Ventura Countywide Stormwater Quality Management Program

2014-2015 Permit Year

Ventura Countywide Stormwater Quality Management Program Annual Report

Camarillo
County of Ventura
Fillmore
Moorpark
Ojai
Oxnard
Port Hueneme
Santa Paula
Simi Valley
Thousand Oaks
Ventura
Ventura County Watershed Protection District

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Prepared Under the Direction of:

Gerhardt Hubner, Deputy Director,
Ventura County Watershed Protection District

Arne Anselm, Water Quality Manager
Bill Carey, Water Resources Specialist
Kelly Hahs, Water Resources Specialist
Lara Meeker, Water Resources Specialist

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Executive Summary

This Annual Report discusses the Permittees' Permit compliance activities for the period of July 1, 2014 to June 30, 2015, the fifth year of the Permit. It includes a description of all activities conducted during the reporting period and the efforts made to improve water quality throughout Ventura County by the Permittees. The purpose of this Annual Report is to both show compliance with NPDES Permit No. CAS004002/Order No. 10-108 (Permit), and meet the reporting requirement which requires an Annual Stormwater Report be submitted by December 15th of each year; in its entirety this Report also serves as the Receiving Water Limitations Report. Since the Permit did not require a Stormwater Management Plan this Report also serves as a way to clarify the Permit's requirements and the efforts put forth by the Permittees to meet them. Finally, program effectiveness assessment of the implementation of the Permit requirements are examined with potential areas for improvement identified.

The Ventura Countywide Permittees, who contributed the information and data regarding their programs, were instrumental in the preparation of this Annual Report. The Permittees cooperate through the Ventura Countywide Stormwater Quality Management Program to ensure information and workloads are shared, economies of scale achieved, and an efficient and effective Program is realized. The Permittees through implementation of various comprehensive program elements have strived for improved water quality through compliance with all requirements of the Permit.

Notable accomplishments made by the Permittees and the Program over this reporting period include:

- Water quality at beaches throughout Ventura County remained among the best in the state.

- The Report of Waste Discharge (ROWD) for permit reissuance that characterizes the discharge, facilities and BMPs was submitted. The ROWD included the Program's goals and guiding principles for Permit reissuance, and recommendations of receiving water driven priorities, question driven monitoring, and the inclusion of a watershed management approach.

- Completed the Ventura Countywide Unified Storm Drain Mapping project, a single geodatabase which contains all available storm drain information from all of the Permittees. This project also included a Countywide GIS analysis to identify infiltration constraints per 2011 Technical Guidance Manual and mapping of the natural stream network.

- Initiated efforts to develop a countywide Stormwater Resource Plan by designating funding and drafting a scope of work, request for qualifications, and selecting consultant.

- Continued a Bacteria Marker Study to identify human, dog, and bird genetic host-specific markers in MS4 outfalls and background sites. No human markers were detected in random sampling of over 65 storm drains. This study will be continued to strengthen results and help the Program identify the controllable sources of indicator bacteria discharged from storm drains.

- Completely redesigned the Program's Permit required website, www.VCStormwater, improving accessibility to Program information, reports, comment letters, and monitoring data.

- The 2011 Technical Guidance Manual (TGM) was updated to correct minor errors and omissions and an errata version was distributed to the development community.

- Participation in SCCWRP's Bight '13 Microbiology Study including assessment of the extent of human fecal contamination from coastal drainages to the ocean.

- Public Outreach efforts made 11.8 million impressions through the Public Outreach program. Ten percent of those were made in Spanish.

- Organization and participation in the statewide Coastal Cleanup Day Event recruiting 2,800 volunteers to 20 different beaches and inland waterways countywide covering a distance of 33.6 miles. A total 8,500 pounds of trash were collected.

- In April 2015 the Program implemented the second phase of a pyrethroid study to identify pyrethroids in sediment above and below urbanized areas.

- Updated the Water Quality Index which distills the over 200 constituents monitored into an easy to communicate form, and continued the comprehensive data analysis effort to prioritize pollutants of concern in outfall and receiving waters that will in turn prioritize Program activities.

- Seventeen Total Maximum Daily Load Implementation Plans, Monitoring Plans and Compliance Reports were submitted to the Regional Board.

- Active participation in Southern California Coastal Water Research Project, Stormwater Monitoring Coalition of Southern California, and California Stormwater Quality Association.

The Program sampled five rain events to comply with the three wet events required. Due to drought conditions, and equipment and laboratory issues only partial data sets for several sites/events during the 2014/15 wet season were produced. Aquatic toxicity samples were collected from all fourteen sites during the first wet event of the season, with none showing significant toxicity. Constituents frequently found at elevated levels at most related Mass Emission and Major Outfall stations include *E. coli*, fecal coliform, and aluminum. Constituents observed in isolated incidents outside of water quality objectives concurrently at one or more related Mass Emission and Major Outfall stations include cadmium, chromium, chloride, total dissolved solids, and bis(2-ethylhexyl)phthalate. Other constituents observed outside of water quality objectives at only Major Outfall stations include: MBAS, pH, perchlorate, ammonia as nitrogen, dissolved oxygen, dissolved copper, dissolved zinc, total selenium, pentachlorophenol, and several polycyclic aromatic hydrocarbons. The Program is using this information to identify pollutants of concern and direct efforts to reduce their discharge from the storm drain system.

Continued in this Annual Report are the Performance Standards for specific Permit requirements identified in each section along with the Permittees' status on achieving that standard. Permit compliance cannot be directly inferred solely by these Performance Standards as the complete effort of the Permittees cannot be reflected through these discrete metrics. Rather, the information is more suitable for use by the Permittees to gage their efforts and identify areas of needed improvement.

The Program uses California Stormwater Quality Association's (CASQA) six progressive outcome levels for effectiveness assessment which range from documenting efforts to measurably protecting receiving water quality. These show the Program is continually effective in the first two outcome levels of documenting efforts and raising awareness. As the Program continues, improvements in the outcome levels of changing behavior and reducing pollutant loads will be accurately measured and documented. The trends identified in the Water Quality Monitoring Section show real progress towards the Program's effectiveness at the ultimate goal - Outcome Level 6 improving and protecting receiving water quality.

Each program element has a subcommittee working to develop needed forms, protocols, and procedures to ensure future Permit compliance. The programs, methods, and this Annual Report are continually being refined to improve effectiveness, apply lessons learned, identify and address additional sources of stormwater pollutants, and therefore improve water quality. Future program activities will be continuing the special studies to address the two pollutants of the highest priority, aluminum and E. coli.

1 Introduction

The Watershed Protection District (Principal Permittee), the County of Ventura, and the incorporated cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Ventura, Santa Paula, Simi Valley, and Thousand Oaks, (each a Permittee, and collectively known as Permittees) operate municipal storm drain systems and discharge stormwater and urban runoff pursuant to the countywide NPDES Permit (Board Order No. 10-0108 or Permit). This Permit, administrated by the Los Angeles Regional Water Quality Control Board (RWQCB), requires an Annual Stormwater Report and Assessment (Annual Report) be submitted by December 15th of each year.

The first stormwater permit for Ventura County was adopted in 1994 and included all ten cities, the County, and the Watershed Protection District. On July 27, 2000 a second permit was adopted that included logical and incremental increases in the requirements. That five-year permit was on administrative extension until May 7, 2009, when Board Order 09-0057 was adopted. Shortly after adoption of that permit the Regional Board rescinded it to hold a new adoption hearing. On July 8, 2010 Order No. R4 2010-0108 was adopted with minor changes. The 2010 Permit had a new set of implementation deadlines associated with it and replaced the order adopted in 2009 in its entirety.

1.1 PURPOSE AND ORGANIZATION OF REPORT

The primary purpose of this Annual Report is to document the Permittees' continued compliance with NPDES Permit No. CAS004002/Order No. 10-108 (Permit) and efforts to improve water quality. Since the Permit did not require a Stormwater Management Plan this Annual Report also serves as a way to clarify the Permit's requirements and the effort required to meet them. Finally, program effectiveness assessment of the implementation of the Permit requirements are examined with potential areas for improvement identified.

Ventura County from the air

This Annual Report discusses the Permittees' Permit compliance activities for the period of July 1, 2014 to June 30, 2015, the fifth year of the third Permit term. It includes a description of all activities conducted during the reporting period and the efforts made to improve water quality throughout Ventura County by the Permittees. In its entirety it also serves as the Receiving Water Limitations Report.

The organization of the Report reflects the organization of the Permit. Each section contains a description of the Permit requirements and their purpose, and the Permittee's program activities in that area with detailed descriptions of the efforts put forth in the 2014/15 Permit year. The sections are as follows:

- **Program Management - Section 2.0** – Roles and responsibilities of the Permittees committee structure, and a program budget report for 2015/16.

- **Public Information and Public Participation Program – Section 3.0 –** The efforts and effectiveness of pollution prevention education and outreach programs.

- **Industrial Commercial Business Program - Section 4.0 –** The activities directed at effectively prohibiting non-stormwater discharges from businesses and industrial sites in order to reduce stormwater pollution to the maximum extent practicable.

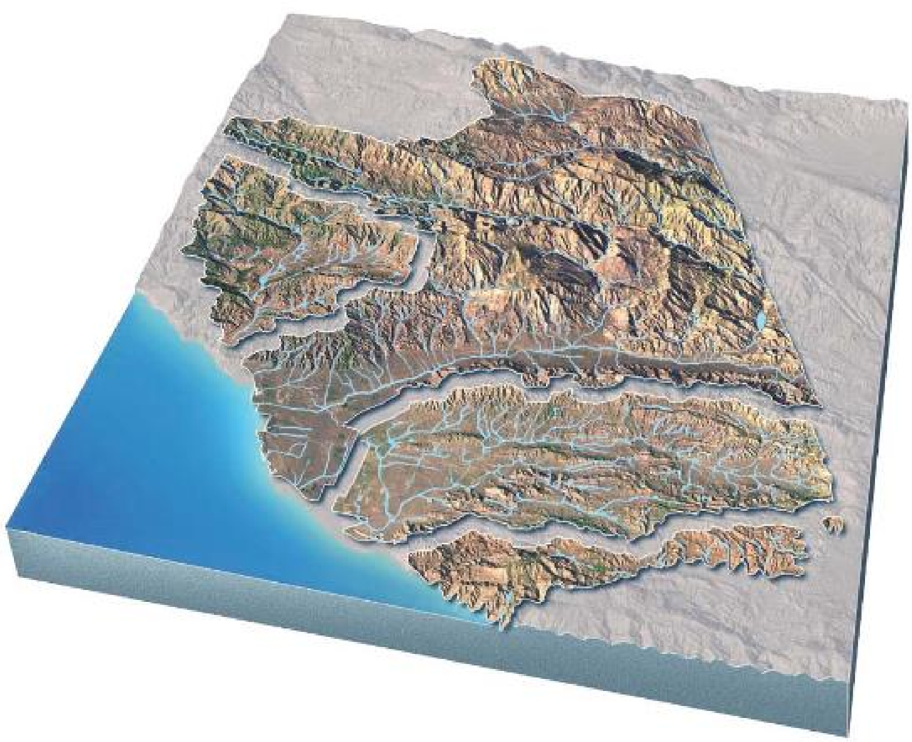
- **Planning and Land Development Program - Section 5.0 –** The minimization of the impact of new development and significant redevelopment on stormwater quality through use of Low Impact Development site design and water quality treatment BMPs.

- **Development Construction Program - Section 6.0 –** Activities before and during construction through stormwater pollution prevention plans and inspections to ensure the protection of stormwater quality to the maximum extent practicable.

- **Public Agencies Activities Program - Section 7.0 –** Both the efforts to remove pollutants from MS4s, and to eliminate the adverse effects that municipal activities may have on water quality.

- **Illicit Discharge and Illegal Connections Elimination Program - Section 8.0 –** Status of the tools, control measures and responses established to eliminate non-permit authorized discharges and connections to the storm drain system.

- **Water Quality Monitoring Program - Section 9.0 –** A summary and analysis of the monitoring results from the Permit year. Includes, and is also considered to be the Program's Receiving Water Limitations Report describing efforts that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of Water Quality Objectives.



The Watersheds of Ventura County east to west:
Ventura River, Santa Clara River, Calleguas Creek, and Malibu Creek

1.1.1 Major Program Accomplishments

Since the adoption of the third term Permit the Program has achieved many accomplishments in each of the program elements, and beyond Permit requirements. These include adopting a five-year implementation agreement and new stormwater quality ordinances, new bilingual BMP training posters for business and construction, drafting a Revised Technical Guidance Manual and Hydromodification Control Plan for land development, catch basin mapping and prioritization, increased trash management programs, new pesticide protocols, installation of eleven new outfall monitoring stations, water quality data trends analysis, development of a water quality index, and special studies to address pyrethoids, pentaclorophenol, aluminum and bacteria. All of these efforts have resulted in water quality at Ventura County beaches to be among the best in the state.

Notable accomplishments made by the Permittees and the Program over this reporting period include:

- Water quality at beaches throughout Ventura County remained among the best in the state.

- Completed the Ventura Countywide Unified Storm Drain Mapping project, a single Geodatabase which contains all available storm drain information from all of the Permittees. This project also included a Countywide GIS analysis to Identify infiltration constrains per 2011 Technical Guidance Manual and mapping of the natural stream network.

- Designated funding and wrote a scope of work to develop a countywide Stormwater Resource Plan for compliance with SB 985.

- Submitted the Report of Waste Discharge (ROWD) for permit reissuance that characterized the discharge, and described facilities and BMPs. The ROWD included the Program's goals and guiding principles for Permit reissuance, and the recommendations of receiving water driven priorities, question driven monitoring, and the inclusion of a watershed management approach.

- Continued a Bacteria Marker Study to identify human, dog, and bird genetic host-specific markers in MS4 outfalls and background sites. No human markers were detected in a probabilistic sampling of over 50 storm drains. This study will be continued to verify results and help the Program identify the controllable sources of indicator bacteria in the receiving waters.

- Participation SCCWRP's Bight '13 Microbiology Study including assessment of the extent of human fecal contamination from coastal drainages to the ocean.

- Redesigned the Program's www.VCStormwater website improving accessibility to Program information, reports, comment letters, and monitoring data.

- Cooperative effort with Ventura County water purveyors to develop www.venturacountygardening.com. A very easy to use site with many pictures of example drought-tolerant landscaping in Ventura County and information on how to water a landscape more efficiently. Special additions were made to include low impact development features of rain gardens, permeable pavement options and rain barrels.

- 11.8 million impressions through the Public Outreach program. Ten percent of those were made in Spanish.

- Organization and participation in the statewide Coastal Cleanup Day Event recruiting 2,800 volunteers to 20 different beaches and inland waterways countywide covering a distance of 33.6 miles. A total 8,500 pounds of trash were collected.

- Updated the Water Quality Index to distill the over 200 constituents monitored into an easy to communicate form, and continued the comprehensive data analysis effort to prioritize pollutants of concern in outfall and receiving waters that will in turn prioritize Program activities.

- Seventeen Total Maximum Daily Load Implementation Plans, Monitoring Plans and Compliance Reports were submitted to the Regional Board.

- The Stormwater Monitoring Program was able to achieve a 99.1% success rate in meeting program data quality objectives.

- Participation in Southern California Coastal Water Research Project (SCCWRP) Stormwater Monitoring Coalition of Southern California, and California Stormwater Quality Association (CASQA).

- Integrated Regional Water Management Plan (IRWMP) Participation.

1.2 PROGRAM EFFECTIVENESS ASSESSMENT

The 2014/15 Annual Report documents the Program's comprehensive stormwater quality efforts that address a wide range of activities. Various Departments in each Permittee's agency cooperate in implementing the different elements or activities of the Program under their control. All of these efforts are examined for program effectiveness.

Each of the six Program Elements contains various Control Measures. Each Control Measure consists of a series of Performance Measures. Performance Measures are identified to document the progress of implementation and to measure the effectiveness of implemented BMPs.

The Program has adopted a method for assessing program effectiveness based on an approach developed by the California Stormwater Quality Association (CASQA). The effectiveness assessment is more comprehensive than assessments under past permits and addresses the major stormwater program areas and activities. The outcome levels represent ways in which the effectiveness of the program can be determined, even if it is intermediate[1].

Outcome levels help to categorize and describe the desired results of the Program Elements and related Control Measures. Pursuant to the 2007 CASQA guidance, outcomes for stormwater programs have been categorized into six levels, as shown in Figure 1-1. As illustrated, there are six outcome levels for the effectiveness assessment. The outcome levels help to categorize and describe the desired results or goals of the program.

Within each individual program section (starting with Chapter 3), the effectiveness assessment identifies the outcome level(s) achieved, as well as any program modifications that have been identified because of the assessment. The assessment section is at the end of each chapter.

[1] California Stormwater Quality Association, *Municipal Program Effectiveness Assessment Guidance*, May 2007.

Integrated Assessment					
Implementation Assessment	Target Audience & Source Assessment			Urban Runoff & Receiving Water Assessment	
Outcome Level 1	Outcome Level 2	Outcome Level 3	Outcome Level 4	Outcome Level 5	Outcome Level 6
Stormwater Program Activities	Knowledge & Awareness	Behavior (Action)	Source Reductions	Runoff Quality & Hydrology	Receiving Water Conditions
▪ *Facilitation activities* ▪ *Feedback activities* ▪ *Administrative activities*	▪ *Knowledge* ▪ *Awareness* ▪ *Attitudes*	▪ *BMP Implementation* ▪ *Intermediary Behaviors* o Information seeking o Pollution reporting o Participation and involvement o Administrative and procedural behaviors	▪ *Source pollutant loads* ▪ *Site / source hydrology*	▪ *Urban runoff quality* ▪ *Urban runoff hydrology*	▪ *Receiving water quality* ▪ *Hydromodification impacts* ▪ *Beneficial use protection*

Figure 1-1 Effectiveness Assessment Outcome Levels

Some important points to remember about these effectiveness assessments include:

- The ability of a stormwater program to assess an outcome level tends to become progressively more difficult as you assess higher outcome levels (levels 4-6). This is because the higher outcome levels assess the impact that the Permittees have on water quality, which requires a much more robust dataset over an extended period of time.
- Outcome levels 1-3 (and sometimes 4) are typically assessed using program management data, whereas outcome levels 4-6 are assessed using physical and/or water quality monitoring data.
- Each program element may be assessed at one or more outcome levels based on the data and information available.

Through the annual reports the effectiveness assessment will be expanded and modified as necessary in order to report on key items.

Outcome Level 6 has already been observed in receiving waters.

Concentrations of metals, E. coli, nutrients, salts, and one pesticide have trended downward since 2001.

To assess our ultimate effectiveness of improvement in receiving water conditions, the Program started a comprehensive data analysis effort, aiming to identify historical trends in water quality, priority pollutants and their sources to receiving waters. As part of this year's Report in Section 9 Water Quality Monitoring, the trend analysis methods and results are presented.

Trend analysis at Mass Emission stations showed decreasing concentration trends for thirty-one constituents, including metals, bacteria, nutrients, and one pesticide, at one or more stations since 2001. Only six constituents exhibited increasing concentration trends, at one or two stations. Most of the constituents with increasing concentrations trends are not causing water quality exceedances based on Basin Plan and CTR numeric water quality criteria. The one exception is chloride, for which increasing concentrations have been observed at ME-CC and ME-VR2, and for which exceedances of water quality standards have been observed. The increase in chloride concentrations was correlated with lower runoff volumes in recent years.

The number of exceedances of water quality standards has also decreased in some cases. Dry weather exceedances have decreased since 2001 at ME-CC, while wet weather exceedances have decreased since 2004 at ME-CC and ME-VR2. Decreasing numbers of wet weather exceedances could be attributed to smaller storm sizes and therefore fewer exceedances for metals in recent years.

These decreasing trends are good news for the environment and the Program, but still leave some questions. By following up to identify what causal agents are behind the trends success can be repeated, problems avoided, and a truly effective stormwater program created.

2 Program Management

2.1 PROGRAM IMPLEMENTATION

2.1.1 Mission Statement

The Management Committee adopted a mission statement to improve the focus and guide the actions of the Program. Its purpose is to provide a sense of direction, identify the overall goals, and guide decision-making in the future. It presents the framework and context within which the Program's strategies are guided. The Program's mission statement is:

> *The Ventura Countywide Stormwater Quality Management Program, established in 1992 between the ten Cities, the County and District, works cooperatively on a regional basis to ensure compliance with the countywide Stormwater Permit through the development and implementation of an integrated, effective and fiscally responsible stormwater quality management program with the objective of protecting, maintaining and improving water quality in Ventura County for the common benefit of its residents and the environment.*

2.1.2 Program Implementation

In 1992 the concept of a single countywide NPDES MS4 Stormwater Permit (Permit) was implemented in Ventura County. This began with the initial Report of Waste Discharge and the authorization to use the Watershed Protection District's Benefit Assessment to finance the activities and program efforts. Subsequently, on June 30, 1992, the District (as the Permit's Principal Permittee) entered into four separate District-zone-based implementation agreements with the ten Ventura County cities and the unincorporated areas of the county (the Permittees). Collectively, these four agreements are known as the Implementation Agreement for the Ventura Countywide Stormwater Quality Management Program. The Implementation Agreement identified the responsibilities of the Permittees and set forth the methodology for using the District's Benefit Assessment financing to fund the NPDES Stormwater Programs.

With the adoption of the second NPDES Permit, the Principal Permittee Program activities, responsibilities, and associated costs increased significantly. The District could no longer solely shoulder these fiscal obligations without assistance from the Permittees. In response, the Permittees' Public Works Directors created a committee to research the historical documentation from the District's Benefit Assessment Reports and draft a new implementation agreement.

In FY 2007/08, the first amendment to the agreement was approved to address this needed cost-sharing by amending the original agreement. In FY 2008/09 and 2009/10, the second and third amendments to the original agreement were approved to continue this needed cost-sharing.

The additional program costs for the Principal Permittee and Permittees associated with the 2010 NPDES Permit prompted further effort among the Public Works Directors to equitably share the increased costs. The result of that effort was a new NPDES Implementation Agreement to supersede the original agreement and amendments.

The Implementation Agreement defines the fiscal responsibilities (expenditures and contributions) of all collective parties with respect to the current Permit. It formalizes the Permittees' commitment to cooperate and to mutually fund an integrated Program for protecting and improving water quality in Ventura County.

2.2 PERMITTEE RESPONSIBILITIES

The responsibilities of the Principal Permittee and Permittees are defined within the Permit and the Implementation Agreement. These roles and responsibilities are outlined below.

2.2.1 Permittees

Each Permittee is responsible for implementing the NPDES Stormwater Program and Permit compliance within their jurisdiction. The main responsibility of each Permittee can be identified as follows:

- Comply with the requirements of the Permit through implementation within its jurisdiction of the various stormwater management programs outlined in the Permit.

- Establish and maintain adequate legal authority, and apply appropriate enforcement actions as necessary within its jurisdictions to ensure compliance with applicable ordinances.

- Participate in intra-agency coordination (e.g., Planning Department, Fire Department, Building and Safety, Code Enforcement, Public Health, Parks and Recreation, and others) necessary to facilitate the implementation of the requirements of this Permit applicable to such Permittees in an efficient and cost-effective manner.

- Prepare and submit all reports or requests of information to the Principal Permittee in a timely fashion.

- Review, provide comments, and approve Program budgets, plans, strategies, management programs, and monitoring programs developed by the Principal Permittee or any subcommittee.

- Respond to, or arrange for, response to emergency situations, such as accidental spills, leaks, illicit discharges/illegal connections, etc., to prevent or reduce the discharge of pollutants to the storm drain systems and waters of the U.S. within its jurisdiction.

- Conduct inspections of, and perform maintenance on, municipal infrastructure within its jurisdiction.

- Conduct and coordinate any surveys and source identification studies necessary to identify pollutant sources and drainage areas, and

- Participate in the Management Committee.

2.2.2 Principal Permittee

The role of the Principal Permittee is similar to the other Permittees with the addition of certain overall programmatic and facilitation responsibilities. These responsibilities do not include ensuring the compliance of the Permittees, as the Principal Permittee has no regulatory authority over the Permittees. The responsibilities outlined in the Permit include the following:

- Coordinate and facilitate activities necessary to comply with the requirements of the Permit.

- Act as liaison between the Permittees and the Regional Water Board on permitting issues.

- Provide for countywide consistency and program coordination.

- Provide technical and administrative support for subcommittees organized to implement this Order and its requirements.

- Implement a Public Information and Participation Program (PIPP) including developing a strategy to educate ethnic communities through culturally effective methods, and a plan to provide outreach in lieu of the school curriculum.

- Implement the monitoring program required in Attachment F of the Permit.

- Participate in the County Environmental Crimes Task Force.

- Provide resources for the collection, processing and submittal to the Regional Water Board of monitoring and annual reports, and summaries of other reports required under this Order. Establish uniform data submittal format and develop an Electronic Reporting Program.

- Participate in water quality meetings for watershed management and planning.

- Participate in the Southern California Storm Water Monitoring Coalition (SMC) Southern California Regional Bioassessment Monitoring Program.

- Compile and make available on the internet a list of the general public reporting contacts, and

- Convene all Management Committee meetings.

In addition to responsibilities identified in the Permit, the Principal Permittee also performs the following for the benefit of the Program:

- Prepare communications, regulatory reports, and submissions to the Regional Board.

- Provide Regional Representation for the Program and communicate information to the Permittees.

- Arrange for public access and review of Program plans and documents.

- Secure services of consultants as necessary.

- Implement activities of common interest to the Program.

- Develop/prepare/generate all materials and data common to all Permittees, and

- Update Permittees on RWQCB and US Environmental Protection Agency (USEPA) regulations.

2.3 MANAGEMENT ACTIVITIES

2.3.1 Management Committee

The NPDES Management Committee is the main forum for directing the Program's development and implementation. This Committee is attended by senior staff from all Permittee agencies and meets monthly to assure Program continuity. All Committee members have been authorized by their Director of Public Works as Management Committee Voting Representatives with the authority to approve the Principal Permittee's budget and/or modifications. If no Representative is authorized, it is the Public Works Directors' responsibility to voice their opinion at meetings when these items are on the agenda. In addition to budgeting and program direction, this committee also periodically evaluates the need to create ad hoc committees or workgroups to develop tools and accomplish the objectives of the NPDES Stormwater Program. Although it is no longer mandated that Permittees attend the meetings, participation in the Management Committee as necessary is a specific requirement of the Permit.

Performance Standard 2-1

Participate in intra-agency coordination including Committee and Subcommittee Meetings to facilitate the implementation of the Permit			
	Yes	*No*	*N/A*
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

2.3.2 Subcommittees

The Subcommittees provide a forum for discussion of particular program elements and are attended by the staff with the appropriate expertise from each Permittee. These meetings allow for a more uniform approach and regional consistency to program management countywide. This helps provide a level playing field for businesses and residents countywide. More importantly it allows the Permittees to learn from each other and have access to tools that have already been developed. This is very beneficial for the smaller agencies which do not have at their disposal the resources available to the true Phase 1 cities (population over 100,000).

The subcommittees were created at the beginning of the program, have continued to meet, and have evolved over the years as requirements and pollutant sources have changed. Subcommittee activities over this Permit Year have been devoted to communicating and implementing Permit requirements, and improving programs for compliance. Each subcommittee focuses on specific Permit requirements and implementation programs. These generally follow the program sections of the Permit, but the subcommittees also incorporate the whole Permit in their analysis and integrated program development. The subcommittees and their program responsibilities are listed below. This list does not include any ad hoc, special project, or working groups that may have been formed by the Management Committee or from a logical outgrowth of the subcommittees. One such working group is the Capital Improvement Projects (CIP) Working Group set up to assist Permittees own capital improvement program engineers and staff to understand and implement the new post-construction requirements as well as the new General Construction Permit requirements in our public projects.

The following is description of the Program's subcommittees.

Residential/Public Outreach Subcommittee

The Principal Permittee's countywide outreach program is guided by this subcommittee. Using information on pollutants identified through the monitoring program and 303(d) lists, this committee selects specific Pollutants of Concern to target each year, target audiences, and decides on the best methods of outreach to influence a change in behavior. Information is shared and regional message consistency reinforced.

Business Outreach and Illicit Discharge Control Subcommittee

Attended mostly by inspectors, this committee oversees the development of the model industrial/commercial and illicit discharge/illegal connections programs. Countywide consistency is created by developing inspection forms and sharing methods of identifying and educating businesses and industries targeted for inspections. Outreach materials focused on specific industries and businesses are also developed for countywide use by all Permittees. Illicit discharge identification and responses are included at every meeting and discussed. Enforcement experiences are shared to further the education of inspectors countywide.

Planning and Land Development Subcommittee

Planners and development engineers work together to provide regional tools for design, review, and conditioning of new development and redevelopment projects, and to promote regional consistency in their application. Guidance and training are developed for the development community for the implementation of stormwater management control measures countywide. The guidelines developed are intended to improve water quality and mitigate potential water quality impacts from new development and significant redevelopment. This year's focus was on developing the Hydromodification Control Plan and the implementation of the 2011 Technical Guidance Manual.

Construction Subcommittee

Regional consistency for inspections and enforcement are provided by developing model inspection checklists and identifying solutions to common problems. Information on the State General Construction Permit issues, training requirements and opportunities are shared and disseminated to the construction community.

Public Infrastructure

This subcommittee assists municipalities in the protection of their storm drain infrastructure from pollutants through best management practices, and the development of model municipal activities programs, corporate yard inspections, and integrated pesticide management programs. It also works to identify solutions to infrastructure mapping and other Permit requirements.

The value of the subcommittees to improve staff knowledge and abilities, achieve economies of scale, and provide regional program consistency is understood by all members. It is recognized by the Permittees that increased attendance and effort in the subcommittees will be rewarded by improvement in staff understanding and capabilities, resources, and the overall program.

2.3.3 Total Maximum Daily Load Annual Compliance

In addition to the compliance requirements of the NPDES Permit the Permittees also must comply with the Total Maximum Daily Loads (TMDLs) when they are named as Responsible Parties. These efforts may seem parallel to Permit compliance efforts, but they require significant additional resources to develop and implement the needed plans. Many of the Permittees have coordinated efforts under separate implementing legal instruments for common sharing of monitoring and reporting costs and collection of data and studies among the Responsible Parties of the different TMDLs. The currently effective multi-stakeholder Memoranda of Agreements (MOAs) for TMDLs in Ventura County are listed in Table 2-1.

Table 2-1 Currently Effective Ventura County TMDL MOAs

Watershed	TMDL	TMDL Requirement	MOA Effective Date	Participating Parties
Ventura River	Algae, Eutrophic Conditions, & Nutrients TMDL	Development of Receiving Water Monitoring Plan	05/01/2014	City of Ventura, City of Ojai, County of Ventura, District, Ojai Valley Sanitary District, VCAILG (Farm Bureau of Ventura County), & Caltrans
		Receiving Water Monitoring	01/19/2015	
		Development of Implementation Plan	01/05/2015	City of Ventura, City of Ojai, County of Ventura, District, & Caltrans
Ventura River	VRE Trash TMDL	Implementation of TMRP/MFAC	03/28/2009	City of Ventura, County of Ventura, District, Fairgrounds, State Parks, VCAILG (Farm Bureau of Ventura County), & Caltrans
Santa Clara River	SCR Bacteria TMDL	Development of Receiving Water Monitoring Plan	09/04/2012	City of Fillmore, City of Santa Paula, City of Oxnard, City of Ventura, & County of Ventura
		Development of Implementation Plan	11/01/2014	
Calleguas Creek	OC Pesticides TMDL	Implementation of TMDL Requirements	06/30/2009 (the most recent Amendment)	CCW MS4s, CCW WWTPs, and VCAILG (Farm Bureau of Ventura County)
	Metals TMDL			
	Salts TMDL			
	RSBW Trash TMDL			
	Oxnard Drain TMDLs			
Coastal	Harbor Beaches TMDL	Implementation of MS4 Permit Requirements	07/08/2012	County of Ventura, VC Harbor Dpt, and VC Environmental Health Dpt. City of Oxnard
Malibu Creek	Malibu Creek Bacteria TMDL	TMDL Monitoring	07/20/2010	District, County of Ventura, & City of Thousand Oaks
	Malibu Creek Trash TMDL	Implementation of TMRP/MFAC	07/30/2012	

For the TMDLs identified in the Permit that specifically mention reporting, the Permit states that "MS4 Permittees, either independently or in conjunction with other stakeholders, shall submit an annual progress report". It does not identify the Principal Permittee as responsible to collect, analyze or report the information regarding TMDL compliance, but rather keeps that responsibility with Permittees (and other Responsible Parties) identified in the TMDL. Nonetheless, all TMDL Reports and Plans submitted to the Regional Board in the 2014-2015 reporting period are included in Attachment E.

During this reporting period of July 2014 and June 2015, the TMDL Responsible Parties continued implementation of the TMDL requirements including preparation and submittal to RWQCB required documents:

TMDL for Trash in Revolon Slough and Beardsley Wash

1. City of Oxnard 2014 Revolon Slough/Beardsley Wash Trash TMDL Annual Report dated December 2014. (Attachment E-1)
2. Revolon Slough/Beardsley Wash 2013-2014 Trash TMDL TMRP/MFAC Annual Report dated December 2014. (Attachment E-2)
3. Proposed Revision to the Trash Monitoring and Reporting Program for the Revolon Slough and Beardsley Wash Trash TMDL dated July 23, 2014. (Attachment E-3)

TMDLs in Calleguas Creek Watershed

1. "Sixth Year Annual Monitoring Report Monitoring and Reporting Program for the Nitrogen and Related Effects; Organochlorine Pesticides, Polychlorinated Biphenyls and Siltation; Toxicity; Salts; and Metals and Selenium Total Maximum Daily Loads" dated December 15, 2014. (Attachment E-4)

TMDL for Bacteria in Harbor Beaches of Ventura County

1. "Draft Compliance Report for County of Ventura and Ventura County Watershed Protection District" dated December 18, 2014 (Attachment E-5)
2. "Compliance Report for City of Oxnard" dated December 18, 2014 (Attachment E-6)

TMDL for Bacteria in Malibu Creek and Lagoon

1. "Malibu Creek and Lagoon Bacteria TMDL Compliance Monitoring Plan and Enhanced Monitoring Protocol for City of Thousand Oaks" dated December 23, 2014. (Attachment E-7)
2. "Bacteria TMDL Outfall Monitoring Plan for Malibu Creek Watershed for County of Ventura and Ventura County Watershed Protection District" dated January 2, 2015. (Attachment E-8)
3. Technical Memorandum "Dry Weather Bacteria Source Identification Study in the Upper Malibu Creek Watershed" dated November 2014. (Attachment E-9)
4. Twelve Monthly Monitoring Reports dated between July 2014 and July 2015. (Attachment E-11)

TMDL for Trash in Malibu Creek and Lagoon

1. Trash Monitoring and Reporting Program and Minimum Frequency Assessment and Collection (TMRP/ MFAC) Second Annual Report dated November 2014. (Attachment E-10)

TMDL for Bacteria in the Santa Clara River

1. "Draft Implementation Plan for the Lower Santa Clara River Watershed" dated March 21, 2015. (Attachment E-12)

TMDL for Nitrogen Compounds in the Santa Clara River

1. "Reassessment and Delisting of Ammonia and Absence of Impairment for other Nitrogen Compounds in the Santa Clara River Reach 3" dated June 4, 2015. (Attachment E-13)

TMDL for Trash in the Ventura River Estuary

1. Ventura River Estuary Trash Monitoring and Reporting Plan (TMRP) – Addendum No. 1 dated October 22, 2014. (Attachment E-14)
2. Ventura River Estuary Trash TMDL 2013-2014 TMRP Annual Report dated January 2015. (Attachment E-15)

TMDL for Algae in the Ventura River

1. "Final Comprehensive Monitoring Plan for Receiving Waters" dated October 20, 2014. (Attachment E-16)
2. "Draft Implementation Plan Total Maximum Daily Load for Algae, Eutrophic Conditions, and Nutrients in the Ventura River and its Tributaries" dated June 27, 2015 (Attachment E-17)

Copies of all the above listed reports, plans, and documentation are provided in the Attachment E of this Annual Report.

2.3.4 Other Regional Committees/Work Groups

Many of the Permittees additionally participate in various watershed management advisory groups. These groups include: the Ventura County Integrated Resources Water Management Plan (IRWMP), Ventura River Watershed Planning Committee, Santa Clara River Watershed Committee, Wetlands Recovery Project, Calleguas Creek Watershed Management Committee, Matilija Dam Ecosystem Restoration Study, Channel Islands Beach Park Action Plan for Improving Water Quality, Malibu Creek Watershed Management Committee and Technical Advisory Committee, Steelhead Restoration and Recovery Plan, Beach Erosion Authority for Clean Oceans and Nourishment (BEACON), Southern California Coastal Water Research Project (SCCWRP), Stormwater Monitoring Coalition of Southern California (SMC), and the Ormond Beach Task Force. These watershed and regional groups focus their activities and discussions on specific concerns such as water quality, habitat restoration and flood control, as well as short, medium, and long-term solutions to improve water quality.

2.3.5 Management Framework – Program Implementation

Program development occurs through the Permittee, Countywide Program, and watershed management frameworks. At a jurisdictional level the Permittees have formally identified which departments and staff have responsibility for implementation of each program element within their jurisdictions. It may be necessary for the responsibility to be formally documented through Memorandums of Understanding or other tools. Smaller agencies tend not to require such formal agreements between departments, and in some cases there may be only a few people who are involved in the implementation of all aspects of the stormwater program.

2.3.6 Legal Authority

Although adequate legal authority existed for most pollutant discharges at the inception of the stormwater program in 1994, the Permittees determined that a Model Stormwater Quality Ordinance should be developed to provide a more uniform countywide approach and to provide a legal underpinning to the entire Ventura Countywide NPDES Stormwater Program.

Performance Standard 2-2

Ensure that the Stormwater Quality and LID Ordinances authorize enforcement of all requirements of the Permit? (by July 8, 2012)			
	Yes	*No*	*In Progress*
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Subsequently, all of the Permittees adopted largely similar versions of the initial Model Stormwater Quality Ordinance. With the adoption of the Order No. 10-0108 the municipal ordinances must be updated by July 8, 2012. The Permittees, led by the City of Moorpark, drafted a model ordinance which can serve as the basis for each Permittee to adopt and authorize them to enforce all requirements of the Permit. Several of the Permittees have updated their existing ordinances or written entirely new ones. Preliminary review by Counsel for the Permittees have determined the existing ordinances are capable of enforcing the Permit, however this will be made stronger through the adopting of an improved ordinance.

Enforcement of the current ordinance and the detection, investigation and elimination of discharges undertaken by the Permittees during 2014/15 are described further in Section 8 Illicit Connections and Illicit Discharge Elimination. In addition to prohibiting un-permitted discharges, the Stormwater Quality Ordinance, in conjunction with the conditions of land development, provides for requiring BMPs on new development and significant redevelopment. Stormwater quality ordinances have been adopted in each Permittees' jurisdictions as indicated in Table 2-1 Ordinance Adoption Dates. As stated above, the requirement to be able to enforce the Permit was required by July 8, 2012, the beginning of this reporting period.

Watershed Identification Sign

Table 2-2 Ordinance Adoption Dates

Ordinance Adoption Dates		
Permittee	**Adopted Date**	**Amendment Date**
Camarillo	3/25/1998	12/12/2012
County of Ventura	10/2/2001	7/17/2012
Fillmore	7/8/2012	3/25/2014
Moorpark	1997	2008
Ojai	1999	
Oxnard	3/24/1998	3/24/2009
Port Hueneme	4/1/1998	
San Buenaventura	1/11/1999	5/31/2016
Santa Paula	1998	2010
Simi Valley	7/2/2012	
Thousand Oaks	10/14/1999	

2.3.7 Watershed Protection District Stormwater Program Representation

To stay informed of new science and regulations and gain economies of scale through regional efforts the Principal Permittee represents the Permittees by participating in the following organizations and associations:

California Association for Stormwater Agencies (CASQA)

The California Stormwater Quality Association, originally formed as an advisory body to the State Water Resources Control Board (SWRCB) on stormwater quality program issues, is now a 501 (c)(3) non-profit organization. CASQA membership is composed of a diverse range of stormwater quality management organizations and individuals, including cities, counties, special districts, industries, and consulting firms throughout the state. A large part of its mission is to assist stormwater quality programs in California to learn collectively from the individual experiences of its members, learn from their mistakes, and provide awareness of regional and state issues. Since its inception in 1989, CASQA has evolved into the leading organization in California dealing with stormwater quality issues.

Southern California Coastal Water Research Project (SCCWRP)

The Southern California Coastal Water Research Project (SCCWRP) is a joint powers agency formed by fourteen agencies through a unique partnership between municipalities that discharge treated wastewater to the ocean, stormwater agencies, and regulators that oversee dischargers. Members work together to develop a solid scientific foundation for coastal environment management in southern California. SCCWRP's mission is to gather the necessary scientific information so that member agencies can effectively and cost-efficiently protect the Southern California coastal and marine environment. In addition, SCCWRP's mission is to ensure that the data it collects and synthesizes effectively reaches decision-makers, scientists, and the public.

Stormwater Monitoring Coalition of Southern California (SMC)

The SMC participants are the Ventura County Watershed Protection District, the County of Orange, the County of San Diego, the Los Angeles County Flood Control District, the San Bernardino County Flood Control District, the Riverside County Flood Control and Water Conservation District, the City of Long Beach, the City of Los Angeles, the Regional Water Quality Control Boards of Los Angeles Region, Santa Ana Region, and San Diego Region, the Southern California Coastal Water Research Project (SCCWRP), and the California Department of Transportation. They have decided to work together in a cooperative effort to develop scientific and technical tools needed in southern California to improve stormwater program implementation, assessment, and monitoring.

2.4 FISCAL ANALYSIS

The Permittees have committed significant resources to Permit compliance, reducing stormwater pollution, and improving the water quality in Ventura County. This Section presents a summary of the costs anticipated for the coming permit year by the Permittees in developing, implementing, and maintaining programs in order to comply with Permit requirements. Also included is information on the different funding sources used by the Permittees to ensure that resources are available for Permit compliance. Since each Permittee shares in the cost of the Principal Program the total cost shown for each Permittee is the sum of those *shared* costs and their *individual* costs. However, in the grand total of all costs, including the Principal Permittee, these costs are not included to avoid the error of counting them twice.

2.4.1 Program Costs for Permit

With the new Permit, costs of the Principal Program have increased significantly. The majority of this was due to the large increase in monitoring, but also the first year of the Permit required new materials for businesses and land development communities. Cost for the Permittees' implementation also increased significantly but have tapered off from the first year. In 2010/11 the projected cost of the activities undertaken by the Permittees implementing the stormwater program within their jurisdictions were estimated to be $31,910,727. This is a large increase over the budgets under the previous permit due to new programs, monitoring equipment and studies required. For FY 2011/12 the estimated costs for all Permittees' expenses were still challenging at approximately $19.5 million. For 2014/15 the estimated costs are about half of what they were a few years earlier, though still significant at $19 million.

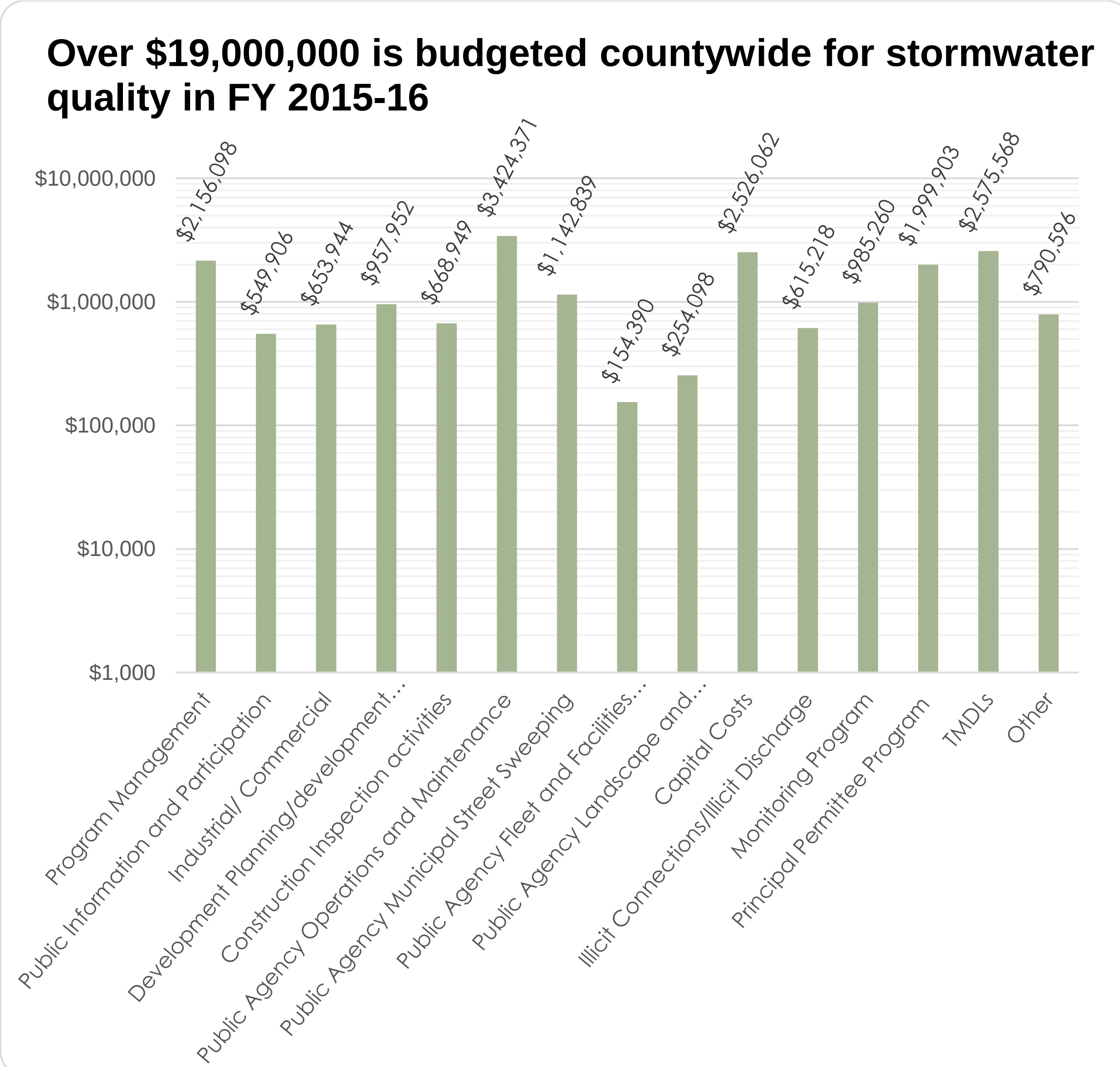
Performance Standard 2-3

Document the costs to implement the stormwater program for Permit Year 2014/2015			
	Yes	*No*	*N/A*
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

2.4.1 **Fiscal Resources**

Each Permittee prepares a stormwater budget annually and allocates resources to be applied to the stormwater program. An effective stormwater program must be integrated within the entire management structure of a Permittee, which means it transcends divisions and departments, therefore stormwater programs are not always uniquely identified in budgets, but more often integrated into the ongoing programs. Table 2-2 presents the projected stormwater budget for each Permittee for Fiscal Year 2015/16 and Figure 2-2 shows how the countywide budget is broken out among the various programs. As expected, there is some variability between the stormwater program budgets reported by the Permittees, even if normalized by population or geographic size. This variability is due in part to the accounting practices utilized by each Permittee and the allocation of activity costs amongst programs implemented by each Permittee. Variability is most significant when capital improvements are undertaken, these are usually very large and costly projects that may be TMDL driven or assisted by grant funding. These projects do not represent ongoing program costs, but rather investments in infrastructure to help reduce stormwater pollution into the future.

Figure 2-1 Countywide Budget FY 2015/16



The Permittees vary significantly in their jurisdictional area and population which can explain some differences in resources dedicated to various program areas. Another example of differences is that some Permittees have privatized streets sweeping and the annual costs are being born by the solid waste rate payers. Yet, a review of the annual budgets produces some nominal findings. As expected, total stormwater budgets trend upwards as population and service area increases. However, increased population doesn't always directly translate into increased revenue available for the program. Seeking new revenue sources to provide the needed resources to comply with the legal requirements of the Permit is an ongoing effort of the Permittees.

