

Training

Municipal Facilities & Activities



RIVERSIDE COUNTY
WATERSHED PROTECTION

Prepared for: Santa Margarita River Watershed Copermitees

Presented by: CASC Engineering and Consulting, Inc.

Version 1

Introductions

- Your Instructor
 - Claudia Steiding, CESSWI, CPSWQ, QSD/QSP
- Audience Introductions
 - Superintendents
 - Corporate Yard Staff
 - Facilities Staff
 - Streets/Roads Staff
 - Parks/Landscape Staff

Course Outline

- Introduction
- Regional MS4 Permit Overview
- Water Quality Improvement Plan (WQIP)
- Jurisdictional Runoff Management Plan (JRMP)
- Minimum BMPs for Municipal Facilities
- Quiz Questions and Class Interaction throughout Course

Common Acronym Definitions

- CASQA – California Stormwater Quality Association
- BMP – Best Management Practice
- HPWQC – Highest Priority Water Quality Concern
- IC/ID – Illicit Connection/Illegal Discharge
- IDDE – Illicit Discharge Detection and Elimination
- JRMP – Jurisdictional Runoff Management Program
- MS4 – Municipal Separate Storm Sewer Systems
- NPDES – National Pollutant Discharge Elimination System
- PWQC – Priority Water Quality Concern
- SMR – Santa Margarita River
- TMDL - Total Maximum Daily Load
- WQIP – Water Quality Improvement Plan

Learning Objectives

A better understanding of:

- Permit requirements for municipal facilities and activities
- Implementation of WQIP and JRMP
- Inspection protocols
- BMPs applicable to municipal facilities and activities

Regional MS4 Permit Overview

San Diego Region MS4 Permit “New Regional Approach”



- Purpose:
 - Regulates the discharge of pollutants from Municipal Separate Storm Sewer Systems (MS4s) draining the ten Watershed-based Management Areas within San Diego Region (R9)
- Primary goals:
 - To provide a consistent set of permit requirements
 - To provide permit requirements that focus on improving water quality, rather than completing specific actions

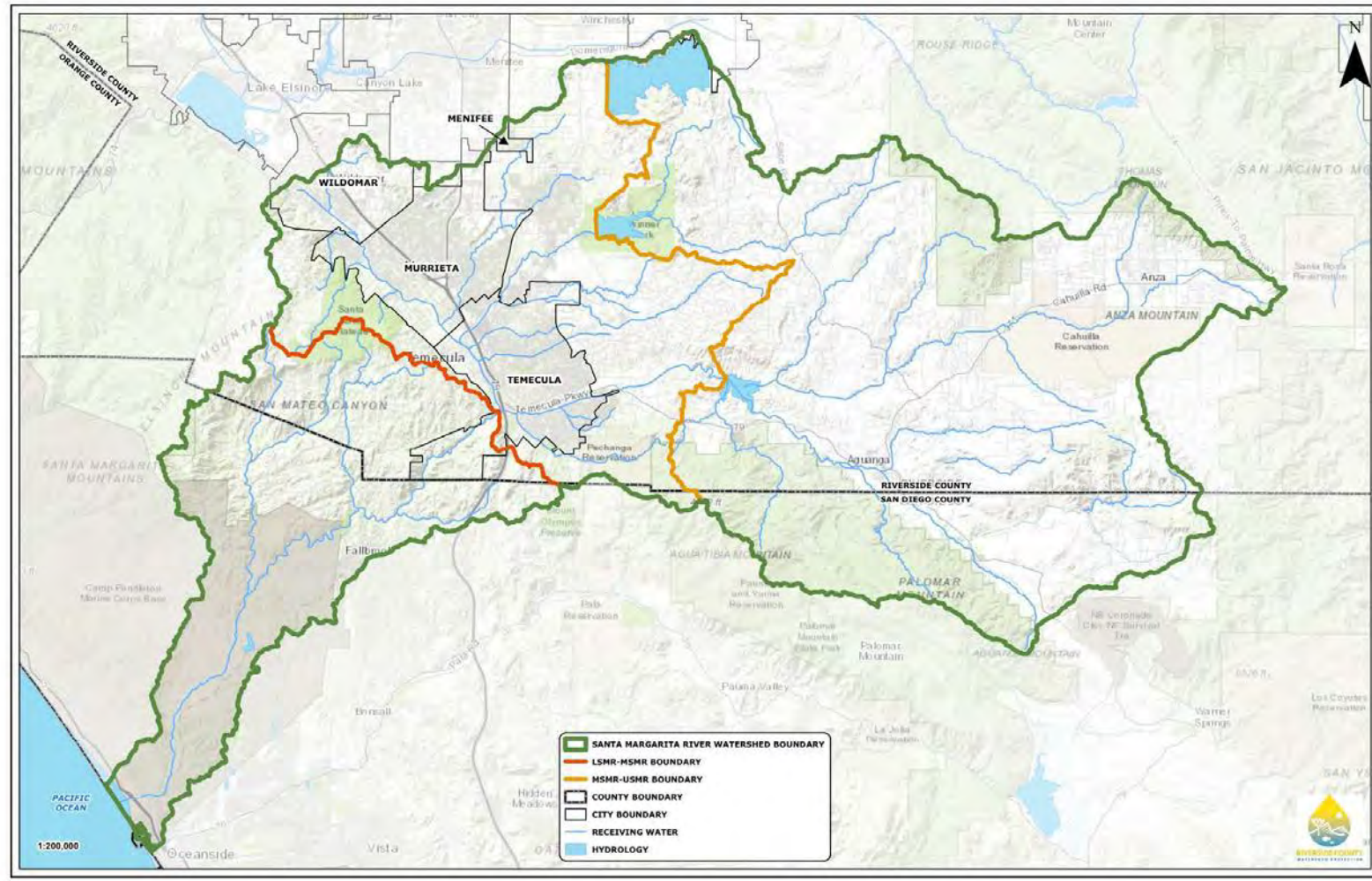
Copermittees Within the SMR Watershed Management Area



