchored to prevent drifting. If deploying an anchor is necessary, care will be taken to limit artificial increase of the turbidity in the area. Prior to sample collection, the water depth at each receiving water location will be measured to the nearest 0.01-foot with a weighted tape measure.

A single composite sample[21] of unconsolidated fine-grain sediment from wadeable and non-wadeable waters will be obtained from each above-noted (Section 5.3.2) sediment sampling location. For wadeable waters, sediment samples will be collected utilizing a stainless-steel, hand-operated push sampler or stainless steel scoop (for waters less than two feet deep). Field personnel will move and stand on the downstream side of the sample site in order to create the least disturbance to the sampling site as possible. Samples will be collected from approximately the upper six inches of surface sediment. Dependent upon availability of soft substrate, samples will be collected either from a single mid-channel location or from an area of approximately 0.5 square meters (m^2) from the streambed.

For non-wadeable waters, sampling will utilize a boat-mounted, stainless-steel, hand-operated push sampler. When using a boat, all engines will be turned off and the samples collected upstream from the engines or any other machinery that may release exhaust fume/oils into the sample. In order to collect enough sediment for all necessary analyses, sediment cores will be collected in a consecutive fashion within a 0.5 m^2 area from the surface (top 0 - 6 inches) at each sampling location. The upper six inches of surface sediment from a sufficient number of cores will serve to make-up the composite sample for analysis. Sampling will be conducted with standard care to minimize disturbance of the sediment during collection. Samples will be composited in the field, although a sample may be collected from a single location based on the availability of soft substrate.

All field analytical and sampling equipment will be decontaminated by washing in a solution of deionized water and laboratory-grade non-phosphate detergent and double-rinsed with deionized water prior to use at each sample location. All rinsate will be properly disposed of.

5.4.1 Health and Safety Procedures

All personnel who participate in fieldwork during the low DO monitoring program will attend a safety indoctrination. Copies of a program specific Health and Safety Plan (HASP) shall be available to all field crews and will be located in each on-site field vehicle.

Field crews will consist of at least two persons wearing clean, powder-free nitrile gloves and appropriate personal protective equipment (life vest, safety glasses, reflective vests, hard hats, steel toes, etc.) for the specific monitoring/sampling event.

“Clean sampling” techniques are required to minimize the potential for cross-contamination of the water quality samples including: never sample near a running vehicle; avoid allowing rainwater to drip from rain gear into sample bottles; do not breath, sneeze, or cough in the direction of an open sample bottle.

A drowning hazard exists at the shoreline, along streams, and at water bodies. If fieldwork is required in water greater than three feet deep or without any protective structure (such as a guard rail) to prevent falling into the waterway, appropriate safety equipment (personal floatation device) will be worn.

Adequate swimming ability will be required of all field crew members conducting receiving water monitoring. Field crew members will wear personal floatation devices at sampling locations where there is the potential danger of falling into water greater than three feet deep.

[21] Sediment sample volumes to be collected will be based on laboratory analytical requirements

To minimize the potential of sample contamination and personnel exposure, crew members will change gloves whenever something not known to be clean has been touched and/or between sampling locations.

No smoking, eating, or drinking will be allowed during sample collection. Field personnel should refrain from touching their face while sampling until thoroughly washing their hands. Liquids should be kept in, and consumed at, the field vehicle. Field crew members should wash their hand with antibacterial soap (located in the field vehicle) prior to consuming any food or drinks.

All electronic equipment will be kept as dry as possible.

Heat stress will be a hazard during hot weather and will be intensified when personnel are in protective clothing (if necessary). To prevent heat stress, personnel will be required to take breaks as needed, and consume adequate quantities of liquid.

No field personnel will enter a manhole or storm pipe without first obtaining an approved confined-space entry permit.

In the event traffic control is necessary, traffic control must be set up before conducting any work where field personnel may be exposed to traffic. Standard traffic control measures include parking vehicles to shield personnel from traffic or using hazard lights or traffic safety cones to identify work areas.

