

OCTOBER 2016

MARIN COUNTY STORMWATER POLLUTION
PREVENTION PROGRAM

Total Maximum Daily Load Implementation Status and Effectiveness Assessment Report 2015-2016

Submitted to

STATE WATER RESOURCES CONTROL BOARD

Submitted by

MARIN COUNTY STORMWATER POLLUTION PREVENTION PROGRAM

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Introduction

BACKGROUND

Marin County Stormwater Pollution Prevention Program (MCSTOPPP)

The Marin County Stormwater Pollution Prevention Program (MCSTOPPP) is a joint effort of the County of Marin and Marin's 11 cities and towns. The countywide program was formed in 1993 to protect and enhance water quality in creeks and wetlands by preventing stormwater pollution, preserving beneficial uses of local waterways and complying with state and federal regulations.

MCSTOPPP comprises local stormwater pollution prevention efforts by the County and each municipality, as well as by a countywide program funded jointly by the County and the municipalities and administered by the Marin County Flood Control and Water Conservation District. The Marin General Services Authority provides programmatic and budgetary oversight. Budgets are approved by the County's Board of Supervisors. MCSTOPPP has developed a creek-focused approach to stormwater pollution prevention by integrating habitat restoration, school-based education, volunteer projects, and public education with public works maintenance and code enforcement.

Stormwater Regulations

In a 1991 update to its Basin Plan, the San Francisco Bay Regional Water Quality Control Board (hereafter Regional Water Board) mandated that Marin County's municipalities pursue a "baseline" program to prevent increases in urban runoff pollutants. In 2003, the State Water Resources Control Board (hereafter State Water Board) required small municipal storm drainage systems, including those in Marin County, to be regulated under a statewide National Pollutant Discharge Elimination System (NPDES) Phase II Small Municipal Separate Storm Sewer Systems (MS4) General Permit (Order No. 2003-005 DWQ) (first term Phase II Permit). The MCSTOPPP Action Plan 2010 was the approved Storm Water Management Plan (SWMP). Each municipality complied with the first term Phase II Permit by implementing Action Plan 2010 through a local stormwater program and through the collaborative effort of MCSTOPPP.

The first term Phase II Permit expired in 2008 and was administratively extended until a revised Phase II Permit was adopted by the State Water Board. The second term Phase II Small MS4 General Permit (Order No. 2013-0001-DWQ) (Phase II Permit) was adopted in February 2013 and became effective July 1, 2013. The TMDL requirements were included in the Phase II Permit in Attachment G.

PURPOSE

This 2015-2016 Total Maximum Daily Load Implementation Status and Effectiveness Assessment Report focuses on implementation of the TMDL requirements identified in Attachment G, as well as the effectiveness assessment reporting requirements identified in Provision E.14.a.(iii) for the high priority pollutants of concern (POCs), and is being submitted in accordance with the requirements of the Phase II Permit.

Total Maximum Daily Load Implementation Status Report

Section E.15 of the Phase II Permit requires traditional Permittees in Marin County to comply with all applicable TMDLs approved pursuant to 40 Code of Federal Regulations section 130.7 that assign a Waste Load Allocation (WLA) to the Permittee and that have been identified in Attachment G of the Phase II Permit.

The Phase II Permit requires the development and submittal of a TMDL Implementation Status Report (TMDL Report). The TMDL Report must address each of the elements outlined in Provision E.15.d.

The TMDL Report must include, for each TMDL for which Permittees in Marin County are identified as responsible entities:

- A description of BMPs implemented, including types, number, and locations;
- An assessment of the effectiveness of implemented BMPs in progressing towards attainment of wasteload allocations within the TMDLs' specified timeframes;
- All monitoring data, including a statistical analysis of the data to assess progress towards attainment of wasteload allocations within the TMDLs' specified timeframes; and
- Based on the information obtained through the monitoring and effectiveness assessment, identification and description of the additional BMPs that will be implemented to attain wasteload allocations within the TMDLs' specified timeframes.

Effectiveness Assessment Report

The Phase II Permit requires the development and implementation of a *Program Effectiveness Assessment and Improvement Plan* (PEAIP). The PEAIP must include the strategy that the Permittees will use to track the short- and long-term effectiveness of the stormwater program, identify the specific measures that will be used to assess the effectiveness of the prioritized BMPs, groups of BMPs, and/or the stormwater program(s), and identify how the Permittees will use the information obtained through the PEAIP to improve their stormwater program(s). MCSTOPPP, in conjunction with the Bay Area Stormwater Management Agencies Association (BASMAA) Phase II Permittees, developed a [PEAIP](#) to assist them in conducting their program effectiveness assessments (EAs). The PEAIP was submitted to the State Water Board on October 15, 2015 with the Year 2 Annual Report.

MCSTOPPP's stormwater program addresses many POCs and implements a wide range of BMPs. Each year, beginning in Year 3, the effectiveness of a subset of prioritized BMPs that are focused on high priority POCs will be assessed. This approach provides a focused assessment program that can be improved, targeted, and refined.

The high priority POCs selected were based on the approved TMDLs, as shown in **Table 1**.

Table 1. Marin County Phase II Areas with Water Bodies that Have Approved TMDLs

Stormwater Program	Municipality	Water Body	TMDL ¹
Marin County Stormwater Pollution Prevention Program (MCSTOPPP)	County of Marin	Tomales Bay	Tomales Bay: Pathogens (Indicator Bacteria) (Fecal Coliform) Resolution No. R2-2005-0046
		Olema Creek	
		Lagunitas Creek	
		Walker Creek	
	County of Marin City of Belvedere City of Mill Valley City of Sausalito Town of Tiburon	Richardson Bay	Richardson Bay: Pathogens (Indicator Bacteria) (Fecal Coliform) Resolution No. R2-2008-0061
	County of Marin	Lagunitas Creek	Lagunitas Creek Watershed: Sediment ² Resolution No. R2-2014-0027
	County of Marin City of Belvedere Town of Corte Madera Town of Fairfax City of Larkspur City of Mill Valley City of Novato Town of Ross Town of San Anselmo City of San Rafael City of Sausalito Town of Tiburon	Arroyo Corte Madera del Presidio	Urban Creek: Diazinon & Pesticide-Related Toxicity Resolution No. R2-2005-0063
		Corte Madera Creek	
		Coyote Creek	
		Gallinas Creek	
		Miller Creek	
		Novato Creek	
San Antonio Creek			
San Rafael Creek			

1. Source: Phase II Permit, *Attachment G – Region Specific Requirements*

2. Although not listed in Attachment G of the Phase II Permit, the Regional Water Board adopted the Lagunitas Creek Watershed Sediment TMDL on June 11, 2014. The Basin Plan amendment adopting the TMDL was approved by the State Board on November 18, 2014 and by the Office of Administrative Law on March 17, 2015.

The following high priority POCs will be the focus of the EAs:

- Pathogens (Indicator Bacteria) – Fecal coliform;
- Pesticides – Diazinon and Pesticide-Related Toxicity; and
- Sediment.

The POCs identified for each MCSTOPPP member agency, based (in most cases) on the TMDL and 303(d) list information available as of June 30, 2015, are summarized in **Table 2**.

Table 2. POCs to be Addressed within MS4-Specific PEAIPs

Stormwater Program	Municipality	Pollutants of Concern (POCs) ¹		
		Pathogens (Indicator Bacteria)	Diazinon and Pesticide-Related Toxicity	Sediment
Marin County Stormwater Pollution Prevention Program (MCSTOPPP)	County of Marin	✓	✓	✓
	City of Belvedere	✓	✓	✓
	Town of Corte Madera		✓	✓
	Town of Fairfax		✓	✓
	City of Larkspur		✓	✓
	City of Mill Valley	✓	✓	✓
	City of Novato		✓	✓
	Town of Ross		✓	✓
	Town of San Anselmo		✓	✓
	City of San Rafael		✓	✓
	City of Sausalito	✓	✓	✓
	Town of Tiburon	✓	✓	✓

Note:

1. This table is current as of June 30, 2015. It is dynamic and subject to change as needed.

Effectiveness Assessment Approach

Based on the identification of the highest priority POCs and their potential sources, target audiences, and key implementation activities (prioritized BMPs), MCSTOPPP identified the Program Elements under which the implementation of prioritized BMPs will be assessed (**Figure 1, Table 3**). The program activities—i.e., the prioritized BMPs—that were conducted and that will be assessed based on collected data are also listed within **Table 3**.

CASQA Outcome Level

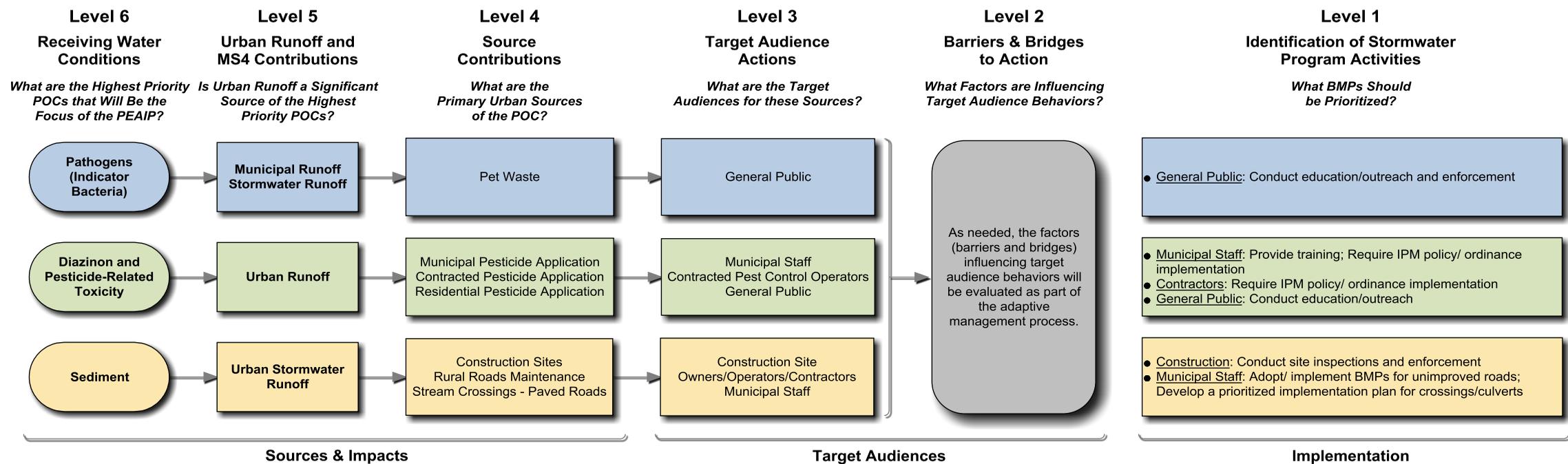


Figure 1. Prioritized BMPs Identified for Target Audiences

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Table 3. Program Elements for Which Prioritized BMPs Will Be Assessed