Regulated by Regional Water Quality Control Board – San Diego

- County of San Diego
- County of Riverside (portion)
- Cities of Murrieta, Temecula, and Wildomar
- Riverside County Flood Control and Water Conservation District

Santa Margarita (SMR) Watershed Management Area



Santa Margarita River Watershed

Document Requirements

- The Permit requires development of two documents:
 - Water Quality Improvement Plans (WQIP) – Watershed-based planning document
 - Jurisdictional Runoff Management Plans (JRMPs) – Individual jurisdiction-based implementation document
- Compliance documents can be found here:
<http://rcflood.org/npdes/SMRWMA.aspx>

Water Quality Improvement Plan (WQIP)

Water Quality Improvement Plan (WQIP) Overview

Objective of WQIP:

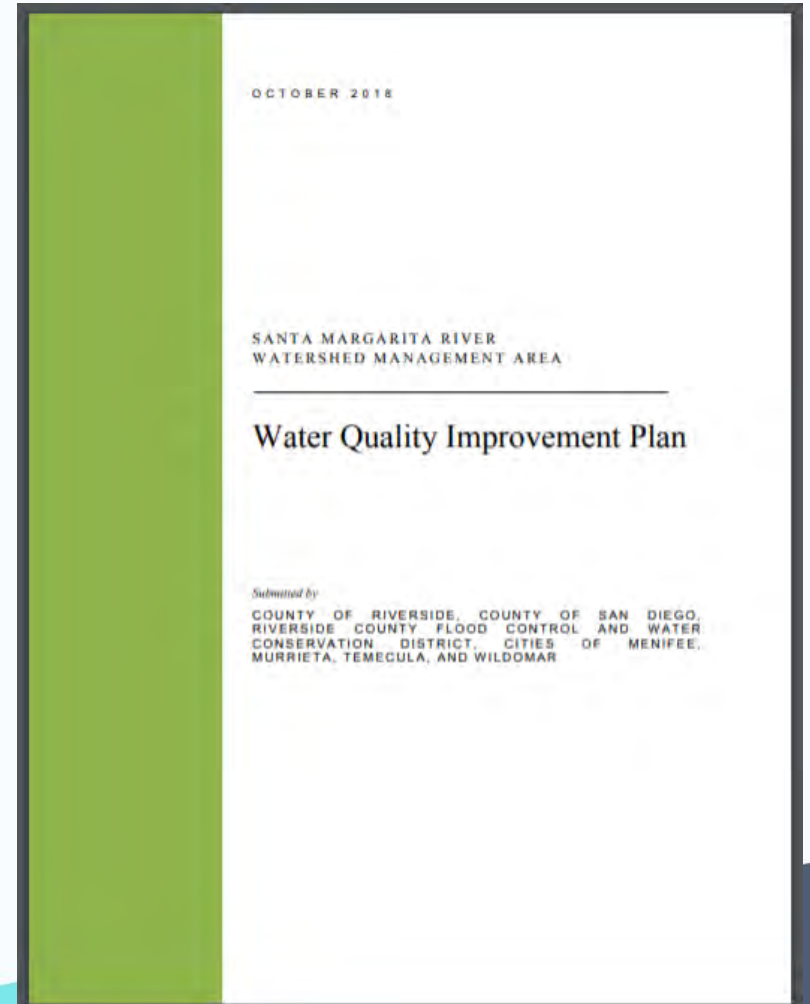
- Protect, preserve, enhance, and restore the beneficial uses of receiving waters

Receiving Waters include:

- Murrieta Creek;
- Temecula Creek;
- Santa Margarita River; and
- Santa Margarita River Estuary (SMR Estuary).