6.0 STOCKTON CHANNEL BUBBLER SYSTEM EFFECTIVENESS ASSESSMENT

In May 2006, the City completed construction of a “bubbler” system in the Stockton Channel as part of the City’s Stockton Channel Water Quality Improvement Project. The system was originally designed by HDR Engineering Inc., (HDR) to address blue-green algae problems in the waterway. At the time of the initial study, DO was considered adequate, but significant temperature stratification was a concern. After investigating chemical, biological, and physical solutions to this problem, HDR selected a bubbler system to increase circulation. Interspersed along the reach of the Stockton Channel from McLeod Lake to the I-5 overpass are eight (8) laterals which extend from the south shore of the Stockton Channel roughly 75% across the waterway along its bottom. The laterals are pipes with 1/16’’ diameter holes in them every three (3) feet that diffuse air into the water column. A “blower” building located on the south side of the Stockton Channel houses two (2) 25-horsepower blowers as well as all the system’s electrical components and controls. Each blower supplies 240 standard cubic feet per minute (SCFM) at 14 pounds per square inch (PSI) of pressure. The rising bubbles create mixing cells in the water column, preventing thermal stratification and inhibiting the growth of blue-green algae. The bubbler system is operated continuously from April to October and intermittently for maintenance-only purposes from November to March. Water quality field parameters and limited duration *in-situ* monitoring conducted in the Stockton Channel during late 2008 indicate that DO increases when the bubbler system is active.

In-situ monitoring data from the Stockton Channel generated during the Low DO Plan monitoring program may be used to assess the effectiveness of the bubbler system in minimizing low DO events. Water column profiling of temperature may also be conducted to assess the bubbler system’s effect on previously observed temperature stratification.

7.0 REPORTING

In compliance with Provision D(28)(b)(ii) of the Permit, Provision II(I)(2) of Monitoring and Reporting Program R5-2007-0173, and 13267 Letter Section 4(h), the Permittees will provide Low DO Work Plan monitoring program updates in the forthcoming Annual Reports. A comprehensive final report for the Low DO Work Plan will be submitted to the Regional Water Board by December 1, 2012. The final Dissolved Oxygen Monitoring and Assessment Report shall include:

- A summary of the project;
- Map of sampling locations;
- Description of activities performed; methods used;
- Project results and conclusions; and,
- BMP assessment, selection, and implementation program.

8.0 PROPOSED SCHEDULE

The 13267 Letter requires a two-year, low DO monitoring program for the Lower Calaveras River, Mosher Slough, Stockton DWSC near McLeod Lake, Five-Mile Slough, and Mormon Slough,; a one-year, monitoring program is required for Smith Canal. Due to the number of waterbodies being examined and the intensive nature of the work, the Low DO Work Plan proposes a staggered schedule for the Low DO monitoring program as shown in Table 6, below. Data recorder download and maintenance and grab sample collection for laboratory analyses will occur on a monthly schedule. Grab sample events will include a minimum of two storm events per year.

The Low DO Monitoring and Assessment Final Report due to the Regional Water Board December 1, 2012.