Program Element	Phase II Permit Provision	Pollutants of Concern (POCs)		
		Pathogens (Indicator Bacteria)	Diazinon and Pesticide-Related Toxicity	Sediment
Education and Outreach	E.7	General Public: Conduct education/ outreach and enforcement	General Public: Conduct education/ outreach	–
Construction Site Stormwater Runoff Control	E.10	–	–	Construction: Conduct site inspections and enforcement
Pollution Prevention/ Good Housekeeping	E.11	–	Municipal Staff: Provide Training; Require IPM policy/ ordinance implementation Contractors: Require IPM policy/ ordinance implementation	Municipal Staff: Provide Training; Implement O&M BMPs for road maintenance activities ¹
Water Quality Monitoring	E.13	N/A ^{2, 3}	See <i>Year 1 Monitoring Report: Diazinon and Pesticide-Related Toxicity TMDL Monitoring Program in Urban Creeks</i> ⁴	N/A ⁵

Notes:

1. The implementation actions for this POC were modified for MCSTOPPP permittees because the actions in the BASMAA PEAP were specific to the Napa River and Sonoma Creek sediment TMDLs.
2. **Tomales Bay Pathogens (Indicator Bacteria) TMDL:** Table 4-25 in the Basin Plan Amendment establishing the Tomales Bay Pathogens TMDL outlines the locations, constituents, sampling frequency, analytical methods, and the sampling entities for water quality monitoring under the TMDL. The County of Marin is not named as a sampling entity. The [Tomales Bay Watershed Council's website](#) provides information on water quality monitoring conducted in the watershed.
3. **Richardson Bay Pathogens (Indicator Bacteria) TMDL:** Monitoring for this TMDL is conducted by the Richardson Bay Regional Agency (RBRA). MCSTOPPP contributes to this monitoring program to cover the costs (labor and analytical) for sampling four locations near stormwater outfalls. RBRA samples a total of 14 outfalls and submits the monitoring results directly to the Regional Water Board.
4. **Urban Creek Diazinon and Pesticide-Related Toxicity TMDL:** MCSTOPPP submitted the MCSTOPPP and City of Petaluma Monitoring Plan and QAPP to Regional Water Board staff for approval on behalf of Marin's municipalities named in the Urban Creek Diazinon and Pesticide-Related Toxicity TMDL. Implementation of the approved Monitoring Plan and QAPP is described in the *Year 1 Monitoring Report: Diazinon and Pesticide-Related Toxicity TMDL Monitoring Program in Urban Creeks* (October 2016).
5. The Regional Water Board adopted the Lagunitas Creek Watershed Sediment TMDL on June 11, 2014. The Basin Plan amendment adopting the TMDL was approved by the State Board on November 18, 2014 and by the Office of Administrative Law on March 17, 2015. This TMDL is not listed in Attachment G of the Phase II Permit. Marin County is currently developing a sediment delivery assessment for paved roads in the Lagunitas Creek watershed that will inform future modifications of implementation actions for this TMDL.

The FY 15-16 EA for MCSTOPPP, organized by the high priority POCs and associated prioritized BMPs, was conducted. The EA focuses on the data and information collected and analyzed to address POC-specific management questions. Because the TMDLs are aligned with the POCs, a summary of the applicable TMDL implementation status, as well as a summary of the data and the results of the EA, are presented within the section for each POC.

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Pathogens (Indicator Bacteria)

As described in the PEAIP, pathogens (indicator bacteria) were selected as a high priority POC, and the prioritized BMPs selected for this POC focused on the implementation actions summarized in **Table 3**. This section includes the applicable TMDL implementation status and the effectiveness assessment for pathogens.

TOMALES BAY PATHOGENS TMDL IMPLEMENTATION STATUS

Overview

The Regional Water Board adopted a Pathogens (Indicator Bacteria) TMDL for the Tomales Bay Watershed.¹ The WLAs, implementation requirements, and TMDL timeframes are described below.

Waste Load Allocations

The WLAs for this TMDL are provided in **Table 4**. The attainment of the WLAs is based upon implementation of specific measures specified in the TMDL.²

Table 4. Waste Load Allocations, Tomales Bay Pathogen TMDL

Fecal Coliform ^a (MPN/100ml)		
For Direct Discharges to Tomales Bay		For Discharges to Major Tomales Bay Tributaries
Median ^b	90 th Percentile ^c	Log Mean ^b
<14	<43	<200

^a These allocations are applicable year-round and apply to any sources (existing or future) subject to regulation by NPDES permit.

^b Based on a minimum of five consecutive samples equally spaced over a 30-day period.

^c No more than 10% of total samples during any 30-day period may exceed this number

¹ http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/tomalesbaypathogenstmdl.shtml

² California Regional Water Quality Control Board, San Francisco Bay Region, Resolution R2-2005-0046, *Amending the Water Quality Control Plan for the San Francisco Bay Region to Establish a Total Maximum Daily Load and Implementation Plan for Pathogens in Tomales Bay Watershed*, Exhibit A, page 6.

Implementation Requirements

The implementation requirements for the WLAs are provided in **Table 5**.

Table 5. Requirements for Implementing the Tomales Bay Pathogens TMDL WLAs

Program Element	Requirement
i. Public Participation and Outreach	Educate the public regarding: <ul style="list-style-type: none">• Sources of fecal coliform and associated health risks of fecal coliform in surface water,• Actions that individuals can take to reduce pathogen loading.
ii. Pet Waste Management	Develop and implement enforceable means of reducing/eliminating fecal coliform loading from pet waste.
iii. Illicit Discharge Detection and Elimination	Develop and implement strategies to detect and eliminate illicit discharges (whether mistaken or deliberate) of sewage to Tomales Bay.
iv. Pollution Prevention and Good Housekeeping	Develop and implement strategies to reduce/eliminate fecal coliform loading from streets, parking lots, sidewalks, and other urban areas that potentially collect and discharge fecal coliform to Tomales Bay.
v. Reporting	Report annually on water quality monitoring results and progress made on implementation of human and animal runoff reduction measures.

TMDL Timeframes

Municipalities listed in this TMDL must within 18 months of the adoption of the Phase II Permit implement the program elements listed in **Table 5**. The County of Marin and MCSTOPPP implemented and reported progress on this TMDL throughout the previous permit term in the MCSTOPPP annual report.

MCSTOPPP Implementation Actions

Through the MCSTOPPP, the County of Marin implements outreach in the Tomales Bay Watershed to reduce the presence of indicator bacteria in stormwater runoff, as described below.

Outreach to Horse Owners and Horse Facility Operators

County local stormwater program staff and MCSTOPPP continued to direct horse keepers to guidance documents on good horse facility management practices in FY 15-16. When requested, MCSTOPPP assists horse owners and horse facility operators (horse keepers) by providing information regarding BMPs that should be implemented to address non-stormwater discharges from their properties throughout Marin County and in the Tomales Bay Watershed. The [MCSTOPPP website](#) offers many reference documents for horse owners. MCSTOPPP distributes printed outreach materials upon request and in response to illicit discharge complaints. Examples of such materials are highlighted below:

- Assessment of Best Management Practices for Equestrian Facilities in the Tomales Bay Watershed – 2005 report on BMPs at 18 equestrian facilities within the Tomales Bay Watershed in Marin County. Assessments were designed to detect the level of actual or potential pollutant sources from horse facilities.
- Horse Owners' Guide to Water Quality Protection – Conservation practices for horse owners and horse facility operators.
- Horse Keeping: A Guide to Land Management for Clean Water – This large format manual contains over 100 pages, with color photographs and diagrams showing conservation practices, evaluating potential sources of contamination, and demonstrating management measures.
- Horse Manure Management: A Guide for Bay Area Horse Keepers – Conservation practices and on-site manure management.
- Manure Management Practices of 30 Horse Ranches in Marin County – 2002 study on manure management practices at 30 horse facilities in Marin County.

In the fall of 2016, the Regional Water Board began to implement a program of Waste Discharge Requirements (WDR) for Confined Animal Facilities (CAF) that will regulate pollutant-generating activities at horse facilities within the Tomales Bay watershed. The County of Marin is providing the Regional Water Board with facility information, as well as applicable outreach materials, including horse-keeping guidance and BMPs, to support the Regional Water Board's planned workshops for horse owners.