Contents of WQIP:

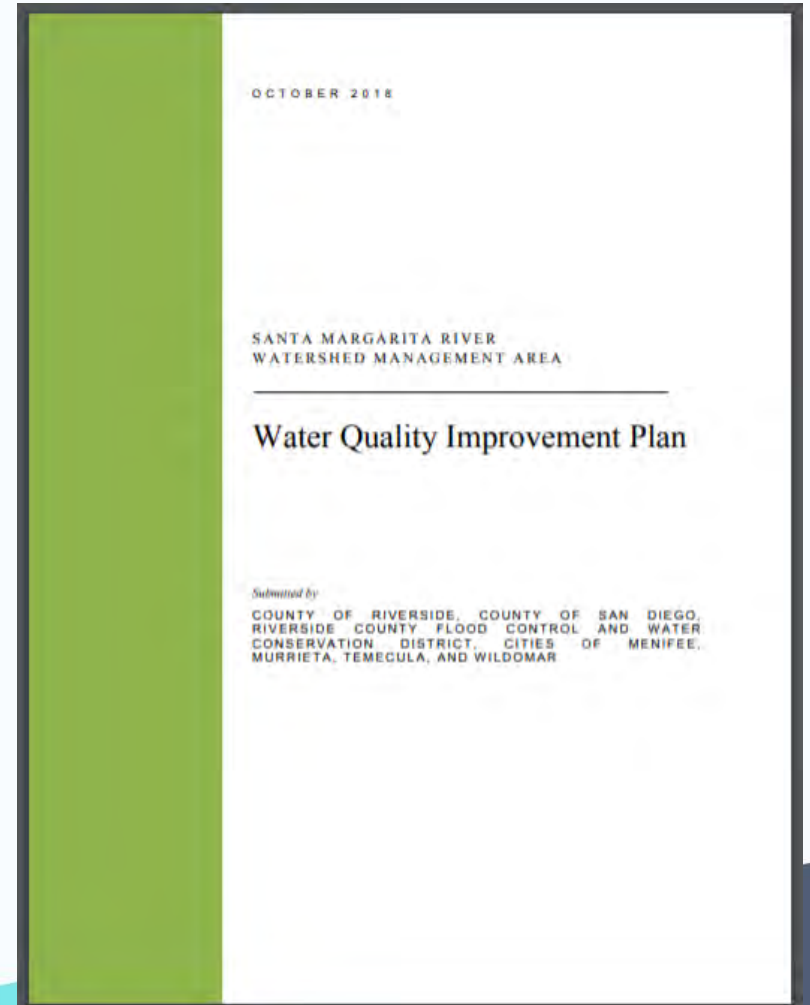
- Goals, strategies, and schedules



Water Quality Improvement Plan (WQIP)

Outcome of WQIP accomplished through:

- Adaptive planning and management processes
- Identification of the PWQC and HPWQC in SMR
- Implementation of strategies applied to the MS4 Permit's Jurisdictional Runoff Management Programs



Water Quality Improvement Plan (WQIP)