Table 2-3 Agency Annual Budget Update for Stormwater Management Program - Fiscal Year 2015-2016

Program Element	Camarillo	County of Ventura	Fillmore	Moorpark	Ojai	Oxnard	Port Hueneme	Ventura	Santa Paula	Simi Valley	Thousand Oaks	VCWPD	Principal Permittee
II. Program Management	$ 244,380.00	$ 653,000.00	$ 10,000.00	$ 52,977.00	$ 12,000.00	$ 132,095.00	$ 10,000.00	$ 251,011.00	$ 35,000.00	$ 149,430.00	$ 140,000.00		$ 466,205
III. Public Outreach	$ 40,066.00	$ 101,000.00	$ 4,000.00	$ 4,400.00	$ 1,000.00	$ 18,000.00	$ 2,500.00	$ 49,128.00	$ 500.00	$ 45,150.00	$ 80,000.00	$ -	$ 204,162
IV. Industrial/ Commercial	$ 104,022.00	$ 53,000.00	$ 5,000.00	$ 2,000.00	$ 5,300.00	$ 185,998.00	$ 1,500.00	$ 100,000.00	$ 3,000.00	$ 144,124.00	$ 50,000.00	$ -	
V. Planning and Land Development	$ 62,622.00	$ 148,000.00	$ 5,000.00	$ 75,000.00	$ 5,000.00	$ 91,404.00	$ 1,500.00	$ 400,000.00	$ -	$ 23,910.00	$ 120,000.00	$ -	$ 25,516
VI. Construction	$ 95,694.00	$ 12,000.00	$ 8,000.00	$ 75,000.00	$ 3,500.00	$ 180,894.00	$ 2,500.00	$ 25,000.00	$ 20,000.00	$ 196,361.00	$ 50,000.00		
VII. Public Agency Activities													
Operations and Maintenance	$ 226,802.00	$ 304,000.00	$ 10,000.00	$ 15,000.00	$ 55,600.00	$ 467,809.00	$ 20,620.00	$ 325,000.00	$ 30,000.00	$ 329,540.00	$ 140,000.00	$ 1,500,000	
Municipal Street Sweeping	$ 125,000.00	Included in County Agencies O&M Budgets		$116,700.00	$ -	$ 600,000.00	$ 84,622.00	$ 40,000.00	$ 9,000.00	$ 167,517.00	$ -	N/A	
Fleet and Public Agency Facilities (Corporate Yards)	$ 6,700.00		$ 7,000.00	$ 26,000.00	$ 5,500.00	$ 33,581.00	$ 2,500.00	$ 7,000.00	$ 30,000.00	$ 16,109.00	$ 20,000.00		
Landscape and Recreational Facilities	$ 20,557.00		$ 3,000.00	$ 32,900.00	$ 3,500.00	$ 8,179.00	$ 61,235.00	$ 40,000.00	$ -	$ 84,727.00	$ -		
Capital Costs				$ 500.00	$ 10,000.00	$ 450,000.00	$ 19,000.00	$ 120,000.00	$ 20,000.00	$ 118,562.00	$ 50,000.00		
VIII. Illicit Discharges/ Connections	$ 109,168.00	$ 48,000.00	$ 5,000.00	$ 7,450.00	$ -	$ 85,058.00	$ 2,500.00	$ 30,000.00	$ 15,000.00	$ 253,042.00	$ 60,000.00		
Monitoring Program	$ 95,973.00	$ -		$ -	$ 1,100.00	$ 49,184.00			$ -	$ 17,468.00	$ -	$ -	$ 821,535
Principal Permittee Program	$ 90,000.00	$ 239,000.00	$ 6,000.00	$ 40,000.00	$ 10,200.00	$ 164,626.00	$ 13,000.00	$ 185,000.00	$ 25,000.00	$ 140,000.00	$ 135,400.00	$ 999,952	
TMDLs	$ 150,000.00	$ 1,514,000.00	$ 4,000.00	$ 36,000.00	$ 40,000.00	$ 254,028.00		$ 47,540.00	$ 10,000.00	$ 75,000.00	$ 205,000.00	$ 240,000	
Other				$ 10,000.00	$ -	$ 10,000.00			$ 1,000.00	$ 77,111.00	$ -	$ 210,000	$ 482,485
Total	**$ 1,370,984**	**$ 4,810,000**	**$ 67,000**	**$ 493,927**	**$ 152,700**	**$ 2,730,856**	**$ 221,477**	**$ 1,619,679**	**$ 198,500**	**$ 1,838,051**	**$ 1,050,400**	**$ 2,949,952**	**$ 1,999,903**

* Funds for additional Public Agency Activities are allocated in the County's Operations and Maintenance budget, Fleet Public Agency budget, and County's Landscape and recreational Facilities budget.

** Capital costs are included in the County's Capital Project budget.

2.4.2 Funding Sources

Funding sources to implement the stormwater program, including the programs that have been in place long before the Permit requirements but are now relied upon to ensure Permittees meet Permit objectives, are both general and specific funds, taxes, maintenance and user fees, and grants. Other efforts in the county to monitor, cleanup, or otherwise improve stormwater quality by volunteer groups like Ventura Coastkeeper who's efforts can be considered to help implement some stormwater program elements are not included, however, Permittee efforts to support volunteer groups in their endeavors are included.

The funding sources used by the Permittees include: Watershed Protection District Benefit Assessment Program, General Fund, Utility Tax, Separate Tax, Gas Tax, Special District Fund, and others (Developer Fees, Business Inspection Fees, Sanitation Fees, Fleet Maintenance, Community Services District, Water Fund, Grants, and Used Oil Recycling Grants).

All Permittees except the City of Moorpark gave authorization to use the Watershed Protection District's Benefit Assessment to finance the activities and requirements. This was done through watershed based Implementation Agreements for the Ventura Countywide Stormwater Quality Management Program. The Implementation Agreements identified the responsibilities of the parties to the Permit and set forth the methodology for using the District's Benefit Assessment financing to fund the NPDES Stormwater Program in their respective jurisdictions.

The Agreements have been amended over the years and with the 2010 Permit a renewed effort to secure a long term agreement was initiated. The result was a five year Implementation Agreement with all Permittees to replace the original agreement. The Agreement defines the fiscal responsibilities (expenditures and contributions) of all collective parties with respect to the current Permit. It formalizes the Permittees' commitment to cooperate and to mutually fund an integrated Program of protecting and improving water quality in Ventura County. The five year time frame was designed to mirror the term of the Permit. As new permits are written and adopted for Ventura County these agreements will be reviewed, revised, and renewed as appropriate.

Table 2-4 Permittee Population and Area

Ventura County Statistics		
Permittee	**Population**	**Area (Sq. Mi.)**
Camarillo	66,086	19.54
County of Ventura	92,063	24
Fillmore	15,255	3.36
Moorpark	34,421	12.44
Ojai	7,500	4.50
Oxnard	200,004	26.60
Port Hueneme	22,399	4.40
Ventura	109,000	33.00
Santa Paula	30,000	5.40
Simi Valley	126,414	42.00
Thousand Oaks	128,000	55.00

3 Public Information and Public Participation

3.1 OVERVIEW

The purpose of the Public Outreach Program Element is to increase the public's knowledge and ultimately change their behavior to reduce stormwater pollution. In addition to improving water quality, helping the public understand the problems associated with urban stormwater runoff can help build overall support for the stormwater program.

The Public Outreach Program Element is designed to implement and evaluate comprehensive short- and long-term public education campaigns that will inform the community about how our actions may adversely impact urban stormwater discharges and, subsequently, the local water bodies. Public education is an essential part of a municipal stormwater program because changing public behavior can create a real reduction in pollutants. When a community has a clear understanding of where the pollution comes from, how it can affect them, and what they can do to stop it, they will be more likely to support the program, change their own practices, and help educate others.

The Permittees are building upon the many successes of the current program. Early in the program, the Permittees identified key elements crucial to establishing a successful outreach campaign. These elements include:

- Watershed Awareness.
- Identification of general and specific goals of the program.
- Identification of target audiences and key messages for those audiences.
- Consistent messaging using a unified “brand name”.
- Development of a watershed based outreach program.
- Development of a model public education/public participation strategy for localization at the Permittee level.
- Development and implementation of a school-aged children education outreach program.
- Development and implementation of food facilities outreach program materials.
- Development and implementation of automotive facilities outreach program materials.
- Development and implementation of industrial facilities outreach program materials, and
- Public Awareness Surveys to measure success and determine needs.

3.2 CONTROL MEASURES

The Permittees have developed several Control Measures and accompanying performance standards to ensure that the Public Outreach Program requirements found in the Permit are not only met, but are effective and provide information for optimizing the Program.

The Public Outreach Program Control Measures are organized to be parallel to the organization of the Permit and consist of the following:

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

PO	Control Measure
PO1	Public Reporting
PO2	Public Outreach Implementation
PO3	Youth Outreach and Education
PO4	Business Outreach
PO5	Effectiveness Assessment

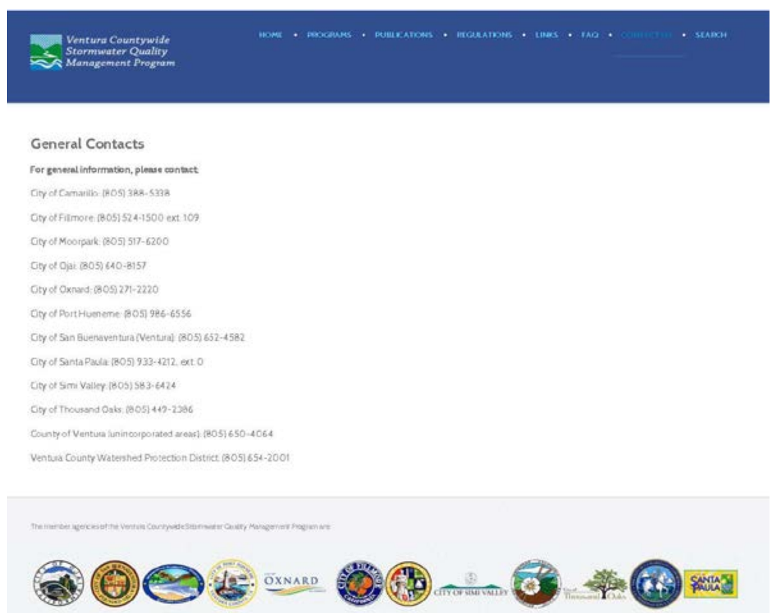
At the end of this chapter these control measures are evaluated to determine the effectiveness of this program element.

3.3 PUBLIC REPORTING (CONTROL MEASURE PO1)

The purpose of this Control Measure is to identify staff to serve as contact persons and to operate and advertise public hotline numbers to facilitate public reporting of observed water pollution problems. This Control Measure also ensures that through the hotlines, complaint information is forwarded to the appropriate contacts for follow-up and/or investigation.

3.3.1 **Identify Staff to Serve as Contact Persons for Public Reporting**

Permittees have identified staff to serve as the contact person for public reporting, in many cases more than one staff member will serve in this capacity to ensure that someone is always available to respond. Designated staff members are provided with relevant stormwater quality information, including program activities and preventative stormwater pollution control information.



Screen Shot of Program's Website

Performance Standard 3-1

Identify staff who will serve as the contact person(s) for public reporting of water pollution problems			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

3.3.2 Maintain Public Reporting Hotline Numbers

The Permittees have two types of phone numbers for the public: one for general stormwater information and one for reporting water pollution problems. The latter number is used by the public to report illicit discharges or illegal dumping into the storm drain system, faded or missing catch basin markers, and other observed water pollution problems. In some cases this number is also used to report clogged catch basin inlets, but some agencies may have a separate number for that. Staff is also available to provide general stormwater information.

Performance Standard 3-2

Public reporting information has been listed in the government white pages of the local phone book			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

Once a water pollution complaint is received, staff initiates a response as required by the Permit within 24 hours to the reported illicit discharges, and within 21 days to illicit connections (generally much faster). For additional summary information regarding use of the hotlines for reporting illicit discharges or illegal connections see the process outlined in Section 8 Illicit Connections and Illicit Discharges Elimination. It is a requirement of the Permit that the public reporting phone numbers are listed in the phone book. As technology continues to make phone books more obsolete, the less effective this Permit requirement is. Pemittees are making use of more novel ways to make the reporting number available. The Permittees will consider a web-based reporting form for reporting illegal discharges and illicit connections (see Control Measure ID1), however the timely response needed to stop illicit discharges necessitate the public report to a live person as quickly as possible, so it is considered more appropriate for websites to refer the public to a phone number. Most Permittees reporting numbers can be found on multiple websites.

3.3.3 **Promote/Publicize Public Reporting Hotline Numbers/Contact Information**

Contact information for reporting water pollution complaints for all Permittees is updated as necessary and published in the government pages of the local phone book and other appropriate locations. In addition, this contact information is available at several Permittee web sites.

Table 3-2 Web Sites Listing Contact Information for Public Reporting

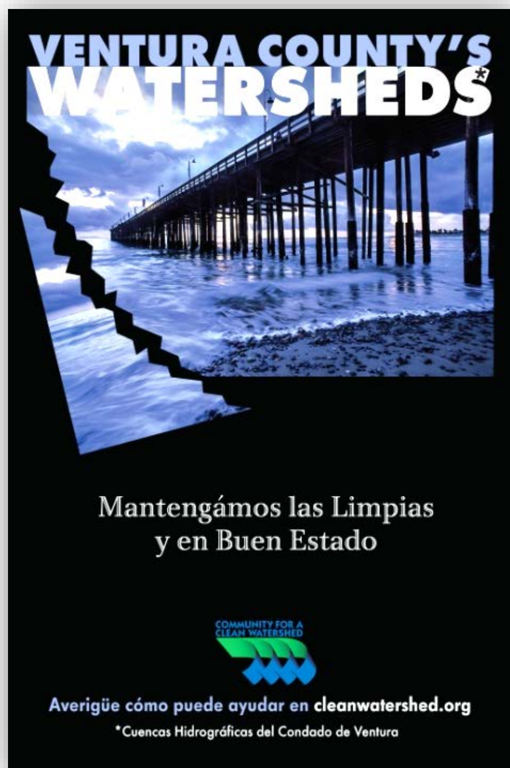
Program or Permittee	Web site URL
Ventura Countywide Stormwater Quality Management Program	http://www.vcstormwater.org/contacts.html
Community for a Clean Watershed	http://cleanwatershed.org/MAIN%20PAGES/Contacts.htm
Ventura County Watershed Protection District and County of Ventura	http://www.vcstormwater.org/index.php/programs/illicit-dischargedumping
City of Camarillo	www.cityofcamarillo.org
City of Fillmore	http://www.fillmoreca.com/
City of Moorpark	www.moorparkca.gov
City of Ojai	www.ci.ojai.ca.us
City of Oxnard	www.publicworks.cityofoxnard.org
City of Port Hueneme	www.cityofporthueneme.org
City of Ventura	http://www.cityofventura.net/water/stormwater
City of Santa Paula	http://www.ci.santa-paula.ca.us/PublicWorksDept.htm
City of Simi Valley	www.simivalley.org/environmentalcompliance
City of Thousand Oaks	http://www.toaks.org/faqs/categoryqna.asp?id=7#275
County of Ventura	http://pwa.ventura.org/stormwater-resources/water-quality-county-of-ventura-stormwater-program http://vcstormwater.org/programs/illicit-dischargedumping

Performance Standard 3-3

Promote and publicize contact information for public reporting in public information media, such as the government pages of the telephone book and web sites			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

3.4 PUBLIC OUTREACH IMPLEMENTATION (Control Measures PO2 and PO3)

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



Spanish language bus shelter posters

3.4.1 **Educate Ethnic Communities**

The Permit requires the Principal Permittee to develop and implement a strategy to educate ethnic communities through culturally effective methods. The Program has previously performed focus groups on Ventura County residents who speak Spanish at home. The information gained through this effort helped the Program understand what needs to be communicated to Spanish speakers and where that communication will be most effective.

To reach the Hispanic community in Ventura County, elements of each campaign were created in Spanish, including transit shelters and radio commercials. Spanish language advertising accounted for 10% of the annual media impressions: 1,273,926. (This figure does not include the BMP fact sheets and other handouts.)

Performance Standard 3-4

Develop and implement a strategy to educate ethnic communities through culturally effective methods?			
	Yes	No	In Progress
Ventura Countywide Stormwater Quality Program	☑		

Performance Standard 3-5

Conduct stormwater pollution prevention public service announcements			
	Yes	No	In Progress
Ventura Countywide Stormwater Quality Program	☑		

3.4.2 Make Five (5) Million Stormwater Quality Impressions per Year

During the Permit year the Program conducted a comprehensive stormwater pollution prevention advertising campaign. Media plans were negotiated with the goal to maximize target reach and frequency on a limited and fractionized budget. This was particularly true this year when the budget needed to stretch to cover several audiences. To amplify total market penetration, the adult and youth campaigns were scheduled either concurrently (fall) or in quick succession (spring), to take advantage of any overlap in the audiences. Attention was paid to geographical distribution throughout Ventura County as well as adequate coverage in the Hispanic market. The Program contracted with a full service marketing firm located in Ventura County, theAgency, who was able to consistently obtain low rates and significant bonus elements, including bonus radio commercials and outdoor billboards.

Always evolving in a continued effort to educate residents on how their daily habits contribute to the health of the five watersheds in Ventura County, the ten co-permittees agreed on a new outreach strategy in program year 2014/2015: Capitalize on already-produced marketing assets to build on current awareness and behavior changes while focusing on a strong grassroots campaign to reach youth.

In last year's outreach, "Beauty" showcased Ventura County's stunning landmass while reinforcing stormwater pollution education and encouraging residents to protect the beauty of their environment, while the transitional campaign, "Past, Present, Future," demonstrated practices former generations initiated that paved the way for future generations to enjoy the Ventura County watersheds. Program year 2014/2015 utilized the positive messaging of those two campaigns along with Coastal Cleanup Day and Earth Day to inform, educate and motivate the public to protect the local watershed as part of their daily habits – concentrating on trash as the main pollutant of concern.

Spanish language advertising accounted for 10% of the annual media impressions.

For the three campaigns in the 2014/15 year, the Community for a Clean Watershed marketing effort plan achieved a total of 11,861,721 gross impressions, as follows:

Media Outreach Strategy

Each year, we take a fresh look at how to reach Ventura County residents – and in particular, youth. Adding a strong element of grassroots outreach, Boys & Girls Clubs throughout the County were contacted for Clean Watershed presentations. The grassroots efforts complemented media plans that were negotiated with the goal to maximize target reach and frequency on a limited budget. To amplify total market penetration, the adult and youth campaigns were scheduled either concurrently to take advantage of any overlap in the audiences. In addition, attention was paid to geographical distribution throughout Ventura County as well as adequate coverage in the Latino market. theAgency was able to consistently obtain low rates and significant bonus elements, including bonus radio commercials, and transit shelters – but most notably, bonus :30 television spots on cable throughout the County.

For the three campaigns in the 2014 – 2015 year, the Community for a Clean Watershed media plan achieved an unprecedented 11,613,977 gross impressions broken out as follows:

Table 3-3 Community for a Clean Watershed Gross Impressions

Timing	Campaign	Gross Impressions (Persons 12+)	Youth Impressions (included in total)	Spanish Impressions (included in total)
Fall 2014	Coastal Cleanup	1,685,447		70,000
Fall 2014	Past, Present, Future, Day in the Life & Anime	4,997,168	575,029	769,010
Fall 2014 BGC Presentations		1,200	1,200	
Spring 2015	Pick it Up, Day in the Life & Anime	4,928,742	673,093	434,916
Spring 2015 BGC Presentations		1,420	1,420	
Total Media Plan		**11,613,977**	**1,250,742**	**1,273,926**
Press Releases/Bylines (7)	Various	247,195		
Total Impressions		**11,861,172**	**1,250,742**	**1,273,926**

Notes: [1]Outdoor impressions = 2,535,000 (20% of media buy)
[2]*Press Release/Byline impressions based on average circulation of The Star x 4 articles plus 1 article in Macaroni Kid. Due to social media's lack of agreed-upon reporting metrics, Facebook impressions are not included.*

Countywide Efforts

Formally acknowledging the collective work of the ten city Permittees and the County, the logo and all branding elements now read "Ventura County's Community for a Clean Watershed." The step is further acknowledgement of the group's commitment and collaboration in its ninth year of effectively educating Ventura County residents about how their daily habits contribute to the health – or the detriment – of the five watersheds in our area.

Expanding on individual city efforts, the 2013/14 program year continued with the "Beauty" campaign, showcasing Ventura County's stunning landmass while reinforcing stormwater pollution education and encouraging residents to protect the beauty of their environment, the watershed. The strategic decision behind "Beauty" was to take a step back from identifying pollutants of concern and best practices to protect the local watershed in hopes of not only reminding people what they are working to protect, but also why it is in their best interests. The committee, however, knew that this was a temporary strategy, making it necessary to eventually bring the messaging back to pollutants of concern. To bridge the two approaches, a transition campaign, “Past, Present, Future,” demonstrated practices former generations have initiated that pave the way for future generations to also be able to enjoy the Ventura County watersheds.

Collectively, the campaigns work toward the following long-term objectives:

- Build and sustain awareness of the term “Watershed”.
- Demonstrate the importance of protecting local watersheds.
- Develop and cultivate a consistent message.
- Be relevant to all of Ventura County and choose media accordingly.
- Educate the specified audiences.
- Identify pollutants of concern.
- Demonstrate positive behavior.
- Change negative behavior.
- Track attitude and behavior changes.
- Adhere to all permit requirements for outreach.

A variety of ongoing outreach activities fulfill various components of the NPDES permit and target a range of key audiences including:

- Residential.
- Retail Businesses.
- Commercial Businesses.
- Industrial Businesses.
- Spanish language support for each of the above audiences.
- K-12 Students.

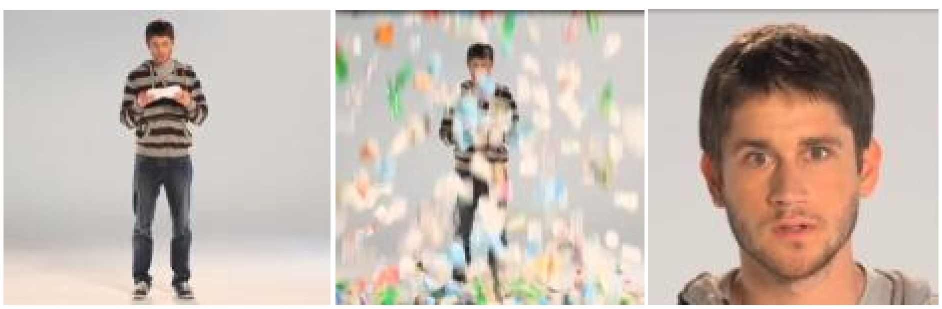
Adult Campaign

This fiscal year’s focus was to use existing creative assets and connect “Beauty” and “Past, Present, Future,” with pollutants of concern and best practices. Both Fall and Spring campaigns centered on trash and bacteria pollutants of concern, rotating commercials to transition from the last program year.

Fall: Designed as a reminder to keep trash and pollution out of local streams and creeks so the natural splendor of the county can be protected and enjoyed by generations to come, the goal of ‘Past, Present and Future’ was to illuminate how every generation is a part of the watershed protection equation. This message was combined with the entertaining, dynamic “A Day in the Life,” where the young announcer describes a ‘typical’ day in the life of Ventura County’s Watersheds. As he reads from a list of items collected during a recent local Coastal Cleanup Day, the ‘junk’ literally falls out of the sky onto his head. He continues to read and the trash builds up around him until he gets to the figure for the estimated pounds of dog poop and his expression becomes very concerned (knowing what will drop next) and the spot ends.

Spring: Again using commercial rotation to drive home the message, “Day in the Life” was combined with “Pick it Up” to drive home the message that anything on the ground anywhere in the Ventura County Watershed can end up at the ocean through unfiltered storm drains. The commercial emulates an atmosphere of activism, one that is becoming increasingly prevalent with both youth and adults in this green-conscious world – and ends with the message, “We can do this!”

Frames from “Past, Present, Future” TV Commercial



Frames from “A Day in the Life” TV Spot

Frames from the “Pick it Up” TV Spot

New Outdoor: To address a focus on bacteria and specifically, pet waste, a new creative ad was developed for transit shelters, delivering a humorous, yet effective message about picking up dog poop. The same tone and message was carried through in social media.

New Spring 2015 Transit Shelters

Fall 2014/Spring 2015 Youth Campaign

To complement the outreach to adults and bridge the gap to teens, the co-permittee committee agreed that "Boat Ride" carried a comprehensive educational message. The commercial follows a hand-made paper boat as it travels from in front of a typical suburban home through a storm drain cluttered with smelly trash and yard waste to a beach filled with litter. This simple, powerful message educates children of all ages – and their parents as well.

Frames from "Boat Ride" TV Spot

Youth Outreach

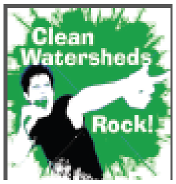
Youth research we did in Program Year 13/14 suggested that a reasonably significant percent of youth were members of an "Environmental Group," which in many cases meant their local Boys & Girls Club. As a result of the research, we realized after-school Boys & Girls Clubs (BGCs) might be interested in environmentally appropriate presentations – a welcome realization, since it is a challenge to reach students in Ventura County schools due to the sheer number of schools and the demands on the curriculum. This was also an opportunity to build on the Meritos teacher training done in the previous program year. After reaching out to local BGCs who were very receptive, the Community for a Clean Watershed created a presentation to educate students about best Watershed practices.

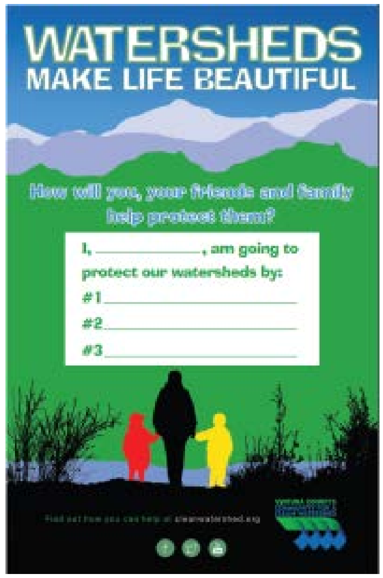
Fall Youth Boys & Girls Club Outreach

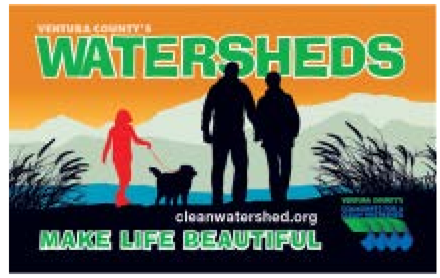
Titled “Only You Can Prevent Watershed Pollution,” the 30-45 minute presentation included:

- Photos and a map of the Watersheds in Ventura County, followed by the :30 video/commercial “Beauty”
- An explanation of the storm drain system, followed by the :30 video/commercial “Boat Ride”
- Photos of examples of pollutants of concern and how the drought plays into the equation, followed by the :30 video/commercial “Day in the Life”
- Graphic examples and photos of pollutants/trash and how long they take to decompose
- Information about ocean currents and how trash travels
- A word math problem to demonstrate how a sports bottle helps the environment, followed by the :30 video/commercial “Pick it up”
- Easy suggestions on how the young audience members and their families can “reduce their Watershed Pollution Footprint”

The Fall presentation was given to 18 Boys & Girls Clubs in seven cities, reaching approximately 1,200 youth ages 5-18. Children were given Clean Watershed magnets, Watershed Rocks tattoos, Watershed Hero tattoos and mood pencils, along with a Clean Watershed Pledge Certificate, where they wrote three things they would do to help protect the Ventura County Watershed. An indication of the success of the program was how the children responded to the query by the speaker, who would prompt, “The Watershed should only shed….” and the participants shouted, “water!”







Fall Presentation Widgets: tattoos, certificate, and magnet

<u>**Spring Youth Boys & Girls Club Outreach**</u>

After the success of the Fall presentations, Boys & Girls Clubs were eager to have us back. Seventeen presentations were made to over 1,400 students. The Spring presentation reviewed some of the same information, but took it to the next step and incorporated an Earth Day and water conservation messages.

- Earth Day genesis, some startling facts about pollution and trash 45 years ago, and some of the incredible changes that have resulted since its inception.
- Transition to Ventura County, the Watersheds, the :30 video/commercial “Beauty,” and what can be done to take care of our community and celebrate Earth Day.
- Lesson about storm drain systems and polluted runoff followed by :30 video/commercial about green waste.
- Lesson about pollutants of concern, followed by “There’s no Poop Fairy” transit shelter and :30 video/commercial, Is “More always Better?”
- Practical advice about what they can do to reduce pesticides and green waste.
- Information about the drought and ways to save water followed by :30 video/commercial “Pick it Up”
- Lesson about decomposition, ocean currents and trash – followed by :30 video/commercial “Day in the Life”
- Information about what they can do, tying in two radio promotions, Watershed Annie and Clean Watersheds Rock/selfie, as well as local Earth Day events – encouraging them to make a difference.



3.4.3 Maintain and Update the Countywide Stormwater Website

The Permit requires the Permittees to maintain the Countywide stormwater website (www.vcstormwater.org) This is the website specified by the Permit, but the Permittees also use cleanwatershed.org primarily for outreach, as described earlier under "activity-specific outreach to residents". The Community for a Clean Watershed Web site (cleanwatershed.org) is the primary mechanism used by the Permittees to reinforce the various public outreach messages as well as make available a network of resources to help the web viewer make informed decisions. The website underwent a major upgrade this year to improve accessibility to Program information, reports, comment letters, and monitoring data. The upgrade also will enable the Program to improve tracking of site visits and therefore adapt to the needs of the users.

In addition, the website, as required, includes pollutant-specific educational material addressing (at a minimum) information on the proper disposal, storage, and use of the following:

- Vehicle waste fluids
- Household waste materials
- Construction waste materials
- Pesticides and fertilizers (including IPM)
- Green waste (including lawn clippings and leaves)
- Animal wastes

Community for a Clean Watershed Website

The cleanwatershed.org website continues to reinforce the various public outreach messages as well as make available a network of resources to help the web viewer make informed decisions.

The Countywide Stormwater Web Site (***www.vcstormwater.org***) is periodically updated to include pollutant-specific educational materials for businesses and do-it-yourself homeowners. Facts sheets have been developed over the life of the program and include educational materials on the proper disposal, storage, and use of the following pollutants:

- Vehicle waste fluids
- Household waste materials
- Construction waste materials
- Pesticides and fertilizers (including IPM)
- Green waste (including lawn clippings and leaves)
- Animal wastes

Website: 7/1/14 to 6/30/15
6,909 Visits (5,377 Unique)
3:22 Average Visit Duration
17,642 page views
2.55 pages/session
3:22 Average minutes/session

Performance Standard 3-6

Maintain the stormwater Web site (www.vcstormwater.org)			
	Yes	No	In Progress
Ventura Countywide Stormwater Quality Program	☑		

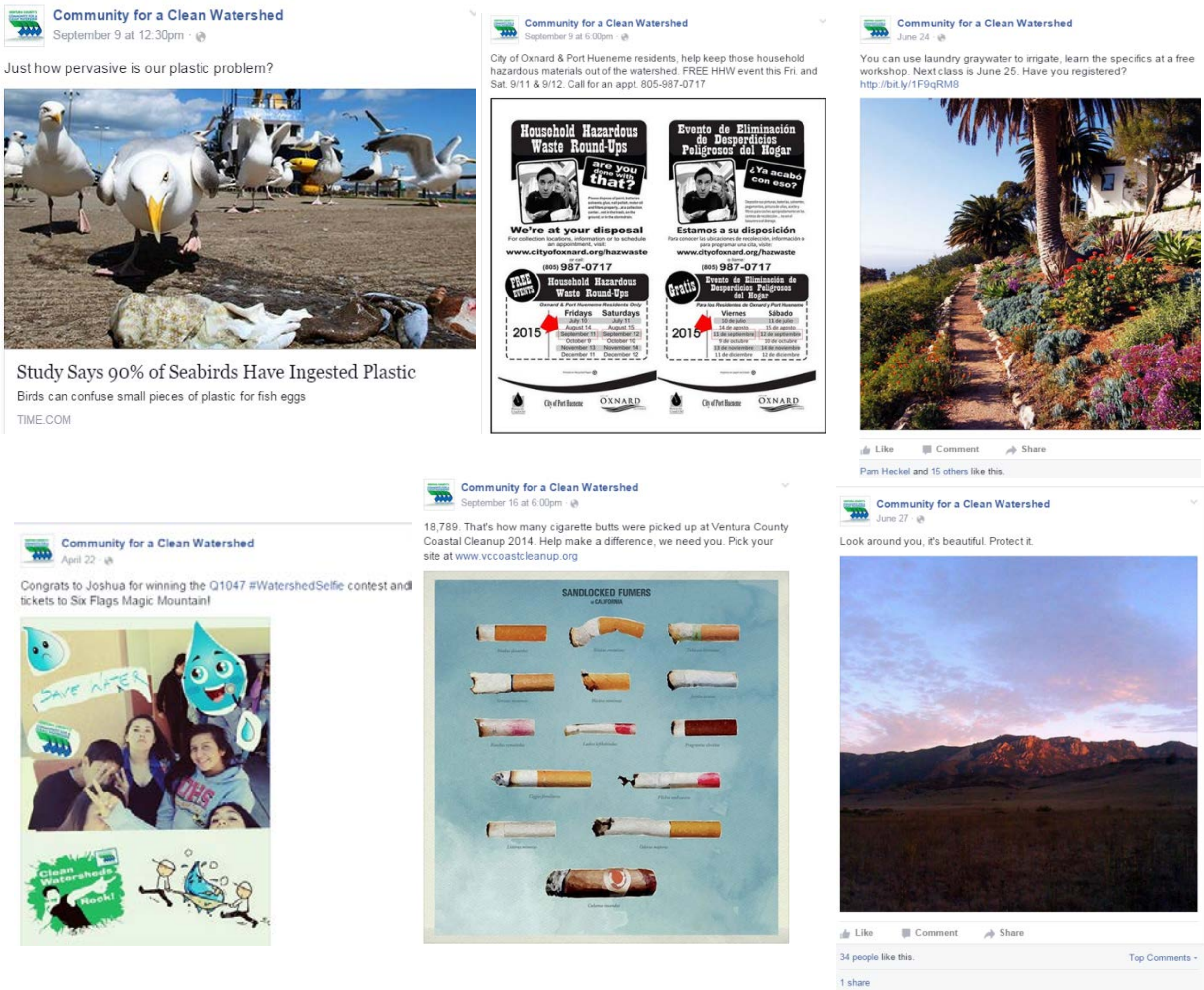
Gardensoft

Understanding Ventura County's water resources are limited and that water wasted down the gutter will also transport pollution, the Program teamed up with Ventura County water purveyors to develop a waterwise landscaping website. A very easy to use site with many pictures of example drought-tolerant landscaping in Ventura County.

There the user will find information on how to design and install a water-wise garden, irrigation methods and equipment that will help water a landscape more efficiently, and suggestions on how to easily and effectively maintain a garden. Special additions were made to include rain gardens, permeable pavement options and rain barrels.

Facebook

Almost doubling in fans since this time last year, the Community for a Clean Watershed has over 3,100 fans, allowing us to keep Ventura County residents and youth engaged during periods when there is no paid outreach while adding a social element during the Fall and Spring campaigns. Consistent posts create ongoing communication with fans that are likely to be concerned about the environment. To maintain awareness of the Watershed between media campaigns, posts are engaging, including photos, information about local events for Earth Day and/or Coastal Clean-up Day, and interesting watershed and water facts.



Sample Facebook status updates/posts

Twitter

In the year since the CleanWatershed Twitter page was created, relevant photos, tweets and retreats have kept 177 followers informed.

VC Clean Watershed Twitter page and sample tweets

Twitter Advertising:

- 30,481 impressions

3.4.4 Publicity: July 2014 - June 2015

Fall 2014 Radio Promotion

Partnering with #1 youth radio station, KCAQ, a social media promotion encouraged listeners to tweet a picture of the Clean Watersheds Rock photo to win tickets to a local amusement park. 448 people entered; Sarah Martin of Oxnard won with the entry below:

Promo Copy:

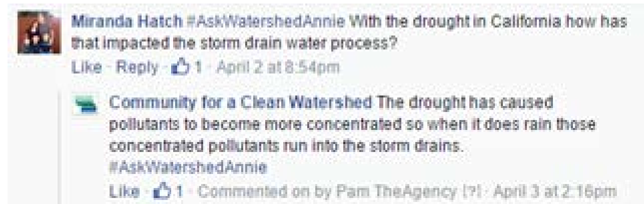
Q104-7 and Ventura County's Community for a Clean Watershed encourage you to support and protect our watersheds! Now your support can also make you a winner - just tweet a pic of the Watershed logo to @q1047 and @CleanWatershed with #CaresWatershed and you're automatically in for a shot at a 4-pack of tickets to Six Flags Fright Fest! You can grab the logo from the twitter link below.

Sample KCAQ social media posts

Spring 2015 – two radio promotions

95.7 The Vibe #AskWatershedAnnie

Users submitted a question regarding a watershed concern and they are automatically entered to win a 4-pack of tickets to Knotts Berry Farm.



Q104.7 #WatershedSelfie

Download a photo of the Clean Watersheds Rocker and take a “selfie” posing with it in a place in the watershed that you care about. Post it to Twitter or Instagram. Prize: 4-pack of tickets to Six Flaggs Magic Mountain.54 recorded and 10 live promos

Performance Standard 3-7

Make a minimum of 5 million impressions per year to the general public related to stormwater quality, with a minimum of 2.5 million impressions via newspaper, local TV access, local radio and/ or internet access.			
	Yes	No	In Progress
Ventura Countywide Stormwater Quality Program	☑		

Permittee Individual Efforts

On top of what the Program provides for public outreach countywide, the individual Permittees implement their own outreach efforts focusing on local issues and more personal interactions with their residents. Countywide these efforts beyond the Program's efforts lead by the Principal Permittee made over 6.1 million additional impressions. Below are some examples of these efforts:

Camarillo

City of Camarillo published the following articles in the Cityscene Quarterly newsletter: Coastal Cleanup Save the Date; Maintain Your Storm Drains & Ditches, Your Yard, Your Watershed, Stomp Out Cigarette Butts & When Your Pet Poops.

The following public service announcements/shows were aired on Camarillo's Cityscene TV: Coastal Cleanup Day PSA, Better Lawn Care & Turf Replacement.

Camarillo made pollution prevention presentations and/or provided a booth to the Boys & Girls Club, Navy Housing Green Expo, Camp Helping Hands, & CSUCI Earth Day events.

Camarillo held volunteer cleanups of Conejo Creek, Calleguas Creek and a local storm drain/park.

County of Ventura

On Monday October 6, 2015, County Staff provided stormwater pollution prevention outreach to approximately 30 middle school students at Medea Creek Creek Middle School's After School Teen Program. The title of the interactive presentation was "Only You Can Prevent Watershed Pollution".

On Sunday October 26, 2014, County staff published an article in the Ventura County Star regarding the County's Green Streets Urban Retrofit Project and the benefits of pervious pavement and infiltration of stormwater on residents property (titled "Retrofit project captures, treats rainwater runoff"). There are over 40,000 subscribers to the Sunday print/online version of the star, and the number of individual readers per subscriber is estimated at 2.5, giving a total number of 100,000 impressions.

On November 21, 2014, County Staff gave a presentation at GIS Day 2014 at Ventura College. The presentation titled "County of Ventura Stormwater Quality & GIS" gave insight into how GIS is used daily to assist the County in compliance with stormwater regulations. The audience of approximately 50 people consisted of GIS professionals and College students.

On April 27, 2015, County Staff provided stormwater pollution prevention outreach to approximately 20 1st and 2nd graders at the Fillmore/Piru Boys and Girls Club. The presentation focused on Earth Day and watershed prevention pollution.

During the May 3, 2015 Oak Park "Big Sunday" community improvement event, the Oak Park Unified School District coordinated approximately 20 community volunteers who picked up trash within Medea Creek in Oak Park.

Six informational signs were installed near main walkways at the County Government Center providing information and graphics about the County Parking Lot Green Streets Retrofit project, a pervious concrete gutter project at the Government Center.

Fillmore

The City of Fillmore has coordinated and participated in community outreach events and clean-ups. The City held a Household Hazardous Waste event, which was advertised in the local newspaper and on large banners throughout the city. The event educated the public of the proper containment, use, storage, and disposal of hazardous waste. In addition, a large clean-up event was held in which the public removed nearly 75 tons of litter and debris from local waterways.

Moorpark

The City participates in California Coastal Cleanup Day, which is traditionally held on the third Saturday of September. In 2014, the event was held on September 20, 2014 and seventy-seven (77) volunteers participated in cleaning up the Arroyo Simi in Moorpark.

Public information on stormwater protection is provided during Moorpark Country Days. Country Days was held on September 27, 2014. An estimated 5,000 people attended the event.

Mass mailing includes the City's quarterly newsletter that went to approximately 10,000 households each quarter. An additional 3,000 are printed and distributed to various locations each quater. In FY 2014/15, the City did stormwater-related messages in 3 of the 4 quarters. Stormwater messages were also mailed in 3 solid waste bill inserts to 9,365 households and 315 business accounts each time.

City staff also gave two presentations to the Boys and Girls Club on the importance of preventing stormwater pollution (100 participants).The City of Moorpark participates in the Countywide Public Information SubCommittee which works on residential and industrial education. The City also provides information on stormwater best management practices when performing inspections of all businesses identified as critical sources for pollutants. These include food, automotive, industrial, laundry, and nursery/feedlot facilities.

The City of Moorpark participates in the Countywide Public Information SubCommittee which works on residential and industrial education. The City also provides information on stormwater best management practices when performing inspections of all businesses identified as critical sources for pollutants. These include food, automotive, industrial, laundry, and nursery/feedlot facilities.

Ojai

Distributed storm water related materials at City Hall, Planning, and Public Works public counters. Building Department counter has storm water brochures available. City plan review includes information regarding SWPPP.

Oxnard

The City of Oxnard has established the OxnardNews.org website to publicize community events such as Earth Day and Coastal Cleanup Day. Community members can access the website to view calendars of upcoming events, view press releases, or even watch videos of past events. Coastal Cleanup Day is an event that consistently receives huge community support. City of Oxnard Outreach Specialists will post a press release containing information about the event at least one month in advance to assist community volunteers with pre-registration and planning. This past September, members of the Oxnard community participated in Coastal Cleanup Day at the Ormond Beach Wetlands and Silverstrand Beach. The City of Oxnard Education and Outreach Specialists estimate that about 13,885 contacts were made through the Building Block, Shows that Teach: "All That Trash" recycling, hazardous waste and Building Block Entertainment, Shows that Teach: Water Conservation. The number of contacts made via print includes Utility Billing Inserts for the "Drought Continues", Earth Day Festival, E-Waste Recycling and 3 Cart curbside recycling and hazardous waste disposal.

The City of Oxnard has an active Business Assistance Program. Technical Services Program (TSP) staff distribute educational materials and BMP guidelines during routine inspections of commercial facilities, automotive facilities and food service establishments. In addition, staff also provide verbal direction and guidance regarding storm water compliance during inspections.

Port Hueneme

Public Works hosts a booth at the annual Beach Festival which provides stormwater education and water conservation materials and give away items. This a large even attended by over 20,000 people each year from cities all over the county. The City also has a booth at the Oxnard Harbor District Annual Banana Festival. The City hosts the Philippine Center of Ventura County's annual beach cleanup at Hueneme Beach Park, as well as Navy Base Port Hueneme beach cleanup events. A California Friendly Landscape Training class was held in April. Residents received bill stuffers with their utility bills containing stormwater and conservation information. Table top displays are done at City Hall and the Library. The Library averages 260 walk-in patrons per day. Approximately 1,000 leash attachment type dog bag dispensers were given away at various events and displays throughout the year.

California Friendly Landscape Class

Santa Paula

City contributed to Ventura County MS4 Public Outreach Program; litter cleanup events; storm drain signage; church service events; Boy Scouts; California Conservation Corps; presentations to Boys and Girls Club.

Simi Valley

Throughout the year the City of Simi Valley participated in several community events to help promote pollution prevention and improve stormwater awareness within the community. During the reporting period six Household Hazardous Waste events were held where over 70,000 pounds of hazardous waste was collected from the residents of Simi Valley. Stormwater informational brochures were handed out to each of the 707 participants at the events. Stormwater demonstrations were given using an Enviroscape to approximately 400 adults and children at the Moorpark College Environmental and Multicultural Day, Living Green Expo, and Simi Valley High School's Earth Day. The City had a staffed booth and informational brochures were handed out at the City's Street Fair. The City's Environmental Compliance Inspectors took the time to educate residents and businesses during 123 compliance responses. City staff issued 149 Pool Discharge Encroachment permits, handing out our Swimming Pool Maintenance BMP brochures with each encroachment permit. The Swimming Pool Maintenance brochures were also given out with Building and Safety permits for new pools.

The City of Simi Valley has a phone hotline and designated e-mail address to address stormwater pollution questions and concerns of businesses in the City. Also, during inspections City Environmental Compliance inspectors review stormwater BMPs as well as issues dealing with industrial pretreatment, hazardous materials, and water conservation. We pay special attention to the stormwater needs of our Industrial base, auto facilities, restaurants, and home improvement stores. On a monthly basis a report is created showing all the new business licenses issued by the City, inspectors will then visit the business to determine what pretreatment classification it should be, discuss Stormwater BMPs, and offer technical assistance and guidance. As time warrants inspectors perform sweeps in their assigned areas to identify new businesses. City Environmental Compliance inspectors respond to resident complaints and concerns on a regular basis and make field observations for mobile businesses.

Thousand Oaks

The following bullet points summarize engagements with local residents to bring to their attention problems that residential activities and automobile use can exert to impair beneficial uses of surface waters. In many cases, residents participated in removing potentially harmful materials from the watershed:

- Public Works Week—5/19 and 5/20/15; Attendees: 712 Students; 213 Adults, total 750.
- Arbor Earth Day 4/17/15 - Displayed a video that raised awareness of stormwater pollution and operated a demonstration of how pollutants can contaminate surface water from runoff. An estimated 300 attendees viewed one or both.
- Amgen Earth Day Fair—4/17/15, Conducted slide how commonly used garden products can cause surface water quality problems - estimated 250 in attendance saw the display.
- Trail Education Days—4/23/15, approximately 20, 3rd grade students were given a tour of a wilderness area. Ecology of the area, factors controlling its inhabitants, and water quality impacts were discussed along the way.
- Thousand Oaks Television (TOTV – a free cable/internet service with educational programming) - Ran a billboard advertisement of Coastal Cleanup Day that began 30 days before event; There were 60,000 estimated impressions (10% of broadcast audience).

- TOTV, FY 2014-15—Ran public service announcements about the street drains being part of the storm drain and examples of contaminating pollutants; There were an estimated 156,000 viewers (5% of broadcast audience).
- Thousand Oaks Boy Scout Troop – On 10/18/2014, the Scouts participated in a trash cleanup of storm drain channel. There were 15 participants.
- Holy Trinity Lutheran Church volunteer channel cleanup **-** 9/6/14, there were 20 participants
- Thousand Oaks Youth Commission – Thirty-five youngsters participated in a volunteer cleanup of Arroyo Conejo Creek on 5/9/14. They removed about 400 pounds of trash and 120 pounds of recyclables from this waterway.
- Thousand Oaks Boys and Girls Club – Slide show presentations were given to club members on March 24, and 27, and on April 14, 2015. The topic was stormwater awareness. About 60 children attended.

City of Thousand Oaks sponsored Trash Reduction Programs 2014-15

- Freeway Ramp and Interchange Cleanup **-** 3.49 tons of litter were collected from on-ramps and off-ramp over the fiscal year.
- Simi Valley Landfill Day—September of 2014 and April 2015 each had one free landfill disposal day sponsored by the City of Thousand Oaks. 678 loads were received composed of 260.74 tons trash, 43.6 tons of green waste, 142.06 tons of construction and demolition waste, 38.04 tons of green waste, and 38 tons of concrete, and 72 tires.
- Household Hazardous Waste Collection Facility – Over the course of the fiscal year, 94 participant residents brought 380,000 pounds of electronics (e-waste), paint, automobile and garden chemicals, pool chemicals and other hazardous materials. Of the materials collected 20,000 was recycled for useful applications.
- Neighborhood Cleanup Events – These events are initiated and organized by neighborhoods and sponsored by the City. During the fiscal year, 108.59-tons trash, 31.02-tons green waste were collected for proper disposal at a landfill.

Ventura

The City of Ventura has a broad based community volunteer program with a mission to preserve our natural resources. Volunteer events included the following: Misc. community park clean ups with over 500 volunteers working to remove litter and trash from public areas. Earthday sites and approximately 800 volunteers; Ventura River and Santa Clara River bottom clean ups involving over 400 volunteers. The Green School Education Program visits K-12 classrooms, after-school programs, and specialty youth clubs with custimized messages on recycling, waste reduction, water conservation and stormwater pollution prevention.

In 2014-2015 school-year, staff presented 284 different times to a total of 8,020 students. These presentations are standards-based and approved by the Ventura Unified School District Curriculum Department. While a holistic presentation, students are given specific information on effects of urban litter, introduced to concepts of rainwater capture and reuse, and dry-weather run-off; all contributors to stormwater pollution. Students are given tips and tools to help prevent urban stormwater pollution. This summer, in addition to the school programs, City staff partnered with UC Hansen Agriculture Center to offer a week-long summer Sustainability Camp. 11 students from Ventura County participated and learned about Land, Water, Food Production, Energy and Air Quality, from a sustainability curriculum developed by UC Cooperative Extension.

One of our most effective outreach tools has been participation in community events where we can meet with residents one-on-one. In 2014 Environmental Sustainability participated in about 20 events and special presentations reaching over 20,000 residents. These included small and large events such as the Home and Garden Show, Hillside Conservancy Film Festival, 4th of July Street Fair, Chamber of Commerce business expos, Eco-Fest, Summer Fest, Story Fest, etc. Special presentations are also made by request by community councils, businesses, and church groups. In addition to our Green Business Certification Program, our Environmental Excellence Award and Green School Award are outreach tools to reward businesses and schools for their best environmental practices. Videos highlighting the winners are posted on our City website as models for other businesses and schools.

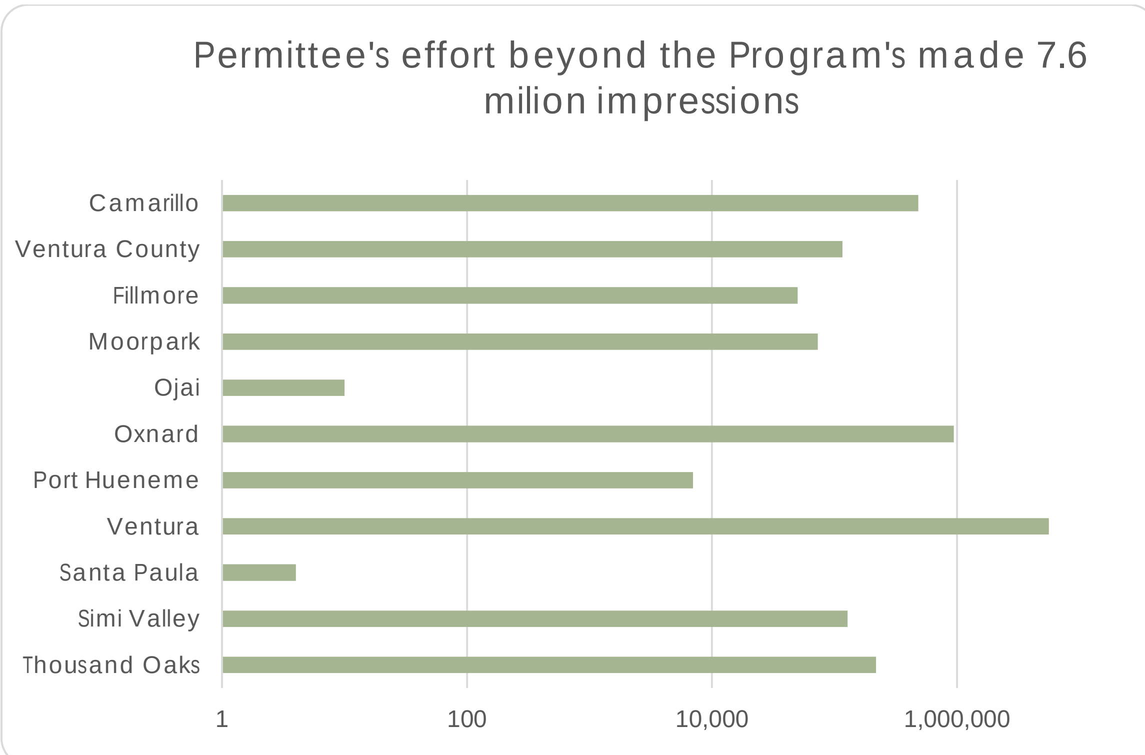
Outreach materials were also provided at the 11 Household Hazardous Waste collections. Technical assistance was provided to business and schools through waste assessments and specific requests. Environmental Sustainability reviews and updates a wide variety of educational materials circulated to residents, multifamily dwellings, businesses and schools.