Educate the Public Regarding Sources of Fecal Coliform, Associated Health Risks, and Actions that Individuals Can Take to Reduce Pathogen Loading

MCSTOPPP conducted pathogen-related outreach in FY 15-16. These efforts included the following:

- MCSTOPPP gave a presentation to Real Manage, an HOA management company, in April 2016. The presentation covered stormwater pollution prevention topics, including proper pet waste management. Attendees received MCSTOPPP brochures on topics such as pet waste management, IPM, and erosion control. Ten property managers attended the meeting.
- The MCSTOPPP website offers information for dog owners, including the [Pick It Up!](#) bookmark.
- Through the Point Blue Conservation Science Students and Teachers Restoring a Watershed (STRAW) program, MCSTOPPP provided 45-minute lessons to all students (~ 600) at Miller Creek Middle School. Students learned how pollutants, including bacteria from pet waste, can be conveyed to the creek through the storm drain system. The presentation prepared each student for a hands-on creek restoration lesson in Miller Creek.
- MCSTOPPP staff conducted outreach at events, including the following:
 - In collaboration with STRAW, Marin Resource Conservation District, Dr. Ann Riley (Watershed and River Restoration Advisor for the Regional Water Quality Control Board), Spirit Rock Meditation Center, City of Mill Valley, and Harold Appleton (Prunuske Chatham, Inc.), MCSTOPPP held two workshops, *Protect Marin's Creeks Hands-On Workshops*, on December 5, 2015 and February 27, 2016. The importance of pet waste management was mentioned at each workshop. Forty-seven people attended the workshops.
 - MCSTOPPP reached 328 students and 39 adults at Wetlands Days, an event held on June 2 and 3, 2016, at the Sewerage Agency of Southern Marin. Using a watershed model, MCSTOPPP staff demonstrated to groups of students how pet waste and other pollutants can reach waterways through the storm drain system. Students used spray bottles to simulate rain and food coloring to simulate pollution. The watershed model features “storm drains” that collect the water and food coloring and convey the liquid through internal plastic tubes to the model’s “creeks” and “bay”. MCSTOPPP staff discussed pet waste and other pollutants of concern, such as pesticides, sediment, and trash with the students. The following elementary schools participated in the event: Old Mill, Park, Edna Maguire, and Tamalpais Valley.



MCSTOPPP Staff Presenting at Wetlands Days, June 2-3, 2016



Students “Making Rain” at using MCSTOPPP’s Watershed Model

Implement Strategies to Detect and Eliminate Illicit Discharges of Sewage (#1)

In FY 14-15, MCSTOPPP staff assessed the condition of 26 outfalls in the Tomales Bay Watershed in the Woodacre community. When dry weather flow was encountered at an outfall, the source was tracked or sampled according to the requirements in the Phase II Permit, Section E.9.c. One outfall had dry weather flow (from groundwater seepage), and no action level concentrations for indicator parameters were exceeded. Because there were no issues or priority outfalls identified in the Tomales Bay Watershed in FY 14-15, no outfalls were assessed in FY 15-16. Section E.9.c. requires annual dry weather flow monitoring at priority outfalls only in years 3-5 of permit implementation.

Local Program Implementation Actions

As described above, the County of Marin local stormwater program conducts public outreach implementation actions jointly with MCSTOPPP. Additional implementation actions conducted by the County of Marin are described below.

Implement Strategies to Detect and Eliminate Illicit Discharges of Sewage (#2)

County of Marin staff enforce the County's urban runoff pollution prevention ordinance (Title 23.18) and their animal keeping ordinance (Title 22.32.030) to reduce fecal coliform loading from pet waste.

In 2015-2016, the County local stormwater program responded to and resolved one complaint regarding improper manure management at a facility in the Tomales Bay Watershed. County staff required the owner to move active manure piles to a designated composting area and provided appropriate materials on water quality protection BMPs for horse facilities. No illicit discharge complaints were received about other improper pet waste management in the Tomales Bay Watershed. In general, when complaints are received about horse keeping operations, they are usually in relation to manure management. In such cases, local stormwater program staff visits the site, discusses potential BMPs with the property owners, provides educational materials on horse facility BMPs, and directs them to the MCSTOPPP website materials regarding appropriate horse facility BMPs. Local stormwater staff may escalate enforcement if issues are not resolved. However, the vast majority of issues are resolved through effective communication, collaboration, and by providing resources to the horse facility owner or manager.

Implement Strategies to Detect and Eliminate Illicit Discharges of Sewage (#3)

The County of Marin's Environmental Health Services Division (EHS) regulates onsite wastewater treatment systems (OWTS). The [County's Septic Systems webpage](#) contains information on current efforts to detect and eliminate illicit discharges of sewage to impaired water bodies such as Tomales Bay. The Regional Water Board regulates the nine permitted sewage treatment systems in the Tomales Bay Watershed through National Pollutant Discharge Elimination System (NPDES) permits. In 2016, the County submitted the [Marin County Local Agency Management Plan \(LAMP\)](#) for OWTS to the Regional Water Board. The plan demonstrates the ability of Marin County EHS to provide substantial protection to groundwater and surface water sources through the proper siting, design, placement, installation, maintenance, and assessment of individual OWTSs.

Implement Strategies to Reduce/Eliminate Fecal Coliform Loading from Urban Areas (#1)

In June 2016, MCSTOPPP held four in-house training workshops on Municipal Operations & Maintenance BMPs. A total of 32 municipal staff from the County of Marin attended the trainings. To assess the training attendees' awareness of the material presented, pre- and post-workshop quizzes were conducted. An average increase of 11% in correct responses was observed after the training, indicating increased awareness and understanding of the storm drain system, how to recognize and report illicit discharges (including those that might contain sewage or fecal coliform), and the BMPs that should be implemented during operations & maintenance activities.

Implement Strategies to Reduce/Eliminate Fecal Coliform Loading from Urban Areas (#2)

The County of Marin continued to promote proper disposal of pet waste by purchasing waste bags and distributing them at conveniently located pet waste bag dispensers at three County Parks in the watershed.

The County of Marin conducted street sweeping of County-maintained roads in the Tomales Bay Watershed in FY 15-16. The County sweeps roads in residential areas one time annually. In commercial areas, roads are swept twice on an annual basis.

RICHARDSON BAY PATHOGENS TMDL IMPLEMENTATION STATUS

Overview

The Regional Water Board adopted a Pathogens (Indicator Bacteria) TMDL for Richardson Bay.³ The WLAs, implementation requirements, and TMDL timeframes are described below.

Waste Load Allocations

The WLAs for this TMDL are provided in **Table 6**. The attainment of the WLA is based upon implementation of specific measures specified in the TMDL.

Table 6. Waste Load Allocations, Richardson Bay Pathogens TMDL

Fecal Coliform ^a (MPN/100ml)	
Median ^b	90 th Percentile ^c
<14	<43

^a These allocations are applicable year-round.

^b Based on a minimum of five consecutive samples equally spaced over a 30-day period

^c No more than 10% of total samples during any 30-day period may exceed this number

Implementation Requirements

The implementation requirements for the WLAs are provided in **Table 7**. The attainment of the WLAs is based upon implementation of specific measures specified in the TMDL.⁴

Table 7. Requirements for Implementing the Richardson Bay Pathogens TMDL WLAs

Program Element	Requirement
i. Public Participation and Outreach	Educate the public regarding: <ul style="list-style-type: none"> • Sources of fecal coliform and associated health risks of fecal coliform in surface water, • Actions that individuals can take to reduce pathogen loading.
ii. Pet Waste Management	Develop and implement enforceable means of reducing/eliminating fecal coliform loading from pet waste.
iii. Illicit Discharge Detection and Elimination	Develop and implement strategies to detect and eliminate illicit discharges (whether mistaken or deliberate) of sewage to Richardson Bay.
iv. Pollution Prevention and Good Housekeeping	Develop and implement strategies to reduce/eliminate fecal coliform loading from streets, parking lots, sidewalks, and other urban areas that potentially collect and discharge fecal coliform to Richardson Bay.
v. Reporting	Report annually on progress made on implementation of pathogen reduction measures.

³ http://www.waterboards.ca.gov/rwqcb2/water_issues/programs/TMDLs/richardsonbaypathogens.shtml

⁴ California Regional Water Quality Control Board, San Francisco Region, *Pathogens in Richardson Bay Total Maximum Daily Load (TMDL) Staff Report for Proposed Basin Plan Amendment*, July 2008, page 43.

TMDL Timeframes

Municipalities listed in this TMDL must within 18 months of the adoption of the Phase II Permit implement the program elements listed in **Table 7**. The County of Marin and MCSTOPPP implemented and reported progress on this TMDL throughout the previous permit term in the MCSTOPPP annual report.

MCSTOPPP Implementation Actions

Through MCSTOPPP, the County of Marin, the City of Belvedere, the City of Mill Valley, the City of Sausalito, and the Town of Tiburon implement specific measures to reduce pathogen loading, as described below.

Implement Strategies to Detect and Eliminate Illicit Discharges of Sewage (#1)

In FY 15-16, MCSTOPPP staff assessed the condition of 25 outfalls in the Richardson Bay Watershed. Should dry weather flow be encountered at an outfall, the source would be tracked or sampled according to the requirements in the Phase II Permit, Section E.9.c. No outfalls had dry weather flow during priority outfall monitoring, and no action level concentrations for indicator parameters were exceeded. Also in FY 15-16, MCSTOPPP staff performed visual surveys of 13 priority areas in the Richardson Bay Watershed. Should dry weather flow be encountered, the source would be tracked or sampled according to the requirements in the Phase II Permit, Section E.9.c. There were four instances of dry weather flow in priority areas, and after investigation, all flows were attributed to natural sources, either tidal influence or springs.

Educate the Public Regarding Sources of Fecal Coliform, Associated Health Risks, and Actions that Individuals Can Take to Reduce Pathogen Loading

Please refer to the *MCSTOPPP Implementation Actions* under the *Tomales Bay Pathogens TMDL Implementation Status* for information regarding pathogen-related outreach conducted by MCSTOPPP in FY 15-16.

Implement Strategies to Reduce/Eliminate Fecal Coliform Loading from Urban Areas (#1)

In June 2016, MCSTOPPP held four in-house training workshops on Municipal Operations & Maintenance BMPs. A total of 76 municipal staff from municipalities in the Richardson Bay Watershed attended the trainings. To assess the training attendees' awareness of the material presented, pre- and post-workshop quizzes were conducted. An average increase of 11% in correct responses was observed after the training, indicating increased awareness and understanding of the storm drain system, how to recognize and report illicit discharges (including those that might contain sewage or fecal coliform), and the BMPs that should be implemented during operations & maintenance activities.

Implement Strategies to Reduce/Eliminate Fecal Coliform Loading from Urban Areas (#2)

Marin County EHS assisted MCSTOPPP by providing [stormwater pollution prevention posters](#) to food service facilities throughout Marin during County EHS routine restaurant inspections. The posters are printed in English on one side and [Spanish](#) on the other.

EHS inspectors routinely look for potential and actual non-stormwater discharges during inspections and they refer illegal stormwater discharges to local municipal stormwater coordinators. Local stormwater coordinators then enforce their urban runoff pollution prevention ordinances.