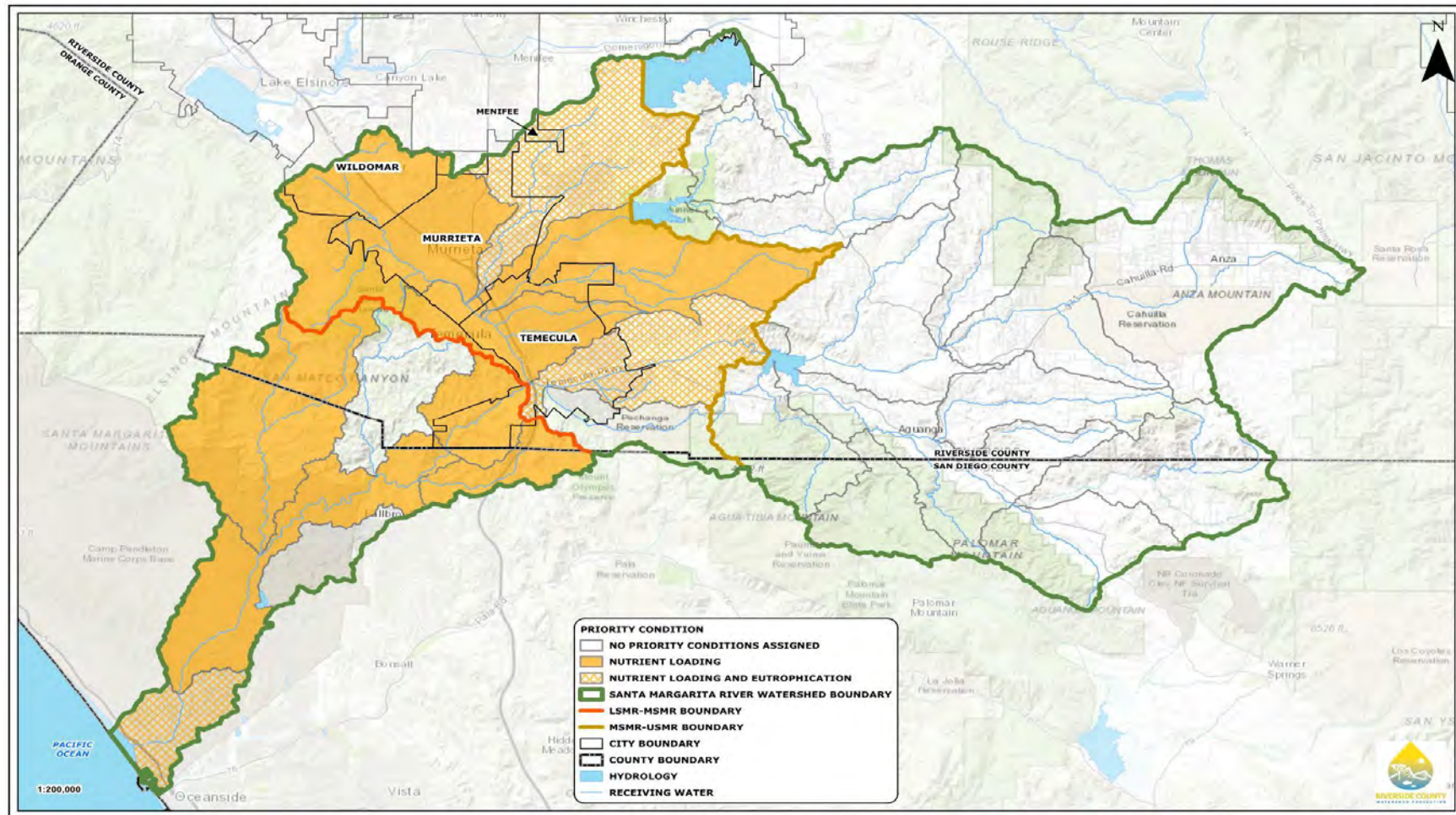
- The development of the WQIP consisted of three phases:
 - **Phase 1:** Identify priority and highest priority water quality conditions and potential water quality improvement strategies for the watershed
 - **Phase 2:** Identify the numeric goals for the highest priority water quality conditions (HPWQC) along with strategies to implement and achieve the numeric goals
 - **Phase 3:** Develop a (outfall) monitoring and assessment program to provide valuable data on outfall discharges

Phase I: Identify Priority & Highest Priority Water Quality Conditions

PWQC List Identified by:

- Water Quality Conditions Studies
- Beneficial Use Impacts
- Contributions of Pollutants from MS4s to Receiving Waters
- **PWQCs: Trash, Bacteria Indicators, Eutrophication**
- HPWQC Identified by further assessments
- 303(d) listings for Nutrients
- TMDL in Rainbow Creek
- TMDL Alternative in SMR Estuary
- **Eutrophication identified as the HPWQC to address in the SMR Watershed**

SMR Geographic Extent of HPWQC



What's Eutrophication?

- Caused by nutrients (nitrogen and phosphorus) loading to Receiving Waters from land uses such as:
 - Animal waste mismanagement
 - Excessive fertilizer application
 - Sewage spills/overflows
 - Irrigation discharges
 - Homeless encampments



What's the Fuss About Eutrophication?

- Nutrients are transported to Receiving Waters by non-stormwater discharges reaching our MS4s
- Nutrient loading causes dense algal and plant growth results in:
 - Oxygen depletion during plant decomposition
 - Fish kills
 - Aquatic “Dead Zones”
 - Reduction in biodiversity
 - Extensive deterioration of water quality, limits access to safe drinking water
 - Degradation of recreational opportunities

Phase 2: WQIP Goals, Strategies and Schedules

The WQIP:

- Defines the goals developed to measure progress (numeric goals for Nutrient Loading Reduction),
- Includes strategies to be implemented to achieve the goals (specific actions taken by Copermitees via individual JRMPs), and
- Includes schedules for implementation of strategies and goal achievement (e.g., Annual Program Implementation, 5-year Permit Term Assessment, etc.).