The City advertises through banners on the VC Star website. Short versions of our TV show (2-3 minute clips) were picked up by the VC Star online edition. Other media outlets include movie theater advertisements and billboard advertising. These messages range from recycling, HHW, DIY oil change, oil recycling, stormwater pollution prevention, litter management. Side panels on the Big Belly machines offers 72 locations for environmental messaging. We also offer residents texting for messages related to stormwater pollution prevention, HHW events, oil recycling, and other community events. We continue to distribute reusable shopping bags to encourage residents to switch to reuseable bags. Our rainbarrel subsidy program sold 248 barrels last year, an increase of over 100% from the previous year.


Creek cleanups both educate and remove trash

Environmental Sustainability Division staff work to provide businesses with general environmental sustainability educational information. This includes stormwater pollution prevention. The City provides marketing materials and training, when requested. In 2012, the City of Ventura Environmental Sustainability Division launched their Green Business Certification program. This statewide program is used by other cities, counties and regional jurisdictions. This program is available currently to office/retail and restaurant businesses. To date, the city has certified forty businesses. Stormwater pollution prevention and best management practices play an important role in this program. In addition to the Green Business Certification Program's growing success, the City continues to recognize businesses that go above and beyond with regard to their environmental practices. Examples include City partnership with the Chamber of Commerce Green Task Force, focusing on business education and recognition, to the annual Chamber of Commerce Poinsettia Environmental Excellence Awards, which recognized The Refill Shoppe last year.

Figure 3-1 Impressions made through Permittee efforts



Watershed Identification Sign

3.4.5 Work with Existing Local Watershed Groups

There are four watersheds in urbanized Ventura County: Malibu Creek, Calleguas Creek, Santa Clara River, and the Ventura River. Each of these watersheds has a watershed organization developed to get stakeholders to work together to identify problems and reach consensus on solutions. The Program's members are involved with these groups and are accomplishing this Permit requirement through their collective effort.

Performance Standard 3-8

Work with existing local watershed groups or organize watershed Citizen Advisory Groups/Committees to develop effective methods to educate the public about stormwater pollution? (by July 8, 2011)			
	Yes	No	In Progress
Ventura Countywide Stormwater Quality Program	☑		

3.4.6 Storm Drain Inlet Markers and Signage Discouraging Illegal Dumping

The Permit requires each Permittee to label all storm drain inlets that they own with a legible "no dumping" message and to maintain them. The Permit also requires signs with prohibitive language (i.e., discouraging illegal dumping) to be posted and maintained at designated public access points to creeks, other relevant waterbodies, and channels.

Label Storm Drain Inlets with "No Dumping" Message

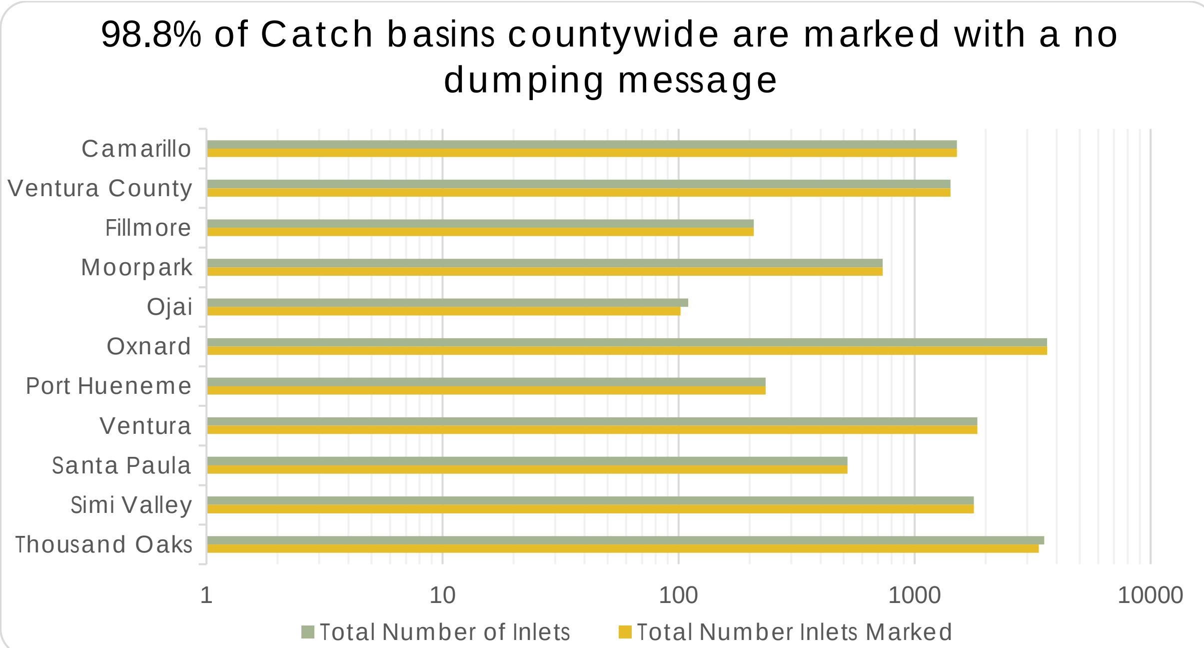
As of 2011/12, the Permittees had completed labeling or marking the curb inlets to their entire storm drain system. Permittees maintain their inlet signs by reapplying stencils/markers as they wear out (see Control Measure PA5) and applying stencils/markers to new inlets as they are installed. Markers at curb inlets have varying useful lives due to the materials from which they are constructed (e.g., paint, thermoplastic), their position (e.g., on top of curb, on face of curb), and wear factors (e.g., traffic, street sweeping, sunlight). As a result, the Permittees have different programs to maintain curb inlet markers within their respective jurisdictions. Some Permittees replace a portion of their markers each year, whereas others re-mark all inlets every few years. Regardless of the specific inlet marker practice, all Permittees understand the importance of storm drain inlet markers to the education component of their program

Performance Standard 3-9

Label storm drain inlets with a "no dumping" or equivalent message			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

and are committed to installation and maintenance of the markers.

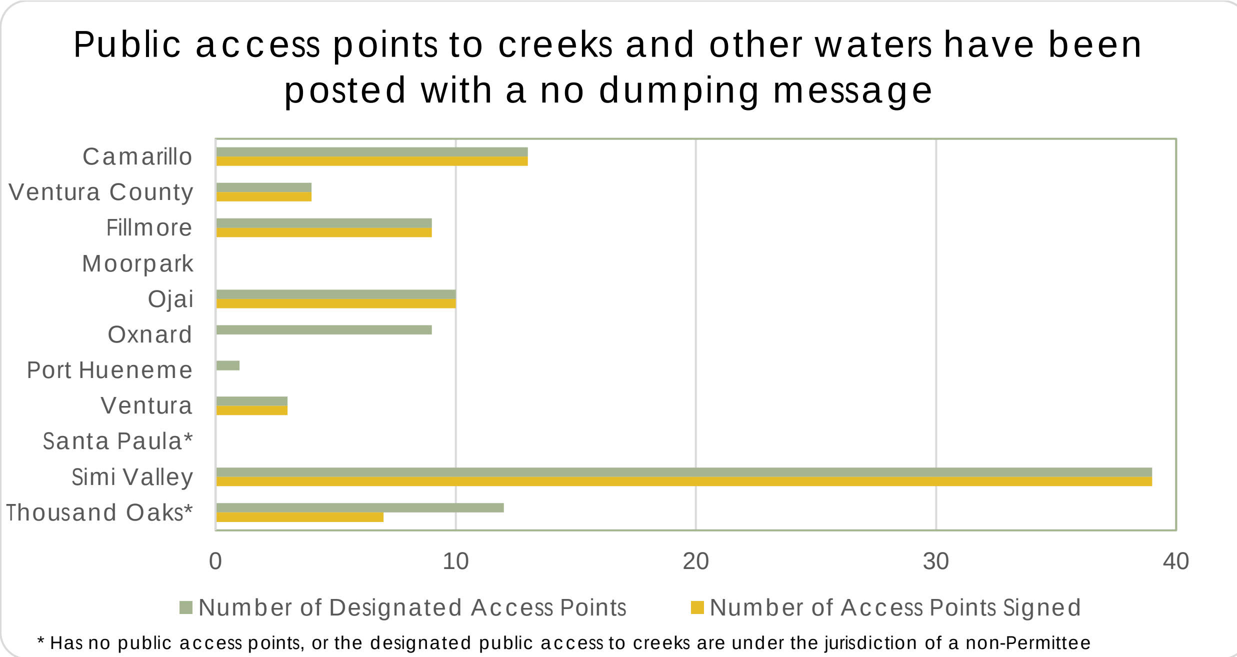
Figure 3-2 Catch Basin Labeling



Post Signs with Language Discouraging Illegal Dumping

The Permittees are required to designate appropriate access points to the creeks and channels within their jurisdiction for the placement of signs with prohibitive language to discourage illegal dumping. Each Permittee is responsible for designating the appropriate access points to creeks and channels within their jurisdiction, which requires field verification and mapping. In some cases a Permittee may not have any designated public access points or they are under the jurisdiction of a special district outside a Permittee's jurisdiction.

Figure 3-3 Public Access Point Signage



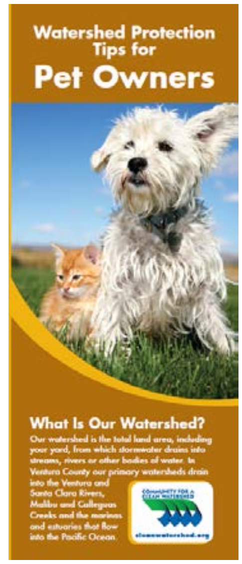
3.4.7 Educational Materials

The Permittees are required to distribute stormwater pollution prevention educational materials covering specific types of pollutants to specific businesses. The businesses to be targeted with these pollutant-specific educational materials include automotive parts stores; home improvement centers, lumber yards, and hardware stores; and pet shops and feed stores. In addition, the Permit requires the Permittees to continue the existing outreach program to residents on the proper disposal of litter, green waste, pet waste, proper vehicle maintenance, lawn care, and water conservation practices.

Public access sign

Retail Partnership Brochures: Gardeners, Pet Owners, Car Owners (Due July 8, 2011)

This requirement was fulfilled in June of 2011, as was reported in the 2010/2011 Annual Report. The Permittees distributed stormwater pollution prevention public education materials to automotive parts stores, home improvement centers/lumber yards/hardware stores, and pet shops/feed stores. Three Watershed Protection Tip pamphlets aimed at residents were created to encourage best practices in their homes. These brochures were distributed to targeted retailers called out



in the Permit to reach the population that is likely involved in the activities. Each colorful pamphlet defines the Watershed, explains the storm drain system, how polluted water is damaging and gives both overall and topic-specific tips for how to keep the Watershed clean. For example:

- Gardeners: discuss plant selection, irrigation, fertilizer and pesticide practices, integrated pest management and yard maintenance
- Pet Owners: safe methods for handling and disposing pet waste, for both cats and dogs
- Car Owners: do-it-yourself clean vehicle practices for fluids, tires, batteries and car-washing

Even though this requirement has been met, several Permittees have made additional visits to restock the brochures, and have also identified and reached out to new businesses that have opened since the original effort. It is important to note that the Retail Partners are not required to display the material and only do so voluntarily. Permit compliance is met when the Permittee makes request for the brochures to be displayed.

Figure 3-4 Retail Partnership Outreach to Automotive Parts Stores

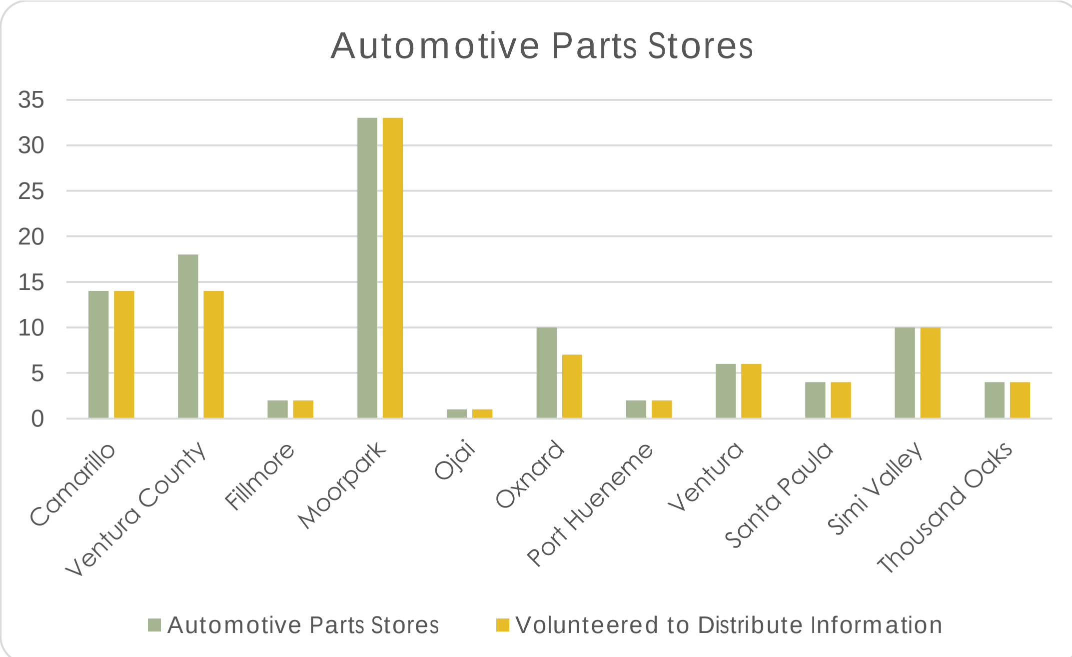
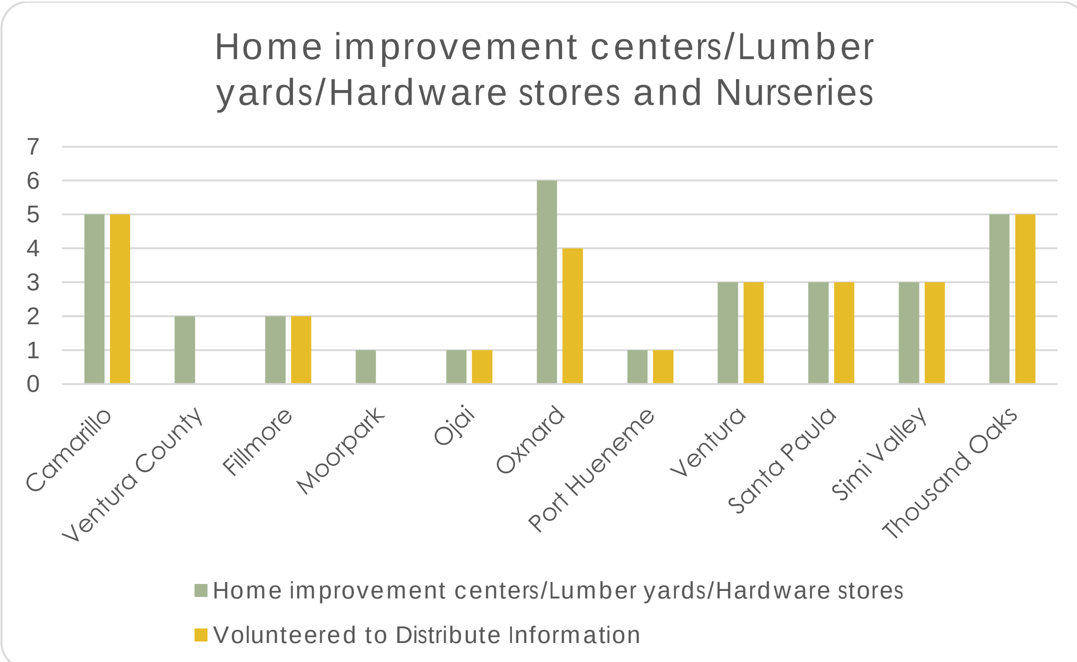


Figure 3-5 Retail Partnership Outreach to Pet Shops

Figure 3-6 Retail Partnership Outreach to Nurseries



3.4.8 **Community Events**

The Permit requires the Permittees to individually and collectively organize community-oriented educational activities and events and to participate in countywide events focusing on stormwater quality. The main countywide event for the stormwater program is Coastal Cleanup Day.

Our Coastal Cleanup Day is part of international coastal cleanup day and is an annual trash pickup event held on the third Saturday each September. Volunteers spend three hours of their Saturday morning picking up litter from beaches, parks, and local waterways. We have approximately 20 sites in Ventura County.

Coastal Cleanup Day is really a team event of talented, hard working professionals from the cities of Oxnard, Ventura, Simi Valley, Camarillo, Port Hueneme, Moorpark, Thousand Oaks, and the Resource Conservation District, without whom this event would not be the success that it is. We are supported by the California Coastal Commission and their statewide sponsors, as well as by our generous local sponsors, including the Ventura Countywide Stormwater Program's Community for a Clean Watershed, NRG Energy, and gold coast broadcasting. We have passionate, dedicated site captains, many of whom have been doing this for many years, who volunteer their time to host the event at sites across the county, including inland areas, and sites along the coast from Oil Piers to Mugu Rock, and inland to Simi Valley, Thousand Oaks, and Ojai.

2014 was the 30th anniversary of CCD with over 2800 volunteers, including individuals and groups from schools, scouts, clubs, churches, and both large and small employers in Ventura County. Collectively, they picked up over 8500 pounds of trash and recyclables - 8500 pounds that is no longer out there to pollute our communities, waterways and oceans, and harm our wildlife. In addition to picking up the trash, the volunteers count the number of each type of item that they pick up, so that we can determine the source of the trash and the data can be used to find better ways to prevent it from becoming trash in the first place. This event showcases the pride that Ventura County residents take in their communities. Our volunteers get to choose which site they volunteer at, so the number of volunteers at each site varies. This year it ranged from 14 to 640.

Performance Standard 3-10

Collectively organize events targeted to residents and population subgroups			
	Yes	No	In Progress
Ventura Countywide Stormwater Quality Program	☑		

3.4.9 Pollutant-Specific Outreach

The Permit requires the Permittees to coordinate to develop outreach programs that focus on the following specific pollutants of concern: metals, urban pesticides, bacteria, and nutrients. For effectiveness in delivering these messages they were incorporated into the other outreach programs requirements of a multimedia campaign and retail partnerships with auto shops, pet stores and home improvement stores/nurseries.

To focus on nutrients a more understandable surrogate for the public was employed because communicating that “nutrients” are a bad thing would create an additional hurdle to the ultimate goal of changing behavior. Good gardening techniques were identified as the best way to communicate this issue. A full media campaign was developed and information along with pesticide BMPs were distributed at retail nurseries throughout the county. Bacteria from pet waste have been an ongoing target of the program and new material was created during the Permit year and given to pet stores to distribute. As stated in the Permit the metals pollutant-specific outreach is addressed through the industrial-commercial inspection program.

3.5 BUSINESS OUTREACH (Control Measure PO4)

The Permit requires the Permittees to develop and implement both a corporate outreach and a small business assistance program to educate and inform corporate franchise operators, local facility managers, and small businesses about stormwater regulations and BMPs to reduce the discharge of pollutants in stormwater.

3.5.1 Corporate Outreach

Develop Corporate Outreach Program (due by July 8, 2012)

The Annual Report for Permit Year 2011/2012 describes in detail how this requirement was met. While the Program continues the data are not repeated here. The requirement is that Permittees must work with other regional or statewide agencies and associations such as the California Storm Water Quality Association (CASQA) to develop a Corporate Outreach program to educate and inform the following corporate franchise operators and/or local facility managers (at a minimum) about stormwater regulations and BMPs.

- Four (4) Retail Gasoline Outlet (RGO) Franchisers
- Four (4) Retail Automotive Parts Franchisers
- Two (2) Home Improvement Center Franchisers
- Six (6) Restaurant Franchisers

Educational materials for RGOs, and restaurants have been developed by the Permittees and are distributed to local facility managers during the required inspections. These facilities are inspected every two years. During the inspection the inspector meets with the facility manger, effectively complying with this Permit requirement. Automotive part stores are included in the retail partnership program to help educate the consumers shopping at their locations. The local facility manager's permission is needed to display the brochures, at this opportunity regulations and BMPs are explained. Under the nursery inspection program some Permittees are including home improvement centers due to the size of their gardening sections. Again the business inspection program satisfies the requirement by meeting with the local facility manager during the inspection.

3.5.2 Business Assistance Program

Best Management Practices Fact Sheets

Targeting types of businesses that have significant potential to contribute to stormwater pollution, Watershed Protection Tips one page fact sheets were created to outline best management practices for six categories of activities. Each BMP fact sheet is available on the Community for a Clean Watershed website, where they can be read or printed for distribution. 10,800 were printed for distribution through Permittees. Printing more of these brochures was evaluated this year, but was postponed due the upcoming Permit renewal. Some Permittees used their own resources to print more fact sheets.

Provide Consultation Regarding Business Responsibilities

On-site, telephone, or e-mail consultation is required to help businesses reduce the discharge of pollutants. The Permittees provide on-site consultation regarding the responsibilities of businesses to reduce the discharge of pollutants, during inspections; this requirement is covered in Section IV Industrial Commercial Programs. These trained and knowledgeable inspectors are also available to respond to questions via phone or email.

Distribute Educational Materials to Specific Businesses

As mentioned above, the Industrial Commercial Program is responsible for the distribution of information to businesses. This occurs mostly at inspections, but may also be done when obvious problems are reported. An opportunity to disseminate this information to new businesses before they are in operation is through the business license program. All businesses need a business license to operate legally in a jurisdiction. It is as that time that the Permittees are able to distribute information regarding stormwater regulations and appropriate BMPs for their operations. The Program has developed many specific fact sheets over the years for this purpose. The fact sheets may be distributed with the business license, or the proprietor may be directed to the website for the information.

Best Management Practices Fact Sheets

3.6 EFFECTIVENESS ASSESSMENT (Control Measure PO5)

3.6.1 Behavioral Change Assessment Strategy

Youth Panel Survey – MAY 2015

Annual research surveys are conducted to measure awareness, perceptions and actions taken by Ventura County residents, alternating years of research to adult residents and K-12 youth. In addition to measuring changes in attitudes and behaviors related to watershed best practices, the research gives insights about whether outreach messaging is effective. The following summarizes the May 2015 Youth Research Survey, which is the 4th youth study survey since 2009.

METHODOLOGY

- A web survey was used as the method of data collection.

- 338 completed surveys were obtained from K-12 youth in Ventura County as follows: Thousand Oaks (30); Simi Valley (30); Oxnard (35); Ventura (31); Moorpark (30); Camarillo (30); Santa Paula (30); Port Hueneme (30); Fillmore (30); Ojai (30); and Unincorporated areas (32), including Somis, Lake Piru, Saticoy, El Rio, Hidden Valley, Meiners Oaks, Mira Monte, Oak Park, Oak View.
- Study participants had to be youths between the ages of 5 and 18 and were required to be residents of Ventura County. In addition, they were recruited according to specific demographic criteria, including male/female, age, grade, and ethnicity.

KEY FINDINGS

- Awareness of the term "watershed" went up significantly in 2015 when compared to 2013 (31% in 2013 versus 51% in 2015) as did storm water pollution (29% in 2013 versus 37% in 2015).
- Awareness regarding the definition of watershed characteristics is significantly higher in 2015 as well (76% in 2013 vs. 81% in 2015).
- Logo recognition is significantly higher (24% in 2013 versus 33% in 2015).
- The fact that it is harmful to throw away any type of trash in the gutter has risen to 82% in 2015 compared to 74% in 2013.
- More youths (70% in 2015 versus 63% in 2013) have seen a sign painted on the curb that warns against dumping things into the gutter. Similarly, observing something being dumped in the gutter has risen slightly.
- Where the kids obtained information about taking care of the environment has shifted to the schools and away from family members. In 2010, information was disseminated equally between family (29%) and schools (30%), whereas in 2015 the information is coming more frequently from the schools (46%) than the family (30%) and also from TV (16%), which is similar to trends established in 2013.
- Recycling is way up (94% in 2015 versus 58% in 2013) and is consistent with trends in 2009 and 2010. Recycle specific items among those who tend to recycle include--paper (53%), plastic (81%), cans (90%).
- More youths believe (67% in 2015 versus 63% in 2013) believe that it is their family's job to keep the environment clean rather than another's responsibility. Taking personal responsibility is rising and the trend of "passing the buck" is beginning to decrease.
- Over, three quarters of the youth turned the water off while brushing their teeth (86% in 2015 versus 77% in 2013).

In the sub-population of Youth, those who belong to a Boys & Girls Club, there was an even higher awareness – evidence perhaps of the effectiveness of the in-person presentations:

- The level of awareness of the term 'watershed' is higher among those who belong to a BGC: 58% versus 41%.
- The term stormwater pollution is more familiar to those who do not go to a BGC: 44% versus 34%
- BGC members rely on their school for environmental protection information more than those who did not: 48% versus 42%
- BGC after school youth are more likely to pick up litter when they see it on the ground and take a 5-minute shower. 36% versus 24% and 44% versus 37%
- Those who spend time at a BGC are likely to have a higher recall of watershed outreach campaigns:

- Online – 46% versus 22%
- Radio – 43% versus 19%
- TV – 56% versus 27%
- BGC youth are also more likely to be “very” worried about how people may be hurting the environment.

Summary of Effectiveness

Based on the positive results of the 2015 Youth Research and 2014 Adult Research (from the previous program year), the combined strategy of taking a break last year to remind people *why* they should protect the watershed, then this year, filtering in existing creative assets seems to have worked. “Beauty” and “Past, Present, Future” were not intended to take the place of the pollutant-specific campaigns, rather to connect more deeply with those who already were being reached – and perhaps to connect with new residents who could not hear the other messaging. Those elements worked together with face-to-face presentations to raise the value of what we are asking them to protect and the motivation to do so.

In program year July 2014 to June 2015, we:

- Utilized existing broadcast elements to strengthen awareness of best watershed practices.
- Maintained a consistent presence with youth, including:
- Consistent communication through social media channels Facebook and Twitter
- Pursued a speakers bureau to after-school clubs that had an environmental curriculum in place
- Increased the degree of understanding, awareness and concern over watershed pollution prevention issues with Boys & Girls Club youth in particular - as indicated by the May Research Survey.
- Continued to push for additional media at no charge, over tripling paid impressions in the Fall and Spring campaigns. (i.e. 68% of all impressions were value-add)

Performance Standard 3-11

Develop and implement a behavioral change assessment strategy based on current sociological data and studies to determine whether the Public Outreach Program is demonstrably effective in changing the behavior of the public.			
	Yes	No	In Progress
Ventura Countywide Stormwater Quality Program	☑		

3.6.2 Outreach Program Annual Effectiveness Assessment

Effectiveness assessment is a fundamental component required for the development and implementation of a successful storm water program. In order to determine the effectiveness of the Public Outreach Program Element, a comprehensive assessment of the program data is conducted as part of the Annual Report. The results of this assessment are used to identify modifications that need to be made to the program. Each year the effectiveness assessment is reviewed and revised as necessary.

By conducting these assessments and modifying the Program Element as necessary, the Permittees ensure that the iterative process is used as an effective management tool. Due to the types of data collected for the Public Outreach Program, current and future assessments will primarily focus on Outcome Levels 1, 2, and 3.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?

- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly increased the awareness of its target audience?
- Outcome Level 3 (L3) answers the question: Can the Permittees demonstrate that the control measure/performance standard changed a target audience's behavior, resulting in the implementation of recommended BMPs?

The following is an assessment regarding the effectiveness of the Public Outreach Program.

PO1 – Public Reporting

The Permittees have identified staff to serve as contact persons for public reporting. (L1)

The Permittees maintain two types of public reporting hotlines, one for general stormwater information and the other for reporting water pollution problems. (L1)

The Permittees are promoting and publicizing the public reporting hotlines and contact information. The information is available on Permittee web sites and is published in the government pages of the local phone book and other appropriate locations. (L1)

The Permittees are raising awareness about the public reporting hotline numbers. (L2)

PO2 – Public Outreach Implementation

The Permittees have developed and are implementing the public outreach program that provides key stormwater messages. (L1)

Education of Ethnic Communities – The Permittees have developed and implemented a strategy to educate ethnic communities through culturally effective methods. The Permittees educated ethnic communities by reaching out to the Spanish language community in Ventura County via Spanish language advertising in the media. In 2014/15, Spanish language advertising accounted for approximately 10% of the annual media impressions.

Storm Drain Inlet Markers and Signage – The Permittees have labeled or marked 98.8of the storm drain inlets for the entire storm drain system and maintain the stencils/markers through the Public Agency Activities Program. In addition, 100% of the Permittees' public access points to creeks and channels have signage with language that discourages illegal dumping, this includes access points that are outside of Permittee jurisdiction.

Educational Materials – The Permittees have developed and are providing a variety of stormwater pollution prevention outreach materials, including those for specific pollutants and activities. The materials include pamphlets, brochures, and BMP posters. These are provided via a number of mechanisms, including at community events, at specific businesses, utility billing inserts, and the Countywide stormwater Web site (cleanwatershed.org/). In addition, the Permittees distributed activity-specific stormwater pollution prevention educational materials to residents regarding the following activities: proper disposal of litter, green waste, and pet waste; proper vehicle maintenance; lawn care; and water conservation practices.

Mixed Media Campaigns – The Countywide program has continued to work with a local public relations agency, theAgency, to develop and implement Community for a Clean Watershed campaigns. The Permittees have provided the public with various stormwater-related articles or messages via radio and public access cable channel PSAs, movie theater slides, print ads (including newspaper), signage on outdoor bulletins and at transit shelters, and Web site banners. During 2014/2015, the Permittees conducted a total of three campaigns for an estimated 11.8 million total impressions through mixed media campaigns.

Countywide Stormwater Web Site – The Permittees continue to maintain and utilize both Web sites (cleanwatershed.org/ and vcstormwater.org/) to provide regularly updated outreach to the public.

Community Events – The Permittees provided outreach to the general public by sponsoring, organizing, and/or exhibiting at multiple community events and providing information to event attendees. These events included Coastal Cleanup Day; a total 2,800 volunteers to 20 different beaches and inland waterways countywide covering a distance of 33.6 miles. A total 8,500 pounds of trash and 1,288 pounds of recyclables were collected.

Pollutant-Specific Outreach – The Permittees are implementing a pollutant-specific outreach program rotating through metals, urban pesticides, bacteria, and nutrients in coordination with multi-media campaigns and retail partnerships with auto shops, pet stores, and home improvement stores and nurseries. Pollutant-specific outreach materials have been distributed via these retail partnerships.

As a result of the above efforts, along with the individual efforts of the Permittees in 2014/15, an estimated total of over 19.4 million impressions were made, well exceeding the goal of five million stormwater quality impressions per year.

PO3 – Youth Outreach and Education

The Program's efforts towards youth continued to build on last year's outreach when a specific plan was created to reach 50% of all Ventura County school children (K-12) once every two years to comply with the NPDES Permit #CAS004002. Persons under 18 in Ventura County is 205,706, according to the 2013 Census Bureau, but many are under 5, with less than 150,000 school aged children enrolled in Ventura County schools, this translates to reaching approximately 75,000 in that target group every two years. While that goal was met and exceeded during the last Permit year with over 500,000 media impressions made on children 6-11 and teens, the Program continues to speak to this important audience with a targeted media plan and a creative strategy that appeals to youth. In addition, the Facebook page has a sizeable percentage of young fans, allowing for a consistent message to be delivered to youth. Through radio, classrooms, cleanups, and new techniques such as twitter and facebook well over 1,250,000 impressions were made on school aged children. (L1)

PO4 – Business Outreach

On-site consultation to businesses are provided during inspections regarding their responsibility to reduce discharge of pollutants. Inspectors are also available for consultation via telephone and e-mail. (L1)

The Permittees distributed educational materials to specific businesses during inspections, when business licenses are obtained, and when problematic businesses are reported. In addition, information is made available on the Countywide web site, and businesses are referred to the web site as appropriate. (L1)

PO5 – Effectiveness Assessment

The Ventura County Watershed Permittees are committed to tracking performance of their outreach efforts. To that end, periodic research surveys are conducted to measure awareness, perceptions, and actions taken by Ventura County residents to protect the local Watershed. The research also gives insight into whether outreach messaging is effective, along with providing some insight into local media preferences.

In order to establish a baseline of both our adult and K-12 target audiences' understanding of the watershed and surrounding stormwater pollution web surveys are routinely conducted, usually every other year for each target audience.

The research results indicate a clear connection between key outreach messages and increases in understanding and shifts in behavior/attitude. This supports continued use of new and traditional media to educate youth on watershed protection.

The results outlined above show that the Public Outreach program efforts have increased awareness among Ventura County residents regarding some key issues impacting the health of Ventura County's watersheds. (L2) (L3)

3.6.3 Public Outreach Program Element Modifications

On an annual basis, the Permittees plan to evaluate the results of the Annual Report, as well as the experience that staff has had in implementing the program, to determine if any additional program modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the maximum extent practicable (MEP). Any key modifications made to the Public Outreach Program Element during the next fiscal year will be reported in the following Annual Report.

4 Industrial/Commercial Facilities Programs

4.1 OVERVIEW

The purpose of the Industrial/Commercial Facilities Program Element is to effectively prohibit unauthorized non-stormwater discharges and reduce pollutants in stormwater runoff from industrial and commercial facilities to the maximum extent practicable (MEP).

The daily activities of many businesses create a potential for pollutants to enter a storm drain system through both intentional and unintentional actions. The Permittees have developed programs to address this source of pollutants through inspections of targeted businesses and by providing educational outreach and enforcement if needed. These efforts include information on the potential for illicit discharges and illegal connections from businesses, assistance in the selection and use of proper BMPs, and may result in formal enforcement action and fines if environmental directions are ignored.

The program for industrial and commercial facilities is accomplished by tracking, inspecting, and ensuring compliance at industrial and commercial facilities identified as critical sources of pollutants in stormwater. Industrial and commercial facilities are managed under a single Program Element due to the similarities among these types of facilities and the effort involved to implement the program.

The Permittees use the Business Outreach and Illicit Discharge/Illegal Connection Subcommittee meeting to coordinate and implement a comprehensive program to control pollutants in stormwater discharges to municipal systems from targeted commercial facilities. The Subcommittee is comprised of representatives of the Permittee cities and other municipal staff from various departments (e.g. Environmental Health, Environmental Services, and Wastewater Services). The subcommittee provides an opportunity for the Permittees to learn from each other's experiences, and to develop and share resources. Each Permittee has implemented an Industrial/Commercial Business Program using the control measures identified below.

4.2 CONTROL MEASURES

Several Control Measures and accompanying performance standards have been developed by the Permittees to ensure that the Industrial/Commercial Facilities Program requirements found in the Permit are met and provide information for optimizing the Program. At the end of this chapter these control measures are evaluated to determine the effectiveness of this program element.

The Industrial/Commercial Facilities Program Control Measures are organized to be parallel to the organization of the Permit and consist of the following:

Table 4-1 Control Measures for the Industrial/Commercial Facilities Program Element

IC	Control Measure
IC1	Facility Inventory
IC2	Inspection
IC3	Industrial/Commercial BMP Implementation
IC4	Enforcement
IC5	Training
IC6	Effectiveness Assessment

4.3 FACILITY INVENTORY (Control Measure IC1)

The Facility Inventory Control Measure addresses the need to develop and maintain a complete and comprehensive database of industrial and commercial facilities that are determined to be critical sources of stormwater pollution. Information for the database is primarily derived from new business licenses and sanitary sewer connection permits. Facility inspections performed by the Permittees also continues to provide the details needed for the database. Some Permittees perform surveys of the industrial zoned areas in their jurisdiction to help maintain their industrial facility inventory. This survey is usually associated with industrial waste pretreatment inspections required for agencies operating a wastewater collection system.

4.3.1 Maintain and Annually Update the Industrial and Commercial Facility Inventory

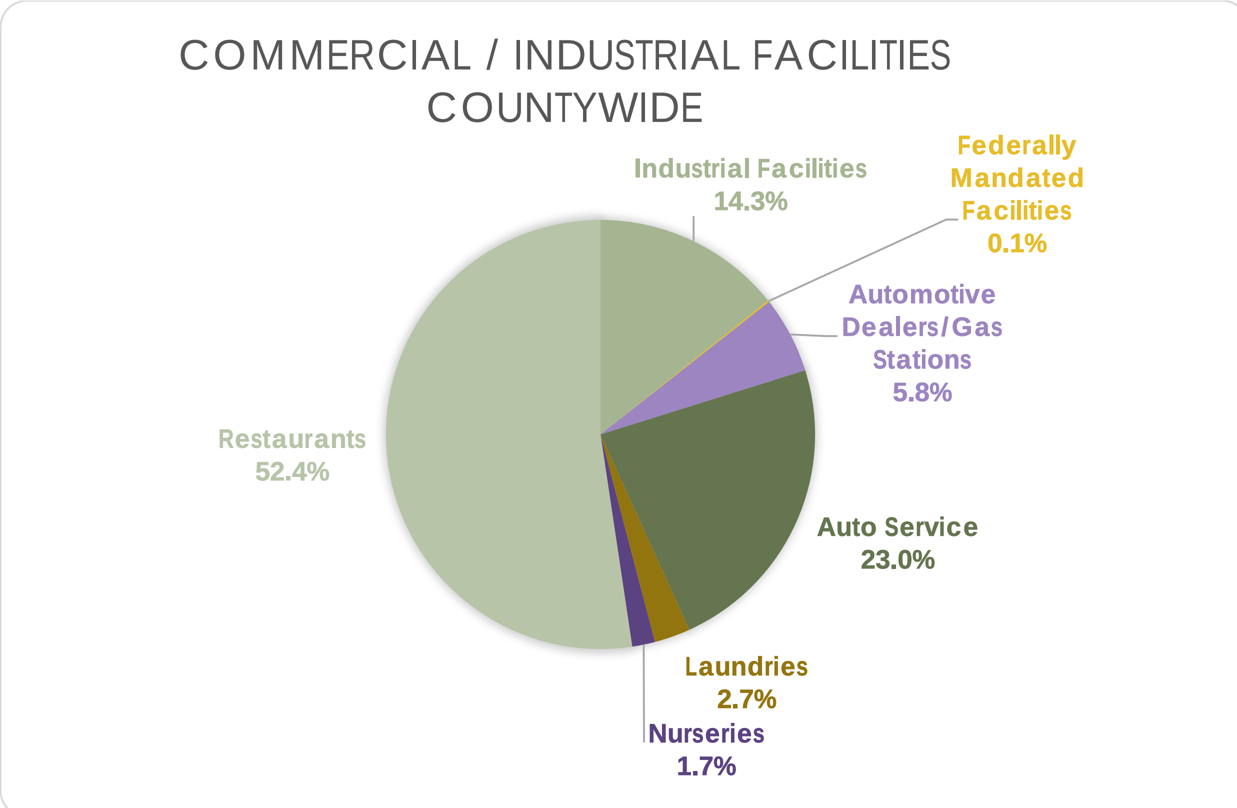
As required by the Permit, the Permittees maintain an inventory of industrial and commercial facilities within their jurisdictions, including those covered under the state Industrial General Permit. This inventory identifies the type of business, the watershed it is located in, and inspections and enforcement action history.

The Permittees supplement their inventory by utilizing data from County Environmental Health to obtain current facility numbers prior to planned inspections. The Regional Water Board's website also provides useful information for all Industrial General Permit holders and is used extensively for that program. These data were first compiled during the 2009/10 reporting period and will be updated on an ongoing basis as the next round of inspections discovers new facilities, as well as companies that are no longer in operation. Some businesses, such as restaurants, have a high turnover with many new ones opening each year and many permanently closing their doors. Because of the continued turnover of businesses the Industrial and Commercial Inventory can never be assumed to be 100% accurate, it is a snapshot in time and is continually updated as information becomes available. The current development of inventory for 2014/15 is summarized in the following Tables.

Performance Standard 4-1

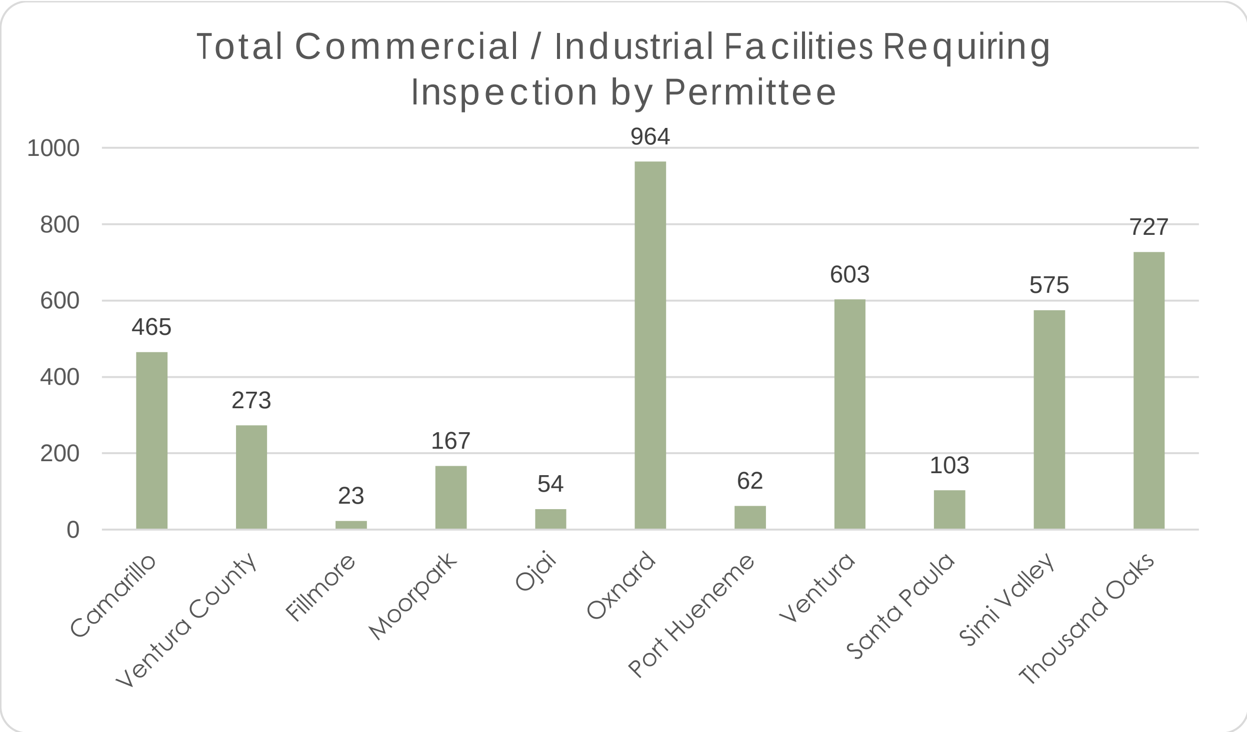
Did the Permittees maintain and update the Industrial and Commercial Facility Inventory			
	Yes	*No*	*N/A*
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

Figure 4-1 Commercial/Industrial Facilities Inventory



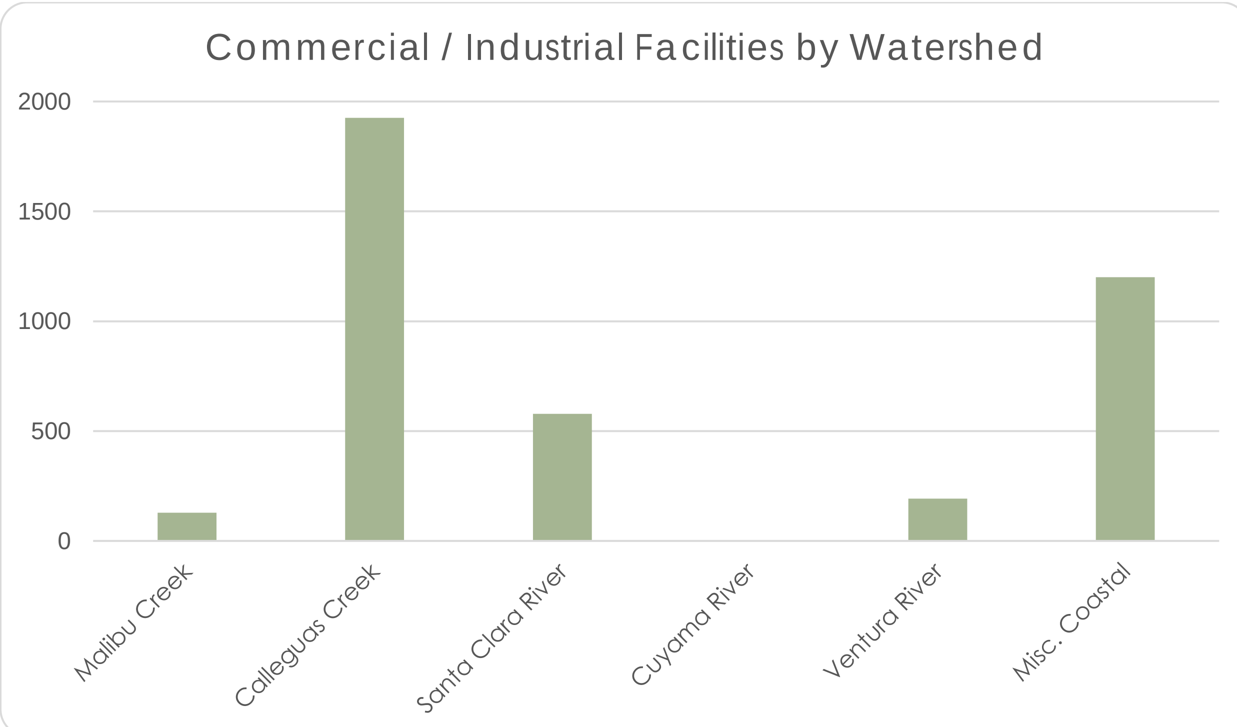
Materials stored in a covered shed with secondary containment

Figure 4-2 Commercial/Industrial Facilities by Permittee



An inspector reviews the Industrial Stormwater Permit requirements with the business manager

Figure 4-3 Commercial Industrial Facilities by Watershed



4.4 INSPECT INDUSTRIAL AND COMMERCIAL FACILITIES TWICE DURING PERMIT TERM (Control Measure IC2)

To satisfy the requirement of inspecting these facilities twice during the Permit term the Permittees began their inspection of industrial and commercial facilities in the 2009/10 Permit year. With respect to industrial facilities, if the initial inspection revealed no risk of exposure of industrial activities to stormwater at a facility, then that facility may be categorized as *No Exposure Status.* Second inspections are required at a rate that provides annual re-inspection of a minimum of 20% of all such facilities determined to have non-exposure.

All initial industrial and commercial facility inspections must be completed no later than July 8, 2012. A minimum interval of six months between the first and second compliance inspection is required at all industrial and commercial facilities. It is possible that a site will be visited sooner than six months if requested by the Regional Board staff to assist with their investigations, or if an illicit discharge is suspected. The status of the industrial commercial inspection program through the end of the reporting period is represented in the following tables.