In FY 15-16, Marin County EHS staff conducted routine inspections countywide at 1,545 food facilities, 376 commercial swimming pool sites, and 691 multi-unit housing sites. Stormwater issues were reported to MCSTOPPP or to the local stormwater program, or EHS staff resolved potential and actual non-stormwater discharges during inspections or at a follow-up inspection.

Local Program Implementation Actions

The local programs for each jurisdiction implementing the Richardson Bay Pathogen TMDL—City of Belvedere, County of Marin, City of Mill Valley, City of Sausalito, and Town of Tiburon—are summarized below.

- The local programs continued to reduce the frequency of sanitary sewer overflows by requiring inspections of residential sewer laterals at the time of sale and for major remodels.
 - All agencies, with the exception of the Town of Tiburon, required inspections (and repair if needed) of residential sewer laterals *at time of the sale of property*. The Town of Tiburon has three sanitation districts, and each has its own ordinance covering this policy.
 - All agencies, with the exception of the Town of Tiburon, required inspections (and repair if needed) of residential sewer laterals *for major remodels*. The Town of Tiburon has three sanitation districts, and each has its own ordinance covering this policy.
- Three agencies (County of Marin, City of Mill Valley, and City of Sausalito) participated in the “Cash for Sewers” program to promote the repair of private laterals for qualifying residences through grants or financial assistance. In the City of Belvedere, the transfers of property and major remodels have resulted in the identification of many sewer lateral problems. City of Belvedere did not provide grants but will explore this option in the future. The Sewerage Agency of Southern Marin (SASM) and the Richardson Bay Sanitary District continued to implement the Private Lateral Replacement Program (PRLP) in portions of incorporated Tiburon. This program promotes the repair of private laterals for qualifying residences through grants or financial assistance. SASM submits PRLP annual reports to the Regional Water Board.
 - Three agencies provided the following information on grants to homeowners for repairing sewer laterals:
 - County of Marin: Nine grants averaging \$2,067; four grants for CCTV inspection averaging \$150; five low-interest loans averaging \$4,960
 - City of Mill Valley: Five grants averaging \$2,050
 - City of Sausalito: A total of 25 grants averaging \$1,226

- The City of Sausalito added multiple pet waste bag dispenser stations located at city parks and other public spaces. The other four agencies did not install new dispensers or signage during FY 15-16.
 - The County of Marin is planning to install new pet waste bag dispensers during FY 16-17.
 - Adequate signage is already in place within the City of Belvedere, City of Mill Valley, and Town of Tiburon.
- The local programs continued to promote proper disposal of pet waste by purchasing more than half a million (544,200) pet waste bags and distributing them at conveniently located pet waste bag dispensers:
 - City of Belvedere: 51,200 pet waste bags purchased and distributed at 10 dispensers.
 - County of Marin: 65,000 pet waste bags purchased and distributed at four dispensers in the watershed.
 - City of Mill Valley: 48,000 pet waste bags purchased; 41,600 distributed at seven dispensers.
 - City of Sausalito: 180,000 pet waste bags purchased and distributed at 31 dispensers.
 - Town of Tiburon: 200,000 pet waste bags purchased and distributed at 22 dispensers.
- The local programs continued to distribute MCSTOPPP outreach literature targeting pet owners, such as *Prevent Pollution: Pick it Up!*, which stresses the importance of picking up after pets while walking on trails. Where local programs did not distribute the brochure, they were able to direct residents to the MCSTOPPP website to find information on stormwater pollution prevention.
- The local programs continued to conduct street sweeping, as follows:
 - City of Belvedere: Conducted street sweeping on a weekly basis in residential and commercial areas.
 - County of Marin: Conducted street sweeping of County maintained roads. The County sweeps roads in residential areas one time annually. In commercial areas, roads are swept twice on an annual basis. In the Richardson Bay Watershed, the County contracts with Marin Sanitary Service for most of the street sweeping.
 - City of Mill Valley: Conducted street sweeping on a monthly basis in residential areas and four times per month in commercial areas.
 - City of Sausalito: Conducted street sweeping on a monthly basis in residential areas and three times per week in commercial areas. Industrial areas are swept on a monthly basis.
 - Town of Tiburon: Conducted street sweeping on a monthly basis in residential and commercial areas.

- The local programs continued to maintain garbage receptacles and pet waste bag dispensers, as follows:
 - County of Marin: Marin County Parks maintained garbage receptacles along the County-maintained Mill Valley-Sausalito Multi-purpose path through Bothin Marsh Open Space Reserve.
 - City of Sausalito: Garbage cans in parks are emptied two times per week and dispensers are restocked.

PATHOGENS EFFECTIVENESS ASSESSMENT

An EA for pathogens (indicator bacteria) and the associated prioritized BMPs was conducted. This EA focuses on the data and information collected and analyzed during Year 3 to address pathogen-specific management questions. Although the PEAIIP was submitted in Year 2 and the specific data associated with management questions was collected beginning in Year 3, efforts to address this POC have been ongoing, and assessment data and information obtained in earlier years will be incorporated as applicable.

In **Table 8**, the POC-specific management questions representing focused program activities and/or prioritized BMPs are presented by Program Element. The California Stormwater Quality Association (CASQA) outcome levels that may be supported by the EA results are also indicated.

Table 8. Pathogen (Indicator Bacteria) Management Questions, by Program Element

Management Questions
Education and Outreach [OL2-3]
<p><i>Public Participation and Outreach</i></p> <ul style="list-style-type: none"> • Is the target audience aware of the sources of fecal coliform and the actions that they can take to reduce the presence of fecal coliform in surface waters? <ul style="list-style-type: none"> ○ What is the source(s) of their information? ○ Are they taking those actions?
<p><i>Pet Waste Management</i></p> <ul style="list-style-type: none"> • Is the target audience aware of the need to properly dispose of pet waste? • Is the target audience properly disposing of pet waste?

A summary of the data and the results of the EA are presented below.

Education and Outreach: Public Participation and Outreach

Is the target audience aware of the sources of fecal coliform and the actions that they can take to reduce the presence of fecal coliform in surface waters?

What is the source(s) of their information?

Are they taking those actions?

The target audience is aware of one source of fecal coliform, pet waste, and is taking action to reduce the presence of fecal coliform in surface waters. This assessment is discussed below under **Education and Outreach: Pet Waste Management**. Additional assessments will be conducted in future years as more data and information are collected and analyzed to answer this management question.

Education and Outreach: Pet Waste Management

Is the target audience aware of the need to properly dispose of pet waste?

Is the target audience properly disposing of pet waste?

In FY 14-15, MCSTOPPP distributed 23,000 2015 MCSTOPPP wall calendars through the local paper, the Marin Independent Journal, and through local government offices and libraries. MCSTOPPP educated the public through messages in the 2015 MCSTOPPP wall calendar regarding: 1) actions that individuals can take to reduce pathogen loading; and 2) sources and associated health risks of fecal coliform in surface water. Calendar outreach messages targeted pet owners in the July calendar section. The calendar text encouraged pet owners to pick up after their pet and to protect sea otter health by disposing of cat litter in the trash. In addition, horse keepers were encouraged to learn more about creek-friendly manure management by visiting the MCSTOPPP website and to participate in local manure composting through the West Marin Compost facility.

The target audience is aware of the need to properly dispose of pet waste and is doing so. [OL2]

- To assess the target audience's awareness of the need to properly dispose of pet waste and whether or not they are doing so, a survey was included with each 2015 MCSTOPPP wall calendar, and 318 surveys were returned. A total of 306 respondents answered the questions pertaining to pet waste.
 - Approximately one-third of survey respondents (104, or 34%) owned a dog.
 - All but two of the respondents who own a dog (98%) stated that when they walk their dog, they most often bring along a plastic bag and dispose of waste in the trash.
 - One respondent (1%) stated that when they walk their dog, they most often bring along a plastic bag and leave the bagged waste along the trail.
 - One respondent (1%) stated that when they walk their dog, they most often don't pick up the waste.

Diazinon and Pesticide-Related Toxicity

As described in the PEAIP, pesticides were selected as a high priority POC, and the prioritized BMPs selected for this POC focused on the implementation actions summarized in **Table 3**. This section includes the applicable TMDL implementation status and the effectiveness assessment for pesticides.

URBAN CREEK DIAZINON AND PESTICIDE-RELATED TOXICITY TMDL IMPLEMENTATION STATUS

Overview

The Regional Water Board adopted an Urban Creek Diazinon and Pesticide-Related Toxicity TMDL that applies to several urban creeks in Marin County.⁵ The WLAs, implementation requirements, and TMDL timeframes are described below.

Waste Load Allocations

The WLAs for this TMDL are provided in **Table 9**. Attachment G specifies that compliance with the WLAs is achieved through implementation of the specified actions.

Table 9. Waste Load Allocations, Urban Creek Diazinon and Pesticide-Related Toxicity TMDL

Constituent	Wasteload Allocation in Urban Creeks
Diazinon	100 ng/l
Toxicity	1.0 TUa (acute toxicity units)
	1.0 TUC (chronic toxicity units)

Implementation Requirements

The implementation requirements for the WLAs are provided in **Table 10**.

Table 10. Requirements for Implementing the Urban Creek Diazinon and Pesticide-Related Toxicity TMDL WLAs

Program Element	Specific Requirement
A. Adopt a Pesticide-Related Toxicity Control Program	<ul style="list-style-type: none"> Adopt an Integrated Pest Management Policy (IPM) or Ordinance, applicable to all the permittees' operations and property, as described in the Basin Plan Amendment (Implementation Section) for this TMDL, within 18 months of permit adoption.