Phase 3: Monitoring and Assessment Plan (MAP)

SMR watershed MAP is designed with the overall goal of answering the following monitoring questions, which correspond to the numeric goals:

- How much has total nitrogen and total phosphorus loading been reduced in the SMR watershed?
- How much has non-stormwater flow been reduced at Copermittee outfalls?
- How much has total nitrogen and total phosphorus loading been reduced at Copermittee outfalls?
- Are there sources of pollutants outside of Copermittee control that are causing exceedances of targets?

MS4 Permit Overview

What is the fundamental difference between previous MS4 Permits and the current one we have now?

- A. There is no difference
- B. The current permit regulates Riverside County only
- C. The current permit regulates all jurisdictions for the entire San Diego Region

WQIP Overview

The Water Quality Improvement Plan (WQIP) was prepared by each jurisdiction and specifically dictates what your jurisdiction is required to do to prevent polluted discharges from your facilities.

True or False?

FALSE

WQIP Overview

Eutrophication is caused by an excess of nitrogen, oxygen, and phosphorous loading into receiving waters.

True or False?

False. Oxygen is depleted during plant decomposition.

Individual Jurisdictional Runoff Management Plan (JRMP)

Jurisdictional Runoff Management Plan (JRMP)

The JRMP is the document that:

- Serves to comprehensively translate the MS4 Permit requirements into actions (e.g., job activities, record keeping, training, etc.) each jurisdiction will implement to comply with the Permit.
- Describes those activities that your jurisdiction has identified as a WQIP strategy to meet the WQIP goals and schedules.
- Is reviewed and updated annually as part of the iterative process.

Permit JRMP Program Elements

- Legal Authority Establishment and Enforcement
- **Illicit Discharge Detection and Elimination**
- Development Planning
- **Construction Management**
- **Existing Development (includes Municipal Facilities and Activities)**
- Outreach
- Monitoring

JRMP Requirements for Municipal Operations and Maintenance



- **Source Identification and Inventory**

- Facilities and Activities that have the potential to pollute
 - Parks
 - Parking Lots
 - Maintenance Yards
- Activities that have the potential to pollute
 - Landscape Maintenance – Pesticide/Herbicide/Fertilizer Application
 - Fleet Maintenance and Repair
 - Unpaved Road Maintenance/Grading
 - Construction
 - Fire Training Activities

JRMP Requirements for Municipal O & M

- **Minimum BMPs**

- Types of Typical Minimum BMPs to implement for pollutants of concern
 - Secondary Containment
 - Street Sweeping
 - Good Housekeeping Measures

- **Inspection and Assessment of Municipal O&M**

- Facility Inspections
- Training
- Documentation-Inspection Checklist, Photo documentation
- Re-inspection, if necessary, Record Keeping

- **“Enforcement”**

What Does This Have to Do With Me and My Job?

- Illicit Discharge Detection and Elimination
 - Continue to report all illicit discharges (e.g., to your NPDES Coordinator)
 - **Prohibit ALL non-stormwater discharges** from your facilities and activities
- Construction Management
 - Continue to or employ **additional Erosion and Sediment Control BMPs at municipal construction sites**

What Does This Have to Do With Me and My Job?

- Road and Street Maintenance (Existing Facilities/Activities)
 - Continue or **increase frequency** of street sweeping in **target areas**
- Landscape Maintenance (Existing Facilities/Activities)
 - **Increase maintenance** of municipal irrigation systems to prevent overspray, overirrigation and non-stormwater flows to the MS4.
 - **Reduce fertilizer use** and/or **take extra precautions** to implement containment of fertilizers during application and storage

Jurisdictional Runoff Management Programs

The Regional MS4 Permit allows the following non-stormwater discharges to the MS4:

- A. Air conditioning condensation
- B. Dechlorinated swimming pool discharges
- C. Irrigation overspray/overflow
- D. All of the above
- E. None of the above

Jurisdictional Runoff Management Programs

The Permit requires municipal facilities and activities to implement a minimum set of BMPs.

True or False?

True

Illicit Discharge Detection and Elimination

Illicit Discharge Detection and Elimination

- The current Permit prohibits the following non-stormwater discharges to the MS4:
 - Air conditioning condensation
 - Individual residential vehicle washing
 - Dechlorinated swimming pool discharges
- Essentially all discharges to the MS4 are Prohibited now by our Permit.
- “Action” is needed when observed or caused

Illicit Discharge Detection and Elimination



- During dry weather, what are your procedures if you observe:
 - Potentially polluted run-on from an adjacent property onto your corporate yard?
 - Discolored discharge entering one of your catch basins?
 - Flow coming from one of your outfalls and it hasn't rained for over a week?
 - One of your coworkers is hosing down your corporate yard parking lot and allowing the water to run into the curb and gutter?