Figure 4-4 Industrial Facilities Filed as Non-Exposure

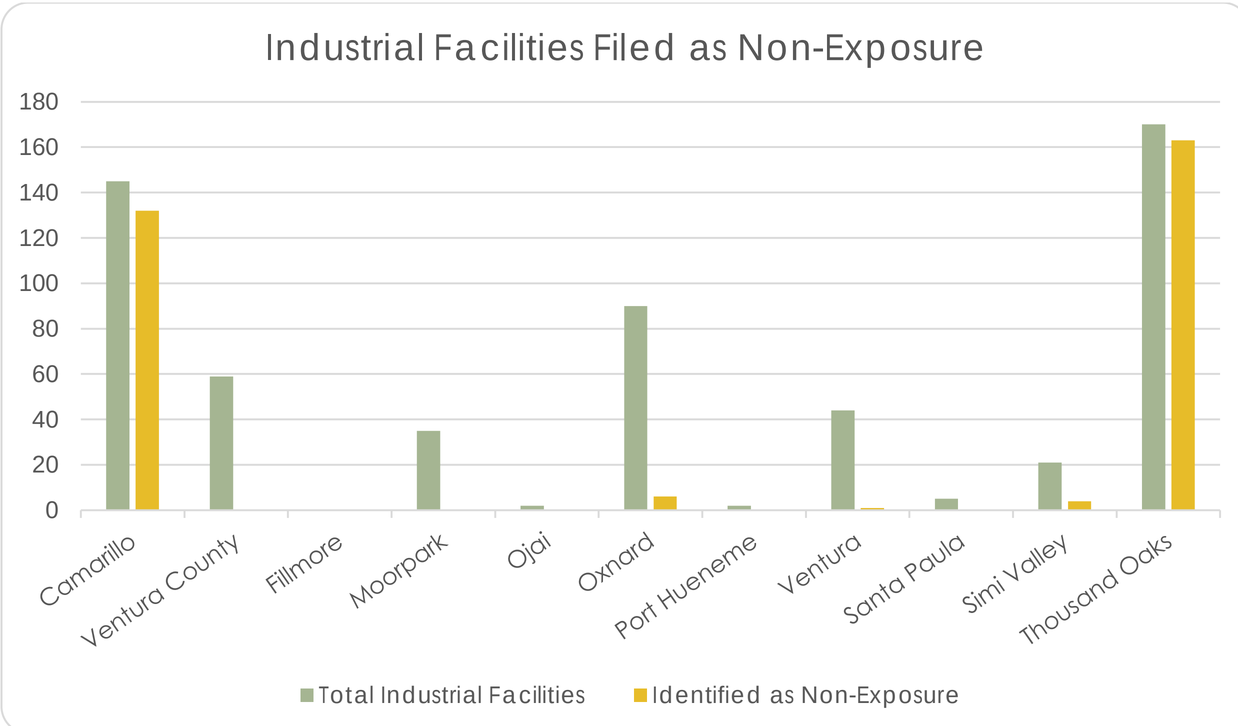
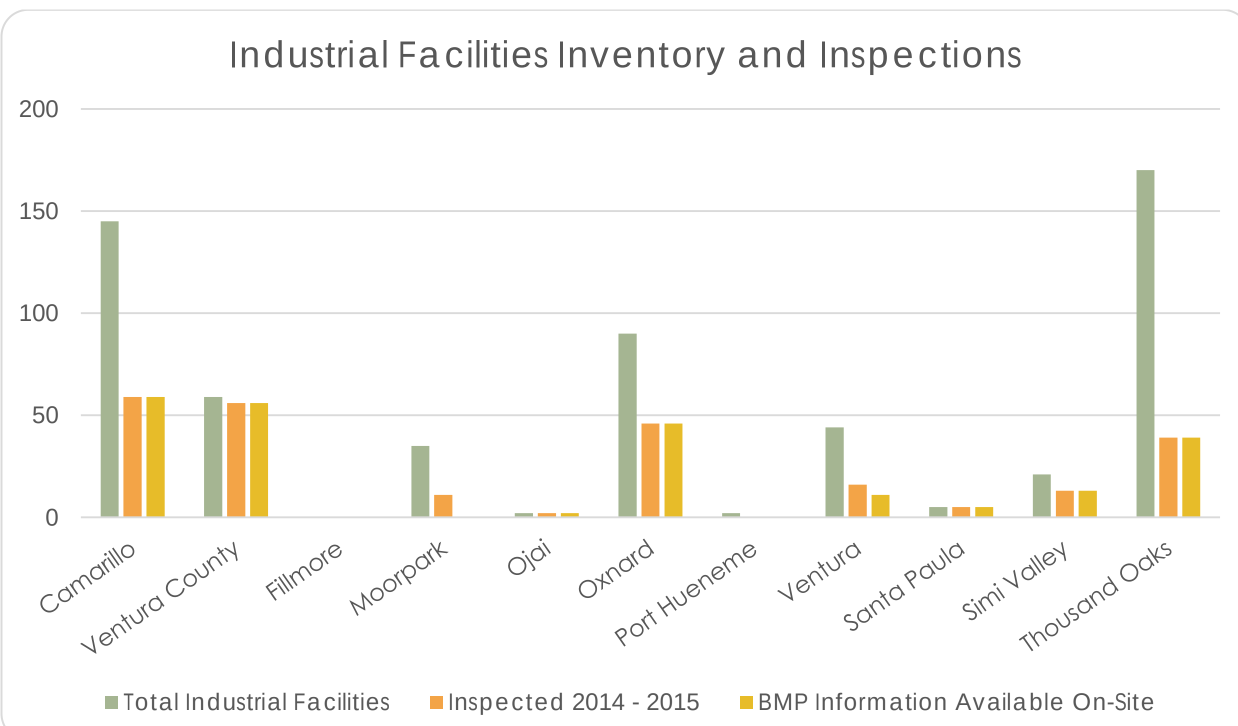


Figure 4-5 Industrial Facilities Inventory and Inspections



Industrial Facilities includes U.S. EPA Phase I, II Facilities required to obtain coverage under the Industrial Activities Stormwater General Permit (IAGSP). These facilities are identified by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) are not factors in this definition and so the inventory includes facilities such as the Naval Base Ventura County at Point Mugu.

COUNTY OF VENTURA UNINCORPORATED AREA
STORMWATER MANAGEMENT PROGRAM

Stormwater Inspection Checklist
INDUSTRIAL AND FEDERALLY MANDATED FACILITIES

INSPECTION TYPE:

INITIAL INSPECTION (due 07/01/2012)
1st Follow-up after INITIAL INSPECTION
2nd Follow-up after INITIAL INSPECTION
☐ 2nd Inspection of Facilities with Exposure (6 months after INITIAL INSPECTION and not later than 07/01/2015)
☐ 1st Follow-up after 2nd Inspection of Facilities with Exposure
☐ 2nd Follow-up after 2nd Inspection of Facilities with Exposure
☐ 2nd Inspection of NON-EXPOSURE FACILITIES (minimum 20% annually)
☐ Complaint Response

INSPECTOR NAME: ________ INSPECTION DATE & TIME: ________
FACILITY NAME: ________
FACILITY ADDRESS: ________
FACILITY CONTACT NAME: ________ PHONE: ________
FACILITY CONTACT SIGNATURE (acknowledging receipt): ________
FACILITY'S SIC/NAICS CODE: ________
FACILITY CATEGORY: ________
THIS FACILITY IS COVERED UNDER:
☐ Industrial Activities Stormwater General Permit (IASGP) WDID # ________
Is SWPPP available on the site? ☐ YES ☐ NO
☐ Other Permit; Specify ________
☐ No Exposure Certification; "Notice of Non-applicability" file date ________
RWQCB Approval Letter received on: ________
☐ None

FACILITY IS LOCATED IN ONE OF THE FOLLOWING WATERSHEDS:

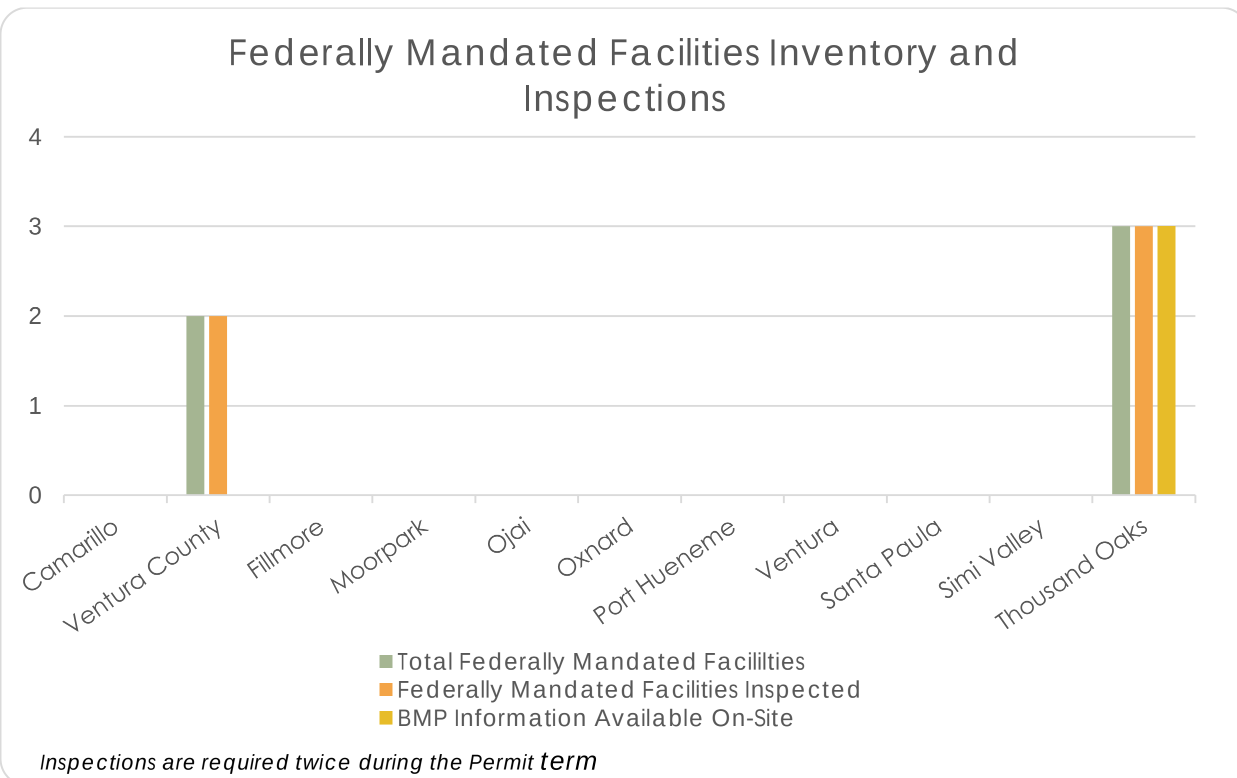
☐ Calleguas Creek ☐ Malibu Creek ☐ Santa Clara River
☐ Ventura River ☐ Cuyama River ☐ Misc. Coastal

A. Brief Description of Facility Operations:	Yes	No	N/A
Does this facility discharge to MS4s that directly discharge to ESAs or 303(d) listed waterbodies? If YES, make a note if BMPs are sufficient or recommend additional BMPs			
List principal products used and status of exposure to stormwater:			
Describe activities that have potential to pollute stormwater:			

BMP#	B. Stormwater Management Criteria	Yes	No	N/A
SC-10	Unauthorized Non-stormwater discharges Are controls being implemented to eliminate non-stormwater discharges?			

Industrial facilities inspection form

Figure 4-6 Federally Mandated Facilities Inventory and Inspections

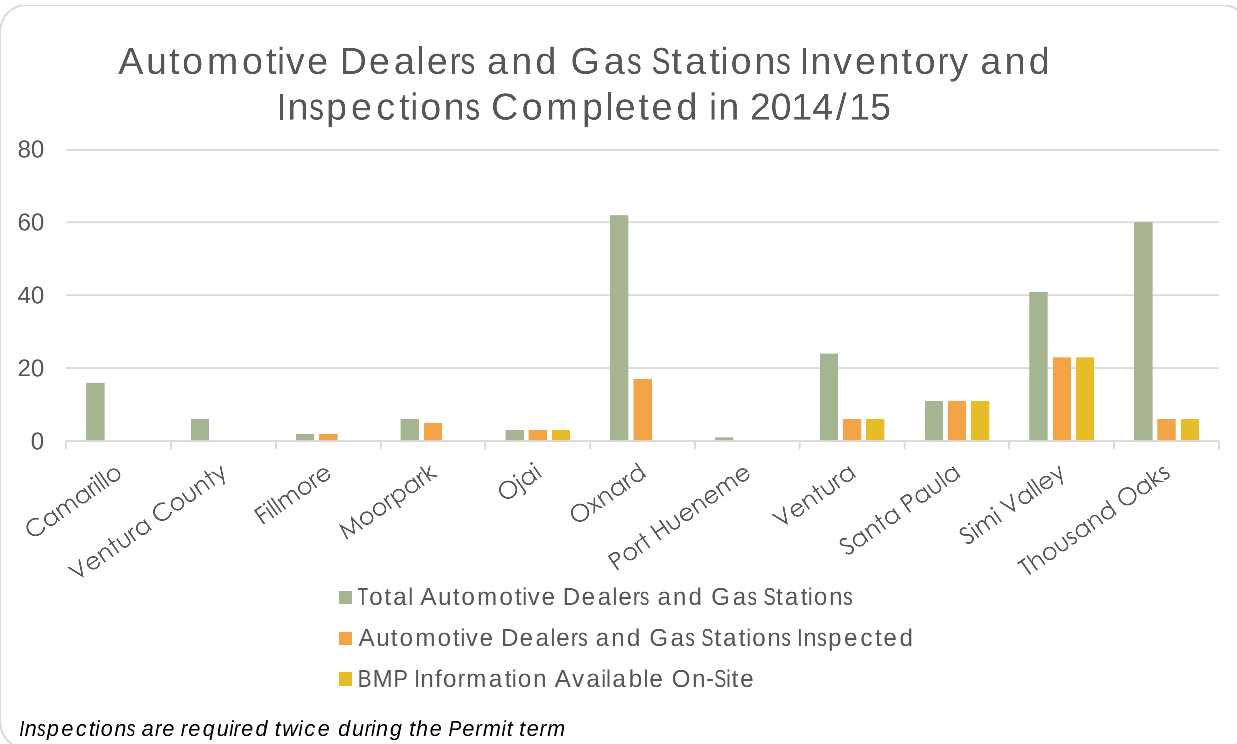


Other Federally-mandated Facilities as specified in 40 CFR 122.26(d)(2)(iv)(C) are also required to obtain coverage under the IAGSP. Again, facility ownership (federal, state, municipal, private) and are not factors in this definition. Included in this category are:

- Municipal landfills
- Hazardous waste treatment, disposal, and recovery facilities
- Facilities subject to SARA Title III (also known as the Emergency Planning and Community Right-to-Know Act (EPCRA))

Inspections are conducted at all automotive and gas station facilities even if these facilities do not have outdoor activities or storage that are exposed to stormwater. In addition, the Permittees have identified other facilities where engine oil is present and represents a potential threat to stormwater pollution, e.g., boat dealers, RV dealers, motorcycle dealers, etc. Facilities that are only inspected if they have outdoor activities or outside storage that are exposed to stormwater are auto parts stores and tire dealers.

Figure 4-7 Automotive Dealers and Gas Stations Inventory and Inspections



All automotive service facilities are included in the inventory for inspection, this category also includes motorcycle and boat repair if there is a potential for stormwater pollution.

An inspector reviews the findings of an inspection with the business manager

Figure 4-8 *Automotive Service Facilities Inventory and Inspections*

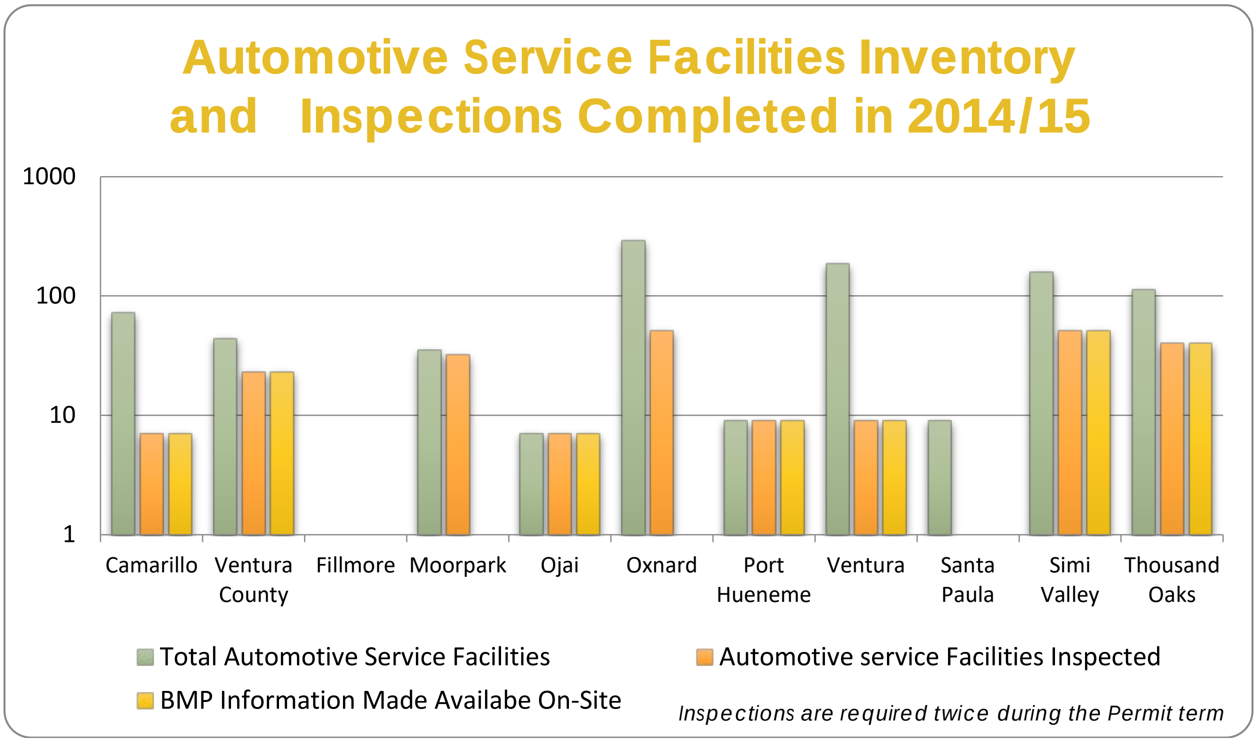
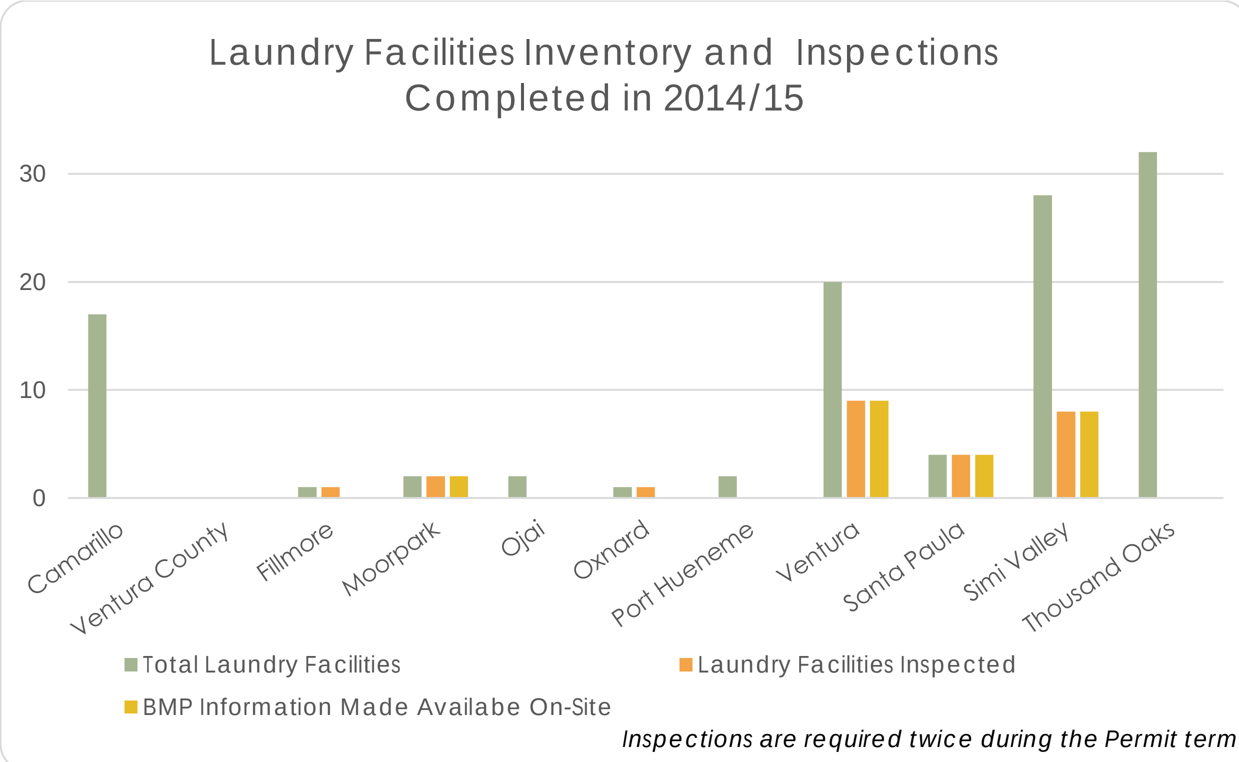


Figure 4-9 Laundry Facilities Inventory and Inspections



Permittees made an effort to identify all laundry facilities in their jurisdiction that may possibly have an exposure to stormwater and therefore a possible threat to stormwater quality. Some Permittees went as far as to include dry cleaners and laundromats. All commercial laundries in a jurisdiction were identified and screened for potential exposure. If there was no exposure potential then an inspection was deemed unnecessary.

The Permit includes requirements for the Permittees to confirm that nursery operators that are exposed to stormwater implement pollutant reduction and control measures with the objective of reducing pollutants in stormwater runoff discharges. “Nurseries” comprises establishments primarily engaged in the merchant wholesale distribution of flowers, florists' supplies, and/ or nursery stock (except plant seeds and plant bulbs). The industry in NAICS Code 444220 comprises establishments primarily engaged in retailing nursery and garden products, such as trees, shrubs, plants, seeds, bulbs, floriculture products and sod, which are predominantly grown elsewhere. These establishments may sell a limited amount of a product they grow themselves.

This is interpreted by the Permittees to not include stores that may have some plants or a small nursery section although it is not their primary business. Florist that specialize in cut flowers are also not included because their business and inventory is kept indoors. However, most Permittees have extended this to include the large home improvement centers due to the size of their nursery section.

Figure 4-10 Nursery Facilities Inventory and Inspections

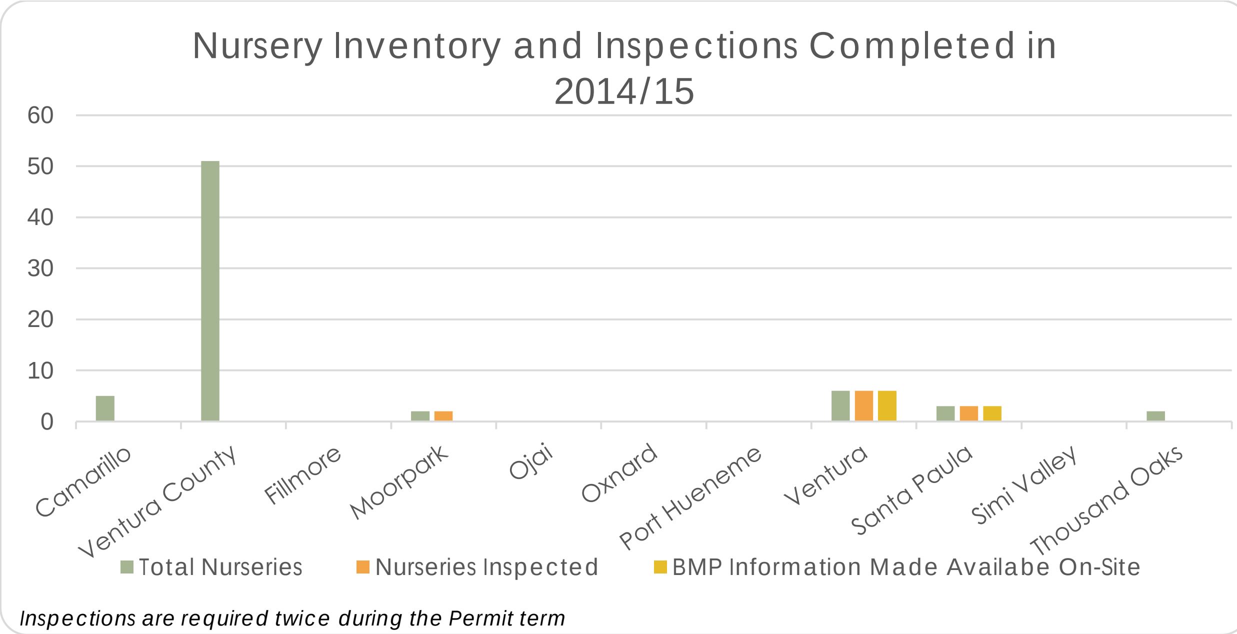
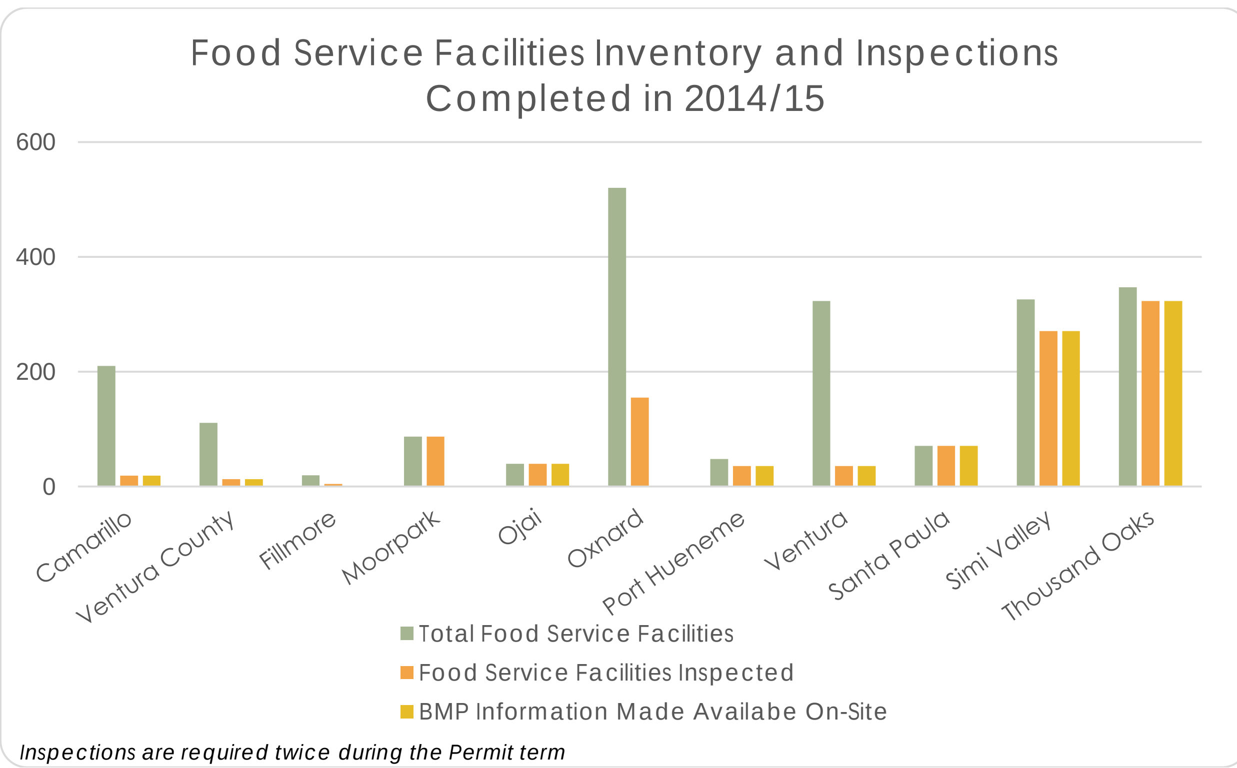


Figure 4-11 Food Service Facilities Inventory and Inspections



For the purposes of inventory and inspection the term food service facility means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812). This will include supermarkets if they have a deli selling food which is prepared on-site, but will not include grocery stores, bakeries and candy stores not engaged in food preparation.

4.5 **INSPECTIONS** (Control Measure IC2)

The Inspection Control Measure establishes the inspection requirements associated with on-site visits. The inspections ensure that the facility operator is effectively implementing source control BMPs, is in compliance with municipal ordinances, has pertinent educational materials, and is not producing unauthorized non-stormwater discharges. Inspection of facilities covered under the IASGP also ensures that the operator has a current Waste Discharge Identification (WDID) number, a Stormwater Pollution Prevention Plan (SWPPP) is available on site, and the operator is effectively implementing BMPs. Stopping unauthorized discharges is the primary purpose of the inspections, however it is also just as important to educate businesses on proper disposal of wastes and other BMPs to prevent future discharges to the storm drain system. To accomplish this educational information is made available to businesses that do not immediately have it available for their staff.


COUNTY OF VENTURA UNINCORPORATED AREA
STORMWATER MANAGEMENT PROGRAM

Stormwater Inspection Checklist
Restaurants

INSPECTION TYPE:

- ☐ INITIAL INSPECTION (due 07/01/2011)
- ☐ 1st Follow-up after INITIAL INSPECTION
- ☐ 2nd Follow-up after INITIAL INSPECTION
- ☐ 2nd Inspection (6 months after INITIAL INSPECTION and not later than 07/01/2014)
- ☐ 1st Follow-up after 2nd Inspection
- ☐ 2nd Follow-up after 2nd Inspection
- ☐ Complaint Response

INSPECTOR NAME: ________ INSPECTION DATE & TIME: ________
FACILITY NAME: ________
FACILITY ADDRESS: ________
FACILITY CONTACT NAME: ________ PHONE: ________
FACILITY CONTACT SIGNATURE (acknowledging receipt): ________
FACILITY'S SIC/NAICS CODE: ________ PRINCIPAL PRODUCTS USED: ________
STATUS OF EXPOSURE: ________
FACILITY IS LOCATED IN ONE OF THE FOLLOWING WATERSHEDS:

☐ Calleguas Creek ☐ Malibu Creek ☐ Santa Clara River
☐ Ventura River ☐ Cuyama River ☐ Misc. Coastal

BMP #	Inspection Items	Yes	No	N/A
SC-10	Any non-stormwater discharge observed? If YES, attach photos and describe:			
SC-10 SC-34 SC-43	Any signs of staining or etching on concrete/asphalt surfaces from possible illegal discharge activities and any dripping or leaking at the storage areas or around the outside trash receptacles? If YES, attach photo and describe:			
SC-10	Are parking lots, walkways and patios swept and/or damp mopped instead of washed and rinsed with a hose?			
SC-10	Is grease interceptor or trap properly maintained? Last service date:			
SC-11	Is the facility effectively preventing and responding to spills and leaks?			
SC-11	Does the facility have a plan to control spills onsite?			
SC-11	Are spill control materials kept on-site to contain and clean up any outdoor spills?			

Restaurant Inspection Checklist

4.5.1 **Inspections**

The Permittees' municipal ordinances currently allow authorized officers to enter any property or building to perform inspections. On refusal to allow inspection by the owner, tenant, occupant, agent or other responsible party, the Permittees may seek an Administrative Search Warrant. All the Permittees have or are reviewing their ordinances to determine if there is a need to strengthen their ability to perform inspections, as well as the enforcement tools at their disposal to bring an uncooperative business into compliance.

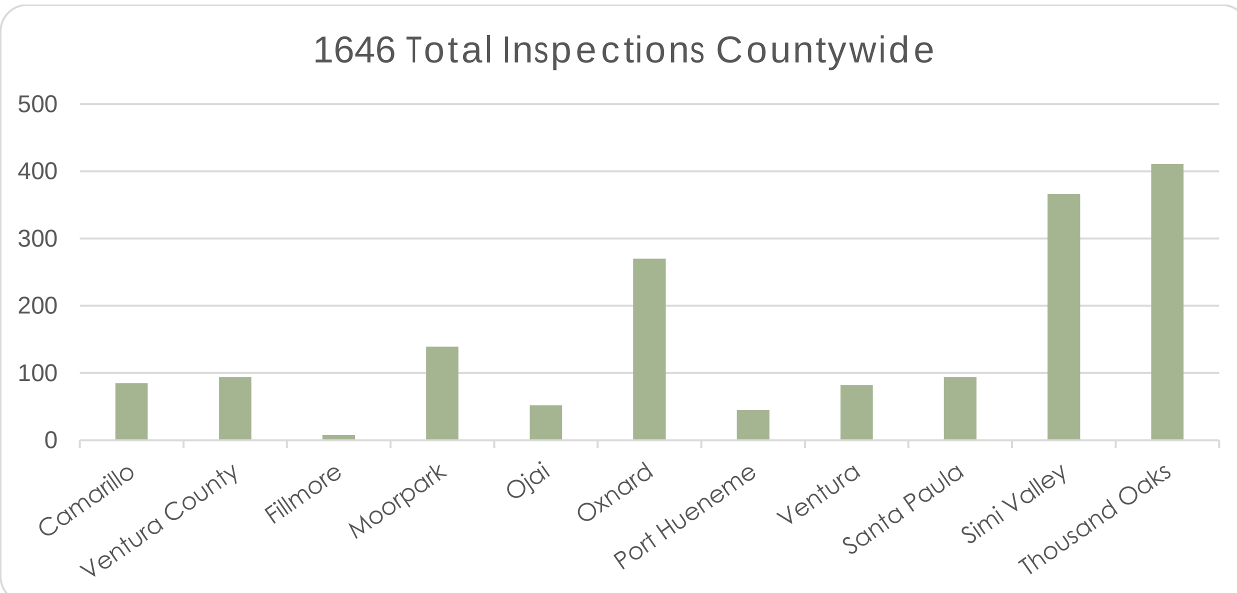
Performance Standard 4-2

Review/revise the industrial inspection checklist to be consistent with the permit			
	Yes	*No*	*N/A*
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		

Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

The vast majority of site visits performed were unannounced providing the inspectors with an honest look at daily activities of the facility. During these site visits, Permittee inspection staff would meet with the business owner/manager to review the objectives of the inspection. After performing a walk-through of the facility, inspection results were discussed with the business owner/manager. In the event a Permittee determined a facility's stormwater BMPs were insufficient, the Permittee provided their recommendations to the facility owner/manager. Source control BMPs were recommended as a first step in BMP implementation before requiring the facility to implement costly structural BMPs. In all cases, inspection staff informed facilities' owners/managers that BMP implementation does not guarantee compliance nor relieve them from additional regulations, and that it is their continued responsibility to ensure that pollutants do not escape the facility.

Figure 4-12 Total Inspections Countywide



Review/Revise the Industrial Inspection and Commercial Business-Specific Checklists as Needed

In order to ensure that the inspectors conduct thorough and consistent inspections, industrial and commercial checklists have been developed for different targeted businesses. Permittee industrial inspectors receive proper training to adequately assess facilities and offer assistance in suggesting remedies. County and municipal ordinances with support from City Attorney's and County Counsel offices also provide the proper legal backing for inspections and any necessary enforcement. Checklists are periodically updated as necessary to ensure that they provide an adequate and sufficiently comprehensive basis upon which to conduct inspections. Currently, the Program has inspection checklists for general industry, restaurants, automobile related businesses, nurseries, and laundries. Examples of the checklists are included as Attachment A.

Performance Standard 4-3

Review/revise the industrial inspection checklist to be consistent with the permit			
	Yes	*No*	*N/A*
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

Performance Standard 4-4

Review/revise the commercial business-specific checklists to be consistent with the permit			
	Yes	*No*	*N/A*
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

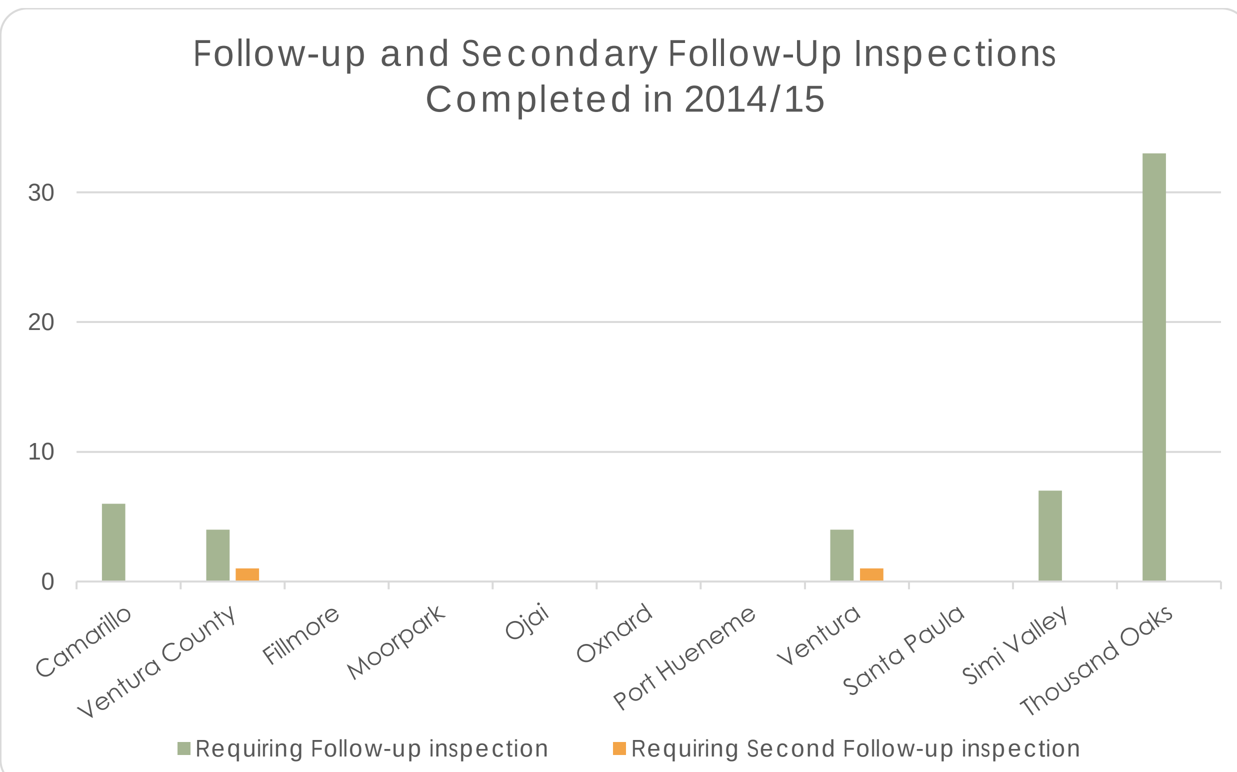
Conduct Follow-up Inspections as Necessary

Performance Standard 4-5

Conduct follow-up inspections as necessary			
	Yes	*No*	*N/A*
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		☑
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		☑
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

Whenever the Permittee determined that an operator had failed to adequately implement all necessary BMPs as required by the Permit, or otherwise were deemed out of compliance, the Permittee engaged in progressive enforcement action. If the facility can be brought into compliance while the inspector is still on-site a follow-up inspection is not deemed necessary. All other facilities that failed to implement all necessary BMPs were advised there would be follow-up visits. The Permit requires that re-inspection occurs within four weeks of the initial inspection. Follow-up visits may be scheduled, especially if the facility operator is difficult to get a hold of, but for the majority of businesses the follow-up inspections are unannounced surprise inspections. If continued stormwater violations were found progressive enforcement actions were initiated, and another visit was scheduled if necessary. Enforcement actions may include any of the following: Warning Notice, Notice of Violation(s), Administrative Civil Liability actions and monetary fines. These actions are described in detail and reported in Section 8 - Programs for Illicit Discharges.

Figure 4-13 Follow-up and Secondary Inspections



The number of required Initial Follow-Up Inspections and Secondary Follow-Up Inspections can be seen by Permittee in Figure 4-13 Follow-up and Secondary Inspections.

4.6 INDUSTRIAL/COMMERCIAL BMP IMPLEMENTATION (Control Measure IC3)

The Industrial/Commercial BMP Implementation Control Measure requires industrial and commercial businesses to reduce pollutants in stormwater discharges and cease any unauthorized non-stormwater discharges to the storm drain system. Although the Permittees may provide guidance to facility operators on appropriate Source and Treatment Control BMP selection and application, the selection of specific BMPs to be implemented is the responsibility of the discharger. The Permittees developed business specific guidance (fact sheets) that is updated as necessary to reflect new requirements and/or knowledge.

4.6.1 BMP Fact Sheets and Selection

Watershed Protection Tips

Commercial Pesticide, Herbicide & Fertilizer Application

How Do Pest, Weed and Landscape Management Chemicals Affect the Watershed?
Careless application and overuse of any pesticide, herbicide or fertilizer is a key contributor to stormwater pollution. When released into the storm drain system, these chemicals can harm unintended insects, plants and animals. You are responsible for preventing this from happening.

Best Management Practices

- Apply pesticides and herbicides according to the label.
- Choose the least toxic sprays based on the characteristics of the target site and type of pest or weed.
- Consider the use of environmentally friendly chemical alternatives such as insecticidal soaps, horticultural oils and biological controls.
- Become familiar with Integrated Pest Management (IPM) options to reduce the need for chemical applications through combining biological, cultural, and physical tools.
- Avoid using copper-based tree sprays and copper sulfate root killing products.
- Spot treat instead of treating the entire area.
- Apply post-emergence herbicide when weeds are at their most vulnerable growth stage.
- To control weeds, use mulch, drip irrigation and hand pulling when possible.
- Apply chemical fertilizer only as needed, when plants can best use it, and when the potential for it being carried away by runoff is low.
- Calibrate equipment and replace worn nozzle tips and faulty gauges, before mixing and loading pesticides.
- Store pesticides in a covered area in their original containers or in the applicator; use secondary containment if possible.
- Maintain a buffer zone around wells and surface water to avoid contamination.
- Avoid applications within 24 hours of a predicted storm forecast or after an irrigation event where water is still leaching or running.
- Apply chemicals only in the morning and on wind-free days to avoid spray drift.
- Know that no landscape will ever be completely pest-free or weed-free.

For more information on preventing stormwater pollution call:

What Is Our Watershed?
Our watershed is the total land area from which stormwater drains into streams, rivers or other bodies of water. The storm drain system is a vast network of gutters, pipes and open channels designed for flood control, which directs untreated stormwater away from our communities. It is both illegal and harmful to allow solid or liquid wastes, including organic materials of any kind, into the storm drain system.

COMMUNITY FOR A CLEAN WATERSHED
cleanwatershed.org
The Watershed Should Only Shed Water

The Community for a Clean Watershed program was established to protect Ventura County's watersheds by preventing stormwater pollution.

Fact Sheet for Pesticide Applicators

In order to assist the industrial and commercial facilities in selecting and implementing the appropriate types of BMPs, the Permittees developed BMP Fact Sheets for industrial and commercial businesses. The BMP Fact Sheets are distributed during the inspections and made available on the Ventura Countywide Stormwater Quality Management Program's website at the following address:

http://www.vcstormwater.org/programs_business.html#business_factsheets

BMP fact sheets were updated and new ones created for several target audiences during this reporting period including:

- Building and Grounds Maintenance.
- Pool and Spa Maintenance.
- Commercial Pesticide Application.
- Mobile Cleaning Services.
- Mobile Auto Detailing and Charity Car Wash Events, and
- Building Repair and Remodeling.

These have been added to the library of fact sheets the Program has already developed for automotive service facilities, RGOs, and nurseries

4.6.2 Distribute BMP Fact Sheets during Inspections

The Permittees distribute BMP Fact Sheets to facility owners/operators as a part of the inspection process. The development and distribution of these fact sheets, along with the inspection program where inspectors meet with the local facility managers about stormwater regulations and BMPs also serves to meet the Permit requirement for Corporate Outreach under the Public Information and Participation Program.

4.7 ENFORCEMENT (Control Measure IC4)

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

4.7.1 Implement the Progressive Enforcement and Referral Policy

The Permittees have a progressive enforcement and referral policy so that the enforcement actions match the severity of a violation and include distinct, progressive steps initiated to bring a facility into compliance. Options are available for progressive corrective actions for repeat offenders. Inspections are performed to assess compliance with municipal stormwater ordinances and any noncompliance is managed through the enforcement policy. Noncompliance may include failure to implement adequate source control or structural BMPs, or other violations of County and municipal ordinances.

The Permittees' facility inventory contains an "inspection findings" data field for comments pertaining to the specific facility. If there is an unsatisfactory inspection, then a comment is made in this data field and the facility is marked for re-inspection within four weeks of the date of initial unsatisfactory inspection. Past experience with facilities has shown that facility operators are cooperative and willing to bring facilities into compliance.

> The Permittees identified 32 non-filers under the Industrial General Permit.

During this permit year, some of the permittees provided outreach to the facilities that were determined as having no exposure under the 1997 IGP on the requirements of the General Industrial Permit that took effect July 1, 2015. As a result of that outreach, several of the no exposure facilities have submitted No Exposure Certifications (NECs) prior to the October 1, 2015 deadline. An example of a form letter sent to facilities under the Industrial Activities General Permit in included in Attachment A.

Implementation of Referral Policy

As a means to enhance interagency coordination, the Permittees may refer industrial business violations of County and/or municipal stormwater ordinances and California Water Code §13260 to the Regional Water Board, provided that Permittees have made a good faith effort of progressive enforcement under applicable stormwater ordinances. Referral to the Regional Water Board is required so that they can enforce the conditions of their permit on non-compliant industries. Every effort is taken at the local level to achieve compliance before referring a facility, including using the threat of calling in the Regional Board and their ability to levy hefty fines. It is possible that the Regional Board would be notified immediately if very egregious problems were discovered at a site covered by the Industrial Activities Stormwater General Permit (IASGP). At a minimum the Permit requires Permittees provide a good faith effort to bring a facility into compliance, which must be documented with:

- Two follow-up inspections
- Two warning letters or notices of violation

For those facilities in violation of municipal ordinances and subject to the IASGP, the Permittees may escalate referral of such violations to the Regional Water Board after one inspection and one written notice (copied to the Regional Water Board) to the operator regarding the violation. This is up to the discretion of the Permittee, and is only likely to be used in cases where there is a severe discharge causing or contributing to a water quality exceedance.

Such referrals are filed electronically with the Regional Water Board for any inspection that led to a notice of violation or the discovery of a non-filer. In making such referrals, Permittees are required to include at a minimum the following information in their referral:

Performance Standard 4-6

Implement a progressive enforcement policy			
	Yes	*No*	*N/A*
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

1. Name of facility
2. Operator of facility
3. Owner of facility
4. WDID number (if applicable)
5. Industrial activity being conducted at the facility that is subject to the IASGP
6. Records of communication with the facility operator regarding the violation, which shall include at least an inspection report
7. The written notice of the violation copied to the Regional Water Board

In Permit Year 2014-15, no industrial facilities were referred to Regional Board as the Permittees were able to gain compliance through a progressive enforcement program. For example, one Permittee sent two NOV letters to an industry that was required to take out coverage under the Industrial Stormwater Permit, the industry complied and received a WDID on July 2, 2015. An example of an NOV letter is included in Attachment A

Investigation of Complaints Transmitted by Regional Water Board

On occasion, Regional Board staff will receive information on an industry within a Permittee's jurisdiction that needs to be investigated in a timely manner. The Permittees implement procedures for responding to complaints forwarded by the Regional Water Board to ensure initiation of inspections within one business day. Permittees may comply by taking initial steps (such as logging, prioritizing, and tasking) to "initiate" the investigation within one business day. However, the Regional Water Board expects that the initial investigation, including a site visit, would occur within four business days. Complaint-initiated inspections include, at a minimum, a limited inspection of the facility to confirm the complaint, to determine if the facility is effectively complying with municipal stormwater urban runoff ordinances and, if necessary, to initiate corrective action.

The Permittees have (and will continue to) work closely with the Regional Water Board when a facility is identified as requiring a compliance inspection.

Table 4-2 Complaints Transmitted by Regional Water Board for Investigation by Permittees

Facility Category	Nature of Complaint	Confirmation of Complaint	Permittee Assistance and/or Corrective Action
Industrial			
None			
Other Federally-Mandated Facilities			
None			

4.7.2 Task Force Participation

The Permittees will participate in an interagency workgroup, such as the Environmental Task Force or the Storm Water Task Force, as a means to communicate information and concerns regarding stormwater enforcement actions undertaken by the Permittees. Participation in such a workgroup should facilitate communication of special cases of stormwater violations and address a coordinated approach to enforcement action.

The Ventura County Stormwater Program and Permittees, including different divisions such as CUPA or County Environmental Health, participate on the Ventura County Environmental Crimes Task Force**.** This task force is led by the District Attorney's office and includes representatives from different environmental agencies including the Ventura Air Pollution Control District, California EPA, and Federal EPA. The purpose is to work together to share sensitive information on enforcement activities to increase the chances of eliminating the problem.

4.8 TRAINING (Control Measure IC5)

The Training Control Measure is important for the implementation of the Industrial/Commercial Program Element. An effective training program is one of the best pollution prevention BMPs that can be implemented because it provides for consistency in inspections and enforcement, gives the inspector the ability to respond to a variety of situations and questions, and ultimately encourages the inspectors to initiate behavioral changes that are fundamentally necessary to protect water quality.

Each Permittee identified inspection staff and other personnel for training based on the type of stormwater quality management and pollution issues that they might encounter during the performance of their regular inspections or daily activities. Targeted staff may include those who perform inspection activities as part of the HAZMAT and wastewater pretreatment programs as well as staff who may respond to questions from the public or industrial/commercial businesses, such as those working with business licenses.

Staff was trained in a manner that provided adequate knowledge for effective business inspections, enforcement, and answering questions from the public or industrial/commercial operators. Training included a variety of forums, ranging from informal “tailgate” meetings, to formal classroom training and self-guided training methods. When appropriate, staff training included information about the prevention, detection, and investigation of illicit connections and illegal discharges (IC/ID). See **Section 8** for more information regarding IC/ID training.

Figure 4-14 IC/ID Training depicts the number of staff trained in the program area for each Permittee. Some agencies contract out their inspections to trained consultants and therefore did not target any of their employees. During this reporting period, the Permittees trained 49 inspection staff in stormwater pollution prevention.