⁵ http://www.waterboards.ca.gov/rwqcb2/water_issues/programs/TMDLs/urbancrksdiazinontmdl.shtml

Program Element	Specific Requirement
B. Implement the Pesticide-Related Toxicity Control Program	<ul style="list-style-type: none"> • Ensure all municipal employees who apply or use pesticides within the scope of their duties are trained in the IPM practices and policy/ordinance. • Require all contractors to implement the IPM policy/ordinance. • Keep the County Agricultural Commissioners informed of water quality issues related to pesticides and of violations of pesticides regulations (e.g., illegal handling) associated with storm water management. • Conduct outreach to residents and pest control applicators on less toxic methods of pest control. • Keep records of the permittees' own use of pesticides of concern and the pesticide use by the permittees' hired contractors. Report on pesticide use when requested by the Regional Water Board.
C. Monitor water and sediment for pesticides and associated toxicity in urban creeks via an individual or regional program.	<p>The monitoring program shall be designed to answer the following questions:</p> <ul style="list-style-type: none"> • Are the TMDL toxicity targets being met? Is toxicity observed in urban creeks caused by a pesticide? • Is urban runoff the source of any observed toxicity in urban creeks? • How does observed pesticide-related toxicity in urban creeks (or pesticide concentrations contributing to such toxicity) vary in time and magnitude across urban creek watersheds, and what types of pest control practices contribute to such toxicity? • Are actions already being taken to reduce pesticide discharges sufficient to meet the targets, and if not, what should be done differently?

TMDL Timeframes

Attachment G does not include implementation timeframes for this TMDL. Municipalities listed in this TMDL began implementation of the permit requirements as of the effective date of the Phase II Permit.

MCSTOPPP Implementation Actions

Through MCSTOPPP, Marin’s municipalities named in the Pesticide TMDL and listed in **Table 1** continue efforts to reduce detections in creeks and other waterbodies of the priority pollutant diazinon and other pesticides of concern through its comprehensive public education and outreach activities designed to reduce pesticide use, as described below.

Refer Complaints of Improper Pesticide Use to County’s Agricultural Commissioner

MCSTOPPP staff refer complaints from the public regarding improper pesticide use to the County’s Agricultural Commissioner. The Agricultural Commissioner implements a [countywide Pesticide Enforcement program](#). When available, MCSTOPPP will provide the *FY 15-16 MCSTOPPP/City of Petaluma Year 1 Monitoring Report: Diazinon and Pesticide-Related Toxicity TMDL Monitoring Program in Urban Creeks* to the County’s Agricultural Commissioner.

Contribute to the California Stormwater Agencies Association (CASQA) Pesticide Subcommittee

MCSTOPPP contributed to the CASQA Pesticide Subcommittee (CASQA PSC) through CASQA dues and through BASMAA’s contribution to the CASQA PSC (MCSTOPPP contributed \$1,381 to the BASMAA contribution of \$32,000 in FY 15-16). MCSTOPPP pays for CASQA membership and for the BASMAA regional task known as “Pesticides Toxicity – Regulatory Modernization” on behalf of all Marin County municipalities named in the Pesticide TMDL. The CASQA PSC collaborates with the Water Boards in a coordinated statewide effort to efficiently and proactively address the impacts of pesticides through the statutory authority of the Department of Pesticide Regulation and the Environmental Protection Agency’s Office of Pesticide Programs (OPP). This has been an ongoing effort for more than ten years and has realized significant changes in pesticide regulation that are protective of water quality in the last five years. The *2015-2016 CASQA Pesticide Subcommittee Annual Report and Effectiveness Assessment* describes CASQA’s activities related to the goal of preventing pesticide pollution in urban waterways.

Conduct Outreach to Residents and Pest Control Applicators on Less Toxic Methods of Pest Control

MCSTOPPP conducted outreach to residents and pest control applicators in FY 15-16. These efforts are described below.

Implement Our Water, Our World (OWOW) Program

The Our Water, Our World (OWOW) program raises awareness of the connection between pesticide use and water quality and provides information to consumers at the point-of-purchase about integrated pest management (IPM) and less-toxic alternatives to control pests. MCSTOPPP implements the OWOW Program locally in Marin and regionally through BASMAA. BASMAA and the Bay Area Pollution Prevention Group jointly fund the regional effort and maintain the [OWOW website](#). The [BASMAA Small MS4 FY 15-16 Training and Outreach Report](#) describes the accomplishments of the regional OWOW program. The 17 partner nurseries and garden stores in Marin where MCSTOPPP implements the local OWOW program are listed in **Table 11**.

Table 11. OWOW Stores in the County of Marin, FY 15-16

Store Name	Location
Ace Building Supply Center	Pt. Reyes Station
Ace Fairfax Lumber Nursery	Fairfax
Bayside Garden Center	Belvedere
Goodman's Building Supply	Mill Valley
Jackson's Hardware	San Rafael
Marin Ace	San Rafael
Orchard Supply Hardware (OSH)	San Rafael
Pini Hardware	Novato
Sloat Garden Center	Kentfield
Sloat Garden Center	Mill Valley (East Blithedale)
Sloat Garden Center	Mill Valley (Miller Ave)
Sloat Garden Center	Novato
Sloat Garden Center Garden Center	San Rafael
Sunnyside Nursery	San Anselmo
The Home Depot, San Rafael	San Rafael
Toby's Feed Barn	Pt. Reyes Station
United Market	San Rafael

In FY 15-16, MCSTOPPP hired a trained OWOW IPM Advocate to keep stores stocked with outreach materials, conduct store visits and/or events at the partner stores. The IPM Advocate (or subcontractor) provided seasonal information, answered staff questions, assisted store managers with selection of less toxic products, and conducted interactive educational events, reaching residents, employees, and landscapers. Messages were delivered in Spanish as needed. Highlights included the following:

- A total of 44 store visits and eight events were conducted.
 - An estimated 238 individuals were reached at the events, which were expanded in FY 15-16 to target a broader audience.
 - OSH – No Tax Day (November 2015) (25 reached)
 - Sloat Vendor Night – Trade Event (February 2016) (50 reached)
 - CAC-MCSTOPPP Meeting – New community outreach regarding HOAs (March 2016) (10 reached)
 - HOA Property Manager Lunch and Learn (April 2016) (10 reached)
 - Goodman Vendor BBQ – Trade Event (June 2016) (100 reached)

- OSH-Home Depot Public Seminar – “Making Sense of Pesticides” (8 reached)
- Home Depot Spanish Tabling – Monday morning tabling with cookies and Spanish literature talking to independent gardeners coming in for plant purchase (15 reached)
- Home Depot In-Aisle Tabling – Weeknight pesticide aisle (20 reached)
- MCSTOPPP’s IPM Advocate conducted five trainings for approximately 17 employees from five OWOW stores in Marin County. Each training covered IPM, pest identification, stormwater pollution prevention, the impacts of pesticides on water quality and aquatic life, less toxic products and ingredients, how to read pest management product labels, and how to direct customers to less toxic products.
 - Pre- and post-training surveys were conducted. An average increase of 13% in correct responses (unweighted average) was observed after the training, indicating increased awareness and understanding of the subject material that was presented.

To promote IPM, the OWOW Program, and less toxic pest management, MCSTOPPP also implemented the following:

- Directed the public to various outreach brochures on IPM and the OWOW program through the MCSTOPPP website.
- Provided MCSTOPPP and OWOW brochures on IPM and less toxic pest management to Marin’s Master Gardeners for distribution at the Marin County Civic Center farmer’s market.
- Provided 15 different OWOW Fact Sheets (200 of each) in Spanish to the Watershed Alliance of Marin for tabling at the 2016 Canal Community Picnic / Fruit and Veggie Fest in San Rafael and other public outreach events in Marin.
- Provided 250 *Protect Our Water and Wildlife* coloring books in Spanish, 40 *A Kid’s Guide to Backyard Bugs*, and 20 *Control It!* guides to the Watershed Alliance of Marin for tabling at the 2016 Canal Community Picnic / Fruit and Veggie Fest in San Rafael and other public outreach events in Marin.
- MCSTOPPP participated in the BASMAA regional outreach meetings focused on the OWOW program.
- MCSTOPPP provided assistance to County of Marin Board of Supervisor’s (BOS) Pesticide Reduction Outreach Campaign planning efforts. The campaign was authorized by the BOS in FY 15-16 and will be implemented in FY 16-17 and FY 17-18. MCSTOPPP staff will continue to provide support and guidance to the focused outreach program and will report accomplishments in future reports.

Outreach via MCSTOPPP Website

MCSTOPPP has made several resources available to residents and pest control applicators via its website, as follows:

- An [overview of IPM and associated programs](#), the Schools IPM Program, and the Marin County IPM Program
- Information on multiple topics pertaining to [Environmental Protection](#), including pests, pesticide enforcement, weeds, and IPM
- [Information on Gardening, Composting and Pest Management](#) (see *Eco-Friendly Landscape Professionals and Pest Control Operators* panel)

Local Program Implementation Actions

All local programs implemented efforts to reduce or eliminate municipal pesticide use and educate the public regarding sources of pesticides in stormwater runoff, as described below.

Integrated Pest Management Policies/Ordinances

Marin's 11 cities and towns and the County of Marin implemented and enforced their IPM policies or ordinances that meet the requirements of the Pesticide TMDL. Each IPM policy or ordinance requires the following:

- Train municipal employees who apply or use pesticides within the scope of their duties in the IPM practices and policy/ordinance.
 - Nine agencies reported that all municipal employees who apply or use pesticides within the scope of their duties were trained in the IPM practices and Policy or Ordinance. Three agencies (City of Belvedere, Town of Fairfax, and Town of San Anselmo) use no pesticides in public areas.
- Require all contractors to implement the IPM policy/ordinance.
 - Ten agencies reported that contractors working on their property were required to implement the IPM Policy or Ordinance. No pesticides were used by contractors in public areas for two agencies (City of Belvedere, Town of Fairfax).
- Keep the County Agricultural Commissioners informed of violations of pesticides regulations (e.g., illegal handling) associated with storm water management. The Agricultural Commissioner implements a countywide Pesticide Use Enforcement program.⁶
 - Three agencies (County of Marin, City of Mill Valley, and City of Novato) referred pesticide misuse complaints to the County Agricultural Commissioner. Eight agencies (City of Belvedere, Town of Fairfax, City of Larkspur, Town of Ross, City of San Anselmo, City of San Rafael, City of Sausalito, and Town of Tiburon) received no complaints for referral. This information was not available for the Town of Corte Madera.