Illicit Discharges

- An illicit discharge is any discharge to the MS4 that is not composed entirely of stormwater runoff.
- The adjacent photo is an example of an illicit discharge generated from vehicle washing activities.
 - Staining on concrete suggests a history of non-compliant activity at the site. What BMPs should have been implemented here?
 - Report observed illicit discharges to your NPDES Coordinator or Designated Person identified in your JRMP.



Illicit Discharges

- Swimming pool discharges are **prohibited** in the SMR
 - This photo is of swimming pool water that was improperly treated and then discharged to the MS4
 - The purple colored discharge contained copper, high levels of cyanuric acid, and a white, powdery residue
 - This discharge was properly reported to the city's NPDES Coordinator pursuant to their JRMP



Park and Municipal Landscaping Irrigation

- Over irrigation of landscaped areas is an illicit discharge.
 - Contributes to nutrient loading
- Stained concrete indicates a history of over irrigation to the curb and gutter
 - Irrigation times need to be reduced
 - Irrigation system needs to be repaired to prevent runoff





Municipal Maintenance Activities

- Municipal maintenance activities have the potential to discharge sediments to the MS4
 - Sediments can carry adhered pollutants such as pesticides and fertilizers which are sources of Nutrient loading to our receiving waters.
 - Your JRMP, for example, could include a strategy to require you to install inlet protection during certain maintenance activities in dry weather to protect your MS4s from dry weather flows (e.g., landscape irrigation water carrying sediments from municipal activities).



Construction Management

Municipal Construction Activities

- Ensure your BMPs are maintained
 - Repair and replace damaged BMPs
 - Report any BMP deficiencies
- Silt fencing was used as perimeter control for this municipal project.
 - Over time, the silt fence was damaged (e.g., holes in fencing, broken lath)
 - Crews removed silt fencing and replaced with gravel bags



Municipal Construction Activities

- Ensure that the perimeter of the project is free from sediments
 - Implement sweeping schedule into daily general housekeeping activities
 - Increase sweeping frequencies if excessive sediment is observed



Municipal Facilities and Maintenance Activities

Municipal Facilities and Maintenance Activities

- Inventory the municipal areas and activities that have the potential to generate potential stormwater pollutants
- Prepare a Facility Pollution Prevention Plan (FPPP) for each facility
- Designate a minimum set of BMPs required for all City/County/District existing facilities

Municipal Facilities and Maintenance Activities

- BMP Implementation and Maintenance
 - Require the implementation of designated BMPs at municipal facilities
 - Require the proper maintenance of designated BMPs at municipal facilities

Municipal Facility Inspections

- Inspection requirements described in JRMP and/or FPPP provisions
- Frequency determined in implementation document
 - Typically – daily walk over, monthly inspection, annual assessment
- Inspections, at a minimum, address
 - Assessment of designated/minimum BMP implementation and effectiveness (IC/ID prevention)
 - At facility and offsite municipal activities
 - Special attention given to locations in high priority areas and activities (e.g., residential, pesticide and fertilizer use)
 - Assessment of training records, site map, housekeeping, actions taken for issues observed

Municipal Facility Inspections

- Inspection Tracking and Records
 - Complete inspection checklist
 - Includes photo documentation (date stamped) of compliance issues and proper BMP implementation (good, bad and improved)
 - Document/record keeping for all municipal facility inspections & re-inspections (if necessary)

“Enforcement”

- Based upon inspection findings, implement follow-up actions and re-inspection necessary for municipal facilities to maintain compliance with the MS4 Permit.
- Submit inspection reports to Supervisors for follow-up and appropriate Permit Compliance “reinforcement”
 - Encouraging behavior change
 - Providing additional training
 - Verbal warnings

Let's now take a closer look at some typical municipal facilities/activities and some of the associated minimum BMP implementation...

CASQA Municipal BMP Fact Sheets



- Municipal Fixed Facility BMPs (Categories)
 - Non-Stormwater Management
 - Vehicle and Equipment Management
 - Material and Waste Management
 - Building and Grounds Management
 - Over Water Activities
 - General Stormwater Management
- Municipal Field Program BMPs (e.g.)
 - Road and Street Maintenance
 - Landscape Maintenance
 - Waste Handling and Disposal

Municipal Corporate Yard – Outdoor Material Storage

- Store equipment and supplies in such a way that they are not exposed to stormwater
 - Equipment and supplies are stored underneath an awning
- Keep areas free of sediment, trash and debris
 - Waste containers with workable lids
 - Daily sweeping activities