Table 6: Low DO Work Plan Implementation Schedule

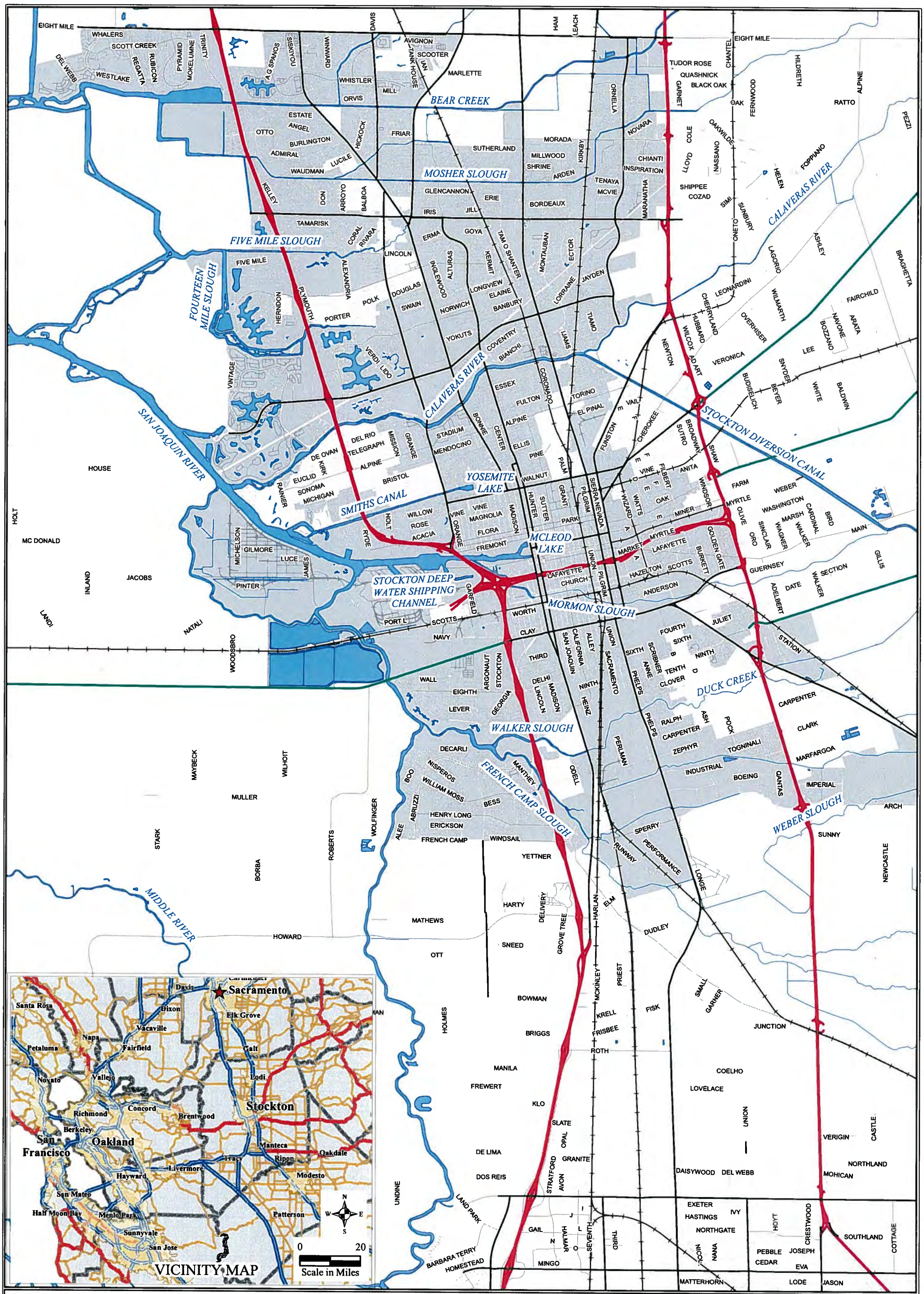
Implementation Phase	Waterbodies	Start Date	End Date
Low DO Work Plan Submittal			June 6, 2008
Phase I	Smith Canal	November 14, 2008	December 1, 2009
Phase II	Mosher Slough	April 15, 2009	May 31, 2011
Phase III	Lower Calaveras River Stockton Channel Five-Mile Slough Mormon Slough	July 1, 2009	July 31, 2011
Low DO Plan Final Report			December 01, 2012

Notes: DO = Dissolved Oxygen

Monthly receiving water and urban discharge grab sample events will include two storm events; one to target the "first flush" storm event anticipated to occur between September and December, the second anticipated to occur between January and May

Sediment grab sample events will occur once following a wet season storm event (anticipated September through December) and once during the dry season (anticipated May through August)

ATTACHMENT A



LEGEND

Approximate Boundary of Stockton Urbanized Area (2007)

Water Bodies

Map compiled at scale indicated and in color. Projection: Lambert Conformal Conic NAD 1983 California State Plane Coordinate System, Zone III.
All zoning, street, and water body data created by County of San Joaquin and City of Stockton GIS Departments (data current as of 8/07).

N
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LOW DO PLAN
SAN JOAQUIN WATERWAYS WITHIN THE
GREATER STOCKTON
URBANIZED AREA
STOCKTON, CALIFORNIA