⁶ <http://www.marincounty.org/depts/ag/pesticides>

- Keep records of the permittees' own use of pesticides of concern and the pesticide use by the permittees' hired contractors. Report on pesticide use when requested by the Regional Water Board.
 - Seven member agencies (Town of Corte Madera, County of Marin, City of Mill Valley, City of Novato, City of San Rafael, and Town of Tiburon) tracked pesticide applications by municipal staff or contractors working at municipal sites during FY 15-16.
 - Five member agencies (City of Belvedere, Town of Fairfax, City of Larkspur, Town of San Anselmo, and City of Sausalito) had no pesticide applications by municipal staff or contractors in public areas in FY 15-16.

PESTICIDES EFFECTIVENESS ASSESSMENT

An EA for pesticides and the associated prioritized BMPs was conducted. This EA focuses on the data and information collected and analyzed during Year 3 to address pesticide-specific management questions. Although the PEAIP was submitted in Year 2 and the specific data associated with management questions was collected beginning in Year 3, efforts to address this POC have been ongoing, and assessment data and information obtained in earlier years will be incorporated as applicable.

In **Table 12**, the POC-specific management questions representing focused program activities and/or prioritized BMPs are presented by Program Element. The CASQA outcome levels that may be supported by the EA results are also indicated.

Table 12. Diazinon/Pesticide-Related Toxicity Management Questions, by Program Element

Management Questions
Addressed by CASQA Pesticides Subcommittee [Various]
<ul style="list-style-type: none"> • Are actions being taken by State and federal pesticides regulators and stakeholders that are expected to end recently observed pesticide-caused toxicity or exceedances of pesticide water quality objectives in surface waters receiving urban runoff? • Do pesticides regulators have an effective system in place to exercise their regulatory authorities to prevent pesticide toxicity in urban water bodies? • Potential Monitoring Questions <ul style="list-style-type: none"> ○ Do water column samples or sediments in surface waters receiving urban runoff exhibit toxicity to standard test organisms that is caused by pesticides in urban runoff? ○ How do conditions in surface waters receiving urban runoff compare with EPA pesticides benchmarks and pesticides water quality objectives? ○ Do urban runoff discharges comply with pesticides TMDLs?
Pollution Prevention and Good Housekeeping [OL2-4]
<ul style="list-style-type: none"> • Are the Permittees aware of the IPM policy/ordinance and do they understand how to implement the IPM practices? <ul style="list-style-type: none"> ○ Are the Permittees holding/attending IPM training sessions? • Are the Permittees and their contracted pest control operators managing their use of pesticides on their right-of-ways and other landscaped areas? <ul style="list-style-type: none"> ○ Are the Permittees and their contracted pest control operators tracking the type and amount of pesticides (i.e., active ingredients) are applied to right-of-ways and other landscaped areas?
Education and Outreach [OL2-3]
<ul style="list-style-type: none"> • Is the target audience aware of the less toxic methods of pest control that are available? <ul style="list-style-type: none"> ○ What is the source of their information? • Is the target audience aware of the actions that they can take to reduce the presence of pesticides in surface waters (e.g., using less toxic products, properly disposing of pesticide-containing waste, including unused quantities of pesticides)? <ul style="list-style-type: none"> ○ What is the source of their information? ○ Are they taking those actions?

A summary of the data and the results of the EA are presented below.

Addressed by CASQA Pesticides Subcommittee

Are actions being taken by State and federal pesticides regulators and stakeholders that are expected to end recently observed pesticide-caused toxicity or exceedances of pesticide water quality objectives in surface waters receiving urban runoff?

Do pesticides regulators have an effective system in place to exercise their regulatory authorities to prevent pesticide toxicity in urban water bodies?

Potential Monitoring Questions

Do water column samples or sediments in surface waters receiving urban runoff exhibit toxicity to standard test organisms that is caused by pesticides in urban runoff?

How do conditions in surface waters receiving urban runoff compare with EPA pesticides benchmarks and pesticides water quality objectives?

Do urban runoff discharges comply with pesticides TMDLs?

The 2015-2016 CASQA Pesticides Subcommittee Annual Report, which is included in the [BASMAA Small MS4 FY 15-16 Pesticide Toxicity Regulatory Modernization Report](#), provides a full discussion of the above management questions, and a brief summary is provided below.

The CASQA PSC collaborates with the Urban Pesticides Pollution Prevention Partnership (UP3) to work with State and federal regulatory agencies and stakeholders on addressing pesticide-related water quality impairments. CASQA PSC's primary near-term goal is to join forces to end recently observed pesticide-related toxicity or water quality objective exceedances in urban water bodies. CASQA PSC's long-term goal is to promote collaboration between the Environmental Protection Agency (EPA), the State and Regional Water Boards, the U.S. EPA Office of Pesticide Programs (EPA OPP), and California Department of Pesticide Regulation (DPR) to use and enforce regulations and statutes to prevent new pesticide toxicity in urban water bodies, rather than managing pesticide-related water body impairments through TMDLs.

In FY 15-16, CASQA made progress on achieving their near-term goal by influencing the following actions by State and federal regulators:

- DPR announced plans to initiate formal regulatory action for fipronil. DPR also initiated modeling and studies to validate potential mitigation strategies to reduce fipronil exposure to stormwater.
- DPR is expanding its pyrethroid monitoring and enforcement programs and partnering with local governments on a special study to examine non-professional pyrethroid use and evaluate the level of compliance with State regulations on professional use.
- DPR is routing three storm drain pesticide product registration applications to its surface water program for review and considering CASQA's recommendation to automatically route all similar storm drain pesticides through the same review process in the future.
- EPA is expanding its review and studies of creosote and its related PAHs (polycyclic aromatic hydrocarbons), as well as triclopyr and its degradate.

To achieve their primary long-term goal, CASQA PSC members are actively participating on many boards and committees. Members are making presentations to help ensure that key elements of CASQA PSC's vision for pesticide reduction are fully supported and

institutionalized in State policy and procedures. In FY 15-16, the CASQA PSC participated in the following:

- State Water Board stakeholder committee to develop the “Strategy to Optimize Resource Management of Storm Water” (STORMS). The State Water Board has established urban pesticide reduction as a top priority in the strategy.
- DPR’s Pest Management Advisory Committee
- Cal-EPA’s Urban Pesticide Reduction Project
- State Water Board policy and science advisory committees
- California Structural Pest Control Board
- University of California Statewide IPM
- US EPA’s Pesticide Program Dialogue Committee (former)
- Provided presentations to DPR, scientific meetings, and at the CASQA and the State of the Estuary conferences
- Prepared and delivered public testimony

One of CASQA PSC’s long-term successes is the Pesticide “Watch List” developed by the subcommittee and their UP3 partners. The “Watch List” is used to assist in prioritizing regulatory review efforts for pesticides with current or pending registrations from EPA OPP and DPR. They update and prioritize the “Watch List” by continually reviewing scientific literature and monitoring studies as they are published for dozens of new pesticides. The information is then shared in real-time with pesticide regulators, as well as government agency and university scientists, to promote additional surface water monitoring and aquatic toxicity data collection for the highest priority pesticides.

CASQA PSC and UP3 are also working on a parallel effort to effect long-term change in the regulatory process by identifying inadequacies and inefficiencies in the pesticide regulatory process, and they are working with EPA and DPR to improve the overall regulating system. These efforts included the following:

- EPA is currently reworking its water quality risk assessment methods to integrate the Endangered Species Act (ESA) compliance;
- Worked with EPA’s OPP to develop a single assessment that could identify specific risk management measures for 18 different pyrethroids; and
- Wrote comment letters to EPA and DPR for pesticide reviews and registration processes.

CASQA PSC is also providing information and insight to assist OPP in developing the preliminary risk assessment for fipronil. Similar CASQA efforts to assist OPP are also being duplicated for creosote and other polyaromatic hydrocarbons (PAHs), ziram and chromated arsenicals, malathion, diuron, triclopyr, and chlorfenapyr.

Pollution Prevention and Good Housekeeping

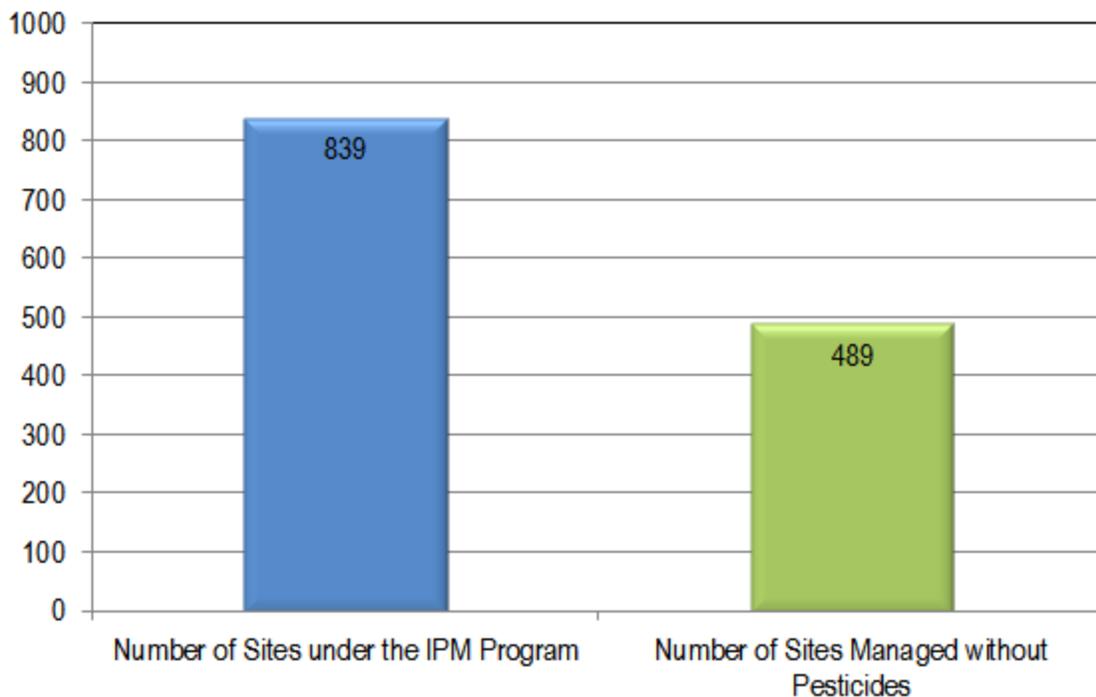
Are the Permittees aware of the IPM policy/ordinance and do they understand how to implement the IPM practices?