Municipal Corporate Yard – Outdoor Material Storage

- Stockpile Management
 - Berm stockpiles to prevent the discharge of sediments
 - Cover stockpiles when not in use and prior to rain events
- Stockpile located in concrete storage bunker
 - Fiber roll berm is placed at opening to storage area
 - Stockpile has been covered with plastic and gravel bags have been placed on top of the plastic to keep plastic in place



Municipal Corporate Yard – Solid Waste Management

- All solid waste must be placed in solid waste containers and must be covered when not in use
- Containers that do not have workable lids should be covered with a tarp
- Keep area clean and free of debris



Santa Margarita River Watershed

Municipal Corporate Yard – Hazardous Waste Management

- Hazardous waste must have secondary containment and must be protected from storm water
- In this example, hazardous waste is placed on secondary containment pallets, but is not protected from storm water
- Prior to a rain event, cover all hazardous waste containers and pallets or move containers indoors
- If containers and pallets are not properly covered, storm water will overflow from the pallets and discharge to the MS4



Municipal Corporate Yard – Hazardous Material Storage

- Example hazardous liquid storage using a tank system
 - Fuel stored in double-walled tank
 - Concrete berm is used for secondary containment to prevent any leaks from entering the MS4



Municipal Corporate Yard – Vehicle and Equipment Cleaning

- Fueling areas must be covered so that precipitation cannot come into contact with fueling area
 - Spill kit should be kept in fueling area for quick cleanup
 - Area needs to be free of sediment and debris
 - Trash container with workable lid should be kept in the fueling area to address solid waste disposal



Municipal Corporate Yard – Vehicle and Equipment Cleaning

- Vehicle washing should be conducted in a manner in which wash waters are discharged to a clarifier or landscaping
- Vehicle washing at this corporate yard is conducted indoors
 - All wash water drains to a clarifying system that is connected to the sanitary sewer
 - Clarifiers must have a maintenance schedule to prevent backups



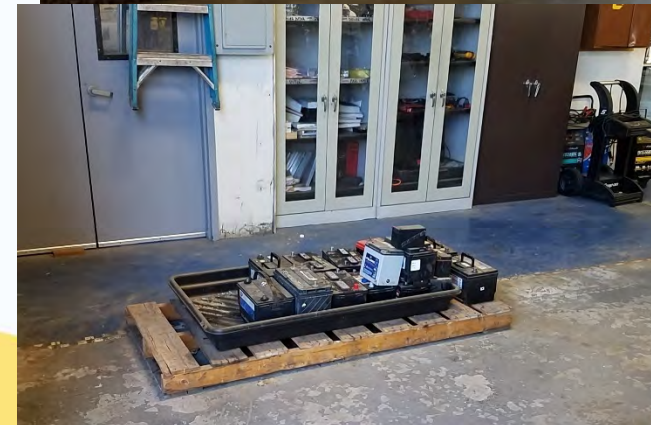
Municipal Corporate Yard – Parking/Storage Area Maintenance

- Vehicle storage and parking lot areas contribute multiple pollutants that can reach surface waters through storm water runoff
 - oil and grease
 - trash
 - sediment, metals
- Establish sweeping schedules to keep areas free of sediments and debris
- Place drip pans under leaking vehicles and equipment
- Schedule repairs



Municipal Corporate Yard – Vehicle and Equipment Repair

- Vehicle maintenance should be conducted indoors, if feasible
 - Facilities should have a berm or clarifier to prevent spills from entering the storm drain system
 - Hazardous materials must have secondary containment
 - Spill kits need to be easily accessible for quick clean up
 - Store cracked and/or dead batteries in a non-leaking covered secondary container and dispose of properly at recycling or household hazardous waste facilities.



Municipal Corporate Yard – Vehicle and Equipment Repair

- If repairs are conducted outdoors
 - Lay down a tarp to protect surface from potential leaks
 - Use drip pans for leaks
- Spill cleanup
 - Follow the Spill Prevention and Countermeasure Plan
 - For non-hazardous spills, use absorbent materials for liquids and brooms/shovels for dry materials
 - Dispose of waste materials properly
 - If water is used, it must be collected and properly disposed of. The wash water cannot be allowed to enter the storm drain.