0 0.625 1.25 2.5
Scale in Miles

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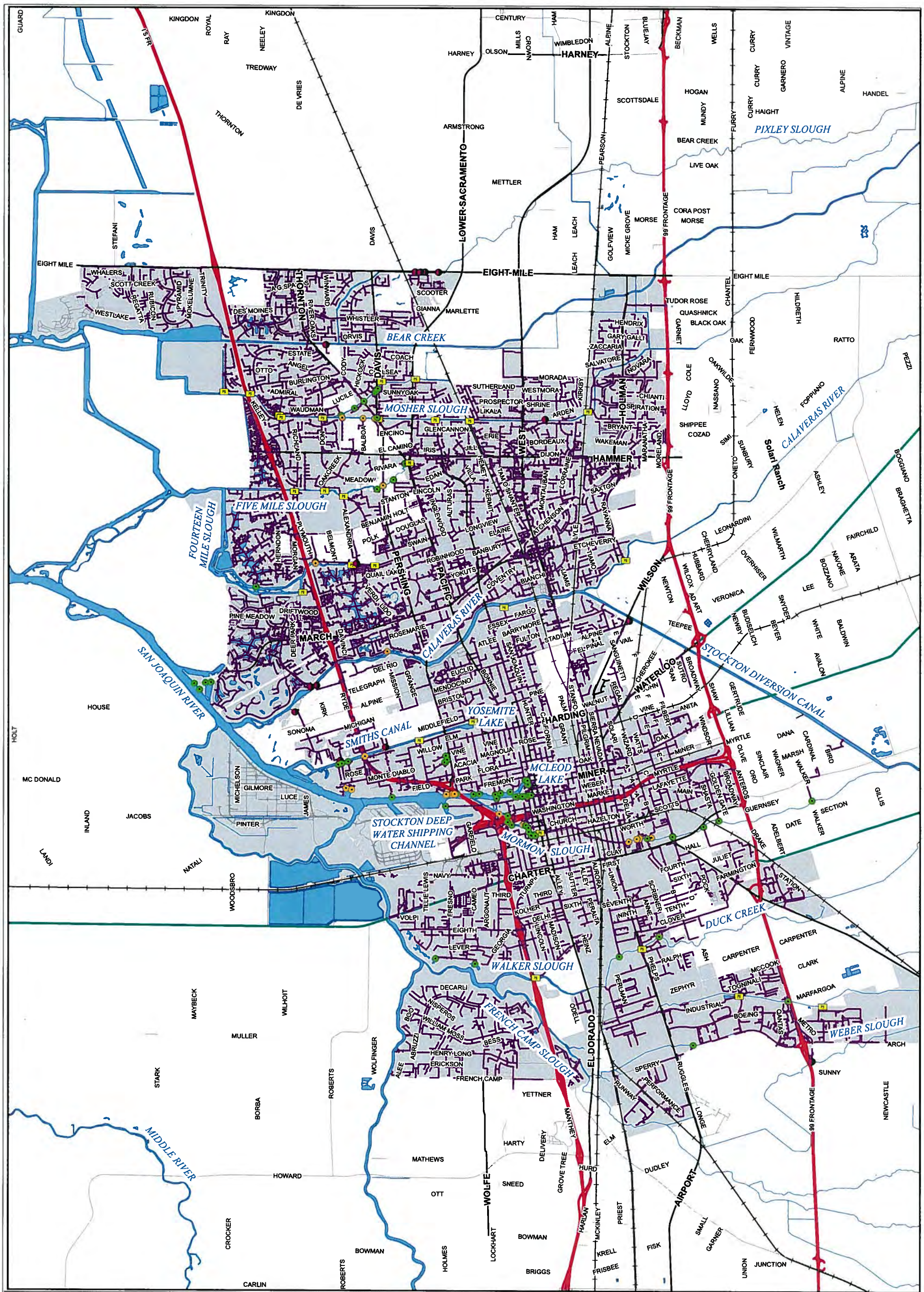
FIGURE
1

5418_F1.MXD



LEGEND

- Gravity Outfall, City
- Pump & Lift Station, County/Other
- Gravity Outfall, Other
- Pump Station
- Storm Water line
- Approximate Boundary of Stockton Urbanized Area (2007)
- Water Bodies

Map compiled at scale indicated and in color. Projection: Lambert Conformal Conic NAD 1983 California State Plane Coordinate System, Zone III.
All zoning, street, and water body data created by County of San Joaquin and City of Stockton GIS Departments (data current as of 8/07).