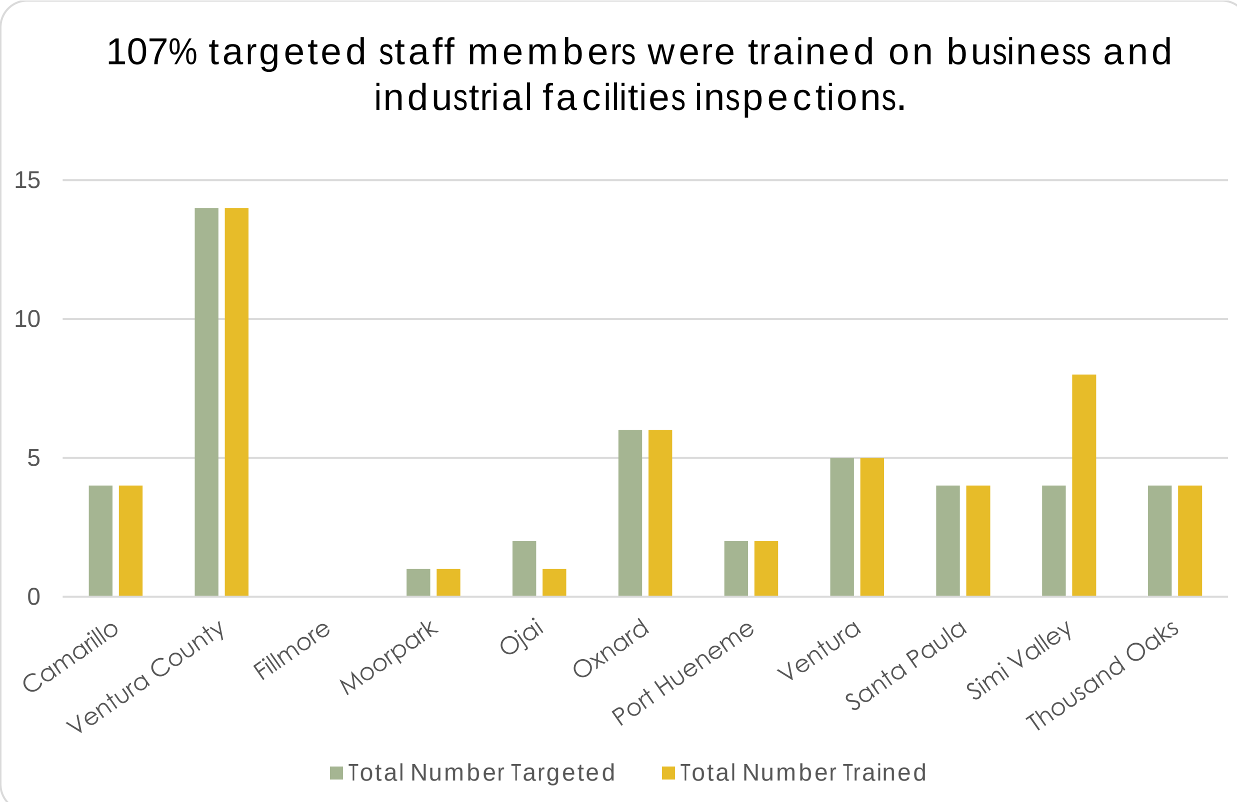
Table 4-3 Training Areas of Focus for the Industrial/Commercial Program Element

Target Audience	Format	Subject Material	Comments
• Industrial/Commercial inspectors • County Health restaurant inspectors	• Classroom • Field Demos	• Overview of stormwater management program • Stormwater ordinance and enforcement policy • BMPs for facilities • Facility inventory tracking	• Training seminars or workshops related to the program may be made available by other organizations

Performance Standard 4-7

Conduct training for key staff involved in the Business Inspection program			
	Yes	*No*	*N/A*
Camarillo	☑		
Ventura County	☑		
Fillmore		☑	
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

Figure 4-14 IC/ID Training



4.9 EFFECTIVENESS ASSESSMENT – IC6

Effectiveness assessment is a fundamental component required for the development and implementation of a successful stormwater program. In order to determine the effectiveness of the Industrial/Commercial Facility Program Element, a comprehensive assessment of the program data is conducted as part of the Annual Report. The results of this assessment are used to identify modifications that need to be made to the Program Element. Each year the effectiveness assessment is reviewed and revised as necessary.

By conducting these assessments and modifying the Program Element as necessary, the Permittees ensure that the iterative process is used as an effective management tool. Due to the types of data collected for the Industrial/Commercial Facility Program, current and future assessments will primarily focus on Outcome Levels 1 and 2 though behavior changes can be seen as a reduction in discharges is observed and the need for enforcement drops.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?
- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly increased the awareness of its target audience?
- Outcome Level 3 (L3) answers the question: Can the Permittees demonstrate that the control measure/performance standard changed a target audience's behavior, resulting in the implementation of recommended BMPs?

The following is an assessment regarding the effectiveness of the Industrial/ Commercial Program.

4.9.1 Facility Inventory Maintain and Annual Update Inventory

All Permittees maintain an inventory of industrial and commercial facilities. Permittees have begun to inspect facilities with the goal of completing all initial inspections by July 8, 2012 and inspecting facilities twice during the Permit term. Initially inspections focused on industrial facilities, auto dealers, auto service shops, laundry facilities, nurseries, and restaurants. (L1)

4.9.2 Inspection

Initial inspections were completed by this reporting year. Some Permittees initiated inspections over the 2009/10 reporting periods and continued them through the 2014/15 period to meet this deadline. (L1) Permittees conducted 59 follow-up inspections when needed to ensure compliance. Since the Permit adoption over 10,000 inspections were conducted Countywide (L2).

The Permittees have reviewed and revised their inspection checklists, as necessary to be consistent with the Permit. (L1)

4.9.3 Industrial/Commercial BMP Implementation

BMP Fact Sheets and Selection

Industrial and commercial BMP Fact Sheets were developed and are available at the Ventura Countywide Stormwater Quality Management Program website. (L1)

Distribute BMP Fact Sheets

Permittees that have initiated an inspection program distribute fact sheets as part of the inspection process. (L1)

4.9.4 Enforcement

Implement Progress Enforcement and Referral Policy

The Permittees have a progressive enforcement and referral policy so that enforcement actions match the severity of a violation and include distinct, progressive steps introduced to bring a facility into compliance. (L1)

Implementation of Industrial Referral Policy

All Permittees may refer industrial business violations to the Regional Water Board provided that Permittees have made a good faith effort of progressive enforcement. (L1)

Investigation of Complaints Transmitted by Regional Water Board

The Permittees implement procedures for responding to complaints forwarded by the Regional Water Board to ensure initiation of inspections within one business day. (L1)

Task Force Participation

The Permittees participate in an interagency workgroup, such as the Environmental Task Force or the Storm Water Task Force, as a means to communicate information and concerns regarding stormwater enforcement actions undertaken by the Permittees. (L1)

4.9.5 Training

During this reporting period, the Permittees trained 49 staff in business inspections and enforcement. Permittees effectively trained over 100% of targeted staff. (L1)

4.9 INDUSTRIAL/COMMERCIAL PROGRAM ELEMENT MODIFICATIONS

On an ongoing basis, the Permittees evaluate the experience that staff has had in implementing the program and the results of the Annual Report to determine if any additional program modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the MEP.

Many key modifications have been made to the Industrial/Commercial Program Element since the adoption of the Permit. Key modifications that have been made are tracking facilities by watershed, an expanded list of businesses and industries that are tracked, and clearly defining how to identify those businesses and industries. Future efforts may look into the inspections or outreach to the owners of multi-tenant commercial retail areas with common trash areas.

5 Planning and Land Development

5.1 OVERVIEW

The addition of impervious areas in the development of homes, industrial and commercial areas, parking lots, and streets and roads increases the amount of stormwater runoff, as well as the potential for pollution. The Planning and Land Development Program Element ensures that the impacts on stormwater quality from new development and redevelopment are limited through implementation of general site design measures, site-specific source control measures, low impact development strategies, and treatment control measures. The general strategy for development is to avoid, minimize, and mitigate (in that order) the potential adverse impacts to stormwater. The potential for long-term stormwater impacts from development is also controlled by requiring ongoing operation and maintenance of post-construction treatment controls.

The Permittees have developed and implemented a Program for Planning and Land Development to address stormwater quality in the planning and design of development and redevelopment projects. The term "development project" as used in this Program encompasses those projects subject to a planning and permitting review/process by a Permittee. A development project includes any construction, rehabilitation, redevelopment, or reconstruction of any public and private residential project, industrial, commercial, retail, and other non-residential projects, including qualifying public agency projects.

To help meet the goals and objectives of the Program, the Permittees attend Planning and Land Development Subcommittee meetings to coordinate and implement a comprehensive and consistent program to mitigate impacts on water quality from development projects to the MEP. However, the Permittees may modify their programs to address particular issues, concerns, or unique constraints to a watershed such as local geology or known water quality impairments.

5.2 CONTROL MEASURES

The Permittees have developed several Control Measures and accompanying performance standards to ensure that the planning and land development program requirements are effectively developed and implemented. For each Control Measure there are accompanying performance standards which, once accomplished, constitute compliance with the Permit requirements. The Planning and Land Development Program Control Measures consists of the following:

Table 5-1 Control Measures for the Planning and Land Development Program Element

LD	Control Measure
LD1	State Statute Conformity
LD2	New Development/ Redevelopment Performance Criteria
LD3	Plan Review and Approval Process
LD4	Maintenance Agreement and Transfer
LD5	Tracking, Inspection and Enforcement
LD6	Training
LD7	Effectiveness Assessment

5.3 STATE STATUTE CONFORMITY (CONTROL MEASURE LD1)

Traditional methods of land development can lead to increased stormwater discharge volumes and flow velocities. These alterations to the natural hydrologic regime may reduce infiltration to groundwater, and increase erosion and flooding as well as decrease habitat integrity. Water quality and watershed protection principles and policies such as minimization of impervious areas, pollutant source controls, preservation of natural areas, and peak runoff controls can help to minimize the impacts of urban development on the local hydrology and aquatic environment. Integration of stormwater quality and watershed principles into the Permittees' general conditions serve as the basis for directing future planning and development in order to minimize these adverse effects. In addition, the California Environmental Quality Act (CEQA) process provides for consideration of water quality impacts and appropriate mitigation measures.

5.3.1 Review/Revise CEQA Review Documents

The California Environmental Quality Act (CEQA) sets forth requirements for the processing and environmental review of many projects. The Permittees use the CEQA process and review as an excellent opportunity to address stormwater quality issues related to proposed projects early in the planning stages. The National Environmental Quality Act (NEPA) comes into play less often than CEQA, but may be included for projects involving federal funding. Like CEQA, NEPA process and review provides opportunities to address stormwater quality issues related to proposed projects early in the planning stages. The CEQA review process is necessary for determining what impacts a proposed development project could have on the environment. The Permittees' current CEQA review process includes procedures for considering potential stormwater quality impacts and providing for appropriate mitigation. Permittees will review and revise the CEQA review documents as needed for consistency with the new Permit.

Each Permittee has reviewed their internal planning procedures for preparing and reviewing CEQA (and NEPA when applicable) documents and has linked stormwater quality mitigation conditions to legal discretionary project approvals. When appropriate, the Permittees consider stormwater quality issues when processing environmental checklists, initial studies, and environmental impact reports. The Permit required that stormwater controls be incorporated into the Permittees CEQA process by July 8, 2011; the Permittees have been successful in meeting that obligation.

A curb cut leading to an LID feature

5.3.2 Revise the General Plan

The Permittees' General Plans provide the foundation and the framework for land use planning and development. Therefore, the General Plan is a useful tool to promote the policies for protection of stormwater quality. The Permittees are to include watershed and stormwater management considerations in the appropriate elements of their General Plans whenever these elements are significantly rewritten. Table 5-2 indicates the scheduled date of a significant rewrite to the Permittees' General Plan elements when known. Note that some Permittees have already modified their General Plan to include stormwater requirements under the previous permit, the table reflects if stormwater issues have been incorporated. The Permit additionally requires that when General Plan elements are being updated drafts are provided to the Regional Board for their review. These Permit requirements do not have an absolute due date other than as General Plan elements are updated.

Performance Standard 5-1

CEQA process include the procedures necessary to consider potential stormwater quality impacts			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

Before and after pictures of infiltration area of parking lot during construction.

Table 5-2 Scheduled Dates for Permittees' General Plan Rewrite

Land Use	General Plan includes Stormwater Requirements (Y/N)	Scheduled Date for Significant Rewrite of General Plan	Date Submitted to Regional Board
Camarillo	Yes	10/1/2003	
County of Ventura	Yes	12/1/2018	9/1/2010
Fillmore	Yes	1/1/2020	
Moorpark	Yes	12/1/2015	
Ojai	Yes		
Oxnard	Yes	1/1/2020	3/12/2009
Port Hueneme	No		
Ventura	Yes	7/1/2020	
Santa Paula	Yes	9/1/2016	1/1/1998
Simi Valley	Yes		
Thousand Oaks	No		
Housing			
Camarillo	Yes	1/8/2014	9/13/2013
County of Ventura	no	1/1/2021	
Fillmore	No		
Moorpark	No	12/1/2015	
Ojai	Yes		
Oxnard	Yes	1/1/2020	3/12/2009
Port Hueneme	No		
Ventura	No	10/1/2021	
Santa Paula	Yes	9/1/2016	1/1/1998
Simi Valley	Yes		
Thousand Oaks	No		
Conservation			
Camarillo	Yes	7/12/2006	
County of Ventura	Yes	12/1/2018	9/1/2010
Fillmore	No		
Moorpark	Yes	12/1/2015	
Ojai	Yes		
Oxnard	Yes	1/1/2020	3/12/2009
Port Hueneme	Yes		
Ventura	No	7/1/2020	
Santa Paula	Yes	9/1/2016	1/1/1998
Simi Valley	Yes		
Thousand Oaks	Yes	10/8/2013	
Open Space			
Camarillo	Yes	7/12/2006	
County of Ventura	Yes	12/1/2018	9/1/2010
Fillmore	No		
Moorpark	Yes	12/1/2015	
Ojai	Yes		
Oxnard	Yes	1/1/2020	3/12/2009
Port Hueneme	Yes		
Ventura	No	7/1/2020	
Santa Paula	Yes	9/1/2016	1/1/1998
Simi Valley	Yes		
Thousand Oaks	No		

Specific efforts some Permittees have made to address stormwater issues in the planning process are detailed below:

Ventura County - The Ventura County Non-Coastal Zoning Ordinance (NCZO) supports the goals and policies of the General Plan, including the Housing Element. While some of the General Plan elements contain specific policies regarding stormwater, the Housing Element does not. Since all development is required to comply with current standards by following state law or meeting development standards listed in the NCZO, the Housing Element is inherently consistent with stormwater requirements.

The Ventura County General Plan was updated last on November 15, 2005 for the 2020 horizon year. The next scheduled date for a significant rewrite of the General Plan is 2020. The 2014-2020 Housing Element was certified by HCD on December 2013.

Oxnard - The 2030 General Plan was adopted by the Oxnard City Council on October 11, 2011. The plan is available for review at cityofoxnard.org.

Simi Valley - The City of Simi Valley's General Plan was adopted by City Council at the June 4, 2012 Council meeting. The Council asked for some changes to be made to the adopted version, those changes were made and the final version was submitted to the Regional Board in September 2012.

City of Ventura – Refinement of the 2005 General Plan for the Land Use Element related to commerce, industrial and mixed use designations is anticipated in late 2015. The next targeted comprehensive General Plan update is projected for 2020, using technical data on water (2015 UWMP), City specific infrastructure needs, the 2016 and 2018 RTP's, and the anticipated 6th cycle Regional Housing Needs (RHNA) in 2019 (for a state mandated 2021 Housing Element update).

5.4 NEW DEVELOPMENT PERFORMANCE CRITERIA (CONTROL MEASURE LD2)

Post-construction BMPs, including site design, source control, low impact development techniques, and stormwater quality treatment, are necessary for development and re-development projects to mitigate potential water quality impacts. In addition, priority projects identified within the Permit require specific mitigation measures. In order to assist developers in meeting these requirements, the Permittees developed a Technical Guidance Manual for Stormwater Quality Control Measures for new development and redevelopment in 2002 (2002 TGM). This Manual was updated to conform to the new Permit requirements in 2011 (2011 TGM), and these requirements became effective during the 2011-2012 reporting period.

5.4.1 Update to the 2002 Ventura County Technical Guidance Manual for Stormwater Quality Control Measures (TGM)

In May 2010 the Permittees updated the 2002 TGM for the selection, design, and maintenance of BMPs for new development and redevelopment projects as identified in Order 2009-0057. This Manual was never approved by the Regional Board Executive Officer due to the Permit being remanded and subsequently re-heard by the Board. As an outcome of that hearing new language was adopted for the Permit and a new date set for the revisions to TGM. The TGM was rewritten to address the five-percent effective impervious area requirement, retention and biotreatment, alternative compliance for technical infeasibility, interim hydro-modification requirements, water quality criteria, and maintenance agreements (see also Control Measure LD4 for more information). The 2011 TGM was submitted to the Regional Board on June 16, 2011. The regional approved the 2011 TGM on July 13, 2011 and it became effective on October 11, 2011.

To correct minor typos, discrepancies and diagrams an errata version of the TGM was released in May of 2015. At 600 pages there are possibly other errors that will need to be corrected. To address this it is the Program’s intention to plan an annual errata update. This would include providing a complete version of the TGM along with the specific pages where changes were made. This will allow users to substitute the correct pages into a hardcopy without having to print the entire document.

5.4.2 **Require Compliance with Performance Criteria**

New development and redevelopment projects, as outlined in Permit Provision 4.E.II., are subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution. New performance criteria outlined within the Permit include reducing the percentage of effective impervious area to five-percent or less of the total project area, the interim hydromodification control criteria, and water quality mitigation criteria. These Permit conditions became effective on October 11, 2011, 90 days after the TGM was approved by the Regional Board Executive Officer.

Project Review and Conditioning

Projects must comply with one of two standards. For projects whose applications were deemed complete after the 2011 TGM effective date the Permittees are to ensure they comply with the requirements in the 2010 Permit. Those deemed complete prior to the effective date must comply with the previous performance criteria under the Stormwater Quality Urban Impact Mitigation Plan (SQUIMP) and the 2002 TGM. Under both manuals the Permittees' approach to stormwater comes early in the project development process when the options for pollution control are greatest, and the cost to incorporate these controls into new development or redevelopment projects is the least. In planning and reviewing a development project, the Permittees consider three key questions with respect to stormwater quality control: 1. What kind of water quality controls are needed? 2. Where should controls be implemented? 3. What level of control is appropriate? During the planning and review process, the Permittees identify potential stormwater quality problems, communicate design objectives, and evaluate the plan for the most appropriate design alternatives.

Low Impact Development BMP

Low Impact Development (LID)

LID is a concept in the overall watershed process which promotes the coordinated development and management of water, land, and related resources. By linking traditional development topics such as land use, water supply, wastewater treatment/reclamation, flood control/drainage, water quality, and hydromodification management into a cohesive hydrologic system developments should recognizes their interdependencies and minimizes their potentially negative effects on the environment. An example is combining stormwater treatment, hydromodification control, and flood control in a single regional infiltration basin that recharges groundwater, incorporates recreation, and provides habitat. Another example is using Smart Growth principles to help reduce the environmental footprint while still accommodating growth.

Similar to Source Control Measures, which prevent pollutant sources from contacting stormwater runoff, Retention BMPs use techniques to infiltrate, store, use, and evaporate runoff onsite to mimic pre-development hydrology, to the extent feasible. The goal of LID is to increase groundwater recharge, enhance water quality, and prevent degradation of downstream natural drainage channels. This goal may be accomplished with creative site planning and with incorporation of localized, naturally functioning BMPs into the project. Implementation of Retention BMPs will reduce the size of additional Hydromodification Control Measures that may be required for a new development or redevelopment project, and, in many circumstances, may be used to satisfy all stormwater management requirements.

Applicable projects must reduce Effective Impervious Area (EIA) to less than or equal to five percent (≤5%) of the total project area, unless infeasible. Impervious surfaces are rendered "ineffective" if the design storm volume is fully retained onsite using Retention BMPs. Biofiltration BMPs may be used to achieve the 5% EIA standard if Retention BMPs are technically infeasible.

Generally, the 2011 TGM advises to first design for the largest hydrologic controls (such as matching post development 100-year flows with pre-project 100-year flows for flood mitigation requirements), according to the appropriate City or County drainage requirements. Secondly, the 2011 TGM advises to check if flood mitigation will reduce or satisfy the stormwater management requirements. If it does not, then more controls are necessary. Flood mitigation may provide the necessary sediment and pollution control, thereby reducing maintenance requirements for the stormwater management BMPs. A sequence of hydrologic controls should be considered, such as site design, flood drainage mitigation, and Retention BMPs. Biofiltration BMPs and Treatment Control Measures can be considered where the use of Retention BMPs is technically infeasible. Each of these controls will have an influence on stormwater runoff from the new development or redevelopment project.

Stormwater Quality Urban Impact Mitigation Plan (SQUIMP)

For those projects deemed complete before October 11, 2011 the Permitees require the implementation of the Stormwater Quality Urban Impact Mitigation Plan (SQUIMP) for new development projects categories described in the 2000 Permit. Redevelopment projects in one of the SQUIMP categories that result in the creation, addition or replacement of 5,000 square feet or more of impervious surfaces, not a part of routine maintenance, are subject to SQUIMP requirements. If a redevelopment project creates or adds 50% or more impervious surface area to the existing impervious surfaces, then stormwater runoff from the entire area (existing and redeveloped) must be conditioned for stormwater quality mitigation. Otherwise, only the affected area of the redevelopment project requires mitigation.

Performance Standard 5-2

Require compliance with performance criteria under SQUIMP			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

The SQUIMP lists the minimum required BMPs that must be implemented for new development and redevelopment projects subject to the SQUIMP.

The minimum requirements include control peak stormwater runoff discharge rates, conserve natural areas, properly design trash storage areas, meet design standards for structural or treatment control BMPs, and provide proof of ongoing BMP maintenance among others designed to reduce the long term pollutant effects of development.

5.4.3 BMP Selection and Design Criteria

The Permittees consider site-specific conditions of development projects and pollutants of concern on the watershed when determining which BMPs are most appropriate for a site. Prior to approving BMPs, the staff conditioning the project evaluates post-construction activities and potential sources of stormwater pollutants. The project proponent is required to consider BMPs that would address the potential pollutants reasonably expected to be present at the site once occupied. BMPs to protect stormwater during the construction phase may also be a part of this conditioning process, although these are addressed through the grading permit process through the Construction Program

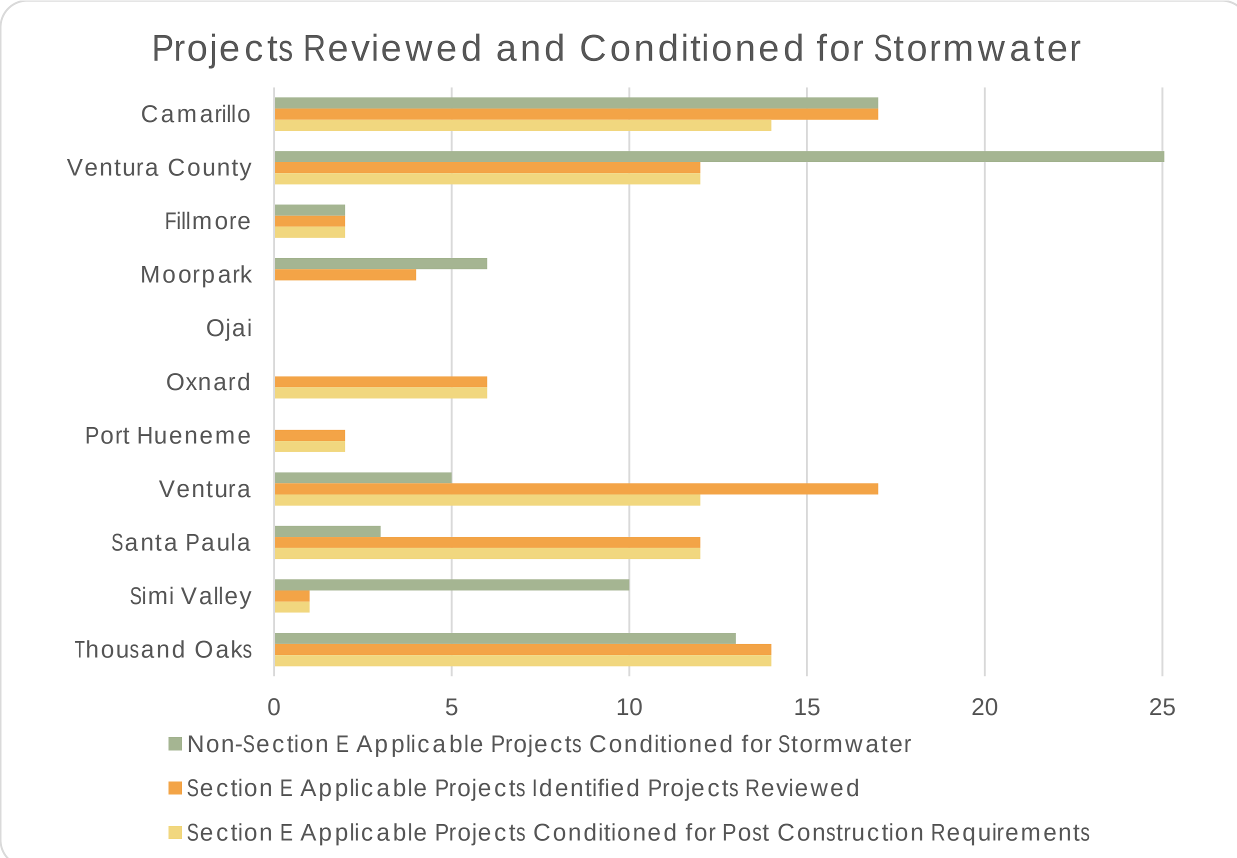
In order to achieve appropriate stormwater quality controls, the Permittees use the following common criteria in screening and selecting, or rejecting BMPs during the planning stage with a priority given to non-proprietary designed BMPs:

- Project characteristics;
- Site factors (e.g., slope, high water table, soils, etc.);
- Pollutant removal capability;
- Short term and long term costs;
- Responsibility for maintenance;
- Contributing watershed area; and
- Environmental impact and enhancement.

The BMP selection criteria listed above is applied by the Permittees in accordance with the overall objective of the Planning and Land Development Program, i.e. to reduce pollutants in discharges to the MEP. In some site-specific situations there will be certain BMPs that are clearly be more appropriate and effective than others, the BMP selection process reflects this variability.

The number of projects required to comply with the performance criteria during the Permit year is outlined in Figure 5-1. This includes projects required by the Permit to implement stormwater treatment controls, but beyond that projects that, due to their nature or potential to discharge pollutants of concern, were also required to implement stormwater management controls of either source control or water quality treatment.

Figure 5-1 Projects Reviewed and Conditioned



**Total number of projects reviewed only account for 1st time reviews. It doesn't count multiple reviews of the same project within the same annual reporting period or reviews of projects first reviewed as part of a prior annual reporting period. Total SQUIMP or Section E projects are newly reviewed projects that have been conditioned with SQUIMP or PCSMP that will have actual physical BMPs requiring annual maintenance. There were several single family hillside homes that were conditioned with PCSMP (< 1 acre Hillside Home) but are only required to meet site design requirements not physical BMPs requiring maintenance. Thus, these projects are included in the non-squimp, or non-section E numbers.*

5.4.1 **Potential of Offsite Mitigation Projects**

The new requirements of the Permit allow an alternative to compliance with the land development criteria of onsite retention and biotreatment for projects with technical infeasibilities through the use of offsite mitigation. New developments and significant re-developments that have identified technical infeasibilities, and therefore cannot comply with the retention and biofiltration requirements onsite have the option of utilizing alternative mitigation offsite.

The Permittees are in the process of developing an offsite mitigation framework and identifying potential locations. Infill and redevelopment projects that demonstrate technical infeasibility may be eligible for offsite mitigation. The Permittees researched potential management and funding structures for creating a new offsite stormwater alternative mitigation program as identified in the Permit. The project focused on general funding mechanisms, accounting, and the program management structure needed to implement and sustain a long term stormwater retention and/or biofiltration program. The second prong of the project focused on potential locations for the offsite program using an integrated water resources approach. The first step was to determine the potential need for offsite mitigation to understand the scale of projects that may be needed.

Because development projects are required to manage as much water on site as possible the final results of the projected needs assessment yielded a volume of only eight acre feet countywide that would need to be managed offsite by 2030. This volume of water is not a significant amount and did not attract the potential for integrated water resource management programs with third party partners (e.g. local water agencies) to support the development of offsite BMPs. From these studies the Permittees learned that the offsite need for any one project is likely to be small enough to be manageable in the public right-of-way of the permitting agency and maintained through conventional funding mechanisms.

5.4.2 Hydromodification Criteria

The purpose of Hydromodification Control Measures is to minimize impacts to natural creeks due to changes in post-development stormwater runoff discharge rates, velocities, and durations by maintaining, within a certain tolerance, the project's pre-project stormwater runoff flow rates and durations. Hydromodification Control Measures may include onsite, subregional, or regional Hydromodification Control Measures; retention BMPs; or stream restoration measures. Preference will likely be given to onsite Retention BMPs and Hydromodification Control Measures; however in-stream restoration measures may be determined to be the best use of resources and may more effectively and quickly address the beneficial uses of natural drainage systems.

Permittees currently require the interim hydromodification criteria as specified in Permit provision 4.E.III.3(a)(3). Interim criteria was required until the Southern California Water Monitoring Coalition (SMC) completes the Hydromodification Control Study (HCS), and a Hydromodification Control Plan (HCP) for the county is approved by the Executive Officer. A Hydromodification Control Plan was submitted to the Regional Board Executive Officer on September 16, 2013. Until the approval of the HCP, the Interim Hydromodification Control Criteria will be applicable to non-exempt new development and redevelopment projects deemed complete after the TGM 2011 effective date. Those which disturb less than 50 acres shall be complying by meeting the stormwater management standards contained in the 2011 TGM. Projects disturbing 50 acres or greater must develop and implement a Hydromodification Analysis Study (HAS) to demonstrate that post development conditions are expected to approximate the pre-project erosive effect of sediment transporting flows in receiving waters. The HAS must lead to the incorporation of project

Low Impact Development BMP incorporated into the landscaping design features intended to approximate, to the extent feasible, an Erosion Potential value of 1, or any alternative value that can be shown to be protective of the natural drainage systems from erosion, incision, and sedimentation that can occur as a result of flow increases from impervious surfaces and damage stream habitat in natural drainage systems.

To ensure the HCP adequately addressed the Permit requirements, and the concerns of the stakeholders, a public stakeholder meeting was held on July 30, 2013. The goals of the meeting were to explain the new hydromodification control requirements, where they apply, and how the HCP will assist the development community in meeting them. This well attended meeting included representatives from the Regional Board, Heal the Bay, the development community, public agency staff, and a BMP manufacturer. Comments were received from four stakeholders and incorporated into the draft HCP as appropriate. All written comments were reviewed by our working group comprised of land development and planning staff from all Ventura County Permittees. Consensus was reached on how to best incorporate the comments while maintaining the HCP's usefulness and compliance with the Permit requirements.

To ensure a smooth transition to the new requirements the Program, in cooperation with the Building Industry Association, is planning a training seminar to cover the approved hydromodification control plan, and review the low impact development and water quality control Permit requirements explained in the TGM.

Performance Standard 5-3

Participate in the Stormwater Monitoring Committee's Hydromodification Control Study			
	Yes	No	N/A
Ventura Countywide Stormwater Quality Program	☑		

Performance Standard 5-4

Develop watershed specific HCPs? (180 days after the completion of the SMC HCS)			
	Yes	No	In Progress
Ventura Countywide Stormater Quality Program	☑		

The Permit states that “Permittees may exempt projects from implementation of hydromodification controls where assessments of downstream channel conditions and proposed discharge hydrology indicate that adverse hydromodification effects to present and future beneficial uses of Natural Drainage Systems are unlikely: Projects that discharge directly or via a storm drain into concrete or improved (not natural) channels (e.g., rip rap, sackcrete, etc.).” The susceptibility of receiving waters to hydromodification impacts is summarized by identifying non-susceptible receiving waters and describing the location of modified conveyance systems. Water bodies within and downstream of each Permittee’s jurisdiction have been mapped as either susceptible or non-susceptible to hydromodification impacts. Per the Permit, non-susceptible water bodies include: lakes, sumps, tidally influenced water bodies, large rivers, and modified conveyances. Water bodies that are considered susceptible to hydromodification impacts are the remaining natural stream channels. The Receiving Water Susceptibility Map was created to provide quick information to the development community. This map is considered a living document that will be updated by the Permittees if more accurate information on drainage infrastructure is obtained in the future.

While hydrologic analyses for flood control, such as those contained in the Ventura County Hydrology Manual (VCWPD, 2010), are based on evaluating the magnitude of one or a few large discrete events (on the order of hours to days), hydromodification analysis focuses on continuous simulations (spanning over several decades) which take into account both flow magnitude and duration. Because hydromodification analysis looks at both magnitude and duration of the long-term record, the large but rare flowrates that are crucial to flood control can be relatively insignificant when considering sediment transport and changes in channel form. The most important range of flows from the perspective of affecting channel form are the relatively frequent flows that are contained primarily within the active channel and not the rare, high magnitude flows which exceed the rate of flow that can be contained in the normally wetter perimeter of the channel.

Curb bump-out in residential neighborhood

Flows which create high enough shear stresses to initiate sediment transport within the channel and which occur frequently enough to have influence over long-term stream morphology are considered "geomorphically-significant" flows. To provide perspective on the timescales of interest, a peak storm discharge may contribute to a bed scour hole, which slowly fills in with sediment over days to months after the event takes place. But if the time scale considered for stream stability is on the order of several decades, then the contribution of the short duration peak discharge to that scour hole may be a negligible perturbation on the overall record of channel form.

5.5 PLAN REVIEW AND APPROVAL PROCESS (CONTROL MEASURE LD3)

Stormwater quality controls should be considered throughout the development plan review and approval process. Comprehensive review by the Permittees of development plans must be provided in order to ensure that stormwater controls minimize stormwater quality impacts.

5.5.1 Conduct BMP Review

Permittees conducted a detailed review of site designs and the proposed BMPs. Review included matching BMPs to the pollutants of concern, sizing calculations, pollutant removal performance and municipal approval. Project designs are not approved unless all conditions have been met.

5.5.1 Establish Authority among Municipal Departments with Project Review Jurisdiction

Permittees have an established structure for communication and delineated authority between municipal departments that have jurisdiction over project review, plan approval, and project construction. Each Permittee has approached this in the manner that will be most effective within their organization.

Interdepartmental communication and coordination does not represent a complicated hurdle for the smaller agencies, however, larger agencies such as the County of Ventura have formally drafted Memorandums of Understanding to establish the structure and define responsibilities.

Performance Standard 5-5

Conducted a detailed review of proposed BMPs. Review included sizing calculations and pollutant removal performance			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

Performance Standard 5-6

Established authority among municipal departments with project review jurisdiction control BMPs. (by July 8, 2011)			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark			☑
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

5.6 TRACKING, INSPECTION AND ENFORCEMENT (CONTROL MEASURE LD4)

Permittees have implemented a tracking systems and an inspection and enforcement program for new development and redevelopment post-construction stormwater BMPs.

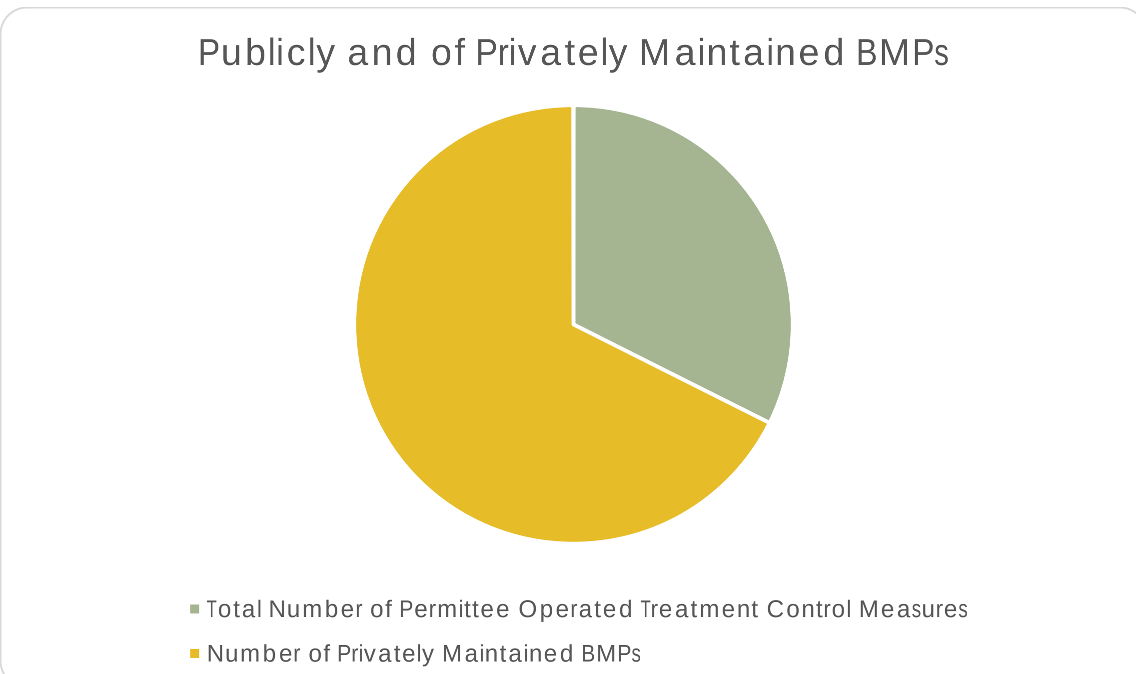
5.6.1 Develop/Implement a Tracking System for Post-Construction Treatment Control BMPs

Permittees have been conditioning development projects for stormwater controls since the 2002 TGM and understand that maintenance of these BMPs is instrumental to their performance of improving water quality. Developing and implementing a system for tracking projects that have been conditioned for post-construction treatment control BMPs is necessary to ensure that BMPs are properly maintained and working. The Permit requires this tracking system be in place by July 8, 2011.

Each Permittees' electronic system should contain the following information:

- Municipal Project ID
- State WDID No.(IAGSP)
- Project Acreage
- BMP Type and Description
- BMP Location (coordinates)
- Date of Acceptance
- Date of Maintenance Agreement
- Maintenance Records
- Inspection Date and Summary
- Corrective Action
- Date Certificate of Occupancy Issued
- Replacement or Repair Date

Figure 5-2 Publicly and Privately Maintained BMPs



5.6.2 Conduct Inspections of Completed Projects

Beginning July 8, 2011 the Permittees are required to conduct inspections of completed projects subject to the Planning and Land Development Program requirements to ensure proper installation of all approved control measures have been implemented and are being maintained. Identifying and tracking these projects will follow the development permitting process. The Certificate of Occupancy is withheld until a project can show that BMPs have been installed as designed on approved plans. See Attachment B for an example inspection checklist from the City of Camarillo.

Performance Standard 5-7

Develop and implement a system for tracking projects that have been conditioned for post-construction treatment control BMPs? (by July 8, 2012)			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

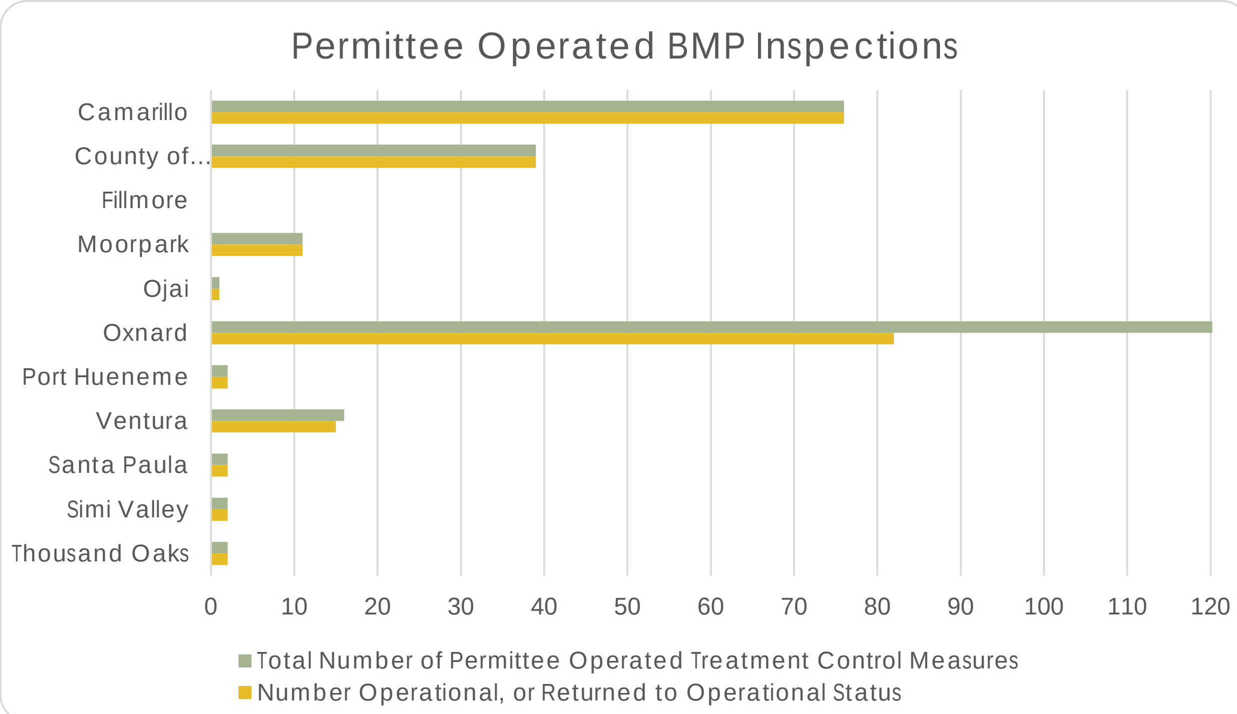
Performance Standard 5-8

Conduct inspections of completed projects subject to the Planning and Land Development Program requirements to ensure proper installation of BMPs (effective 90 days after approval of Manual)			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

5.6.3 Conduct Inspections of Permittee Owned BMPs

The Permittees are responsible for the inspection and maintenance of BMPs they own and operate. Sometimes Permittees will accept this responsibility from a development as a way to ensure that proper maintenance is performed. Not all Permittees own and operate BMPs, and some have not yet installed or accepted ownership of permanent BMPs. These inspections are required once every two years. The first inspection was due July 8, 2012, which is outside the reporting period of this Annual Report.

Figure 5-3 Permittee Operated BMPs



Specific efforts some Permittees have made to inspect BMPs are detailed below:

Moorpark - Permittee Operated BMPs: Number of treatment control devices are lumped by project. The 11 treatment control devices provided above contain multiple BMPs for each site such as multiple detention basins, trash excluders, etc.

The database of private BMPs is currently being developed and owner contacts are being updated for future contact/maintenance reports.

LID Feature in Moorpark

Ojai - City corporate yard is Permittee operated BMP's covered in public agency activities.

Oxnard - City of Oxnard Collections staff inspect and maintain City owned treatment control devices. The number of permittee operated BMPs has been increasing as completed housing tracks in the Riverpark community have released infrastructure to the City per developement agreements. A vactor truck is used to pump out and remove sludge and debris as needed. All residual wastewater is disposed of in the Oxnard Wastewater Collection System. Technical Services Program-Stormwater staff work with the City Civil Engineers to maintain a database for all the privately owned BMPs. As projects are completed, developers are required to file a covenant of agreement detailing the location of the BMP device along with a maintenance plan/schedule. The storm water maintenance agreement for privately maintained BMPs has been revised to include language with requirements for annual report submittal.

Ventura – BMP inspections are performed routinely by either Parks personnel or private contractors who are responsible for the cleaning and maintenance of treatment devices operated by the City. Private owners are notified annually by registered mail, requesting maintenance records for the post construction BMP's. A City inspection may satisfy the requirement for reporting from the private party. After inspection, if maintenance is required, an additional letter will be sent requiring follow-up and reporting. Enforcement follows no reply and/or non-compliance. This year Maintenance Assessment Districts 17 and 18 were added.

Performance Standard 5-7

Inspect post-construction BMPs operated by the Permittees at least once every 2 years			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark			☑
Ojai	☑		
Oxnard		☑	
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

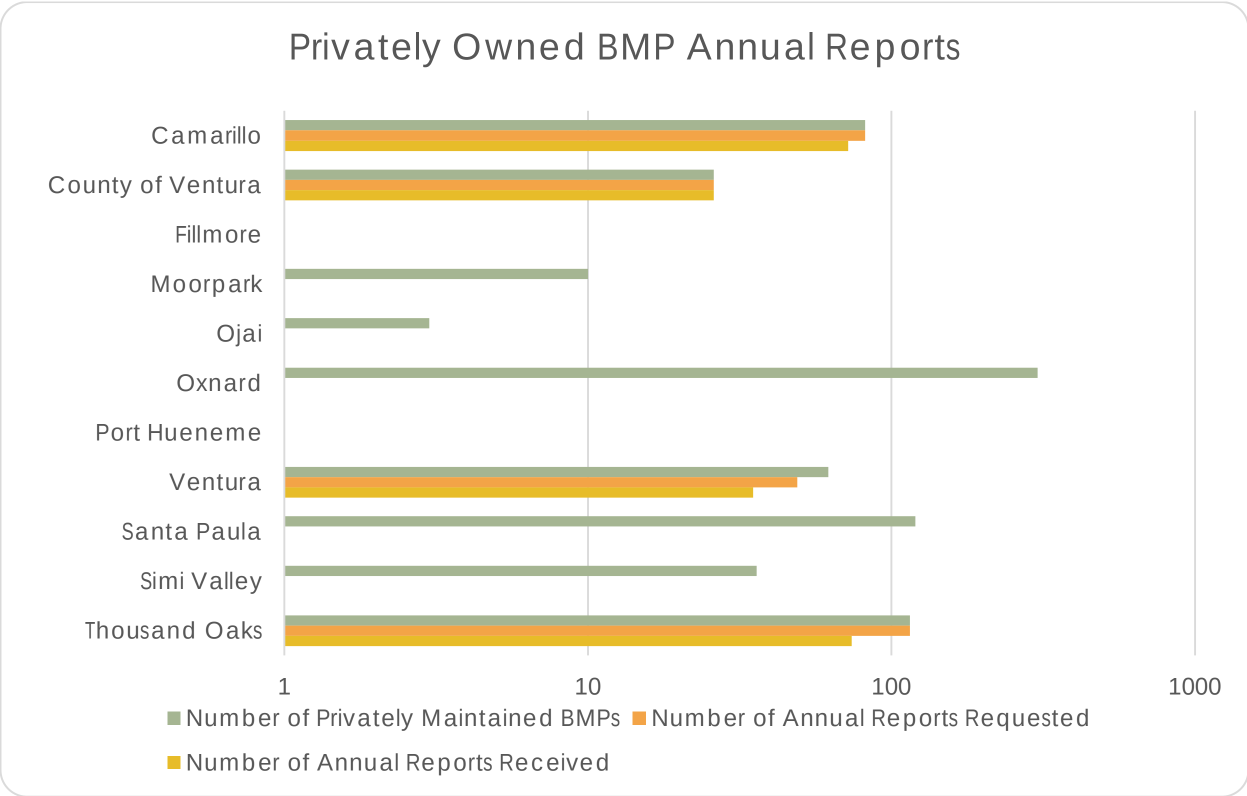
Performance Standard 5-8

Require annual reports for private post-construction BMPs to demonstrate proper maintenance and operations			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

5.6.1 **Require Annual Reports for Post-Construction BMPs**

In July of 2011 the Permittees were required to require the submittal of Annual Reports for BMPs maintained by parties other than the Permittees. The annual statements provide information to the Permittees showing that the BMPs have been properly maintained. In many cases a copy of an invoice from a service provider showing the date maintenance performed will suffice for an annual report.

Figure 5-4 BMP Annual Reports



5.6.2 **Take Enforcement Action**

Inspections and the requirement for annual reports are only the first steps towards ensuring BMPs are operational. Enforcement actions based on the results of the inspection may be needed in order to bring the facility into compliance. The Permit requires inspections of Permittee owned BMPs and enforcement is not necessary in that scenario. To ease future compliance the Permittees are performing educational outreach to the owner/operators of BMPs.

A performance standard on enforcement may be developed in future reports, however, enforcement would only be needed when there is non-compliance. Low enforcement numbers (high level of compliance) may represent an effective program just as well as high enforcement numbers would represent a determined effort to return BMPs to compliance.

5.7 MAINTENANCE AGREEMENT AND TRANSFER (CONTROL MEASURE LD5)

Maintenance agreements and transfers ensure that post-construction BMPs will remain effective upon project completion and continued occupancy. As a condition of approval for all priority development projects, Permittees require the owner/developer/successor-in-interest of stormwater BMPs to provide proof of control measure maintenance in the form of a Stormwater Treatment Device Operation and Maintenance Agreement and a Maintenance Plan.

Low Impact Development infiltration BMP

5.7.1 Require Stormwater Treatment Device Operation and Maintenance Agreement

Permittees integrated the development/submittal of a stormwater maintenance agreement as a condition within the project approval process for projects subject to the Permit's Planning and Land Development Program requirements. To enforce the requirements of post-construction BMPs, a Maintenance Agreement is required to be executed between the Permittee and the owner/developer/successor-in-interest for any private facilities who remain the responsible party in operating and maintaining the post-construction Treatment Control Measures.

The 2002 TGM and the 2011 TGM revisions address the development and submittal of Maintenance Agreements when a developer is responsible for ongoing maintenance of onsite treatment BMPs.

Performance Standard 5-9

Require an operation and maintenance plan for applicable stormwater BMPs			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

5.8 TRAINING (CONTROL MEASURE LD6)

Training is important to the successful implementation of the Planning and Land Development Program Element. An effective training program is one of the best pollution prevention BMPs that can be implemented because this subject is complicated and requires many interpretations and judgment calls.

To facilitate the implementation of the new Technical Guidance Manual a special training session was held in June of 2011. This training was open to private sector developers as well as the planners and plan check engineers who will be interpreting and implementing the new standards. It was important to have everybody in the same room receiving the same training to minimize confusion and conflict at the counter when actual projects come in for approval. This six-hour training was attended by well over one hundred people.