Are the Permittees holding/attending IPM training sessions?

MCSTOPPP member agencies are aware of the IPM policies and/or ordinances and are implementing IPM at all municipal sites (e.g., municipal buildings, corporation yards, fire departments, parks, pump stations); in addition, they are managing some sites without the use of pesticides. [OL2]

- Member agencies are managing 839 municipal sites under the IPM program. Of these, 489 (58%) are managed without pesticides.

Integrated Pest Management, Permit Year 3 (CY 2015)



- During FY 15-16, only two violations of the IPM Policy/Ordinance were reported, both in the County of Marin.

MCSTOPPP held Pollution Prevention and Good Housekeeping Workshops where topics such as the IPM policies/ordinances and IPM practices were discussed. Six workshops were held in June 2015 (114 attendees) (FY 14-15), and two workshops were held in October 2015 (36 County Parks staff attendees) (FY 15-16).

The target audience is aware of the IPM policies/ordinances and understands IPM practice implementation. **[OL2]**

- To assess the target audience's awareness, pre- and post-workshop quizzes were conducted for these trainings. Pre- and post-workshop quiz results for all six workshops were analyzed. The percentage of correct responses improved after each of these trainings, indicating increased awareness and understanding of the subject material that was presented.
 - The vast majority (88%) of workshop attendees understood that landscape chemicals, such as pesticides, herbicides, and fertilizers, may not be applied when there is a probability of precipitation of 75%. This was an increase of 51% from the pre-workshop quiz results (37%).
 - The majority (64%) of workshop attendees also understood that IPM is a pest management approach that uses the least toxic solution to control a pest. This was an increase of 13% from the pre-workshop quiz results (51%).

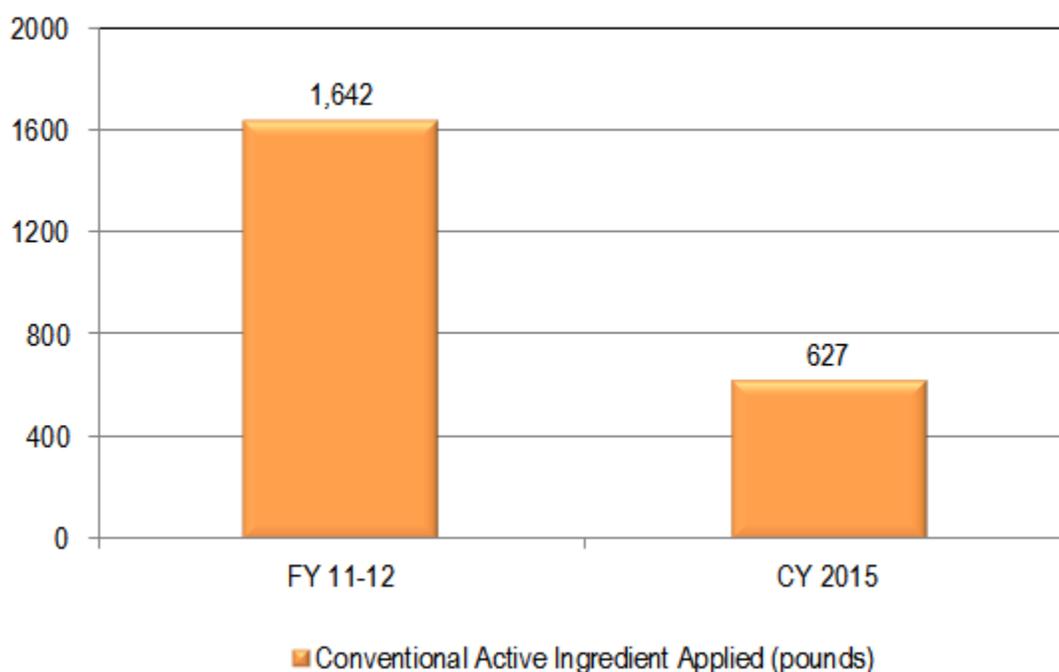
Are the Permittees and their contracted pest control operators managing their use of pesticides on their right-of-ways and other landscaped areas?

Are the Permittees and their contracted pest control operators tracking the type and amount of pesticides (i.e., active ingredients) are applied to right-of-ways and other landscaped areas?

MCSTOPPP member agencies are managing their use of pesticides on their right-of-ways and other landscaped areas. Member agencies are tracking their pesticide use, and in many cases, they have reduced use of pesticides from previous years or have eliminated their use altogether. **[OL2, OL3, OL4]**

- During calendar year 2015, municipal staff or contractors working at municipal sites at six member agencies (Town of Corte Madera, County of Marin, City of Mill Valley, City of Novato, City of San Rafael, and Town of Tiburon) applied 627 pounds of pesticides, as well as 5.01 pounds and 5.73 gallons of organic pesticides. This is a 62% decrease from the amount of pesticides applied (1,642 pounds) in FY 11-12, the last year this information was tracked. This indicates an increased load reduction.
- Five member agencies (City of Belvedere, Town of Fairfax, City of Larkspur, Town of San Anselmo, and City of Sausalito) used no pesticides in public areas in FY 15-16.

Pesticide Applied by Municipal Staff or Contractors



Education and Outreach

Is the target audience aware of the less toxic methods of pest control that are available?

What is the source of their information?

MCSTOPPP conducted outreach to residents on less toxic methods of pest control through messages in the 2015 MCSTOPPP wall calendar. The calendar's inside cover listed MCSTOPPP's 16 OWOW stores and promoted Bay-Friendly Landscapers. In the month of May, calendar messages connected use of least-toxic alternatives to pesticides to protection of migratory birds in Marin. The October calendar page encouraged readers to replace their lawns with native plant gardens and encourage IPM using mulch. Finally, the November calendar page included text explaining that pesticides should never be disposed of using inside drains and directed readers to local household hazardous waste facilities in Marin.

The target audience is aware of the less toxic methods of pest control that are available. [OL2, OL3]

- To assess the target audience's awareness, a survey was included with each calendar, and 318 surveys were returned. A total of 306 respondents answered the question pertaining to less toxic pesticide products. The results indicate that some survey respondents are aware of the less toxic methods of pest control.
 - Survey results indicated that 20% of the 306 respondents had seen the Our Water Our World less toxic product label when shopping for a product to manage a pest. This is an increase (2%) from the 2014 survey result (18%).

Is the target audience aware of the actions that they can take to reduce the presence of pesticides in surface waters (e.g., using less toxic products, properly disposing of pesticide-containing waste, including unused quantities of pesticides)?

What is the source of their information?

Are they taking those actions?

The target audience is aware of the actions that they can take to reduce the presence of pesticides in surface waters. [OL2, OL3]

- To assess the target audience's awareness, a survey was included with each calendar, and 318 surveys were returned. A total of 306 respondents answered the question pertaining to shopping for less toxic pesticide products, and 314 respondents answered the question pertaining to use of a household hazardous waste facility. The results indicate that a majority of survey respondents are taking appropriate actions to reduce the presence of pesticides in surface waters.
 - A total of 48% of survey respondents indicated that they don't shop for pesticides (less toxic or otherwise). This is an increase (2%) from the 2014 survey result (46%).
 - A total of 89% of survey respondents have used a household hazardous waste facility to get rid of pesticides. This is an increase (6%) from the 2014 survey result (83%).

Sediment

As described in the PEAIP, sediment was selected as a high priority POC, and the prioritized BMPs selected for this POC focused on the implementation actions summarized in **Table 3**. This section includes the applicable TMDL implementation status and the effectiveness assessment for sediment.

LAGUNITAS CREEK WATERSHED SEDIMENT TMDL IMPLEMENTATION STATUS

Overview

Although the Sediment TMDL for the Lagunitas Creek Watershed is not listed in Attachment G of the Phase II Permit, it was recently adopted by the Regional Water Board.^{7,8} Since this TMDL has not yet been incorporated into the Phase II Permit, MCSTOPPP will not report on TMDL implementation, but it will report on prioritized BMPs for the purpose of the EA.

SEDIMENT EFFECTIVENESS ASSESSMENT

An EA for sediment and the associated prioritized BMPs was conducted. This EA focuses on the data and information collected and analyzed during Year 3 to address sediment -specific management questions. Although the PEAIP was submitted in Year 2 and the specific data associated with management questions was collected beginning in Year 3, efforts to address this POC have been ongoing, and assessment data and information obtained in earlier years will be incorporated as applicable.

In **Table 13**, the POC-specific management questions representing focused program activities and/or prioritized BMPs are presented by Program Element. The CASQA outcome levels that may be supported by the EA results are also indicated.

⁷ http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/lagunitascrksedimenttmdl.shtml

⁸ The Regional Water Board adopted the Lagunitas Creek Watershed Sediment TMDL on June 11, 2014. The Basin Plan amendment adopting the TMDL was approved by the State Board on November 18, 2014 and by the Office of Administrative Law on March 17, 2015.

Table 13. Sediment Management Questions, by Program Element

Management Questions
Construction Site Stormwater Runoff Control [OL2-3]
<ul style="list-style-type: none"> • Are the construction sites being managed so that they are in compliance with the corresponding permits, local codes, and ordinances and preventing sediment from leaving the site? <ul style="list-style-type: none"> ○ Are Erosion and Sediment Control BMPs being implemented and maintained? ○ What are the common issues with BMP implementation that are identified during inspections?
Pollution Prevention and Good Housekeeping [OL2-3]¹
<ul style="list-style-type: none"> • Are the Permittees aware of the operations and maintenance (O&M) BMPs that should be implemented during road maintenance and repair activities, and do they understand how to implement them? <ul style="list-style-type: none"> ○ Are the Permittees attending O&M BMP training sessions?

Note:

1. The management questions for this POC were modified for MCSTOPPP member agencies because the management questions in the BASMAA PEAIP were specific to the Napa River and Sonoma Creek sediment TMDLs. The questions have been modified for consistency with MCSTOPPP member agencies' paved road maintenance activities and the requirements of the Lagunitas Creek Watershed Sediment TMDL.