STORMWATER DISCHARGE LOCATIONS WITHIN THE GREATER STOCKTON URBANIZED AREA STOCKTON, CALIFORNIA

0 0.625 1.25 2.5
Scale in Miles

N W E S

FIGURE 2

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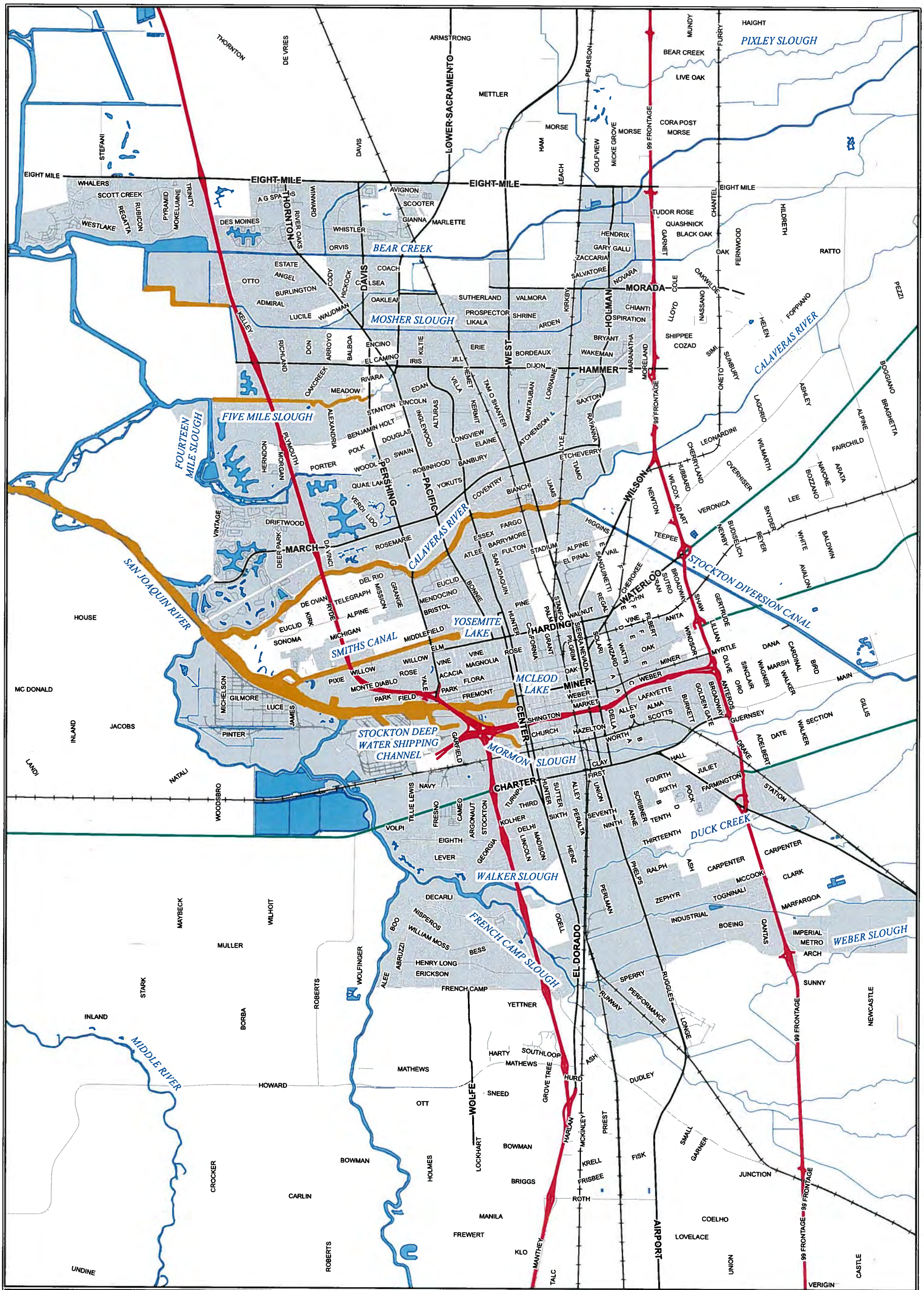
5418_F2.MXD



LEGEND

Waterway Segments 303(d)-Listed for Low Dissolved Oxygen

Approximate Boundary of Stockton Urbanized Area (2007)

Water Bodies

Map compiled at scale indicated and in color. Projection: Lambert Conformal Conic NAD 1983 California State Plane Coordinate System, Zone III. All zoning, street, and water body data created by County of San Joaquin and City of Stockton GIS Departments (data current as of 8/07).

IMPAIRED PORTIONS OF STOCKTON WATERWAYS
303(d) - LISTED FOR LOW DISSOLVED OXYGEN
WITHIN THE GREATER STOCKTON URBANIZED AREA
STOCKTON, CALIFORNIA