Training Session

Figure 5-5 Land Development Training

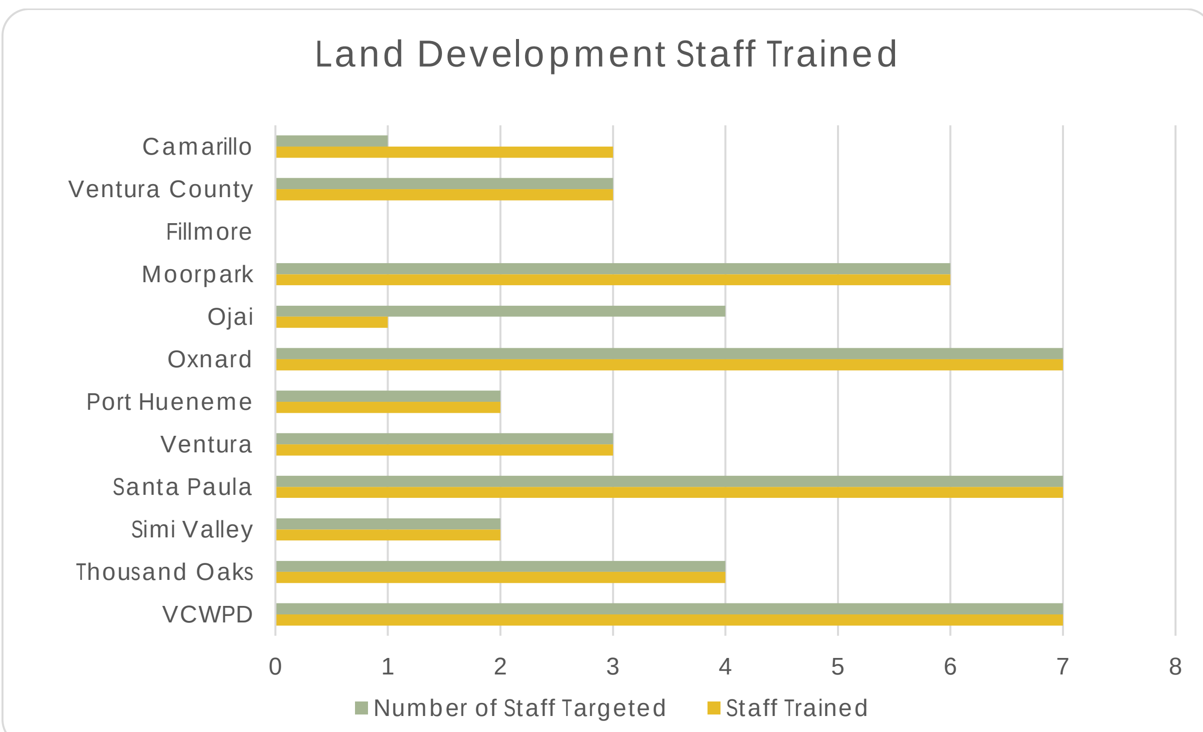


Table 5-3 Training Areas of Focus for the Planning and Land Development Program Element

Target Audience	Format	Subject Material
• Plan Checkers • Engineers • Building and Construction Inspectors • Builders • Design Professionals • Regulators • Resource Agencies • Other Stakeholders	• Classroom	• Overview of 2011 TGM • Integration of LID at various project scales • Guidance on relationship between LID strategies, source control BMPs, and hydromodification control requirements • Highlight LID pilot projects and demonstration projects

5.9 EFFECTIVENESS ASSESSMENT (CONTROL MEASURE LD7)

Effectiveness assessment is a fundamental component for developing and implementing successful stormwater programs. In order to determine the effectiveness of the Planning and Land Development Program, a comprehensive assessment of the program data is conducted as a part of the annual report. The results of this assessment are used to identify modifications that need to be made to the program. Each year the effectiveness assessment is reviewed and revised as needed.

By conducting these assessments and modifying the program as needed, the Permittees ensure that the iterative process is used as an effective management tool. Due to the types of data collected for the Planning and Land Development Program, current and future assessments will primarily focus on Outcome Levels 1, 2 & 3.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?
- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard increased awareness of a target audience?
- Outcome Level 3 (L3) answers the question: Can the Permittees demonstrate that the control measure/performance standard changed a target audience's behavior, resulting in the implementation of recommended BMPs?

The following is an assessment regarding the effectiveness of the Planning and Land Development Program.

5.9.1 State Statute Conformity

Review/Revise CEQA Review Documents

The CEQA process and plan review process is an effective mechanism for addressing stormwater quality issues early in the planning stages. Where applicable, all Permittees have reviewed their internal planning procedures for preparing and reviewing CEQA documents. All Permittees have formally integrated stormwater quality issues into the CEQA review process (L1).

Revise the General Plan

The majority of Permittees have either already incorporated or are in the process of incorporating stormwater requirements into their General Plans (L1). This control measure is dependent on the scheduled updates/amendments to General Plans which varies greatly by municipality. Once updated, Permittees will submit draft elements to the Regional Board for review. Effectiveness of this control measure will continue to be evaluated as progress is made.

5.9.2 New Development Performance Criteria

Update the 2002 Ventura County TGM

The 2002 Ventura County TGM was updated and submitted to the Regional Board on June 16, 2011 (L1). The updated TGM (2011 TGM) includes:

- Interim hydromodification criteria (addressed in Section 2 of the TGM);
- Expected BMP pollutant removal performance (addressed in Section 3 and Appendix D);
- Improved correlation of BMPs with stormwater POCs (addressed in Section 3 and Appendix D);
- BMP maintenance and cost considerations (addressed in Section 7, Appendices H &I);
- Integration of integrated water resources planning and management goals (Sections 1 and 4).

Require Compliance with Performance Criteria

Permittees continued to require compliance with 2002 TGM for all SQUIMP new development and redevelopment project categories (L1). As indicated in Figure 5-1, Permittees reviewed 819 projects and required 271 projects to implement source control and/or water quality treatment (note these numbers apply to both SQUIMP and non-SQUIMP project categories) (L2). The 2011 TGM became effective October 11, 2011, 90 days after its approval by the Regional Board Executive Officer. With the 2011 TGM in effect, priority new development and redevelopment projects will be required to comply with the 5% EIA Requirement and other new development provisions contained within Order No. R4-2010-0108.

Documentation of Offsite Mitigation Projects

Individually the Permittees are in the process of developing an offsite mitigation framework and creating a list of potential locations.

Require Hydromodification Criteria

The Permittees currently require SQUIMP project categories to comply with the interim hydromodification criteria (L1). Permittees will implement the Hydromodification Control Plan once approved by the Regional Board's Executive Officer (L1).

5.9.3 Plan Review and Approval Process

Conduct BMP Review

Proposed post-construction BMPs were reviewed by each of the Permittees. BMP review included calculation sizing and pollutant removal performance. Permitees have effectively conducted BMP review for several years now and current review mechanisms are considered adequate (L1).

Establish Authority among Municipal Departments

Each Permittee has successfully established the authority for review of stormwater quality measures. The mechanism varies by Permittee and for the larger Permittees may consist of a formal MOU (L1).

5.9.4 Tracking, Inspection and Enforcement

Develop/Implement Tracking Mechanism

Permittees have been conditioning development projects for stormwater controls since the last permit and understand that maintenance of these BMPs is instrumental to their performance of improving water quality. Developing and implementing a system for tracking projects that have been conditioned for post-construction treatment control BMPs is necessary to ensure that BMPs are properly maintained and working. (L1)

Conduct Inspections of Completed Projects

This performance measure was due July 8, 2011 and all 11 Permittees have conducted inspections of completed projects to ensure they were done in accordance with the land development requirements, or do not have completed projects and are in the process of developing their inspections programs (L1) (L2).

Conduct Inspections of Permittee Owned BMPs

All of the Permittees are inspecting the BMPs they own and operate, while others have not built or adopted BMPs. (L1) (L4)

Take Enforcement Action

Two of the Permittees have needed to take enforcement action to ensure proper BMP maintenance – the rest reported that enforcement actions were not necessary to achieve compliance. (L2)

5.9.5 Maintenance Agreement and Transfer

Require Stormwater Treatment Device Access and Maintenance Agreement

Permittees have required since 2002, and will continue to require, a maintenance agreement to ensure proper maintenance and permission to enter property and access BMPs (L1).

Require Annual Reports for Post-Construction BMPs

All Permittees reported that they have required annual reports as required by the Permit.

5.9.6 Training

Conduct Training

During this reporting period, Permittees trained 45 staff. Training primarily focused on updates to the 2011 TGM (L1).

5.10 PLANNING AND LAND DEVELOPMENT PROGRAM MODIFICATIONS

On an annual basis, the Permittees plan to evaluate the results of the Annual Report, as well as the experience that staff has had in implementing the program, to determine if any additional program modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the MEP. Any key modifications made to the Land Development Program Element during the next fiscal year will be reported in the following Annual Report, such as the implementation of any new requirements that became effective during the 2015/16 Permit year.

6 Development Construction

6.1 OVERVIEW

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

Reducing pollutants from construction activities has been a focus of the Permittees' compliance program since the stormwater program's inception. The Permittees regulate private construction activities, and also have responsibility for the construction and renovation of municipal facilities and infrastructure (these projects are reported in Section 7 Public Agency Activities). Major components of the Permittee's Construction Program include:

- Review of local SWPPPs for compliance with local codes, ordinances, and permits;
- Inspection of all construction sites for the implementation of stormwater quality controls a minimum of once during the wet season. Follow-up inspections take place within two weeks for sites found to have not adequately implemented their Local SWPPP;
- Require proof of filing a Notice of Intent (NOI) for coverage under the State General Construction Permit prior to issuing a grading permit for all projects requiring coverage.

Additionally, the Construction Program provides construction site owners, developers, contractors, and other responsible parties information on the requirements and guidelines for pollution prevention/BMP methods. To ensure construction sites are implementing the SWPPPs properly, each jurisdiction conducts inspections during the rainy season to verify the appropriateness and implementation of BMPs, taking enforcement action as necessary. Inspectors are also visiting the sites in the dry season to ensure the potential for illicit discharges has been reduced. Training and outreach is done regularly to improve the quality and consistency of program implementation throughout Ventura County.

The Permittees attend the Construction Subcommittee meetings to coordinate and implement a comprehensive program to mitigate impacts on water quality from construction sites to the MEP. In order to facilitate effective inspections and to document compliance with this requirement the Construction Subcommittee developed a model Stormwater Quality Checklist for Permittee use, which can be found in Attachment C. The checklist and the meetings create countywide consistency in the programs, however, the Permittees usually modify their programs to address particular issues, concerns, or constraints that are unique to a particular watershed, or to an individual municipality. The subcommittee is attended by representatives of the Permittee's municipal staff from various departments including Engineering Services, Planning and Land Development, and Inspection Services.

6.2 CONTROL MEASURES

The Permittees have developed several Control Measures and accompanying performance standards to provide information for optimizing the program and ensure that the construction-related requirements in the Permit are met. For each Control Measure there are accompanying performance standards which, once accomplished, constitute compliance with the Permit.

The Development Construction Program Control Measures consist of the following:

DC	Control Measure
DC1	Plan Review and Approval Process
DC2	Inventory
DC3	Inspections and BMP Implementation
DC4	Enforcement
DC5	Training
DC6	Effectiveness Assessment

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

At the end of this chapter these control measures are evaluated to determine the effectiveness of this program element.

6.3 PLAN REVIEW AND APPROVAL PROCESS (CONTROL MEASURE DC1)

The Plan Review and Approval Process control measure provides the Permittees with the mechanism to review and approve construction plans to address sediment and erosion controls. Effective planning of construction site activities leads to minimizing erosion and preventing pollutants from entering the storm drain system. The Permittees require all projects that disturb less than one acre of land to address pollutants and activities during the construction phase of the project by implementing the erosion control, sediment control, non-stormwater management, and waste management BMPs identified in the NPDES Permit. For larger projects greater than one acre and less than five acres, the list of required BMPs gets progressively larger, more complex, and more protective. Prior to issuing a grading permit, the Permittees review construction and grading drawings to ensure that necessary erosion and sediment control BMPs and source and treatment control BMPs are identified and properly designed to control runoff pollution to the MEP. In the case of construction that encroaches in the Watershed Protection District's right-of-way, those projects are inspected but are invariably part of a larger project and the lead agency for that project is the jurisdiction with land use authority to permit the design and building of that larger project.

6.3.1 Review Grading and Construction Permit Applications for SWPPP Requirements

Prior to approving a grading permit, the Permittees require a SWPPP be submitted for projects greater than one acre. Additionally, as is mandatory for all construction related activity disturbing one or more acres, Permittees require proof of filing an NOI for projects subject to the General Construction Permit. The SWPPP remains in effect until the construction site is stabilized and all construction activity is completed. The SWPPP includes identification of potential pollutant sources and the design, placement and maintenance of BMPs to effectively prevent the entry of pollutants from the construction site to the storm drain system. In addition, the Permittees require construction projects to include the following requirements:

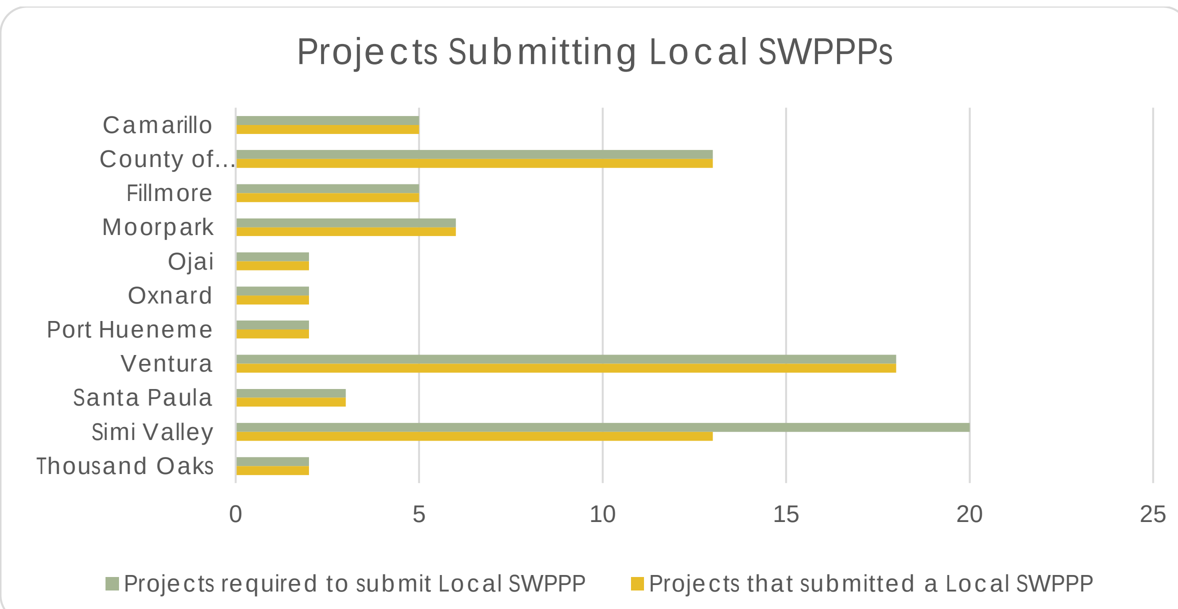
- Erosion from slopes and channels will be eliminated by implementing BMPs;
- Sediments generated on the project site shall be retained using structural drainage controls;
- No construction-related materials, wastes, spills, or residues shall be discharged from the project site to streets, drainage facilities, or adjacent properties by wind or runoff;

- Non-stormwater runoff from equipment and vehicle washing and any other activity shall be contained at the project site;

The Permittees have also incorporated SWPPP provisions in their own construction projects resulting in soil disturbance of one acre or more, located in hillside areas, or directly discharging to an ESA. Many Permittees have multiple Construction General Permit Qualified SWPPP Developers (QSD) and/or Qualified SWPPP Practitioners (QSP) on staff. The Permittees also include provisions delineating contractor responsibilities for SWPPP preparation, implementation, for performance of the work and ancillary activities in accordance with the SWPPP approved by the Permittee for the project. In some jurisdictions, Local SWPPPs were required and submitted for nearly all projects, including those not exceeding Permit thresholds. This conservative approach underlines the importance the Permittees place on ensuring implementation of stormwater controls at construction sites.

The number of grading permits issued during this reporting period does not directly reflect the number of active construction projects. This is due to the fact that larger projects can take longer than a year to complete. Conversely, not all projects that received grading permits granted during the Permit year actually broke ground on grading and construction. Because of these facts the number of active projects requiring inspection does not always match the number of grading permits granted. A project may be operating under a grading permit granted the previous year, or the grading permits may have been granted after the wet season so there was no opportunity for a wet season inspection, for these reasons the number of permits and projects inspected rarely match.

Figure 6-1 Local SWPPPs



6.3.2 Requirements for Projects Subject to the General Stormwater Permit

The Permittees require all construction projects subject to the General Stormwater Permit for Construction Activities to submit proof of filing an NOI prior to issuing a grading permit. Proof of filing an NOI can include a copy of the completed NOI form and a copy of the check sent to the State Water Resources

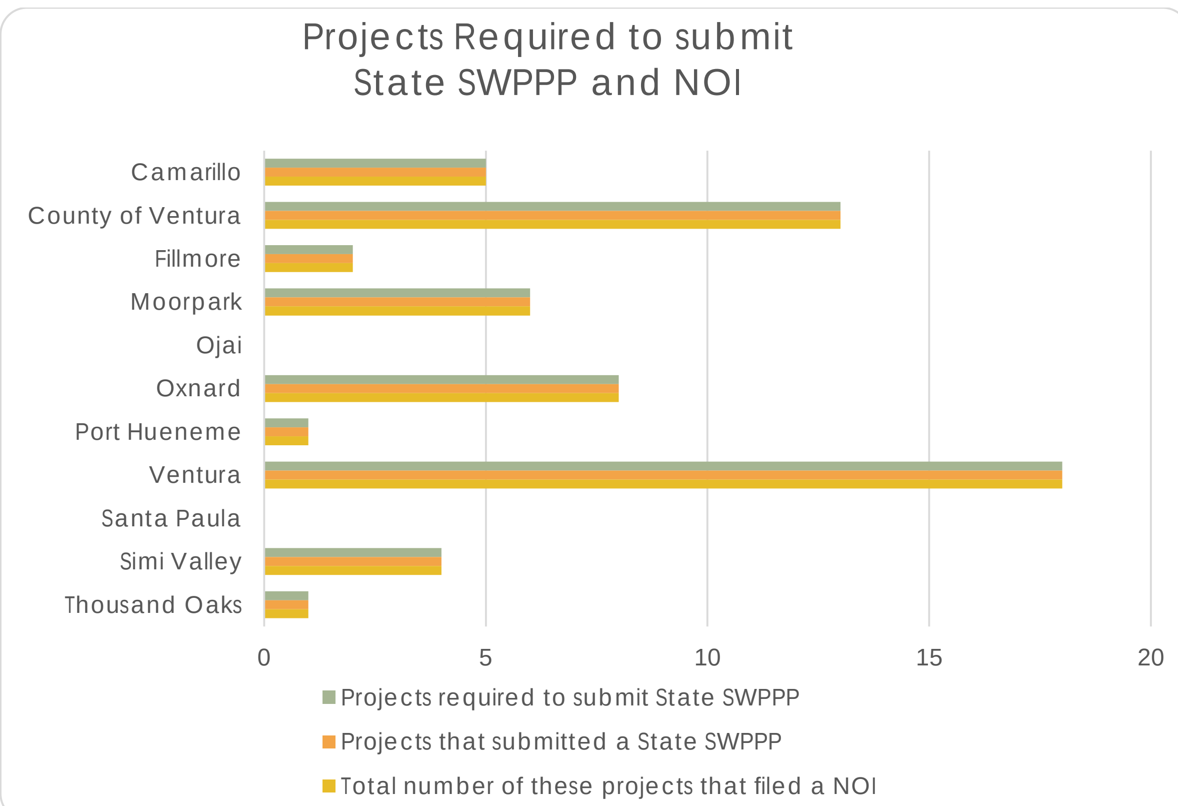
Control Board (SWRCB), or a copy of the letter from the SWRCB with the Waste Discharge Identification Number (WDID) for the project.

In addition, the Permittees will file NOIs with the SWRCB and pay the appropriate fees when Permittee construction projects require coverage under the General Construction Permit. The NOIs and appropriate fees are sent to the State prior to the commencement of any construction activity covered by the General Construction Permit. A copy of the NOI is kept with the project files and in the SWPPP for the project.

Permittees inspect more construction sites than are required to submit a SWPPP, and inspect them more frequently for stormwater compliance than the permit requires.

Projects subject to the requirements of the General Construction Permit currently include those involving clearing, grading, or excavation resulting in soil disturbances of at least one acre. Permittee emergency work and routine maintenance projects do not require preparation of a SWPPP. That does not imply that stormwater controls are not implemented during these activities. Routine maintenance and emergency projects are performed in accordance with the Permit's requirements for Public Agency Activities.

Figure 6-2 State SWPPPs and NOIs

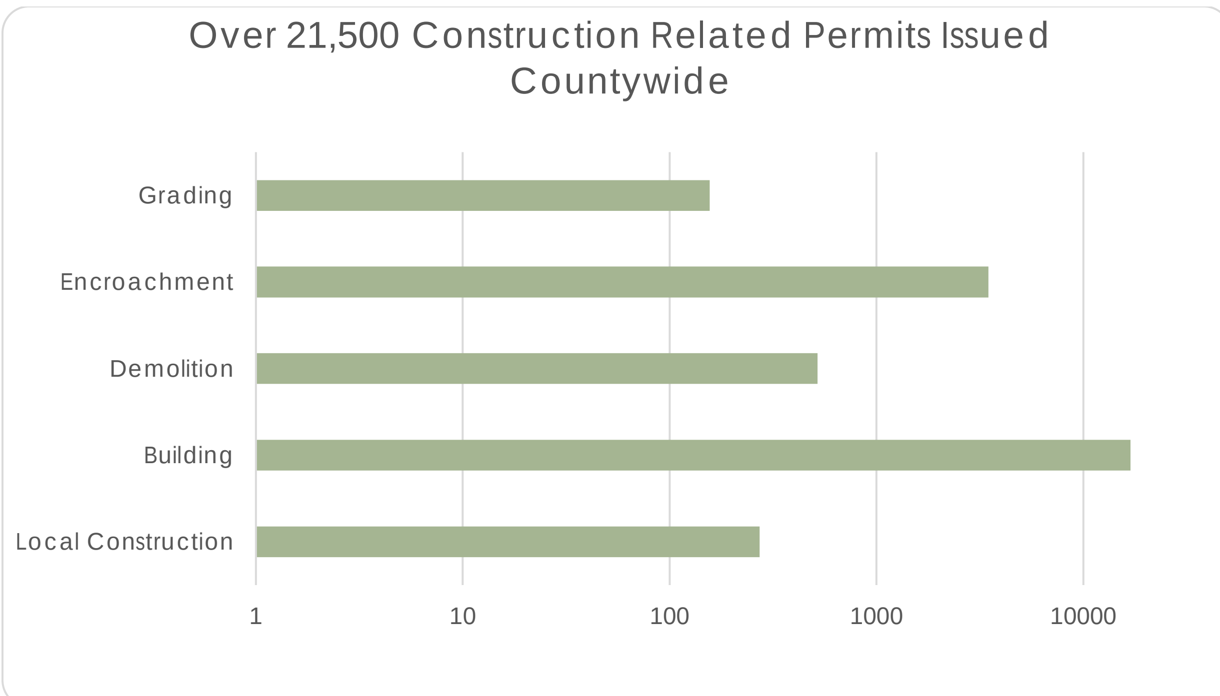


6.4 INVENTORY (CONTROL MEASURE DC2)

The Construction Projects Inventory Control Measure involves tracking construction sites from the planning stage to completion. This is essential for ensuring that stormwater pollutants are reduced to the MEP. Maintaining a database to track all stages of the construction process is the foundation of construction-related source identification and helps to ensure that pollution prevention and source control are emphasized during all phases of the construction project. The permitting process is also an opportunity to provide stormwater education and outreach to the construction community and to emphasize the penalties that can be incurred with non-compliance.

The Permittees have programs in place to track all grading, encroachment, demolition, and building permits as required by the NPDES Permit. In order to ensure the appropriate BMPs are being implemented when soil disturbing activities are taking place, the Permittees focus on the grading permit process to identify projects and the level of BMPs required. This has been determined as the most effective way to track projects with a potential to impact water quality as many encroachment, building, and other permits that are not associated with grading activities do not present the same level of risk to stormwater quality.

Figure 6-3 Construction Permits Issued



Performance Standard 6-1

Maintain an electronic system to track grading permits, encroachment permits, and any other municipal authorization to move soil			
	Yes	In Progress	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore			
Moorpark	☑		
Ojai			
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula			☑
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

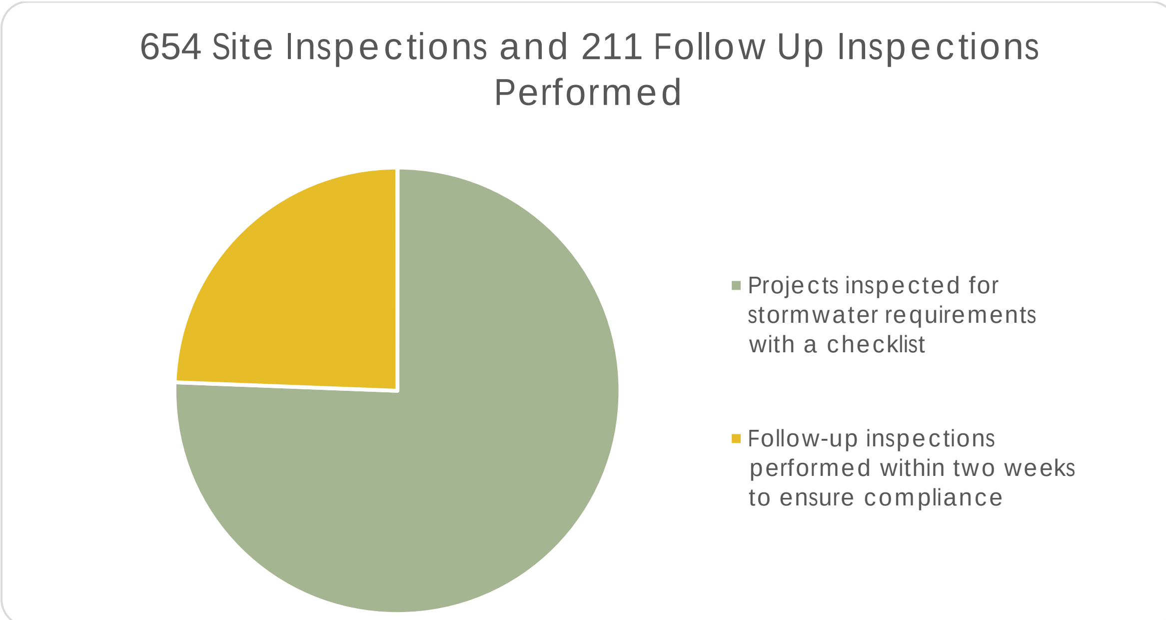
Performance Standard 6-2

Required proof of Change of Information form (COI) and a copy of the modified SWPPP(s) at any time a transfer of ownership takes place			
	Yes	No	N/A
Camarillo			☑
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai		☑	
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula		☑	
Simi Valley	☑		
Thousand Oaks	☑		

6.5 INSPECTIONS AND BMP IMPLEMENTATION (CONTROL MEASURE DC3)

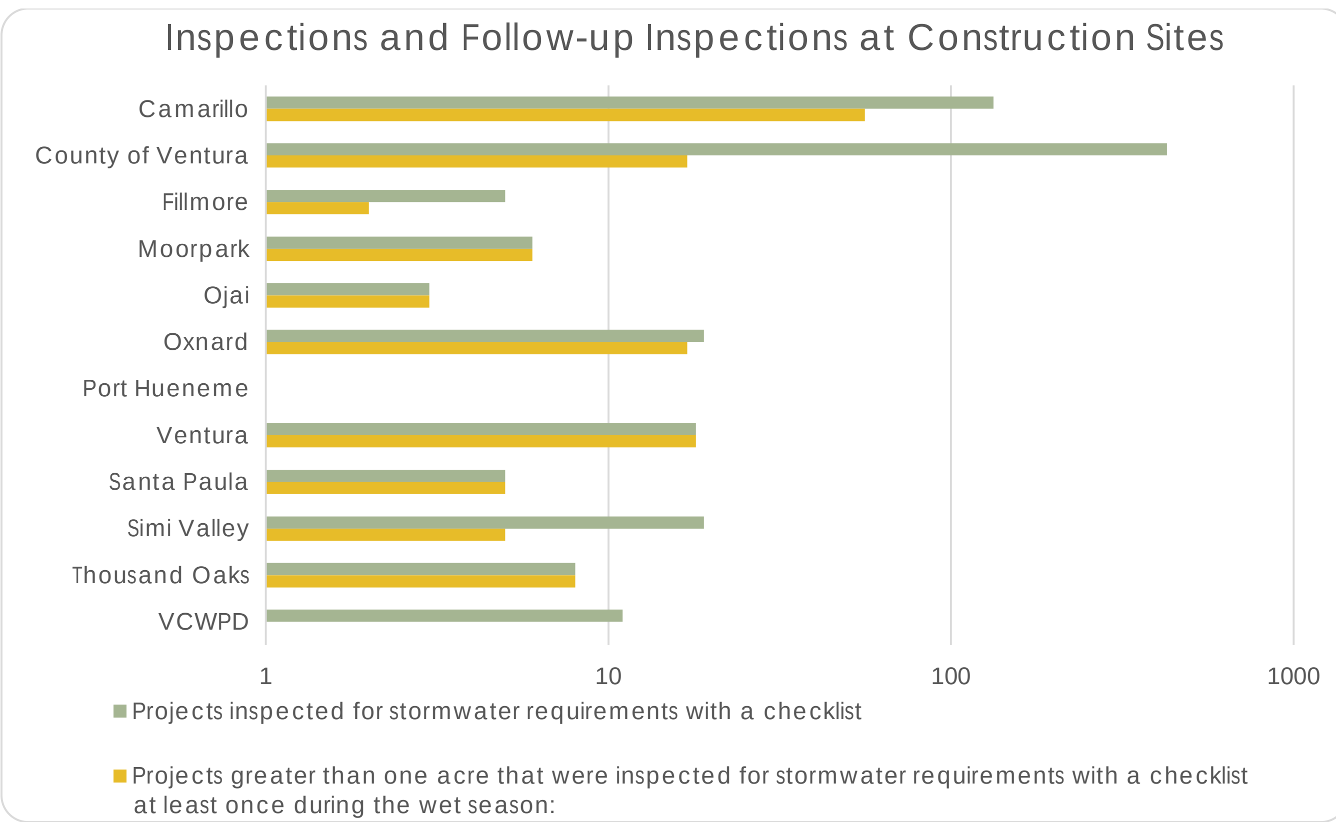
The Inspection and BMP Implementation Control Measure is critical to the ultimate success of the Development Construction Program Element. An effective construction site inspection program requires having adequate legal authority to enforce Permittee requirements, conducting inspections to ensure the sources are identified and that BMPs are being implemented and maintained, and tracking active construction sites to identify repeat violators. The inspection program also provides the basis for notifying the Regional Water Board when inspectors identify non-compliant sites including non-filers or repeat violators.

Figure 6-4 Site Inspections and Follow-Up



Stormwater inspection at construction site

Figure 6-5 Construction Inspections and Follow-up Inspections



6.5.1 Inspect Construction Sites

The Permittees inspect all active construction sites for the implementation of stormwater quality controls a minimum of once during the wet season, including all construction sites with SWPPPs to determine if the SWPPP is adequately implemented. During these site inspections, a checklist is completed to document inspection results. If it is determined the SWPPP is not adequately implemented, or when there is evidence of a reasonable potential for sediment, construction materials, wastes, or non-stormwater runoff to be discharged from the project site, the Permittees will inform the responsible party of what needs to be corrected and conduct a follow-up inspection within two weeks, but most often it is much sooner. The follow-up inspections are not always scheduled and often the response needed to correct the situation does not require two weeks to implement.

Performance Standard 6-3

Construction sites less than 1 acre were inspected to ensure that the minimum set of BMPs was implemented			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark			☑
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

Performance Standard 6-4

Construction sites greater than 1 acre and less than 5 acres inspected to ensure that the minimum set of BMPs was implemented			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

Performance Standard 6-5

Construction site greater than 5 acres inspected to ensure that the minimum set of BMPs was implemented			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme			☑
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

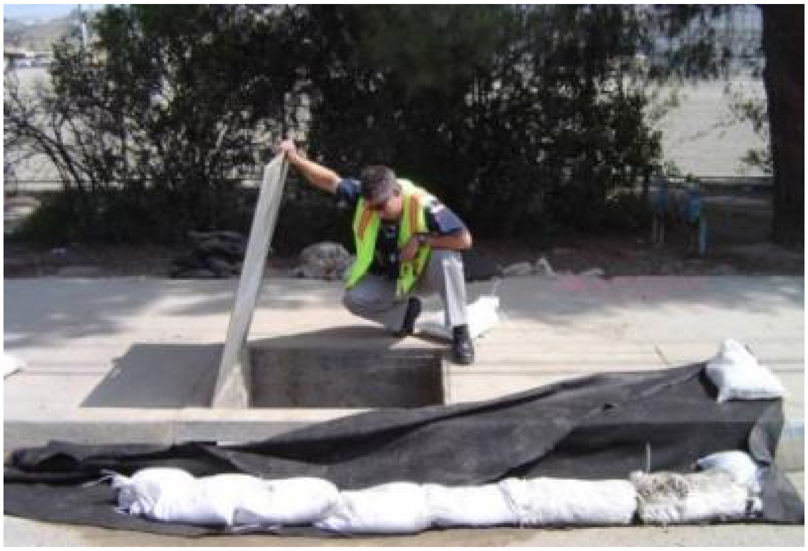
The Permittees inspect each road project that includes roadbed or street paving, repaving, patching, digouts, or resurfacing roadbed surfaces to ensure that the minimum set of BMPs are implemented. This is routinely done at the same time inspections are performed to ensure all work is being performed according to the design and the standards required of public works projects.

Performance Standard 6-6

Projects that include roadbed or street paving, repaving, patching, digouts, or resurfacing roadbed surfaces inspected to ensure that the minimum set of BMPs was implemented			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai			☑
Oxnard	☑		
Port Hueneme			☑
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

6.5.2 Implementation of Enhanced Practices at "High Risk" Sites

Construction sites located on hillsides, adjacent to CWA 303(d) listed waters for siltation or sediment, and directly adjacent to ESAs are termed "high risk" sites. The Permittees ensure implementation of enhanced practices such as increased BMP inspection and maintenance requirements at "high risk" sites to ensure that they do not create a threat to water quality.



Inspection of catch basin BMPs

The Permit requires that "high risk" sites be inspected by the project proponent's Qualified SWPPP Developer or Qualified SWPPP Practitioner or personnel or consultants who are Certified Professionals in Erosion and Sediment Control (CPESC) at the time of BMP installation, at least weekly during the wet season, and at least once each 24 hour period during a storm event that generates runoff from the site. Many of the Permittees did not have any designated high risk construction sites, but did have the program in place to identify and implement the added requirements.

Catch basin protection

Concrete washout at construction site

Performance Standard 6-7

Ensure implementation of enhanced practices such as increased BMP inspection and maintenance requirements at high risk sites			
	Yes	No	N/A
Camarillo			☑
Ventura County	☑		
Fillmore		☑	
Moorpark	☑		
Ojai			☑
Oxnard			☑
Port Hueneme			☑
Ventura	☑		
Santa Paula	☑		
Simi Valley			☑
Thousand Oaks			☑

Performance Standard 6-8

Require that high risk sites be inspected by the project proponent's Qualified SWPPP Developer or Qualified SWPPP Practitioner at high risk sites			
	Yes	No	N/A
Camarillo			☑
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai			☑
Oxnard			☑
Port Hueneme			☑
Ventura	☑		
Santa Paula	☑		
Simi Valley			☑
Thousand Oaks			☑

Construction sites are dynamic and changing environments and must be routinely inspected by the project proponent to ensure that the appropriate BMPs are in place and maintained. Permittees require that the project proponent of high risk sites retain records of the inspection and a determination and rationale of the BMPs selected to control runoff during the wet season.

Performance Standard 6-9

Did the Permittee require that the project proponent retain records of the inspection and a determination and rationale of the BMPs selected to control runoff during the wet season at high risk sites			
	Yes	No	N/A
Camarillo			☑
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai			☑
Oxnard			☑
Port Hueneme			☑
Ventura	☑		
Santa Paula	☑		
Simi Valley			☑
Thousand Oaks			☑

6.5.3 Inspect for Post-Construction Controls

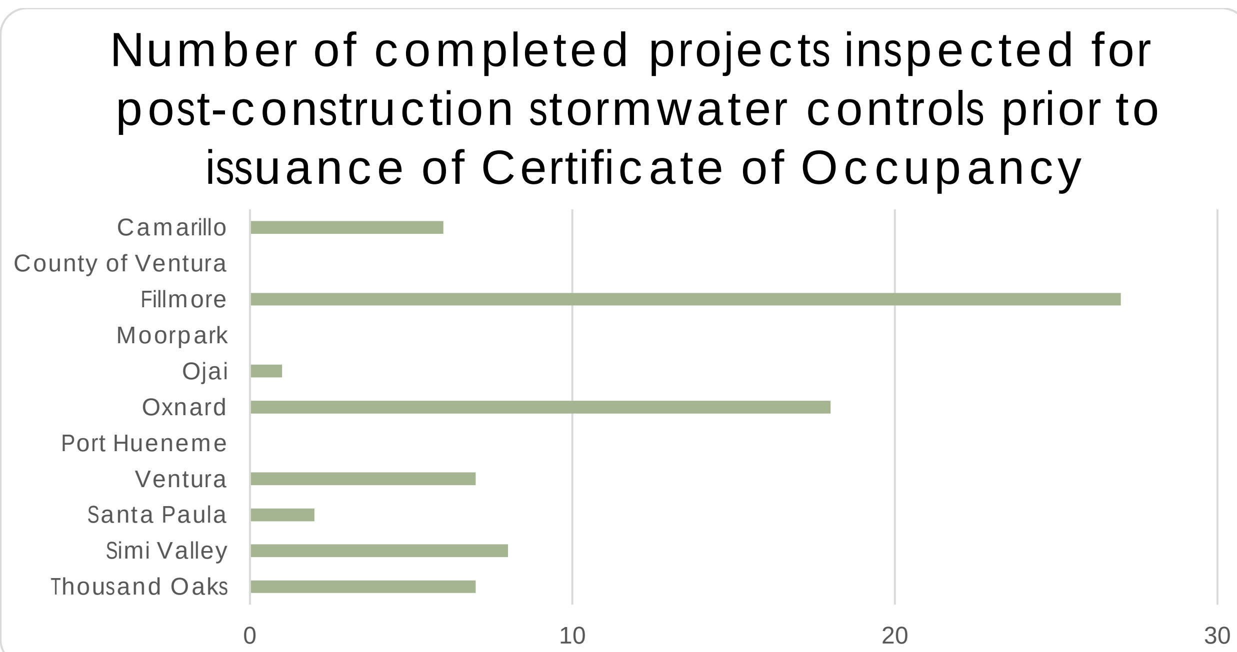
The Permittees inspected the site design as constructed for source control and treatment control BMPs conditioned during the development process to verify that they have been constructed in compliance with all specifications, plans, permits, ordinances, and the MS4 Permit prior to approving and/ or signing off for occupancy and issuing the Certificate of Occupancy for all construction projects subject to post-construction controls. Permanent BMPs may be installed at any point during the construction process and therefore may be exposed to runoff conditions much worse than their intended design. The Permit also requires inspections to ensure that the BMPs are in good operating condition and are not in need of maintenance. These inspections are routinely performed at the same time to be cost efficient and to use the leverage the Certificate of Occupancy provides the Permittee. This requirement is in the Permit in Section F – Construction, and also Section E – Planning and Land Development.

As stated previously, the number of projects reaching the final stages of construction and requesting a Certificate of Occupancy will not directly match the number of active construction sites, or grading permits issued due to the elapsed time from permitting, to project initiation, completion, and finally occupancy.

Performance Standard 6-10

Inspected constructed site design, source control and treatment control BMPs to verify constructed in compliance with all specifications prior to approving issuing the Certificate of Occupancy			
	Yes	No	NA
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark			☑
Ojai			☑
Oxnard	☑		
Port Hueneme			☑
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

Figure 6-6 Inspections Prior to Certificate of Occupancy



6.6 ENFORCEMENT (CONTROL MEASURE DC4)

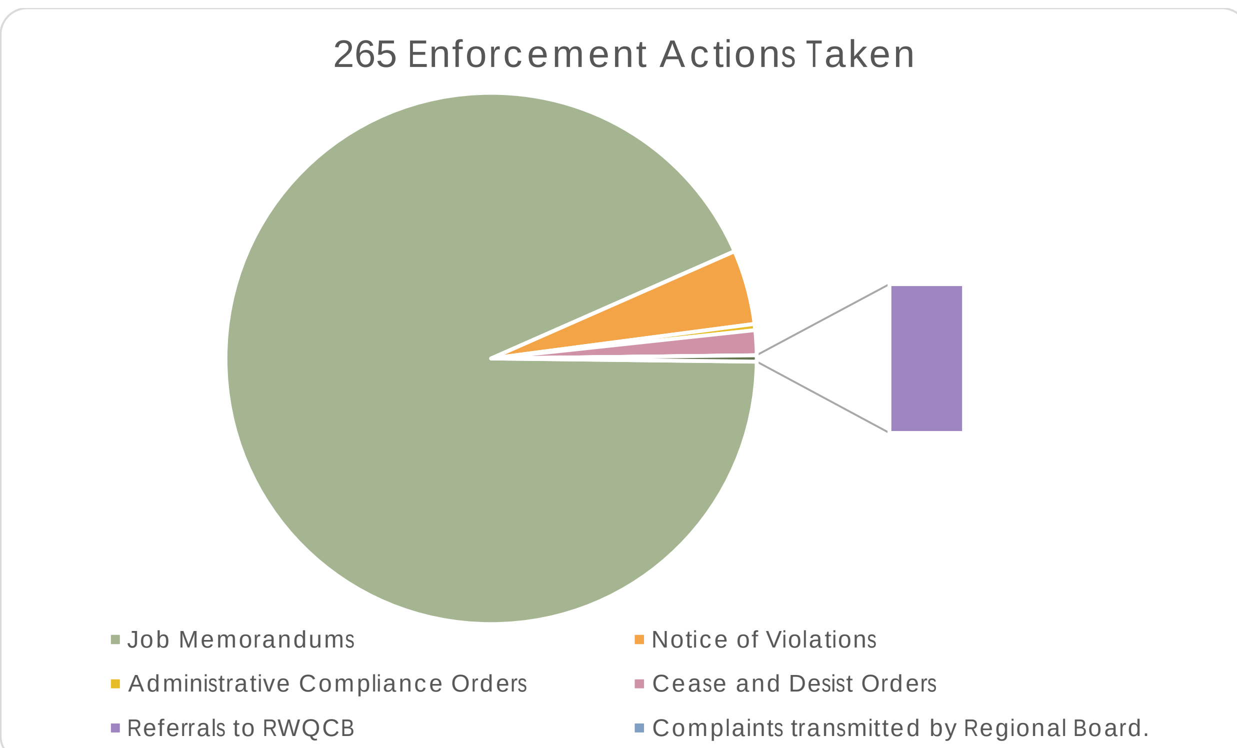
The Enforcement Control Measure outlines the progressive levels of enforcement applied to construction sites that are out of compliance with local ordinances and establishes the protocol for referring apparent violations of construction sites subject to the General Construction Permit to the Regional Water Board.

The progressive enforcement and referral policy, as well as the accompanying legal authority, is an important tool for providing a fair and equitable approach to bringing contractors and developers into compliance with the Permittees' municipal code requirements. Enforcement actions range from verbal warnings to the issuance of stop work orders. Legal action may also be taken, although is rarely necessary, as in almost all cases preventing work at a site will focus the developers attention to the BMPs. For repeat offenders, or contractors that have not filed appropriate applications, the referral policy includes notification to the Regional Water Board.

6.6.1 Enforcement Action to Achieve Compliance

When a construction site fails to comply with the SWPPP, minimum BMPs or other stormwater requirements, a Permittee implements the appropriate notification and enforcement procedures. There are five general levels of notification and enforcement for most stormwater related problems for construction projects. These are: Verbal Notification, Job Memorandum, Notice of Violation, Administrative Compliance Order, and Stop Work Order. Sites that are permitted under the construction activities general permit (CASGP) are also referred to the RWQCB if they fail to achieve compliance and a good faith effort has been made by the Permitee to achieve compliance. At a minimum that is two follow-up inspections within three months, and at least two warning letters or NOVs. The decision to use any level of enforcement is based upon the severity of the violation(s). Severe violations may result in all construction activities being stopped at the job site and not allowed to proceed until compliance is achieved. The Regional Board may be notified of severe violations at sites under the CASGP if the situation warrants immediate attention. If such a case occurs, the Permittees will work with Board staff in identification of owners and operators, assist with joint inspections, and other efforts to reduce pollutants from entering an MS4.

Figure 6-7 Enforcement at Construction Sites



6.6.2 Implement Progressive Enforcement and Referral Policy

During the reporting year no construction site failed to return to compliance and none were referred to the Regional Water Board for enforcement actions under the CAGSP. There were also no referrals to the Regional Water Board, which would be summarized in Table 6-2.

Table 6-2 Summary of Referrals

WDID Number	Reason for Referral
N/A	No Referrals in 2014/15

6.6.3 Refer Non-filers Under the CASGP or the Small LUP General Permit

Countywide all construction activities that were required to file for coverage under the CASGP or the Small Linear Underground Project Permit did so. This is because the Permittees have developed the appropriate programs and procedures to ensure that local permits are not granted until the project proponent can provide adequate proof of state permit coverage.

6.6.4 Investigation of Complaints Regarding Facilities - Transmitted by the Regional Water Board Staff

The Permittees are required to initiate an initial investigation of complaints transmitted by the Regional Water Board Staff (other than non-storm water discharges) on the construction site(s) within its jurisdiction. During the reporting period the Regional Board did not transmit any complaints for Permittee investigation; any reports received would be summarized in Table 6-3 Summary of Complaints Transmitted by the Regional Water Board.

Table 6-3 Summary of Complaints Transmitted by the Regional Water Board

Permit #	Initial Investigation conducted within 1 business day? (Y/N)	Inspection of the Facility and its Perimeter? (Y/N)
None	**	**

6.6.5 Support of Regional Water Board Enforcement Actions

If the Regional Water Board is aware of non-compliance at a construction site they may request assistance from the Permittees to support their formal enforcement actions. Fortunately during the reporting period the Permittees were able to use their local authority to keep all construction sites in compliance and assistance to the Regional Water Board enforcement actions was not needed.

Table 6-4 describes what kind of assistance the Permittees could provide and will be used in future reports to summarize any enforcement action assistance.

Table 6-4 Summary of Complaints Transmitted by the Regional Water Board

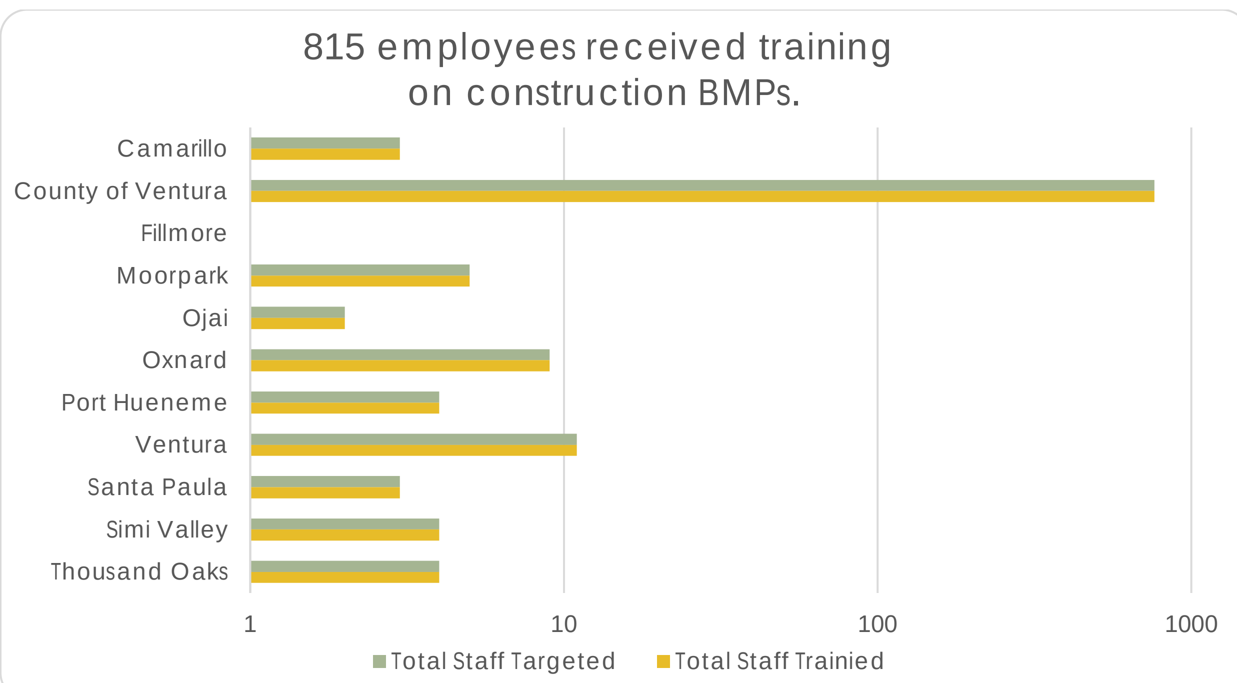
Permit #	Assisted in Identification of Current Owners/ Operators of Properties/Sites? (Y/N)	Provided Staff for Joint Inspections with Regional Water Board Inspectors? (Y/N)	Appeared to Testify as Witnesses in Regional Water Board Enforcement Hearings? (Y/N)	Provided Copies of Inspection Reports and Other Progressive Enforcement Documentation? (Y/N)
**	**	**	**	**

6.7 TRAINING – (CONTROL MEASURE DC5)

Training is important for the implementation of the Development Construction Program Element. An effective training program is one of the best pollution prevention BMPs that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality. The Permittees target employees involved with construction engineering and inspection for training regarding the requirements of the Program for Construction Sites. Training methods varied amongst the Permittees and ranged from informal meetings, formal classroom training, and seminars to self-guided training. The Permittees also trained staff on the prevention, detection and investigation of illicit discharges and illegal connections (IC/ID) associated with construction activities. See Chapter 8 of this Annual Report for more information regarding IC/ID training.

During this reporting period, the Permittees trained 815 key staff, including contractors whose interactions, jobs, and activities affect development construction in stormwater management, construction inspections, SWPCPs, SWPPPs, illicit discharge response, and non-stormwater discharges. Figure 6-8 depicts the number of staff trained in the program areas for each Permittee. Camarillo currently has one QSP/CISEC and one QSD on staff.