Fire Fighting Non-Emergency Activities

- Discharges associated with fire training activities and testing activities
 - Conducted on non-rainy days
 - Contain runoff or direct runoff to landscaped/greenbelt areas
 - Ensure erosion is not occurring from discharge
 - Prior to conducting activities, remove all sediments and debris



Fire Fighting Non-Emergency Activities

- Activities at a training facility may include the use of fire fighting foams
 - All foams have the potential to increase nutrient (phosphorus) loading in surface waters, harm aquatic life, and pose a risk to ground water supplies
- Cleanup and proper disposal of foam and proper disposal is required
 - Vacuum trucks
 - Hand-held equipment, such as shovel, mops or absorbent materials



MS4 Maintenance Activities



- Regularly scheduled inspection and maintenance of catch basins and storm drain inlets
 - Removes sediments, leaves, debris, and trash
 - Reduces the potential of discharging pollutants to receiving waters

MS4 Maintenance Activities



- Storm Drain Signage to prevent illegal dumping
 - BMP alerts public of dumping prohibitions and ultimate destination of storm drain discharge
 - Stenciling or marker
 - Schedule periodic visual inspections
 - Repair or replace as needed

Road and Street Maintenance



- Maintain consistent sweeping schedule
- Consider increasing frequency based on factors such as traffic volume, land use, proximity to water
- Dispose of street sweeping debris and dirt at a landfill
- Do not store swept material along the side of the street or near a storm drain inlet
- Keep debris storage to a minimum during the wet season

Water and Sewer Utility Maintenance

Each jurisdiction *must*:

- Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers
- Coordinate with sewerage agencies to keep informed of relevant and appropriate maintenance activities to prevent seepage of sewage into the MS4

Water and Sewer Utility Maintenance



- Wastewater from sanitary sewer systems is a source of nitrogen and phosphorous from human waste, food, and detergents
- Wastewater from leaking sewers can be tracked throughout your jurisdiction and can pose a serious health and water quality problems
 - If possible, block off or redirect pedestrian and vehicle traffic until spill is cleaned up

Landscape Maintenance Pesticides, Herbicides and Fertilizers Application, Storage and Disposal

Each jurisdiction *must*:

- Require the implementation of BMPs to reduce pollutants in storm water discharges associated with the application, storage, and disposal of pesticides, herbicides and fertilizers.
- BMPs must include, educational activities, permits, certifications and other measures for applicators and distributors.

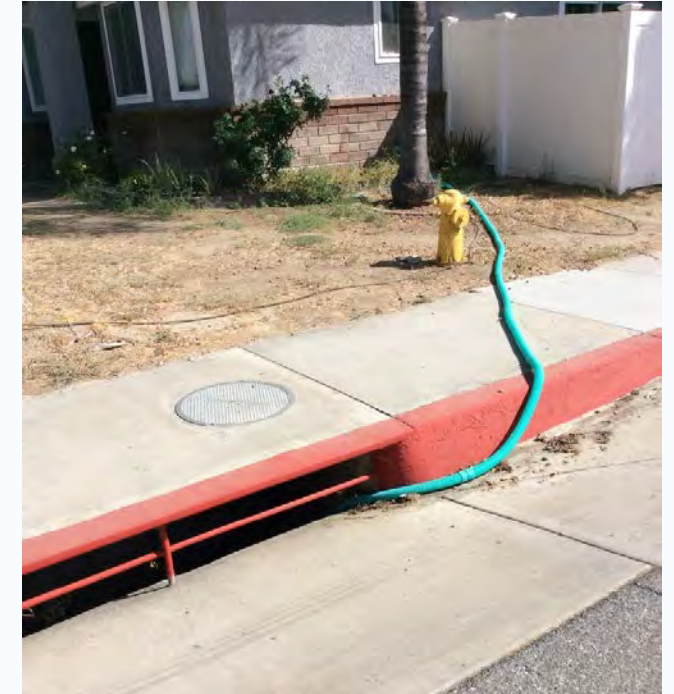
Landscape Maintenance Pesticides, Herbicides and Fertilizers Application, Storage and Disposal



- Pesticide and fertilizer applications in parks and landscaped areas
 - Follow all federal, state and local regulations regarding use, storage, disposal and training
 - Follow product instructions
 - Do not apply prior to predicted rain events
 - Minimize use to targeted areas
 - Only use pesticides if there is an actual problem

Class Interaction - Discussion

- Are there any IC/ID's here?



Class Interaction - Discussion

- A discharge from the trash enclosure is observed. The discharge is pooling in a low point of a municipal facility parking lot. The source of the discharge is an improperly maintained grease container. Is this an illicit discharge?



Santa Margarita River Watershed



Class Interaction - Discussion



Santa Margarita River Watershed



- Discharge from a vehicle washing area is not being contained within the washing area. The discharge is entering a catch basin with a direct connection to the city's storm drain. Is this an illicit discharge?
- Do you see any other issues in the photos?

You Have Successfully Completed the SMR Municipal Training Q & A

- Follow-up questions can be answered by:
 - Contacting your NPDES Coordinator
 - Contacting Charlene Warren at RCFC & WCD, cwarren@rivco.org
 - Contacting the CASC presenter, csteiding@cascinc.com