N W E S

0 0.625 1.25 2.5

Scale in Miles

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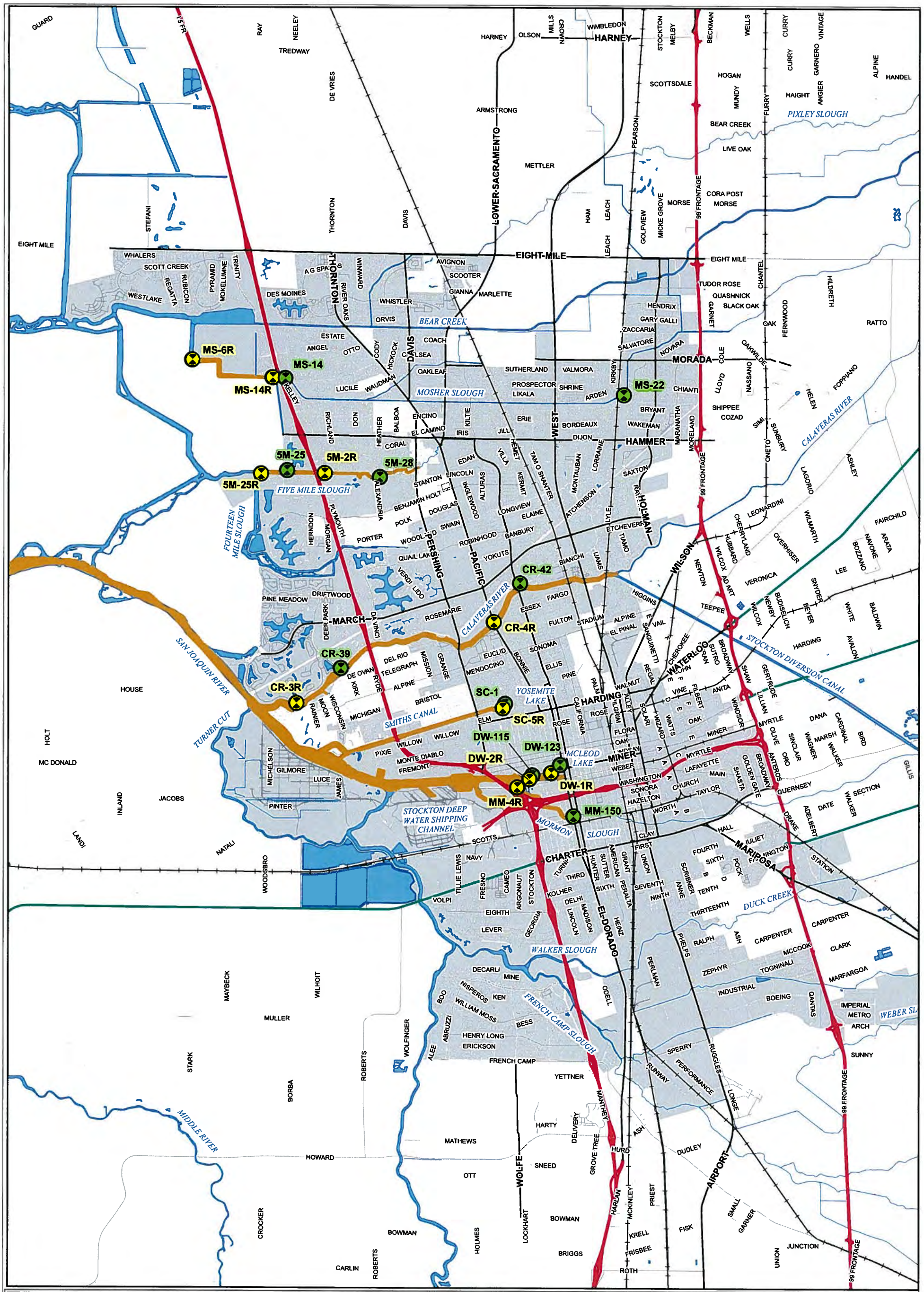
FIGURE 3

5418_F3.MXD



LEGEND

- Waterway Segments 303(d)-Listed for Low Dissolved Oxygen
- Water Bodies
- Approximate Boundary of Stockton Urbanized Area (2007)
- SC-1 — Proposed Discharge Grab Sample Monitoring Locations
- SC-5R — Proposed Receiving Water *In-Situ* and Grab Sample Monitoring Locations

Map compiled at scale indicated and in color. Projection: Lambert Conformal Conic NAD 1983 California State Plane Coordinate System, Zone III.
All zoning, street, and water body data created by County of San Joaquin and City of Stockton GIS Departments (data current as of 8/07).

PROPOSED LOW DO MONITORING LOCATIONS WITHIN THE GREATER STOCKTON URBANIZED AREA STOCKTON, CALIFORNIA

0 0.625 1.25 2.5
Scale in Miles

N W E S

FIGURE 4

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5418_F4.MXD

ATTACHMENT B

RESOURCE REFERENCE LIST

California Department of Water Resources, September 2007, Calaveras River Fish Migration Barriers Assessment Report

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