Figure 6-8 Construction Inspection Training



6.8 EFFECTIVENESS ASSESSMENT (CONTROL MEASURE DC6)

Effectiveness assessment is fundamental for developing and implementing successful stormwater programs. In order to determine the effectiveness of the Development Construction Program, a comprehensive assessment of the program data is conducted as a part of the Annual Report. The results of this assessment are used to identify modifications that need to be made to the program. Each year the effectiveness assessment is reviewed and revised as needed. By conducting these assessments and modifying the program as needed, the Permittees ensure that the iterative process is used as an effective management tool. Due to the types of data collected for the Development Construction Program, current assessments will primarily focus on Outcome Levels 1, 2 & 3.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?
- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly increased the awareness of its target audience?
- Outcome Level 3 (L3) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly modified the behavior of a target audience?

The following is an assessment regarding the effectiveness of the Development Construction Program.

6.8.1 Plan Review and Approval Process

Review Grading and Construction Permit Applications for SWPPP Requirements

Prior to approving a grading permit, the Permittees require a SWPPP be submitted for projects greater than one acre. (L1) All projects required to submit a State SWPPP, submitted a State SWPPP and filed a NOI. (L1) Proof of filing an NOI included a copy of the completed NOI form and a copy of the check sent to the SWRCB, or a copy of the letter the SWRCB with the WDID for the project. (L1)

In some jurisdictions, Local SWPPPs were required and submitted for nearly all projects, including those not exceeding Permit thresholds. (L1)

The Permittees required proof of state permit coverage so that all construction activities that were required to file for coverage under the CASGP or Small Linear Underground Project Permit did so.

6.8.2 Inventory

The Permittees maintained an electronic system to track grading permits, encroachment permits, and any other municipal authorization to move soil (or are in progress developing the system). (L1) They required a copy of the SWPPP any time a transfer of ownership took place. Ownership transfer did not happen in each jurisdiction, so some Permittees did not have the opportunity to require a revised SWPPP. (L1)

Inspection and BMP Implementation

The Permittees inspected all active construction sites for stormwater quality requirements during routine inspections a minimum of once during the wet season. (L1) (L2) As shown in Figure 6-4, for inspected sites that had not adequately implemented their SWPPPs, the Permittees conducted a follow-up inspection within two weeks. Most often, the follow-up inspection occurred much sooner. (L1) (L2) (L3) In addition, the majority of Permittees inspected each project that included roadbed or street paving, repaving, patching, digouts, or resurfacing roadbed surfaces to ensure that the minimum set of BMPs were implemented. This was routinely done at the same time inspections were performed to ensure all work was being performed according to the design and standards required of public works projects. (L1) (L2)

The Permittees required a CPESC to inspect the construction sites at the time of BMP installation, at least weekly during the wet season, and at least once each 24 hour period during a storm event that generated runoff from the site if the site was:

- Within, or adjacent to an ESA
- On a hillside
- Discharging into a sedimentation/siltation impaired water body listed on the CWA 303(d) list

Many of the Permittees did not have any of these types of high risk construction sites but did have the program in place to implement the added requirements.

Prior to approving and/or signing off for occupancy and issuing the Certificate of Occupancy for all construction projects subject to post-construction controls, the majority of Permittees inspected the constructed site design, and source control and treatment control BMPs conditioned during the development process to verify that they have been constructed in compliance with all specifications, plans, permits, ordinances, and the MS4 Permit, as shown in Figure 6-6.

6.8.3 Enforcement

Enforcement Action to Achieve Compliance

When a construction site fails to comply with the SWPPP, minimum BMPs or other stormwater requirements, a Permittee implements the appropriate notification and enforcement procedures. (L1) Sites that are permitted under the CASGP are also referred to the RWQCB if they fail to achieve compliance in two weeks and a good faith effort has been made by the Permittee to achieve compliance. (L1) (L2)

Figure 6-7 shows each enforcement level and the relative number of enforcement actions taken. The Permittees did not make any referrals of violation of the new development and redevelopment post construction requirements and municipal stormwater ordinances to the Regional Water Board because there were no violations. (L1) No sites were referred to the Regional Water Board to take appropriate enforcement actions under the CAGSP.

Training

During this reporting period, the Permittees trained 815 key staff, much more than last year, including contractors whose interactions, jobs, and activities affect development construction in stormwater management, construction inspections, SWPCPs, SWPPPs, illicit discharge response, and non-stormwater discharges. (L1) 100% of targeted staff members received training on construction BMPs, as shown in Figure 6-8.

6.8.4 Development Construction Program Modifications

On an annual basis the Permittees plan to evaluate the results of the Annual Report, as well as the experience that staff has had in implementing the program, to determine if any additional program modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the MEP. Any key modifications made to the Development Construction Program Element during the next fiscal year will be reported in the following Annual Report.

7 Public Agency Activities

7.1 OVERVIEW

Public Agencies can help fight stormwater pollution in two ways. One is to stop and remove pollutants generated by the public before they reach receiving waters, and the other is ensuring all the activities performed by the agency do not contribute to stormwater pollution to the MEP. Therefore, public agencies have a dual role in the stormwater program: removing pollutants before they are transported by the storm drain system and preventing pollution from being generated in the operation and maintenance of public facilities.

The Permittees own and operate public facilities, and build and maintain much of the infrastructure of the urban and suburban environment throughout their jurisdictions. Maintenance activities include street sweeping and drainage facility inspection and cleaning. As part of their normal operations the Permittees conduct a number of activities (e.g., sewer line cleaning, catch basin cleaning, street repairs) that have the potential to generate or mobilize pollutants. Control Measures in the Public Agency Activities Program Element are designed to ensure that these operations and maintenance activities are performed using procedures that minimize pollutants generated and reduce the potential for pollutants to enter the storm drain system.

7.2 CONTROL MEASURES

The Permittees have developed several Control Measures and accompanying performance standards to ensure that Permit requirements for the public agency activities are effectively developed and implemented. For each Control Measure there are accompanying performance standards.

The Public Agency Activities Control Measures are organized to be parallel to the organization of the Permit and consist of the following:

Table 7-1 Control Measures for the Public Agency Activities Program Element

PA	Control Measure
PA1	Public Construction Activities Management
PA2	Vehicle Maintenance/Material Storage Facilities/Corporation Yards Management/Municipal Operations
PA3	Vehicle and Equipment Wash Areas
PA4	Landscape, Park, and Recreational Facilities Management
PA5	Storm Drain Operation and Management
PA6	Street And Roads Maintenance
PA7	Emergency Procedures
PA8	Training
PA9	Effectiveness Assessment

7.3 PUBLIC CONSTRUCTION ACTIVITIES MANAGEMENT (CONTROL MEASURE PA1)

The Public Construction Activities Control Measure provides protocols to be followed in the design and construction phases of capital projects undertaken by the Permittees. Per the Permit, Permittees will follow the Planning and Land Development, and Construction Programs requirements for all Permittee-owned or operated public construction projects. Those requirements include complying with the Development Planning Program requirements at public construction projects and all the Development Construction Program requirements at Permittee owned or operated construction sites including requiring the development of SWPCP for projects that disturb less than one Acre.

Performance Standard 7-1

Comply with all the Development Planning Program requirements at public construction projects.			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai			☑
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Performance Standard 7-2

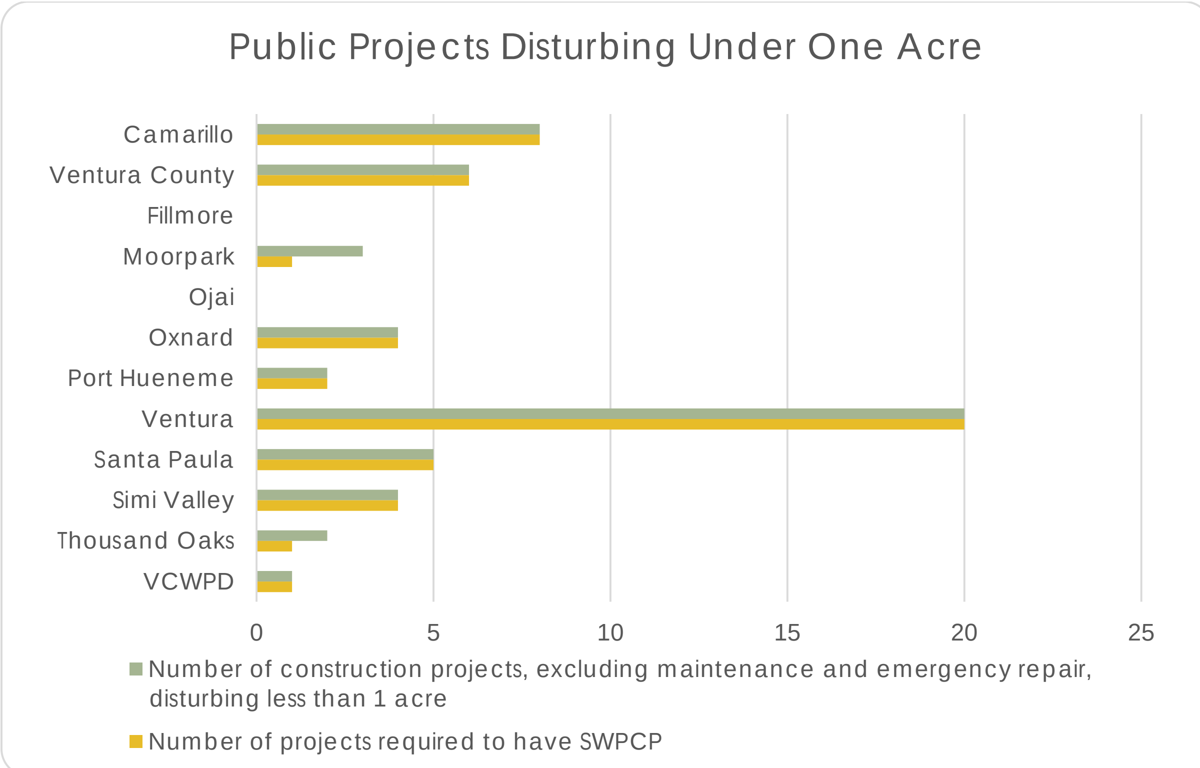
Comply with all the Development Construction Program requirements at Permittee owned construction sites			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai			☑
Oxnard	☑		
Port Hueneme			☑
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

An agency does not routinely grant grading or building permits for its own public construction projects within their jurisdiction. Therefore identifying and defining small construction projects is less straight forward. To ensure that extremely small projects such as installing a stop sign or providing wheelchair access ramps to a sidewalk meet Permit requirements, the Permittees have adopted standard practices to serve as the SWPCP. The practices include the BMPs identified in the permit for construction projects under one acre. In Oxnard the Technical Services Program-Stormwater staff work in conjunction with Capital Improvement Project Managers and Public Works Inspectors to make sure best management practices are being adequately implemented. Staff also attend preconstruction meetings with CIP Engineers, PW inspectors, Project Managers, Construction Contractors, and consultants to discuss roles and responsibilities for storm water compliance throughout the construction process. No NOI's for General Construction Permits were filed in FY2014-2015, however; three projects were under construction from previous filings. Three projects terminated their GCPs during FY2014-2015.

Performance Standard 7-3

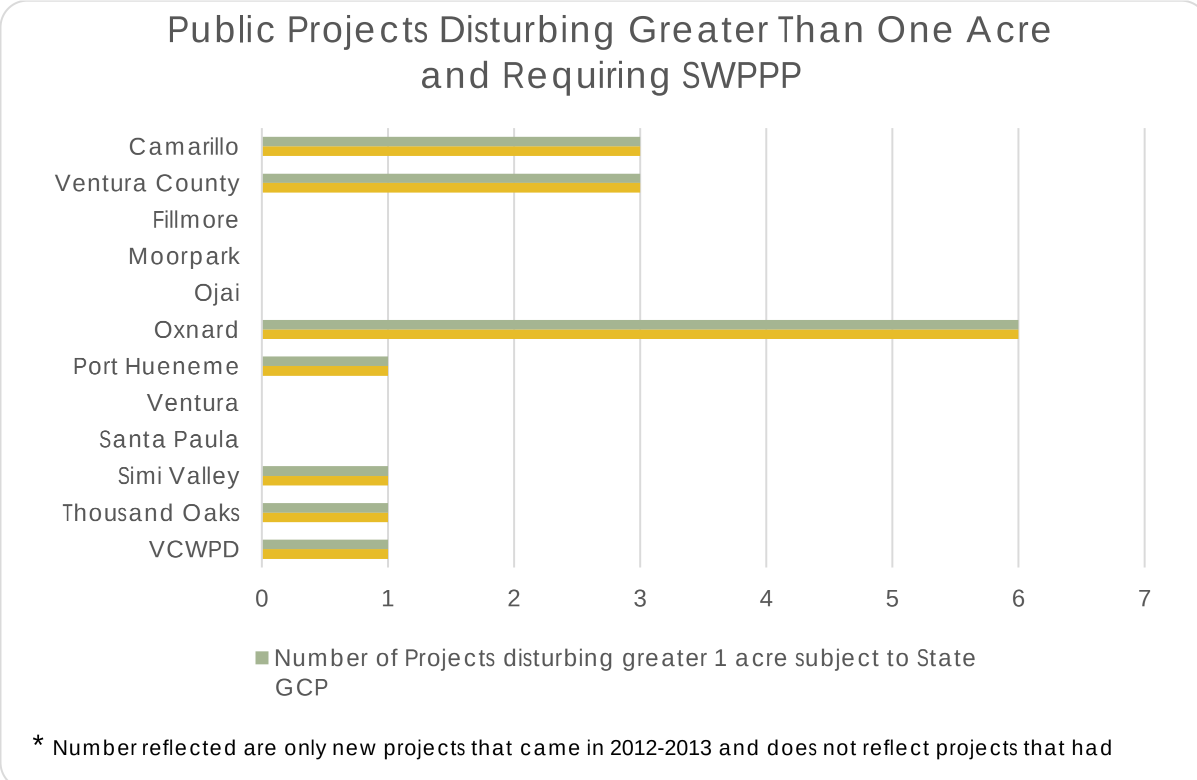
Require the development of a Storm Water Pollution Control Plan for public projects			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai			☑
Oxnard	☑		
Port Hueneme			☑
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks			☑
Watershed Protection	☑		

Figure 7-1 Public Projects Disturbing Less Than One Acre



Larger projects have requirements in the construction bid documents which require the contractor to draft and implement an approved SWPCP with the size appropriate BMPs. All public constructions projects are required to be in compliance the State's requirements under the Construction Activities General Stormwater Permit (CAGSP). Figure 7-2 identifies how many projects the Permittees had that fell under those requirements.

Figure 7-2 Public Projects Disturbing Greater Than One Acre



7.4 VEHICLE MAINTENANCE/MATERIAL STORAGE FACILITIES/CORPORATION YARDS MANAGEMENT/MUNICIPAL OPERATIONS (CONTROL MEASURE PA2)

The Vehicle Maintenance/Material Storage Facilities/Corporation Yards Management/Municipal Operations Control Measure addresses pollutants entering the storm drain system from Permittee-owned/leased facilities (e.g., vehicle equipment maintenance facilities, material storage facilities, collectively referred to as corporation yards). There are other non-operation oriented facilities that are owned or leased by the Permittees where these Permit conditions are not relevant, such as libraries, parks, and office buildings. However, these facilities are still required to comply with all other applicable Permit requirements such as pesticide use.

BMP protected materials in Thousand Oaks

The Permittees' corporation yards support operation and maintenance activities within their jurisdiction. Corporation yards are operated and maintained by the Permittees for the following activities or facilities:

- Vehicle and equipment
- Storage and parking
- Maintenance
- Fueling
- Washing and cleaning
- Sign painting activities
- Bulk material storage areas

Table 7-2 Summary of Permittee-Owned and Leased Facilities

Permittee Corporate Yards	Name	Address	Implementation of appropriate BMPs	Address discharges of wash waters from vehicles and equipment washing facilities
Camarillo	Camarillo Corporation Yard	283 South Glenn Drive	☑	☑
County of Ventura*	Saticoy Operation Yard	11201/11251 Riverbank Drive Saticoy, CA	☑	☑
	Government Center, Service Building	800 South Victoria Avenue Ventura, CA	☑	☑
	VCSO Air Unit	555 Airport Way Camarillo, CA	☑	☑
	Maintenance Yard	Camarillo/Oxnard Airport	☑	☑
	Aircraft Maintenance and Wash Rack Yard	Camarillo/Oxnard Airport	☑	☑
	East Dirt Field	Camarillo Airport	☑	☑
	Moorpark Maintenance Yard	6767 Spring Road Moorpark, CA	☑	☑
Fillmore	Public Works Yard	711 Sespe Place	☑	☑
Moorpark	Moorpark Public Services Facility	627 Fitch Avenue, Moorpark, CA 93021	☑	N/A
	Moorpark Police Services Center	610 Spring Road, Moorpark, CA 93021	☑	☑
Ojai	Public Works Maintenance Yard	408 S. Signal St. Ojai, CA 93023	☑	☑
Oxnard	Oxnard POTW	6001 S. Perkins Rd., Oxnard, CA	☑	☑
	Corporation Yard	1060 Pacific Ave, Oxnard, CA	☑	☑
	Water Campus	251 S. Hayes Ave, Oxnard, CA	☑	☑
	Del Norte	111 S. Del Norte Blvd, Oxnard, Ca	☑	☑
Port Hueneme	Public Works Surfside Yard	700 'B' E. Port Hueneme Rd.	☑	☑
	Public Works Industrial Yard	746 Industrial Avenue	☑	☑
Ventura	City of Ventura Public Works Corp Yard	336 SanJon Road	☑	☑
Santa Paula	City Corporation Yard	203 Corporation St, Santa Paula	☑	☑
	City Water Yard	180 S. Palm St., Santa Paula	☑	☑
Simi Valley	Simi Valley Police Department	3901 Alamo St, Simi Valley CA	☑	☑
	City of Simi Valley Public Service Center	490 W Los Angeles Ave, Simi Valley CA	☑	☑
Thousand Oaks	Municipal Service Center	1993 Rancho Conejo Blvd., Newbury Park, CA 91320	☑	☑
VCWPD	Moorpark Maintenance Yard	6767 Spring Rd, Moorpark, CA 93021	☑	☑
	Saticoy Maintenance Yard	11251-B River Bank, Ventura, CA 93004	☑	☑

* The County of Ventura has implemented BMPs at over 40 facilities to eliminate runoff pollution from wash water. See table 7-3 for list of facilities and BMPs.

Thousand Oaks' car wash facility drains to wastewater treatment plant

7.4.1 Implement Required BMPs for each Facility

The Permittees have written SWPCPs for corporation yards to ensure implementation of appropriate BMPs, including those identified in Table 10 of the Permit. The SWPCPs were required under the previous permit and serve to help implement the current Permit requirements. The SWPCPs call for annual inspections to be performed and documented by trained staff. Any insufficiencies identified during inspections are quickly corrected by facility staff.

7.5 VEHICLE AND EQUIPMENT WASH AREAS (CONTROL MEASURE PA3)

The Vehicle and Equipment Wash Areas Control Measure addresses pollutants entering the storm drain system from Permittee-owned/leased vehicle and equipment wash areas. The Permit provides several options to eliminate wash water discharges from vehicles and equipment washing facilities by implementing one of the following:

- Self-contain, and haul-off for disposal;
- Equip with a clarifier;
- Equip with an alternative pre-treatment device; or
- Plumb to the sanitary sewer.

The Permittees have been successful in implementing applicable BMPs to eliminate wash water discharges from vehicles and equipment washing. As municipal facilities are constructed, redeveloped, or replaced all vehicle wash areas will be plumbed to the sanitary sewer or be self-contained with all wastewater disposed of legally.

Table 7-3 County Facilities with Wash Water Elimination BMPs

County Facilities with Wash Water Elimination BMPs		
Project Name	**BMP**	**Address**
Boat Launch Ramp Replacement	Vegetated Swales and Cartridge Media Filters (2 of each)	Pelican Way, Oxnard
County Gov Center Parking Lot	Pervious gutters with infiltration trench and dry wells	800 S. Victoria Ave, Ventura
FS 20	Bioretention	12727 Santa Paula Ojai Road, Ojai, CA
FS 21	Bioretention with underdrain	1201 E. Ojai Rd, Ojai, CA
FS 22	Bioretention	466 S La Luna Ave, Meiners Oaks, CA
FS 23	Bioretention	15 Kunkle Street, Oak View, CA
FS 25	Clarifier and diversion to sanitary sewer	5674 W Pacific Coast Hwy, Ventura, CA
FS 27	Bioretention	613 Old Telegraph Road, Fillmore, CA
FS 33	Clarifier and diversion to sanitary sewer	25 Lake Sherwood Dr, Westlake Village, CA
FS 40	Clarifier and diversion to sanitary sewer	4185 Cedar Springs St, Moorpark, CA
FS 42	Clarifier and diversion to sanitary sewer	295 E High St, Moorpark, CA
FS 51	Clarifier and diversion to sanitary sewer	3302 Turnout Park Circle, Oxnard, CA
FS 53	Clarifier and diversion to sanitary sewer	304 N Second St, Port Hueneme, CA
FS 54	Clarifier and diversion to sanitary sewer	2160 Pickwick Dr, Camarillo, CA
FS-26	Fossil Filter - FloGard Plus inserts (2)	12391 W. Telegraph Rd, Santa Paula
FS-28	Bioretention	513 N. Church St, Piru
FS-30	Biofiltration (underdrain)	325 W. Hillcrest Dr, Thousand Oaks
FS-31	Biofiltration (underdrain)	151 Duesenberg Dr, Thousand Oaks
FS-32	Drywell	830 S. Reino Rd, Newbury Park
FS-34	Biofiltration (underdrain)	555 Avenida De Los Arboles, Thousand Oaks
FS-36	Drywell	855 N. Deerhill Rd, Oak Park
FS-37	Biofiltration (underdrain)	2010 Upper Ranch Rd, Thousand Oaks
FS-41	Drywell	1910 Church St. Simi Valley
FS-43	bioswale, detention basin, and FloGard Plus Filter	5874 East Los Angeles Avenue, Simi Valley
FS-44	Fossil Filter - FloGard Plus inserts (2)	1050 Country Club Dr, Simi Valley
FS-45	Fossil Filter - FloGard Plus inserts (3)	790 Pacific Ave, Simi Valley
FS-46	Bioretention	3265 Tapo St, Simi Valley
FS-47	bioswale	2901 Erringer Rd. Simi Valley
FS-50	Drywell	189 S. Las Posas Rd, Camarillo
FS-52	Drywell	5353 Santa Rosa Rd, Camarillo
FS-55	Drywell	403 Valley Vista Dr, Camarillo
FS-56	Biofiltration (underdrain)	11855 Pacific Coast Hwy, Malibu
FS-57	Drywell	3356 Somis Rd, Somis
Moorpark Police Station	bioswale	610 Spring Rd, Moorpark
VC Juvenile Court	retention basin	4333 Vineyard Ave
County facility in Ventura	planter swale	855 Partridge, Ventura
Saticoy Yard	detention basin	11251 Riverbank Drive, Saticoy
Piru Skate Park	Infiltration Trench	500 North Main Street, Piru, CA
Camarillo Sheriff's VCSA Unit	Biofilter	373 Durley Ave. Suite A, Camarillo, CA
Work Furlough Visiting Park	swale, catch basin filters	345 Skyway Dr, Camarillo, CA

7.6 LANDSCAPE, PARK, AND RECREATIONAL FACILITIES MANAGEMENT (CONTROL MEASURE PA4)

The Landscape, Park, and Recreational Facilities Management Control Measure ensure that the discharges of pollutants from the Permittees' use, and storage of, fertilizers and pesticides are minimized. The control measure includes the use of BMPs that promote the use of integrated pest management (IPM) and retention and planting of native plant species requiring less water and chemical support to remain healthy.

7.6.1 Implement IPM Program

A model integrated pest management (IPM) program was drafted through the Public Agencies Activities Subcommittee and used as a template by the Permittees to develop their own plans. This standardized protocol was posted on the Program's website November 2009. The due date in the Permit for implementation of IPM plans was October 8, 2010.

The standardized protocol provides a comprehensive policy to comply with the Ventura County Permit for the routine and non-routine application of pesticides, fertilizers, and herbicides (including pre-emergents). The intent is to focus on preventing pesticides, fertilizers, and herbicides from entering the storm drain system and discharging to receiving waters.

This protocol is applicable to 1) the outdoor use of pesticides, herbicides, and fertilizers; 2) the use of pesticides and fertilizers where the materials may come into contact with precipitation; 3) the use of pesticides, herbicides, and fertilizers where these materials may come into contact with runoff (natural or irrigation); and 4) the use of pesticides, herbicides, or fertilizers anywhere where they may be directly or indirectly discharged to a storm drainage system.

The protocol is applicable to both Permittee staff and contracted services that apply pesticides, fertilizers, or herbicides. Such staff commonly include, park, public works, building/grounds maintenance, and pesticide application staff. It is not applicable to the indoor use of pesticides, but is applicable to the consequential outdoor handling, mixing, or disposal of materials related to indoor use. It is also not applicable to separate parks districts that operate within the County, but are not covered under the Permit. Additionally, this protocol also does not apply when another NPDES permit and/or abatement orders are in effect at the selected site. Furthermore, this protocol is not intended to replace federal or state requirements or provide complete directions for applying, handling, transporting, mixing, or storing pesticides, fertilizers, or herbicides.

An effective IPM program should include the following elements:

- Pesticides are used only if monitoring indicates they are needed according to established guidelines.
- Treatment is made with the goal of removing only the target organism.
- Pest controls are selected and applied in a manner that minimizes risks to human health, beneficial non-target organisms, and the environment.
- Use of pesticides, including Organophosphates and Pyrethroids do not threaten water quality.
- Partner with other agencies and organizations to encourage the use of IPM.
- Adopt and verifiably implement policies, procedures, and/or ordinances requiring the minimization of pesticide use and encouraging the use of IPM techniques (including beneficial insects) in the Permittees' overall operations and on municipal property.
- Policies, procedures, and ordinances shall include commitments and timelines to reduce the use of pesticides that cause impairment of surface waters by implementing the following procedures:
    - Quantify pesticide use by its staff and hired contractors.

- Prepare and annually update an inventory of pesticides used by all internal departments, divisions, and other operational units.
- Demonstrate reductions in pesticide use.

Performance Standard 7-4

Implement an integrated pest management (IPM) program consistent with Permit			
	Yes	No	Draft
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai			☑
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

The prevention of pesticides from harming non-target organisms is the primary goal of the Permittees IPM program. The Permit also asks for the demonstration of a reduction in pesticide use; that is not as simple as comparing one year's use to another. Many factors should, and do, go into the decision to use pesticides. Year-to-year variables can have a significant impact on the use. For example, an above average wet year will require more weed abatement than a dry year. The need to address an insect infestation before it spreads will require an intensified use of pesticides in that area. Since year-to-year reductions cannot be accurately compared due to the variability of needs, the reduction of pesticides used by the Permittees is considered to be the difference between current usage and the amount of pesticides that would have been used under a non-IPM program.

Beyond IPM some Permittees have completely stopped the use of pesticides. Ventura County's General Services Agency Grounds Maintenance Division have not applied pesticides over 2 years using only mechanical means of removing surplus vegetation.

Turf removal is also being done by the Permittees. The reduction in turf saves water and reduces the amount of fertilizer and pesticides needed for continued maintenance. Turf removal and replacement with drought tolerant landscaping was completed for County's Fire Station No. 30 located at 325 W. Hillcrest Dr. in City of Thousand Oaks. This effort was funded by the California American Water turf removal grant successfully applied for by VCPWA County Stormwater Program.

7.6.2 Maintain and Expand Internal Inventory on Pesticide Use

Permittees require all staff applying pesticides to be either certified by the California Department of Food and Agriculture, or under the direct on-site supervision of a certified pesticide applicator, as defined in the standardized protocol. Permittees have also restricted the purchase and use of pesticides and herbicides to certified staff. Permittees that contract out for pesticide applications have included contract provisions requiring the contract applicator meet all requirements of this program. Contract language includes

Before and after picture of turf removal at County Fire Station compliance with the standardized protocol, the prohibitions and requirements of the protocol, and supervision of pesticide applicators.

Performance Standard 7-5

Establish standard protocols for routine and non-routine application of pesticide consistent with the permit requirements			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai			☑
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Performance Standard 7-6

Prepare an annual update an inventory of pesticides used by all internal departments and hired contractors			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai			☑
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

7.7 STORM DRAIN OPERATION AND MANAGEMENT (CONTROL MEASURE PA5)

The Storm Drain Operation and Management Control Measure provides for the year-to-year performance and long-term integrity of the Permittees' storm drain system while reducing the discharge of pollutants. The Permittees must prioritize catch basins for cleaning based on the required level of maintenance, and all catch basins are marked with a storm drain message, whether stenciled or permanently imprinted. This Control Measure also includes a requirement for special events to prevent debris accumulation in catch basins and storm drains.

7.7.1 Implement Storm Drain System Mapping

The Permit requires Permittees to create a map at a scale and in a format specified by the Principal Permittee showing the location and length of underground pipes 18 inches and greater in diameter, and channels within their permitted area.

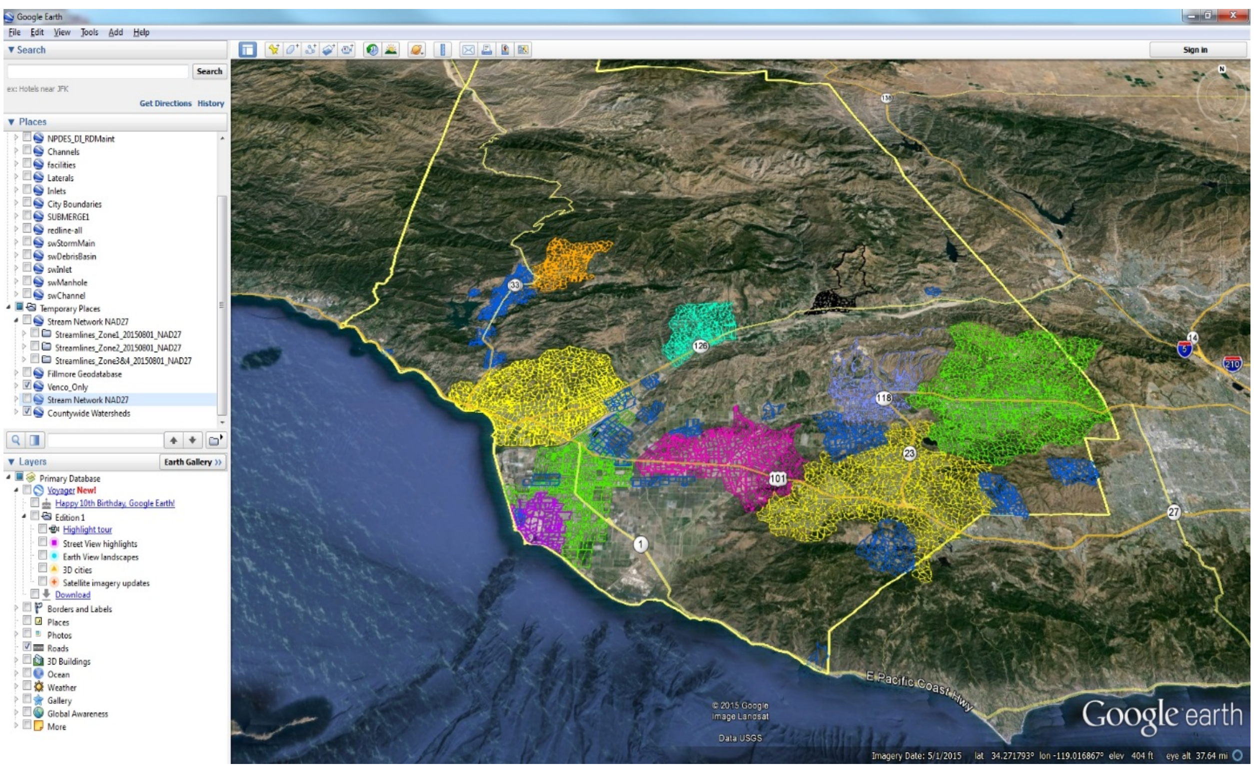
Performance Standard 7-7

Prepare a map or list of catch basins, with GPS coordinates, designations, and rationale for designations			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		

A schedule was provided to allow time to develop the needed information. The first due date was October 6, 2010. Since Ventura County's cities are all separated by open space and the MS4 from one city does not discharge to another, the need to integrate the maps into a countywide storm drain map is not as imperative as the need for a Permittee to be able to know what is upstream from any point in their MS4, and where that water will discharge. Given that the priority for the mapping is internal to the agency operating the system, the Permittees were given the autonomy to decide what form of mapping will work best for their needs. All maps have been incorporated into the Principal Permittee's Watershed Protection District GIS system as best as possible.

7.7.2 Unified Storm Drain Atlas

The Program has completed its Ventura Countywide Unified Storm Drain Mapping project. This project involved the creation of five new Storm Drain System Geodatabases and sub watershed boundaries for the five small cities of Fillmore, Moorpark, Ojai, Port Hueneme, and Santa Paula who did not have this mapped in Geodatabase format. The new storm drain geodatabases are consistent with existing Storm Drain System Geodatabases for Permittees Thousand Oaks, Camarillo, Simi Valley, Oxnard, Ventura, and the County. A single Geodatabase now contains all available storm drain information from all of the Permittees. This information is also available in Google Earth KMZ files. This project also included a Countywide GIS analysis to Identify infiltration constrains per 2011 Technical Guidance Manual and mapping of the natural stream network. In addition, a user-friendly computer program was created which allows for easy updating to the unified Geodatabase and KMZ files. This allows the Permittees to share updates to their storm drain system with all of the other Permittees ensuring all have the latest and greatest version of the unified storm drain information.



Screen shot of Countywide Unified Storm Drain Atlas with all storm drain information in a single database.

The storm drain mapping for the small cities ensures future opportunities for the Program to work collaboratively on stormwater/TMDL required treatment and associated costs, future stormwater treatment projects and regional understanding and visualization of challenges to be faced when planning on stormwater/TMDL required treatments on the watershed scale or countywide. The effort is expected to be helpful during upcoming Permit Renewal to help the regulators, Non-Governmental Organizations, and general public understand the local conditions and complexity of planning, designing, and implementation of stormwater and urban runoff treatment to meet Ventura MS4 Permit requirements and Countywide TMDLs.

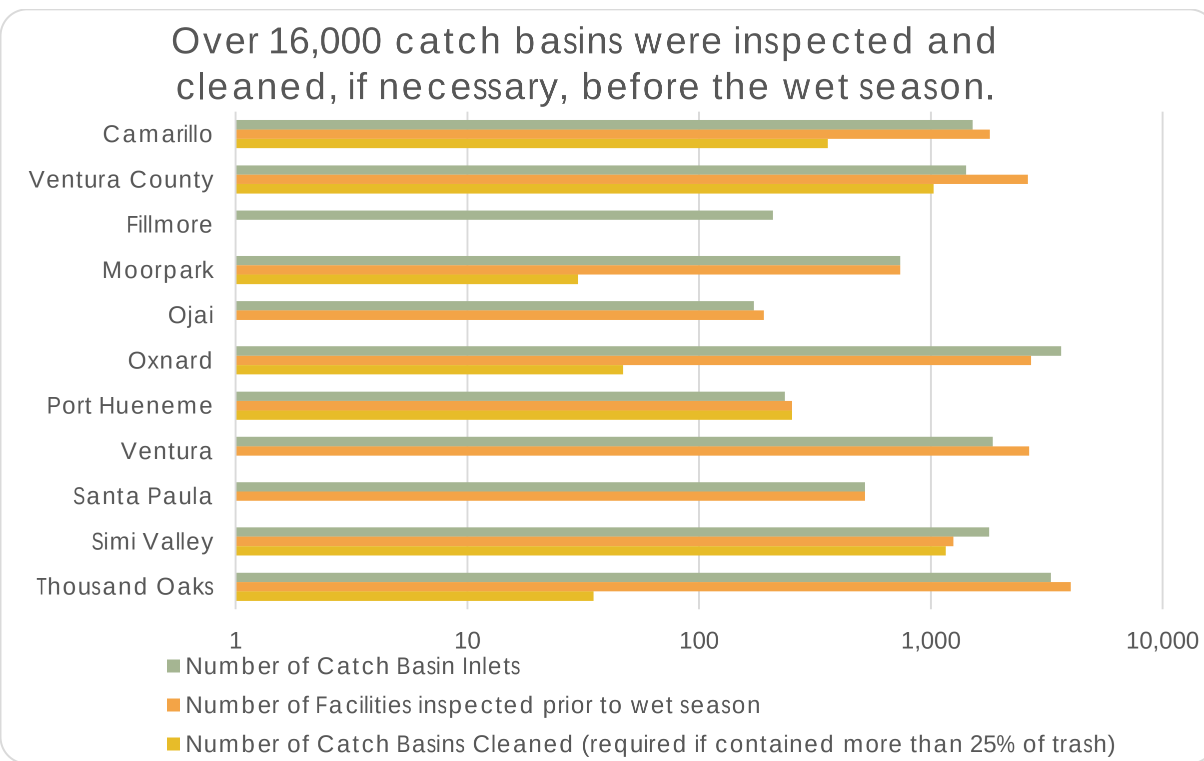
7.7.3 Implement Catch Basin Maintenance Program

The Permittees are implementing catch basin cleaning schedules based upon the prioritization designations as required by the Permit. The requirement of a list or map of catch basins with their GPS coordinates and their prioritization designation was due July 8 2011. Figure 7-4 through Figure 7-7 shows the Permittees' efforts on prioritization, inspection, and maintenance.

Permittees routinely inspect catch basins and other drainage facilities that are a part of their system. These inspections are scheduled and completed in accordance with the requirements of the catch basin prioritization (due July 2011). The prioritization requires:

- Priority A inspected 3 times a wet season and once during the dry season;
- Priority B inspected once during the wet season and once during the dry season;
- Priority C inspected a minimum of once per year

Figure 7-4 Catch Basin Inspections and Cleaning



Inspections include the visual observation of each catch basin and open channel to determine if the device or conveyance has accumulated trash, sediment, or debris requiring removal. All debris removed (including natural debris such as leaves from street trees) is disposed of properly and therefore represents a removal of pollutants that would have been washed downstream to a receiving water. For catch basins, "as-needed cleaning" occurs whenever trash, sediment, or debris accumulation is found to be at least 25% of capacity. Watershed Protection District cleans and maintains their flood control facilities, but does not operate any catch basins that receive runoff directly from streets or roads.

Catch Basin Cleaning Using a Vacuum Truck

Performance Standard 7-5

Inspect the legibility of the catch basin label by all inlets before the beginning of the wet season			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore		☑	
Moorpark	☑		
Ojai	☑		
Oxnard		☑	
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection			☑

Over 490 tons of debris was removed from catch basins countywide through the storm drain maintenance program.

Figure 7-5 Priority A Catch Basins Inspected and Cleaned

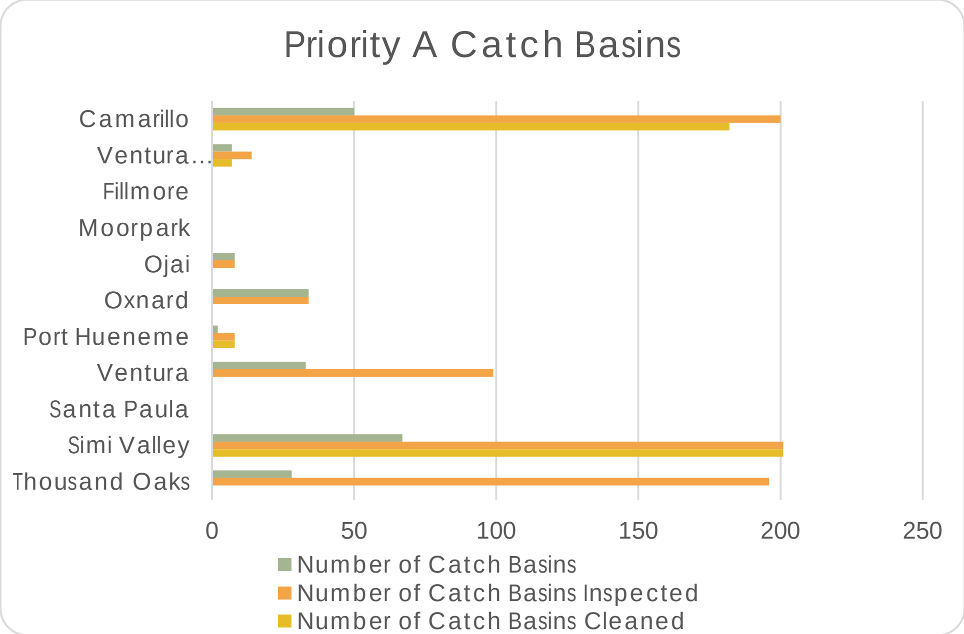


Figure 7-6 Priority B Catch Basins Inspected and Cleaned

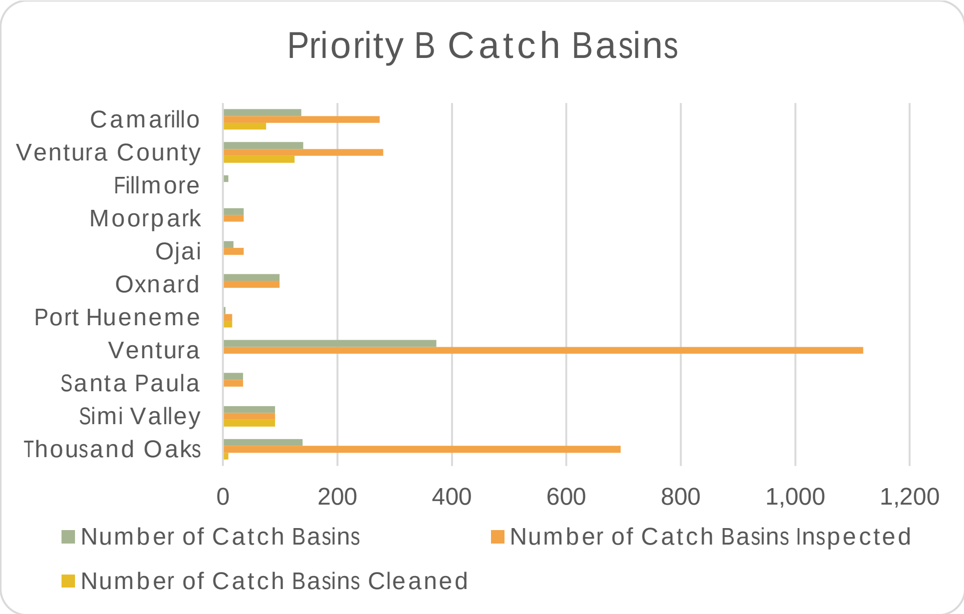
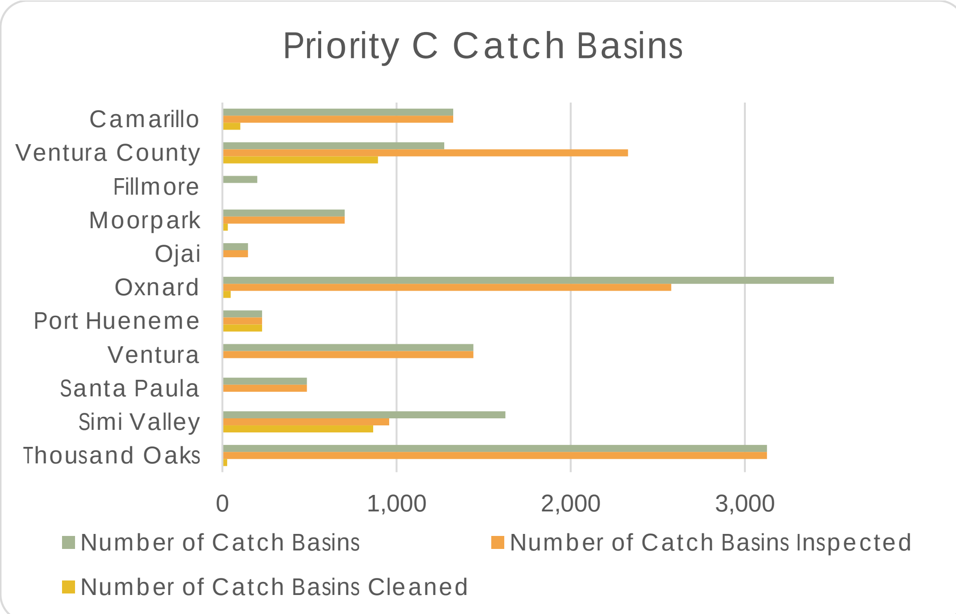


Figure 7-7 Priority C Catch Basins Inspected and Cleaned



7.7.4 **Install Trash Receptacles**

All Permittees have installed trash receptacles at areas subject to high trash accumulation. They have also identified bus stop areas which are typically located in commercial areas and near schools as areas to install trash receptacles. Commercial areas are typically required to install trash receptacles at store fronts to aid in proper disposal. Trash programs usually involve agency solid waste divisions who bring their expertise in performing trash audits to determine the need for additional trash or recycling receptacles in commercial areas.

Performance Standard 7-6

Trash receptacles, or equivalent trash capturing devices in areas subject to high trash generation within jurisdiction			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Trash excluders ready for installation

Performance Standard 7-7

Trash receptacles cleaned out and maintained as necessary to prevent trash overflow			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

7.7.5 Install Additional Trash Management Devices and Programs

The Permittees have finished the implementation of this performance standard which was due July 8, 2012. Some agencies already had trash capturing devices installed in known problem areas before the permit was adopted. See below for the Permittee's specific actions to control trash and litter:

Camarillo - High trash areas are reviewed annually when city catch basins are inspected. Those catch basins that are found to be 25% or more full two years in a row are then reclassified as a higher priority. Most A priority catch basins are retrofitted with a full capture trash device. Trash cans have been installed and are maintained weekly at all city bus stops. City streets are swept either biweekly or weekly.

County of Ventura – HCA Hospitals has department specific recycling program in place.

Department of Airports O&M staff patrols and identifies trash areas including prior to rain events and during high winds.

HCA Hospitals managers report full trash receptacles to the Housekeeping dpt. Housekeeping provides additional trash cans and pick up as necessary.

Fillmore - Street sweeping and additional trash receptacles have been added to high trash generating areas.

Moorpark – All field staff is instructed to be observant and report any areas that need attention. Cleanup crews are promptly dispatched to clear any accumulation. The City has trash receptacles installed at major transit bus stops (approximately 18) and services them at least weekly. Receptacles that become full sooner are emptied promptly.

Ojai – City activities: field inspections, placement of no-dumping signs, clean up after public events, users are required to provide BMPs and cleanup activities as part of City permit process.

Oxnard – The City of Oxnard utilizes the services of Oxnard City Corps to inspect and maintain the high priority catch basins. In September 2010, City Corps started using a small street sweeper/vacuum modified with a hose attachment to remove debris from the catch basins

Port Hueneme - Regular inspections of catch basins beyond permit requirements. Solid waste performs regular trash audits of their day to day services. Identified Priority 'A' areas have had full capture devices and/or inlet screens installed.

Santa Paula – City identified the following high trash areas: pedestrian high traffic areas; restaurant concentration areas; special events. City increased number of trash receptacles in public areas prone to high amount of trash. City increased trash pickup to weekly or biweekly in public areas prone to high amount of trash.

Simi Valley - The City of Simi Valley's Public Works Environmental Compliance staff, working with the Streets Division, has identified high trash areas throughout the City. The City purchased trash excluders and trash/recycling bins, which were installed in these areas. The trash excluders are cleaned four times each year removing nearly 14 tons of trash, landscape debris, and dirt. The City placed 30 recycling and 40 trash receptacles on major public streets between July and November of 2012. Staff estimates that approximately 48 tons of trash, dirt, and landscape debris has been diverted from the Simi Arroyo because of these receptacles. Twenty-three additional trash/recycling receptacles were placed along public streets in Fall 2014 and 25 connector pipe screen trash excluders were installed on major streets throughout the city.

Thousand Oaks - Trash cans at the MSC are emptied daily and roll-off boxes containing scrap metal and greenwaste are covered with a tarp during inclement weather. Trash cans at the MSC are emptied daily and roll-off boxes containing scrap metal and greenwaste are covered with a tarp during inclement weather.

Ventura - Those areas identified as high trash areas have had trash excluders installed in catch basins and cleaned 4 times/yr. The City Westside has been identified as an area in which trash excluders will be installed in all catch basins to help comply with the Trash TMDL.

7.7.6 Trash Management at Public Events

Events in the public right of way whenever it is foreseeable that substantial quantities of trash and litter may be generated, require the following measures:

- Proper management of trash and litter generated
- Arrangement for temporary screens to be placed on catch basins
- Arrangement that trash is removed after the event

The Permittees appreciate having the ability to select the option that will work best in their jurisdiction and have employed several methods to ensure trash does not get into a storm drain after a public event. Most cities use the power of the Special Use Permit or Temporary Use Permit. With this they can, and do, require a trash and recycling management plan and/or a substantial deposit before issuing an event permit. Funds can be withheld if trash has not been properly managed and costs recovered if the Permittee has to provide clean up services. Fines may even be levied to discourage any attempt to avoid the responsibility to prevent trash and litter. A few agencies take on this responsibility and have street sweepers employed to clean streets of any trash immediately after a large event, or services the affected drains with a vacuum truck after the event has concluded.

Camarillo – A special use permit is issued for all events held on city property and conditions are applied that address proper disposal and containment of trash. A city inspector inspects the event usually within 24 hours of completion of the event to ensure all trash had been removed.

County of Ventura - County Transportation Department's Encroachment Permits issued for activities within the County Road right-of-way require that trash be removed. Trash receptacles with specialized lids along with recycle bins are installed. Removal of trash occurs daily or during special events extra receptacles are provided and cleaned up immediately after.

Department of Airports O&M staff provided extra trash receptacles and dumpsters, monitored trash levels, increased frequency of trash pick-ups during events.

Additional trash receptacles are provided. Housekeeping staff is available on site to clean daily and empty trash receptacles.

All GSA Parks' public park facilities are equipped with trash receptacles and covered 3 yard bins for public use. Trash containers are checked and emptied as needed on a daily basis or more often as required in accordance with use patterns.