A summary of the data and the results of the EA are presented below.

Construction Site Stormwater Runoff Control

Are the construction sites being managed so that they are in compliance with the corresponding permits, local codes, and ordinances and preventing sediment from leaving the site?

Are Erosion and Sediment Control BMPs being implemented and maintained?

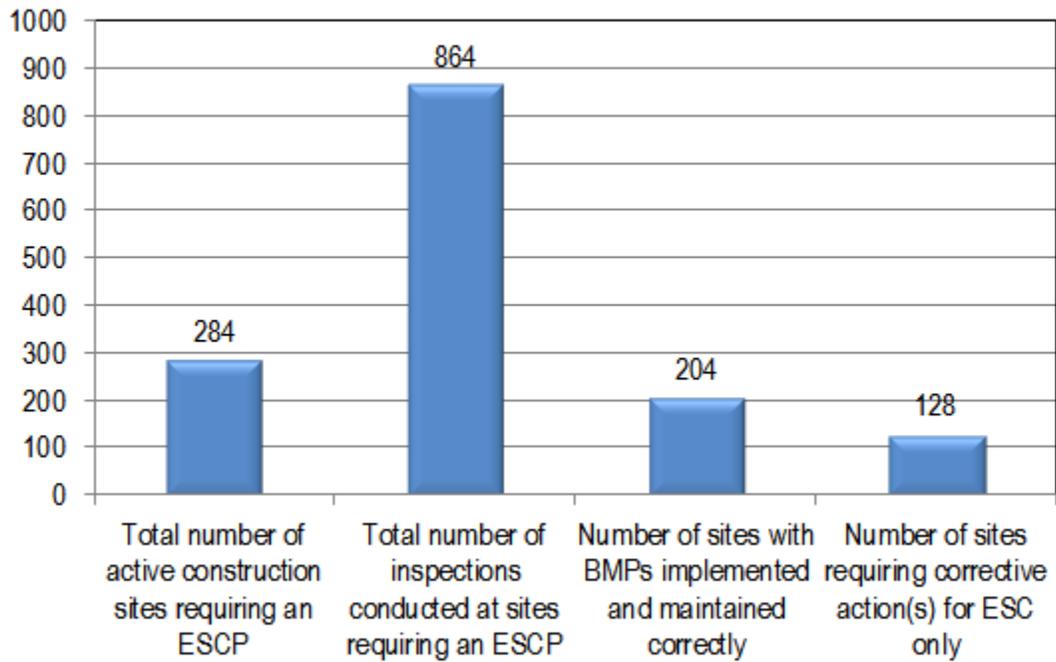
What are the common issues with BMP implementation that are identified during inspections?

MCSTOPPP member agencies are managing construction sites so that they are in compliance with the corresponding permits, local codes, and ordinances and preventing sediment from leaving the site. [OL2]

- MCSTOPPP member agencies conducted 864 inspections at 284 sites requiring an Erosion and Sediment Control Plan (ESCP).
- Of the 284 sites requiring an ESCP, 204 (72%) had at least one inspection where BMPs were correctly implemented and maintained, while 128 sites (45%) had at least one inspection that required corrective action(s) only for erosion and sediment control issues.⁹

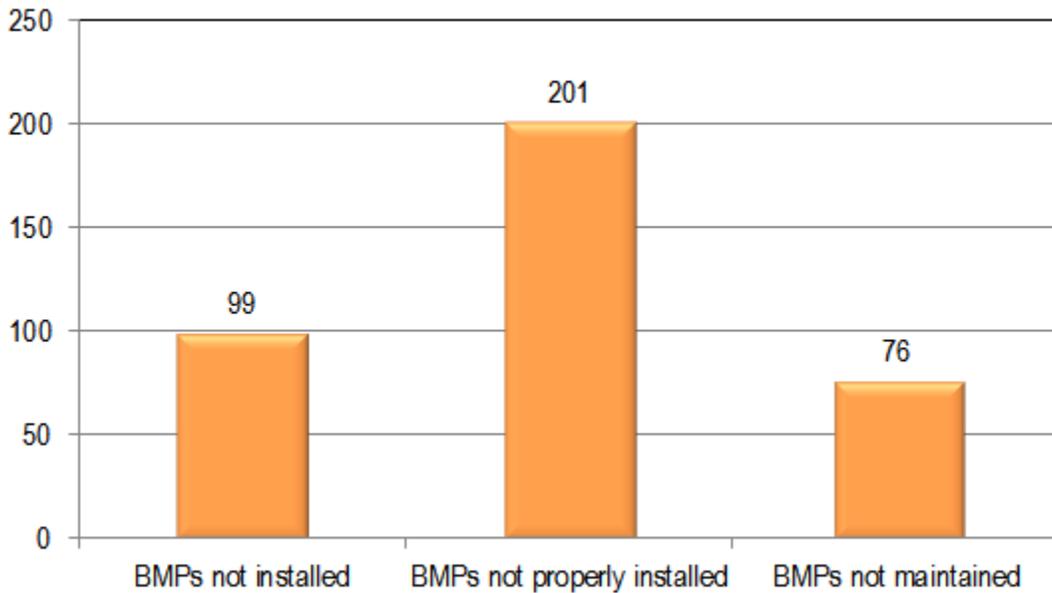
⁹ Based on the experience conducting this year's effectiveness assessment, MCSTOPPP has identified a need to review and modify the BASMAA PEAIP (through an addendum specific to MCSTOPPP member agencies) to collect and assess more detailed inspection data and information that will more accurately capture individual construction site compliance.

Sediment BMPs for Permit Year 3 (FY 15-16)



- During inspections, 376 erosion and sediment control issues were identified. The common issues included BMPs not being installed at all (26%), BMPs not being properly installed (53%), and BMPs not being maintained (20%).

Issues with Sediment BMPs for Permit Year 3 (FY 15-16)



Pollution Prevention and Good Housekeeping

Are the Permittees aware of the operations and maintenance (O&M) BMPs that should be implemented during road maintenance and repair activities, and do they understand how to implement them?

Are the Permittees attending O&M BMP training sessions?

In June 2016, MCSTOPPP held four in-house training workshops on Municipal O&M BMPs. Several topics were covered, including the storm drain system, pollution prevention and good housekeeping BMPs, illicit discharges, and BMPs for road maintenance and repair activities. A total of 146 municipal staff attended these trainings.

The target audience is aware of the O&M BMPs that should be implemented during road maintenance and repair activities. [OL2]

- To assess the training attendees' awareness of the material presented, pre- and post-workshop quizzes were conducted. An average increase of 11% in correct responses (78% correct, pre-workshop; 89% correct, post-workshop) was observed after the training, indicating increased awareness and understanding of the subject material that was presented.
- A vast majority of staff (93%) understood the BMPs that should always be used during road repair and pavement maintenance activities, indicating awareness and understanding of the subject material that was presented. There was no difference in the number of correct responses to this question on the pre- and post-workshop quizzes.

Program Modifications

The completion of the EAs is part of the program management cycle (**Figure 2**) and will, over time, inform program modifications. In conjunction with the long-term EAs that will be conducted beginning with the Annual Report in Year 5, MCSTOPPP will review the EAs that have been conducted, as well as recommendations from the experience of stormwater staff in implementing the program, and identify areas for improvement. The management questions and data collection results will be reviewed and used as the basis for summarizing the short- and long-term progress of the stormwater programs towards reducing the potential impacts of urban runoff on receiving waters. MCSTOPPP will pinpoint any modifications that may be necessary to improve program effectiveness at reducing pollutant loads, achieving the Maximum Extent Practicable standard, and protecting water quality.

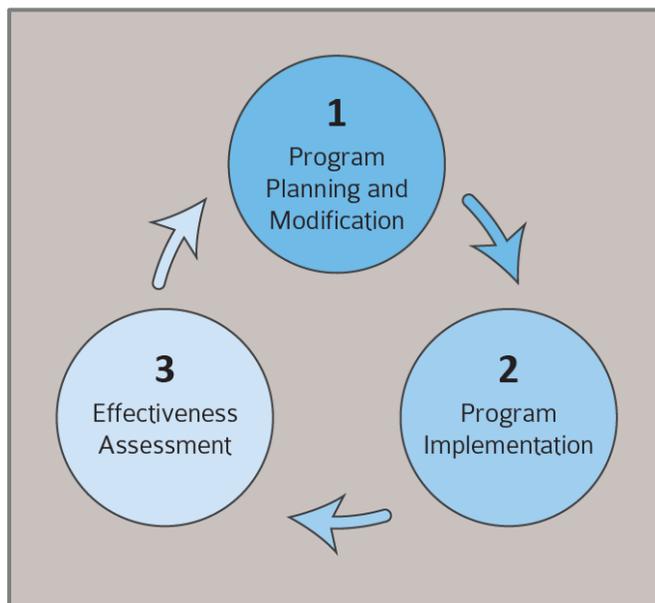


Figure 2. The Program Management Cycle (CASQA, 2015)

MCSTOPPP will provide a summary identifying the following types of modifications (as applicable):

- Improving upon the PEAIIP by identification of any potential data gaps and/or revisions that may be necessary for the evaluation of the POC-specific management questions;
- Improving upon prioritized BMPs (i.e., key implementation activities) that have not been fully implemented and/or did not achieve the expected result;
- Continuing and expanding upon prioritized BMPs that proved to be effective, including identifying new prioritized BMPs or modifications to existing prioritized BMPs, with the goal of increasing pollutant load reductions;
- Discontinuing BMPs that may no longer be effective;
- Based upon identification of bridges and barriers, changes in how MCSTOPPP intends to provide outreach to target audiences in order to reduce pollutant-generating activities (PGAs) and increase implementation of prioritized BMPs; and
- Shifting priorities to make more effective use of resources.

The summary of program modifications will be provided with the fifth year Annual Report and will include the identified priority program areas and the schedule MCSTOPPP will follow to complete the identified modifications during the next permit term. By conducting these assessments and modifying the program as needed, MCSTOPPP will follow the program management cycle (**Figure 2**).

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