Harbor Department's Permittees provided additional containers and inspected clean-ups as required. Special lidded cans are provided; cans are raised from the ground, emptied at least daily or twice a day for busy times; during public events, additional containers are provided and clean-up immediately after the event.

Fire Prevention Department provides trash containers and clean-ups.

Fillmore - The city has regular Public Works crew and Harris trash truck to empty receptacles and to clean areas of high trash. During special events out permits require additional trash facilities. Street sweeping may be added as well.

Moorpark – Placement and frequent servicing of temporary litter containers are a condition of approval for all public events. Also required is that waddles must be placed at all catch basins in the event area.

Ojai - Users are required to provide BMPs and cleanup activities as part of City permit process.

Oxnard - Technical Services Program-Stormwater staff worked in conjunction with the Planning Division to revise the Temporary Use Permit Application. A "Drainage and Trash Management" requirement has been added as a condition for obtaining a TUP. Any applicant seeking a TUP for a public event where substantial quantities of trash may be generated must meet the above referenced conditions.

The City of Oxnard owns and maintains two Fresh Creek trash removal devices located downstream of the high priority areas in the Wooley Road and Oxnard West Drains. The City of Oxnard has conducted a review of all the storm drains identified as priority A and will be submitting a request for proposal to retrofit those drains with trash excluders.

Port Hueneme - Solid Waste division works in conjunction with events staff to provide adequate receptacles and service during the events. Language is also included in Special Use Permits regarding trash collection.

Santa Paula – City increased number of trash receptacles in public areas prone to high amount of trash. City increased trash pickup to weekly or biweekly in public areas prone to high amount of trash.

Simi Valley – The City of Simi Valley created a trash management plan for public events which require the event's responsible party to obtain a permit; this permit gives specific requirements for trash management at the event. Requirements of the trash management plan are to provide proper management of trash and litter generated by providing sufficient trash receptacles accommodate the anticipated number of participants. The trash receptacles must be emptied and removed within 24 hours of the conclusion of the event. The event organizers are also required to install and maintain temporary screens on all catch basins within the event area. Specific instructions, with photos, are provided to the event coordinators.

Thousand Oaks - Parking and storage areas are kept clean and orderly. Litter control at the MSC is managed by weekly sweeps of the facility grounds and by daily pick-up of litter. The limited number of public events at the MSC include follow-up litter removal.

Ventura - The City downtown area has frequent community events which draw large numbers of people. Trash excluders were installed in all catch basins in the downtown area to collect litter from these events.

7.7.7 Implement Storm Drain Maintenance Program

Permittees also routinely inspect and clean their drainage facilities during the year on an as-needed basis. "Routine cleaning" for these facilities, means the removal of accumulations of trash, sediment and debris likely be washed downstream with the next runoff event or cause a loss of hydraulic capacity and result in potential flooding.

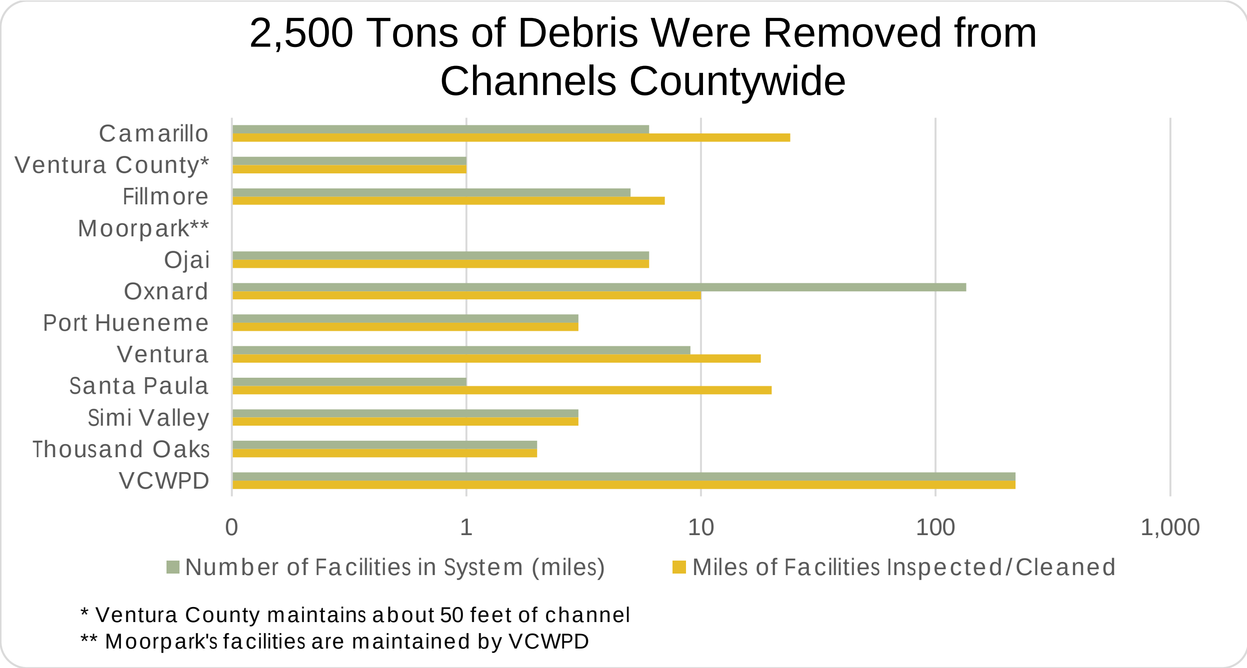
The Public Information and Participation section requires Permittees to have completed labeling or marking the curb inlets in their entire storm drain system, but the inspection and relabeling is required under Public Agencies. During the reporting period, some Permittees maintained their inlet signs by reapplying stencils/markers as they wear out, and applying stencils/markers to new inlets as they were installed.

Signs at curb inlets have varying useful lives due to the materials from which they are constructed (e.g., paint or thermoplastic), their position (e.g., on top of curb or on curb face), and wear factors (e.g., traffic, street sweeping, sunlight). As a result, the Permittees have different programs to maintain curb inlet signage within their respective jurisdictions. Some Permittees replace a portion of their signs each year whereas others re-sign all inlets every few years. In the cases where a Permittee has a separate program for catch basin label maintenance from their catch basin debris maintenance program the catch basin debris maintenance inspection does not inspect for the label. Catch basin label data is reported in public outreach program.

Performance Standard 7-8

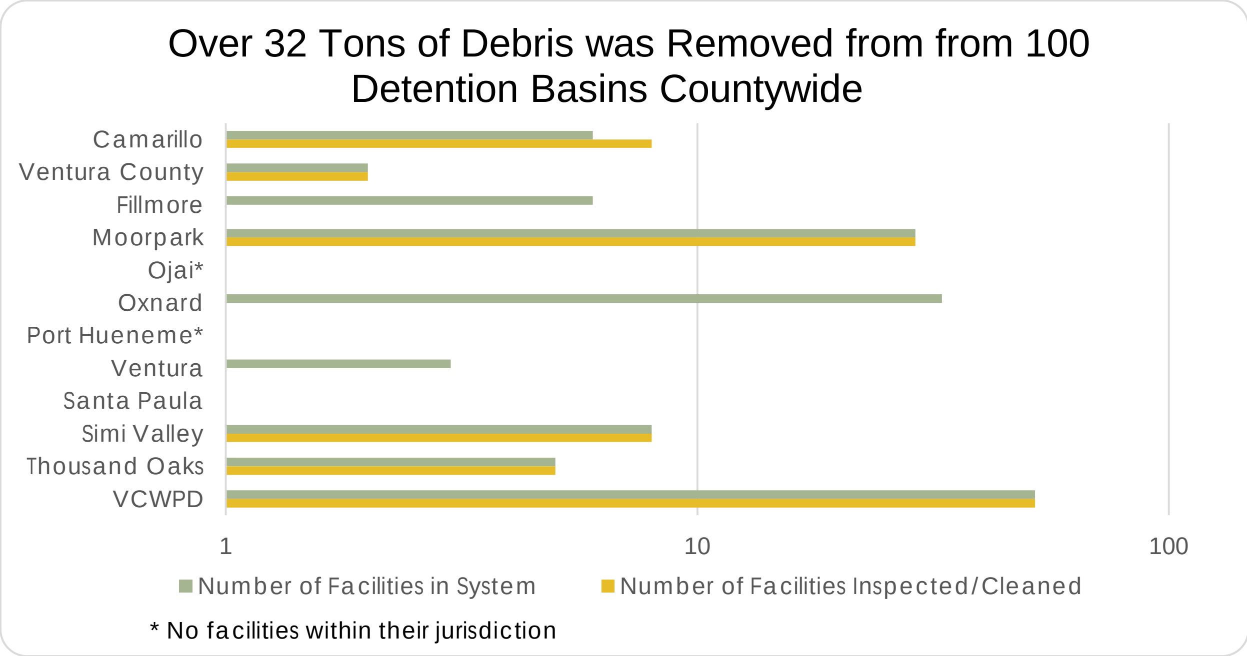
Catch basins with illegible stencils recorded and re-stenciled or relabeled within 15 days of inspection			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore		☑	
Moorpark	☑		
Ojai	☑		
Oxnard		☑	
Port Hueneme	☑		
Ventura	☑		
Santa Paula		☑	
Simi Valley	☑		
Thousand Oaks	☑		

Figure 7-8 Tons Removed from Channels and Ditches



When performing cleaning activities, Permittees implement appropriate BMPs to prevent sediments and debris from being washed downstream. By removing this amount of material from the catch basin inlets, open channels, and detention basins the Permittees prevent the passage of these materials to downstream receiving waters. During the reporting period, the Permittees tallied the collection of 2,500 tons of solid debris from drainage facility maintenance activities.

Figure 7-9 Tons Removed from Detention Basins



7.7.8 Implement Spill Response Plan

Within their respective jurisdiction the Permittees implement a response plan for spills generated from their operations that have the potential to enter the MS4 system. Response plans include:

- Investigation of all complaints received within 24 hours of the incident report;
- Containment response within 2 hours to spills upon notification, except where such overflows occur on private property, in which case the response should be within 2 hours of gaining legal access to the property; and
- Notification to appropriate public health agencies and the Office of Emergency Services (OES).

Unfortunately, even with good training and well maintained equipment there are occasions where a spill will happen and needs to be cleaned up. Cleanup can be as simple as dispatching a crew to pick up fallen debris, a street sweeper or vacuum truck to clean an area or catch basin and storm drain after a known spill. It could also become a major multi-agency operation if hazardous materials are involved.

7.7.9 Inspect and Maintain Permittee-Owned Treatment Control BMPs

Permittees that own or are authorized to maintain treatment control BMPs have programs to implement an inspection and maintenance program for those treatment control BMPs, including post-construction treatment control BMPs. Private BMPs required for private developments are managed in different ways. Some Permittees do not want to be responsible for the cleaning and maintenance of these BMPs and limit their role to inspection and enforcement to ensure effectiveness. Others will take on that responsibility on a case by case basis. And there are occasions where a Permittee has installed their own treatment BMPs to improve water quality.

When Permittees are performing maintenance of structural BMPs they implement their own BMPs to ensure that residual water produced by a treatment control BMP (not internal to the BMP performance) is:

- Hauled away and legally disposed of;
- Applied to the land without runoff;
- Discharged to the sanitary sewer system (with permits or authorization); or
- Treated or filtered to remove bacteria, sediments, nutrients, and meet all limitations.

7.8 STREET AND ROADS MAINTENANCE (CONTROL MEASURE PA6)

The Street and Roads Maintenance Control Measure ensures that the streets and roads are both cleaned to reduce pollutants, and maintained in ways that prevent the release of pollutants..

7.8.1 Implement Street Sweeping Program

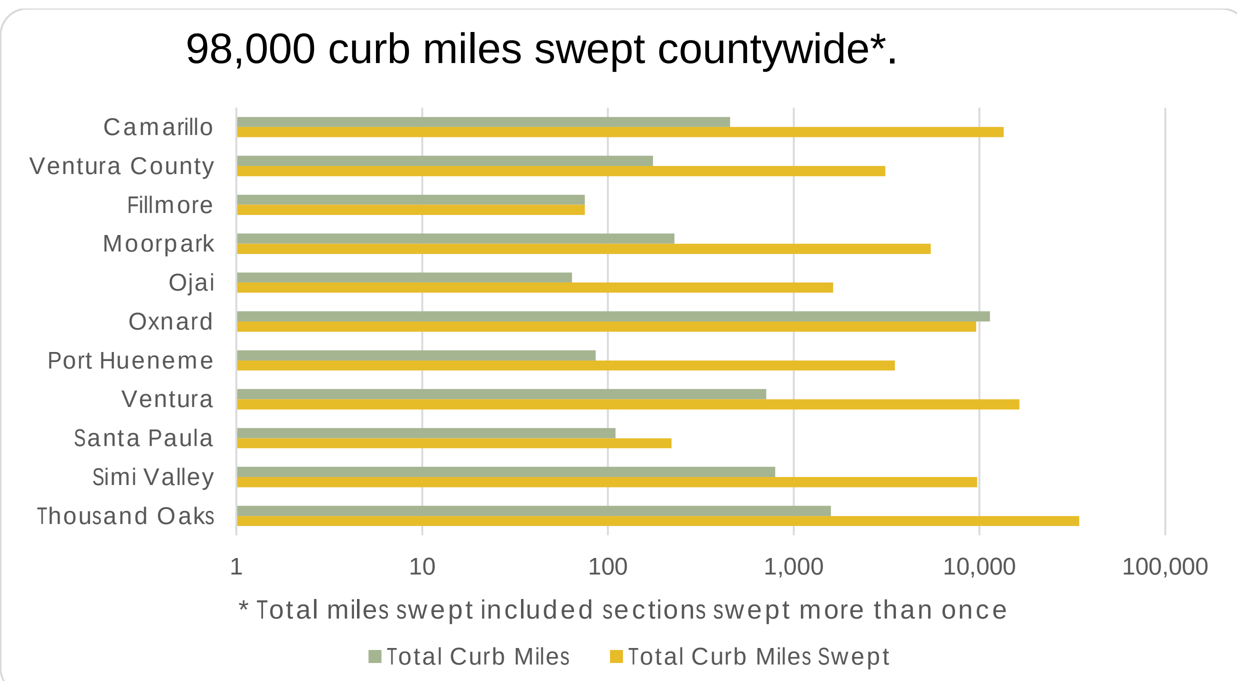
Permittees have identified curbed streets within their jurisdiction and have implemented a sweeping program for these streets. In many cases the frequency of street sweeping is beyond the Permit requirement of at least twice a month for commercial areas and areas subject to high trash generation.

To increase the efficiency of the street sweeping, Permittees have made an effort to encourage voluntary relocation of street-parked vehicles on scheduled sweeping days. This has been achieved by placing temporary "no stopping" and "no parking" signs, posting permanent street sweeping signs and/or distributing street sweeping schedules to residents and businesses. Many of the Permittees have coordinated street sweeping to follow the routine trash collection days in order to remove any litter left in the streets by the trash removal service. Additionally, Permittees also sweep public parking lots to remove litter and debris, this is not always included in the total mileage swept.

Performance Standard 7-9

Perform street sweeping of curbed streets in commercial areas and areas subject to high trash generation at least two times a month			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection			☑

Figure 7-10 Curb Miles Swept



7.8.2 BMP Implementation for Road Reconstruction Projects

For any road reconstruction project that includes roadbed or street paving, repaving, patching, digouts, or resurfacing road surfaces, the Permittees require that appropriate BMPs are implemented. The vast majority of this work falls under the definition of routine maintenance as the road will maintain the line and grade and original purpose of the facility. The implementation of these BMPs ensures the project will not impact stormwater without the need for a formal SWPPP or other documentation.

Performance Standard 7-10

Require that appropriate BMPs be implemented for any project that includes roadbed or street paving, repaving, patching, digouts, or resurfacing road surfaces			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection			☑

7.9 EMERGENCY PROCEDURES (CONTROL MEASURE PA7)

The Emergency Procedures Control Measure ensures that each Permittee can conduct repairs of essential public service systems and infrastructure in emergency situations with a self-waiver. A self-waiver is required when there is a discharge to the storm drain system and the repairs needed to halt that discharge cannot be made within one day.

7.9.1 Invoke Emergency Procedures Self-Waiver

During the Permit term there were no emergency that caused a Permittee to invoke Emergency Procedures Self-Waiver. Any uses of the self-waivers would have been reported here.

Table 7-4 Summary of Emergency Procedures

Summary of Emergency Procedures		
Permittee	**Date Emergency Procedures invoked**	**Description**
N/A	N/A	No emergencies required self-waivers

7.10 TRAINING (CONTROL MEASURE PA8)

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

Each Permittee targets staff based on the type of stormwater quality and pollution issues they typically encounter during the performance of their regular maintenance activities. Targeted staff included those who perform activities in the following areas: stormwater maintenance, drainage and flood control systems, streets and roads, parks and public landscaping, and corporation yards.

Performance Standard 7-11

Provide training for key staff whose interactions, jobs, and activities affect stormwater quality			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore		☑	
Moorpark		☑	
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

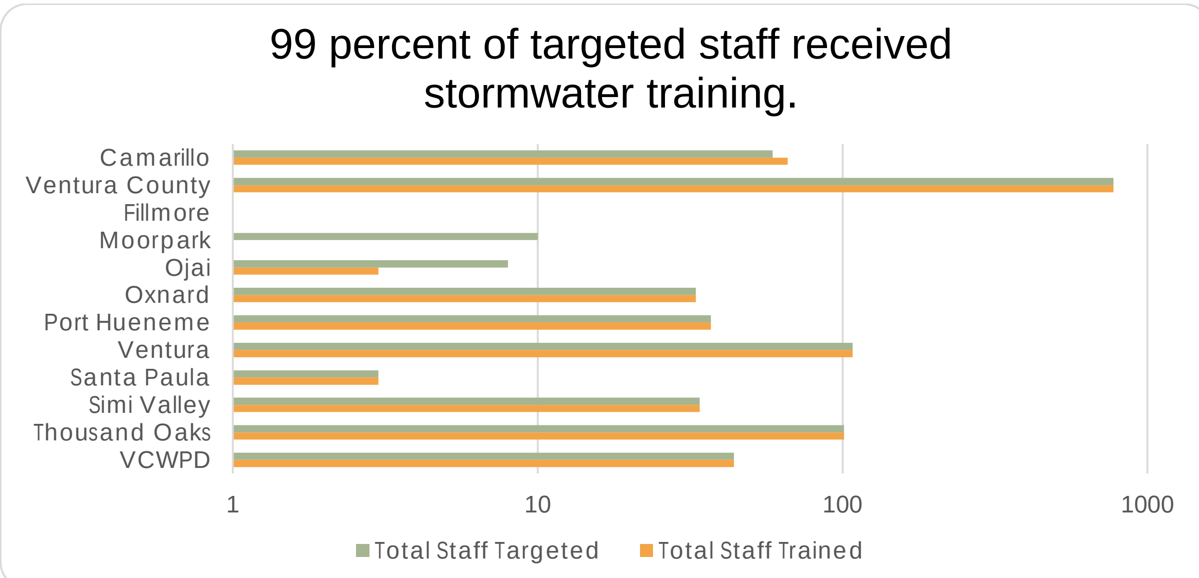
Performance Standard 7-12

Provide training, or ensure that contractors were trained, whose interactions, and activities affect stormwater quality			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		☑
Ojai		☑	
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Training methods vary among Permittees and range from informal meetings to formal classroom training to self-guided training materials. The Permittees also train staff on the prevention, detection, and investigation of illicit discharges and illegal connections (IC/ID). (See Section 8 for more information regarding IC/ID training).

The Permittees provide training for contractors whose interactions, jobs, and activities affect stormwater quality, or in some cases where contractors are hired for their expertise, Permittees ensure that contractors hired had the required training, Not all employees receive the same training as certain positions require special focus, such as key staff that use or have the potential to use pesticides or fertilizers.

Figure 7-11 Public Agency Training



Performance Standard 7-13

Provide training for contractors who use or have the potential to use pesticides or fertilizers, or ensure that contractors were trained.			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore		☑	
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Table 7-5 Areas of Focus for the Public Agency Activities Program Element Training

Target Audience	Subject Material
• Employees whose interaction, jobs and activities affect stormwater quality.	• Understanding of the potential for activities to pollute stormwater. • Implementation of BMPs.
• Employees and contractors who use or have the potential to use pesticides and/or fertilizers	• Potential for pesticide-related surface water toxicity • Proper use, handling, and disposal of pesticides • Least toxic methods of pest prevention and control, including IPM • Reduction of pesticide use
• Employees and contractors responsible for the IC/ID program	• Cover the full IC/ID program from identification to enforcement.

7.11 EFFECTIVENESS ASSESSMENT (CONTROL MEASURE PA9)

Effectiveness assessment is a fundamental component for developing and implementing successful stormwater programs. In order to determine the effectiveness of the Public Agency Activities Program, a comprehensive assessment of the program data is conducted as a part of the Annual Report. The results of this assessment are used to identify modifications that need to be made to the program. Each year the effectiveness assessment is reviewed and revised as needed.

By conducting these assessments and modifying the program as needed, the Permittees ensure that the iterative process is used as an effective management tool. Due to the types of data collected for the Public Agency Activities Program, current and future assessments will primarily focus on Outcome Levels 1-3.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?
- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly increased the awareness of a target audience?
- Outcome Level 4 (L4) answers the question: Can the Permittees demonstrate that the control measure/performance standard reduced the pollutant load?

The following is an assessment regarding the effectiveness of the Public Agency Program.

7.11.1 Public Construction Activities Management

Require Public Projects to Comply with Planning and Land Development and Construction Program Requirements

Where applicable, all Permittees require publically-owned or operated construction projects to comply with the Planning and Land Development and Construction Program requirements, or adopted standard practices for very small projects. (L1)

Require Development of SWPCP for Projects that Disturb less than 1 Acre

Grading or building permits are not an effective mechanism for identifying or defining small public construction projects since they are not granted for public construction projects. Instead, all Permittees have effectively required small public projects to follow a SWPCP that identifies BMPs. (L1)

7.11.2 Vehicle Maintenance/ Material Storage Facilities/ Corporation Yard Management/ Municipal Operations

Implement Required BMPs for Each Facility

As indicated in table 7-2 Permittees have developed and implemented SWPCPs at all corporate yards. Inspections are performed annually and deficiencies are quickly corrected by facility staff. (L1)

7.11.3 Vehicle and Equipment Wash Areas

Eliminate Wash Water Discharges

The Permittees have successfully eliminated wash water discharges from their operations through a variety of options including offsite disposal, disposal to sanitary sewer, and treatment through clarifier. (L1) Discharges will continue to be prohibited as facilities are constructed, redeveloped, or replaced.

7.11.4 Landscape, Park and Recreational Facilities Management

Implement IPM Program

All of the Permittees have implemented an IPM program that is consistent with the Permit. Further tracking of pesticides and assessment are being conducted. (L1) (L2)

Maintain and Expand Internal Inventory on Pesticide Use

Permittees have effectively restricted the purchase and use of pesticides and herbicides to staff certified by the California Department of Food and Agriculture. Permittees that contract out for pesticide applications include standard protocols and requirements as a condition of the contract. (L1)

7.11.5 Storm Drain Operation and Management

Implement Storm Drain System Mapping

New storm drain geodatabases have been developed that are consistent countywide. A single Geodatabase now contains all available storm drain information from all of the Permittees. This information is also available in Google Earth KMZ files. This project also included a Countywide GIS analysis to Identify infiltration constrains per 2011 Technical Guidance Manual and mapping of the natural stream network. (L2)

Implement Catch Basin Maintenance Program

Each Permittee has identified criteria and a methodology for catch basin mapping and prioritization. More than 16,000 catch basins were cleaned during the Annual Reporting period. (L1) The Permittees have completed the process of designating and reporting debris removal by prioritization. During 2014/15, Permittees collectively removed more than 230 tons of debris from catch basins. (L4)

Install Trash Receptacles

The majority of Permittees have installed trash receptacles in high trash generation areas. Trash receptacles are cleaned out as necessary. (L1)

Install Additional Trash Management Devices

Permittees have begun the implementation of this performance standard. Their actions range from installing no littering signs (L2), ensuring sufficient trash collection containers in public spaces (L4), and prioritizing catch basins and installing trash capturing devices, trash booms, and using landscape contractors to remove trash from public areas.(L4)

Trash Management at Public Events

All Permittees have required trash management for any event in the public right-of-way. (L1) (L4)

Implement Storm Drain Maintenance Program

Each Permittee has a program to maintain curb inlet labeling. (L1) Additionally, all Permittees regularly maintain channels, ditches and detention basins. (L1) Implementation of this performance standard removed more than 2,500 tons of debris from channels and ditches and 32 tons of debris from detention basins countywide. (L4)

Implement Spill Response Plan

All Permittees maintain a spill response plan. (L1)

Inspect and Maintain Permittee-Owned Treatment Control BMPs

Permittees that own or are authorized to maintain treatment control BMPs have programs to implement an inspection and maintenance program for all Permittee-owned treatment control BMPs, including post-construction treatment control BMPs. (L1)

7.11.6 Street and Roads Maintenance

Implement Street Sweeping Program

Permittees have implemented a street sweeping program that at a minimum, targets commercial areas and high trash generation areas twice a month. Almost 100,000 curb miles were swept countywide. (L1) (L4)

BMP Implementation Road Reconstruction Projects

All Permittees required BMPs for any road reconstruction project that includes roadbed or street paving, repaving, patching, digouts, or resurfacing. (L1)

7.11.7 Emergency Procedures

Invoke Emergency Procedures

No Permittees had an emergency that required Permittees to invoke Emergency Procedures. (L1)

7.11.8 Training

Conduct Training

Permittees provided training for 99.3% of targeted staff. Over 1,200 staff members were trained on the implementation of BMPs, reduction of pesticide use, and reduction of illicit connections/illicit discharges. (L1)

7.12 PUBLIC AGENCY ACTIVITIES PROGRAM MODIFICATIONS

On an annual basis, the Permittees plan to evaluate the results of the Annual Report, as well as the experience that staff has had in implementing the program, to determine if any additional program modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the MEP. Any key modifications made to the Public Agency Program Element during the next fiscal year will be reported in the following Annual Report.

8 Illicit Connections and Illicit Discharges Elimination

8.1 OVERVIEW

Illicit connections and illicit discharges (IC/ID) can be concentrated sources of pollutants to municipal storm drain systems. To reduce this source of pollutants the Permittees have developed and implemented programs for the identification and elimination of IC/ID to the MS4. Key components of these programs are public reporting, field screening, incidence response, and enforcement actions.

The term "illicit discharges" used in this program is any discharge to the storm drain system that is prohibited under local, state, or federal ordinances. The term includes all discharges not composed entirely of stormwater except discharges allowed under an NPDES permit. Examples of illicit discharges include:

- Incidental spills, or disposal of wastes, and non-stormwater. These may be intentional, unintentional, or accidental and would typically enter the storm drain system directly through drain inlets, and catch basins;
- Discharges of sanitary sewage due to overflows or leaks;
- Discharges of prohibited non-stormwater other than through an illicit connection. These typically occur as surface runoff from outside the public right-of-way (e.g., area washdown from an industrial site).

Categories of non-stormwater discharges not prohibited (exempted or conditionally exempted) under the Permit are listed below.

- Stream diversions permitted by the State Board
- Natural springs and rising groundwater
- Uncontaminated groundwater infiltration [as defined by 40 CFR 35.2005(20)]
- Flows from riparian habitats of wetlands
- Discharges from potable water sources
- Drains for foundation, footing and crawl drains
- Air conditioning condensate
- Water from crawl space pumps
- Reclaimed and potable landscape irrigation runoff
- Dechlorinated/debrominated swimming pool discharges
- Non-commercial car washing by residents or non-profit organizations
- Sidewalk rinsing
- Pooled stormwater from treatment BMPs

Accidents are inevitable, so it will be impossible to eliminate all illicit discharges. Also, just as police cannot eliminate all crime in a community, unfortunately there will always be an element of society that will contribute to the stormwater pollution problem. However, through the efforts of public education, business inspection, construction inspection, and illicit discharge response the preventable acts of willfully using the storm drain system to dispose of waste will continue to be reduced.

Illicit connections, while done in error, cannot be considered accidents. An illicit connection to the storm drain system is an undocumented and/or un-permitted physical connection from a facility or fixture to the storm drain system. Finding and eliminating illicit connections requires ongoing investigation and screening efforts.

8.2 CONTROL MEASURES

The Permittees have developed several Control Measures and accompanying performance standards to ensure that the Illicit Discharges/Connections Program requirements found in the Permit are met.

The Illicit Discharges/Connections Program Control Measures are organized the same as in the Permit and consist of the following:

Table 8-1 Control Measures for the Illicit Discharges/Connections Program Element

ID	Control Measure
ID1	Detection and Reporting of Illicit Discharges and Illicit Connections
ID2	Illicit Discharge and Illicit Connection Response and Elimination
ID3	Training
ID4	Effectiveness Assessment

At the end of this chapter these control measures are evaluated to determine the effectiveness of this program element.

8.3 DETECTION OF ILLICIT CONNECTIONS AND ILLICIT DISCHARGES (CONTROL MEASURE – ID1)

Detection of IC/ID through public awareness, the availability of a public hotline, and conducting illicit connection screening ensures that the IC/ID Program is proactive in identifying and eliminating problematic discharges. This control measure reflects the Permittee's efforts to detect and eliminate IC/ID.

The Permittees have a number of programs supporting the detection of IC/ID. These programs include:

- Public education materials (see Section 3: Public Outreach)
- Industrial and commercial facility site visits (see Section 4: Industrial/Commercial Facilities Program)
- Drainage facility inspection (see Section 5: Public Agency Activities)
- Construction inspections and BMP implementation (see Section 6: Development Construction)
- Water quality monitoring (see Section 9: Monitoring and Reporting Program)

The performance standards for this IC/ID control measure and the activities that have been initiated, completed, and/or maintained during this reporting period are summarized below.

8.3.1 Public Reporting

The Public Outreach Program control measure both helps prevent illicit discharges from occurring and educates the public when discharges should be reported. Very early in the Stormwater Program the public became aware of what was not allowed down storm drains, and reports of IC/ID increased rapidly; this trend reversed as behavior changed, and for last several years reports of IC/ID have demonstrated a leveling off. Since the public is more aware of IC/ID and how to report them the decrease likely represents a change in behavior resulting in fewer illicit discharges overall and fewer pollutants reaching the storm drains.

The public are the eyes of the IC/ID program, and so most illicit discharges are identified through public reporting of the situation. The goal of this component, in tandem with the Public Outreach component, is to educate the public and facilitate public reporting of illicit discharges and illicit connections. The baseline objectives are:

- Implement a program to receive calls from the public regarding potential illicit discharges and illicit connections, communicate and coordinate a timely response, perform all necessary follow up to the complaint, and maintain documentation.
- Provide educational material on non-stormwater discharges and why they are harmful to streams and oceans and how to report them;
- Target the land development/construction community with educational material and provide workshops on stormwater quality regulations and illicit discharge prevention response; and
- Target the industrial/commercial community with educational material and provide workshops on stormwater quality regulations and illicit discharge prevention and response.

Table 8-2 Permittee Hotlines

Permittee	Hotline
Camarillo	(805) 388-5338
County of Ventura Unincorporated Area	(805) 650-4064
Fillmore	(805) 524-3701
Moorpark	(805) 517-6248
Ojai	(805) 640-2560
Oxnard	(805) 488-3517
Port Hueneme	(805) 986-6530
Santa Paula	(805) 933-4212
Simi Valley	(805) 583-6400
Thousand Oaks	(805) 449-2400
Ventura	(805) 667-6510
VC EHD Sewage/wastewater discharges	(805) 654-2813
VC EHD Hazardous waste and material discharges	(805) 654-2813
VC PWA Transportation	(805) 672-2131
VC WPD O&M	(805) 650-4064
VC WPD Permit Section	(805) 650-4064

8.3.2 **Publication of IC/ID Program Procedures**

As part of the IC/ID outreach effort, the Permittees have documented their IC/ID Program through past Annual Reports which are available for public review at the Program's web site (www.vcstormwater.org). More directly, however, the program promotes the reporting of illicit discharges through the Public Information and Public Participation Program.

8.3.3 **Public Reporting**

Public reporting is one of the most effective ways that the public be a part of the solution. Each Permittee has identified staff serving as the contact person(s) for public reporting of IC/ID. As required by the Permit Permittees maintain a phone hotline to receive reports of IC/ID. Due to the need for timely response to illicit discharges by inspectors the web sites direct people to report by telephone to a "live person" instead of through email which, while quickly delivered, may not be read within the short time frame that a discharge is occurring.

The Program maintains a website that contains the phone numbers for all the Permittees. A list of hotlines is presented in Table 8-2. This information is updated as necessary and, as required in the Permit, published in the government pages of the local phone book and other appropriate locations. However, the availability of information on the internet is making the use of the more obsolete every year.

Timely responses to reports of illicit discharges are necessary to have the opportunity to determine the source, identify and educate the responsible party, and require the responsible party to initiate any cleanup to reduce pollutants from the discharge to the MEP. The baseline objectives include:

- Initiate response within 24 hours of receiving a report of discharge from the public, other agencies or observed by a Permittee field staff during the course of their normal daily activities;

- Investigate to determine the nature and source of discharge and eliminate through voluntary termination (when possible) or enforcement action; and

- Educate identified responsible parties, and initiate clean up and enforcement actions as necessary.

Performance Standard 8-1

Document the procedures of the ID/IC Program and make them available for public review			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai			☑
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Performance Standard 8-2

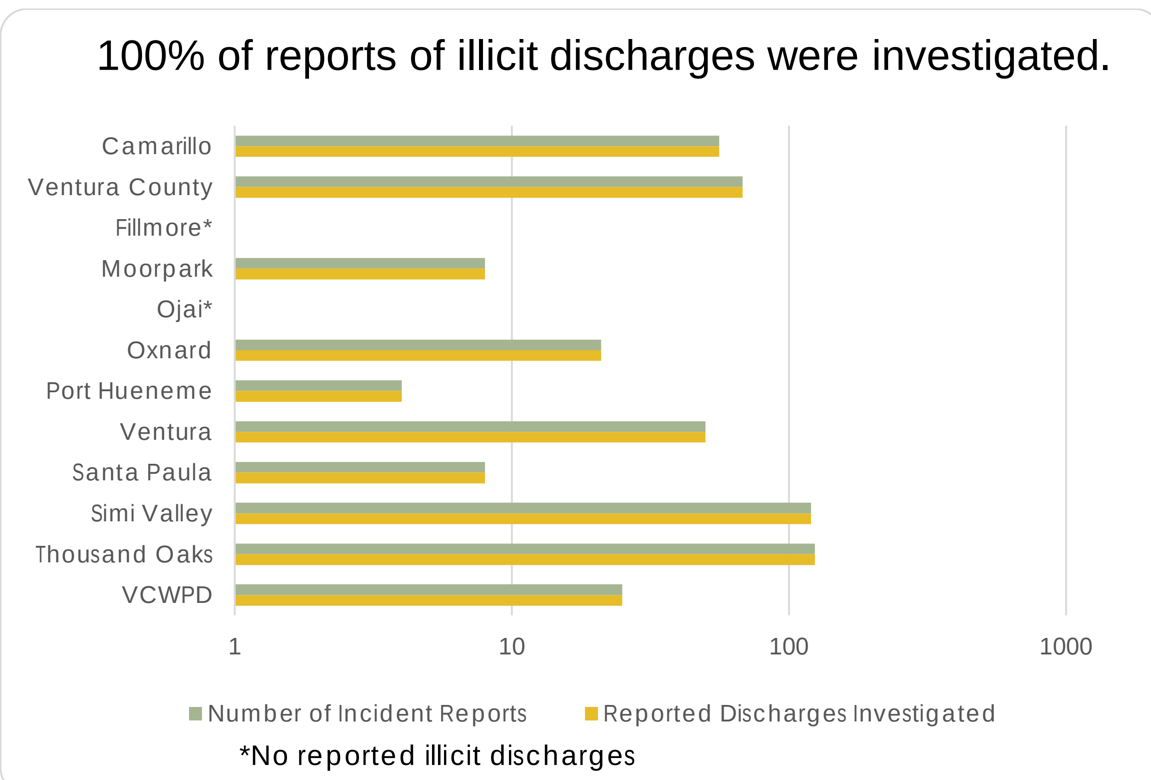
Maintain a phone hotline to receive reports of ID/IC			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Performance Standard 8-3

Maintain a web site to receive/direct reports of ID/IC			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai		☑	
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

While the goal is to respond within 24 hours, most reports of illicit discharges are responded to within a few hours. Some Permittees have prioritized problem areas (geographical and/or activity-related) for increased inspections using the methods defined in the program. All illicit discharges reported by the public, and found through the results of inspections are presented in Figure 8-1.

Figure 8-1 Illicit Discharge Investigations



8.3.4 **IC/ID Tracking**

Tracking the location of illicit connections and illicit discharges, aside from being a Permit requirement is performed to assist the Program's efforts understanding which land uses, age of neighborhood or other potential identifier is common to the problem of illicit discharges and connections. That knowledge could be useful in the future as the Public Outreach and Business Inspections programs continue to evolve.

Performance Standard 8-4

Keep records of all illicit discharge discoveries, reports, responses, and formal enforcement			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai			☑
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Mapping of Known Connections to Storm Drain System

The benefit of mapping all storm drain connections is to allow the Permittees the ability to know the upstream location of an unknown, and conversely what might be possibly affected downstream. This is required in the Permit by May 7, 2012. Since the storm drain system includes all streets and gutters, literally mapping all known connections would include every driveway and property that drains to a street. Since an endeavor of that scale would be resource intensive and result in a product lacking practical usability, the Permittees have looked to the Regional Board for clarification of the requirement. In the response to comments on this topic the Regional Board provided the following statement: *"Known connections in the Order refer to permitted below grade connections whose locations are likely already known to Permittees. Staff agrees that mapping may reveal additional connections, but those are likely to be un-permitted."* This guidance creates a manageable effort and ultimately a useful product that will increase the Permittees ability to respond to IC/IDs.

Mapping Illicit Connection and Discharge Incidents

The Permit required the mapping of all incidents of illicit connections and illicit discharges to their storm drain system since January 2009 by May 7, 2012 at a scale and in a format specified by the Principal Permittee.

The Permittees mapped all known connections to their storm drain system and all IC/ID incidents by July 8, 2012. While no obvious hotspots jumped out while reviewing the maps, the discharges were plotted on GIS and compared to other data layers to identify any consistent correlations that could be used to focus resources to prevent illicit discharges. Figures 8-2 and 8-3 show the illicit discharges by land use. Residential areas by far have the highest number of illicit discharges, but they are also the largest areas of the cities. When normalized for area commercial land uses become the major source of illicit discharges. This was not a surprise to the Permittees. By their nature commercial areas are high in activity and have high visibility, meaning a high chance of a discharge being reported by residents or neighboring businesses. Overall the mapping exercise confirmed the Permittees understanding. The Permittees have learned through experience which areas have problems with illicit discharges, and have also developed strong inspection programs to prevent them.

Figure 8-2 Illicit Discharge by Land Use

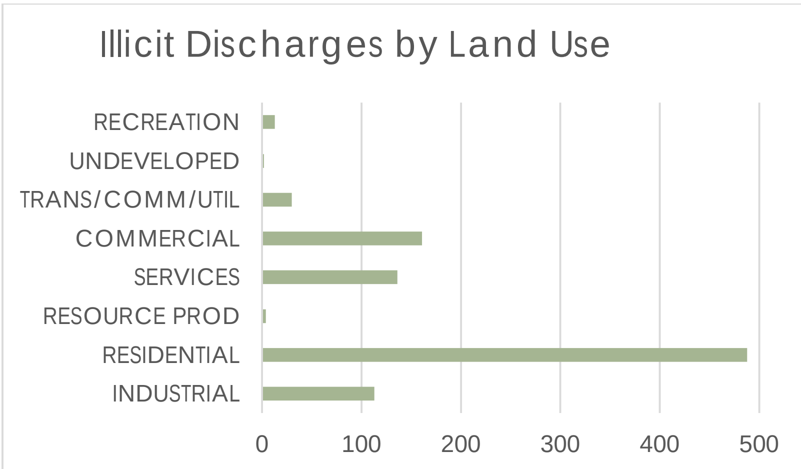
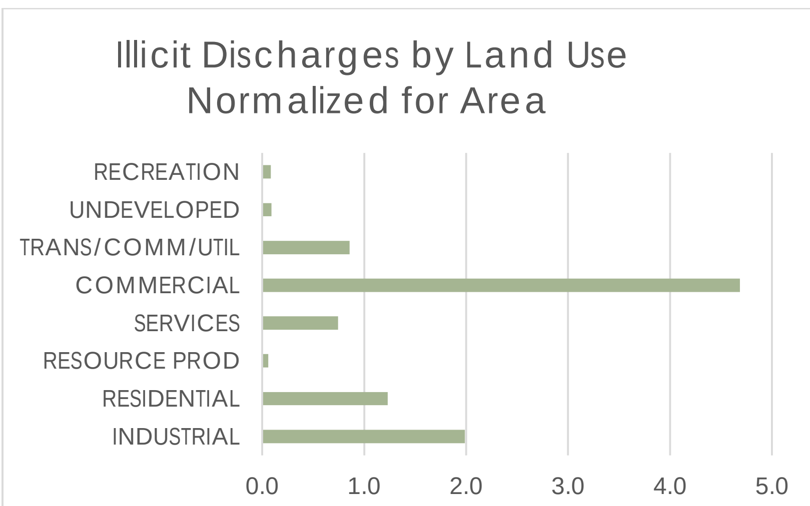


Figure 8-3 Illicit Discharges by Land Use Normalized for Area



8.3.5 Screening for Illicit Connections

Inspections of infrastructure can detect and eliminate illicit connections to the MS4 and reduce pollutants discharged through such connections to the MEP. The objectives of illicit connections screening are to:

- Identify dry weather flows.
- Investigate and determine the origin and nature of the discharge when connections to the storm drain system are suspected or observed to be from an illicit connection or discharge.

Mapping of Storm Drain System

Similar to mapping requirements of known connections to the storm drain system the Permit requires mapping of the entire system in a phased approach outlined below.

- Map all channeled portions of the storm drain system by October 6, 2010
- Map all portions of the storm drain system consisting of pipes 36 inches in diameter or greater by May 7, 2012
- Map of all portions of the storm drain system consisting of pipes 18 inches in diameter or greater by May 7, 2014

Performance Standard 8-5

Submit a map of all channeled portions of the storm drain system in a uniform format			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Performance Standard 8-6

Submit to the Principal permitted a map of all portions of the storm drain system consisting of pipes 36 inches in diameter or greater in a uniform format			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Performance Standard 8-7

Submit map of all portions of the storm drain system consisting of pipes 18 inches in diameter or greater in a uniform format? (Due by May 7, 2014)			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

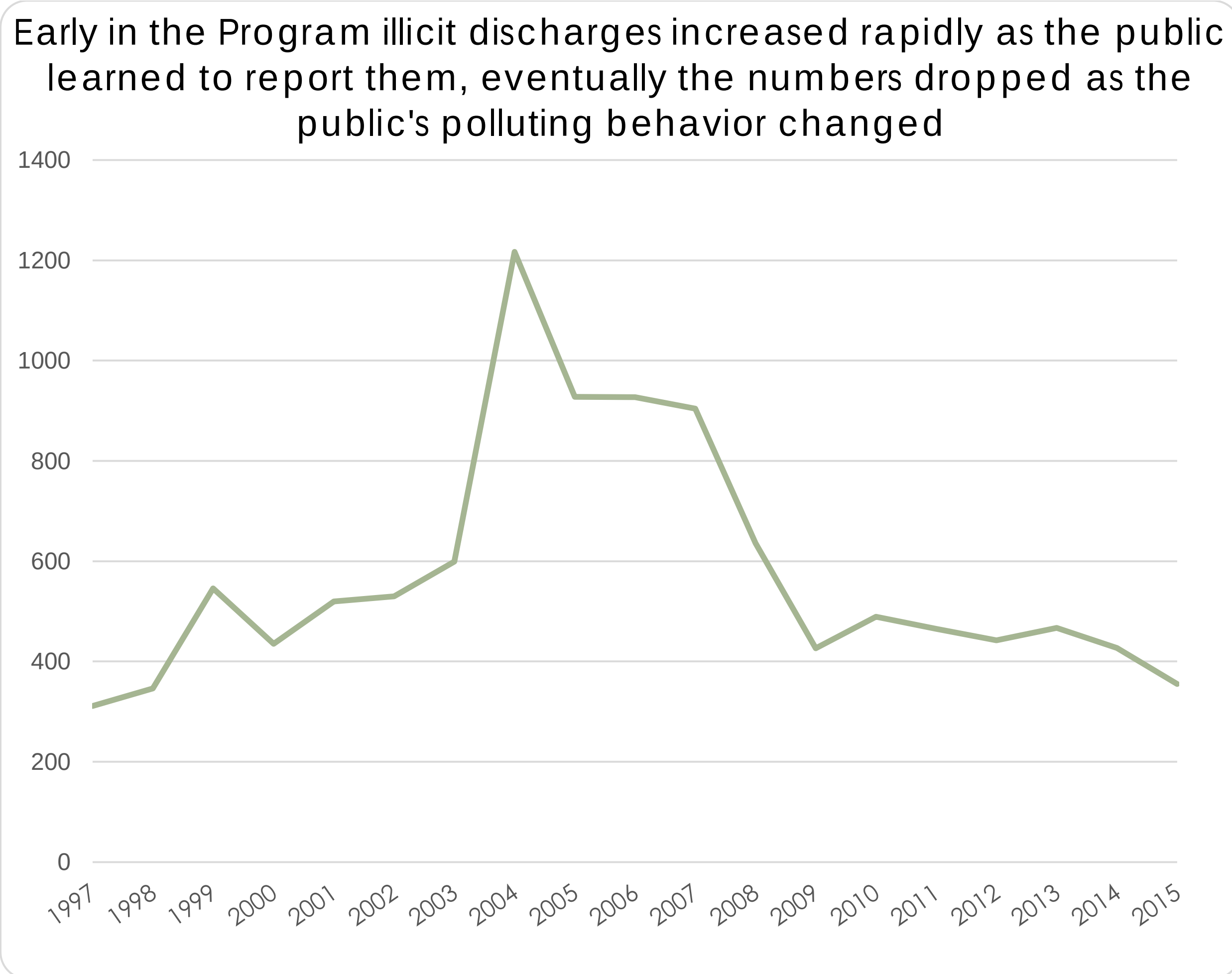
To assist in screening for illicit connections, the Permittees have mapped channels within their permitted area and storm drain system. These maps were transmitted to the Principal Permittee and have been incorporated into the Watershed Protection District's GIS system. Currently, this incorporation may be as simple as having scanned drawings available through the GIS system when no true GIS data exists. Maps depicting the storm drain system were completed by May 7, 2012, and those 18 inches or greater completed by May 7, 2014.

Unified Storm Drain Atlas

The Program has completed its Ventura Countywide Unified Storm Drain Mapping project. This project involved the creation of five new Storm Drain System Geodatabases and sub watershed boundaries for the five small cities of Fillmore, Moorpark, Ojai, Port Hueneme, and Santa Paula who did not have this mapped in Geodatabase format. The new storm drain geodatabases are consistent with existing Storm Drain System Geodatabases for Permittees Thousand Oaks, Camarillo, Simi Valley, Oxnard, Ventura, and the County. A single Geodatabase now contains all available storm drain information from all of the Permittees. This information is also available in Google Earth KMZ files. This project also included a Countywide GIS analysis to Identify infiltration constrains per 2011 Technical Guidance Manual and mapping of the natural stream network. In addition, a user-friendly computer program was created which allows for easy updating to the unified Geodatabase and KMZ files. This allows the Permittees to share updates to their storm drain system with all of the other Permittees ensuring all have the latest and greatest version of the unified storm drain information.

The storm drain mapping for the small cities ensures future opportunities for the Program to work collaboratively on stormwater/TMDL required treatment and associated costs, future stormwater treatment projects and regional understanding and visualization of challenges to be faced when planning on stormwater/TMDL required treatments on the watershed scale or countywide. The effort is expected to be helpful during upcoming Permit Renewal to help the regulators, Non-Governmental Organizations, and general public understand the local conditions and complexity of planning, designing, and implementation of stormwater and urban runoff treatment to meet Ventura MS4 Permit requirements and Countywide TMDLs.

Figure 8-4 Illicit Discharge Trends



Field Screening

As discussed previously in this section, the Permittees have mapped the storm drain system in order to identify high priority areas for inspection. The Permittees inspected the storm drain system based on these maps. The screening effort did not identify a high number of illicit discharges, this can be seen in Figure 8-4 that displays the trend of actual illicit discharges countywide. The reduction seen in illicit discharges can be seen as a change of behavior as the public gains knowledge of stormwater pollution. The field screening may have identified a few discharges, but public reporting remains the most efficient way to identify them. The requirements for screening were during the reporting period and are outlined below.

- Screen all portions of the storm drain system consisting of pipes 36 inches in diameter of greater by May 7, 2012
- Screen all high priority areas identified during the mapping of illicit connections and discharges by May 7, 2012
- Screen all portions of the storm drain system 50 years of age or older by May 7, 2012

Performance Standard 8-8

Screening of all portions of the storm drain system consisting of pipes 36 inches in diameter of greater			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore		☑	
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Performance Standard 8-9

Screening of all high priority areas identified during the mapping of illicit connections and discharges			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore		☑	
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula			☑
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Individually, the Permittees efforts may be beyond Permit requirements and offer some valuable lessons learned:

- Camarillo conducted additional screening of the outfalls in the channel upstream from the urban outfall monitoring station after a higher than normal pH was detected. Very little flow was observed and the pH was normal.

- Oxnard’s Technical Services Program-Stormwater staff completed field screening of all 36" pipes or greater in a previous reporting year. TSP-SW staff conducted outfall reconaissance inventory of all applicable manholes at locations immediately upstream of the outfalls that discharge into VCWPD open channels. TSP -SW staff also walked all City owned open channels to conduct field screening and to look for illicit connections.

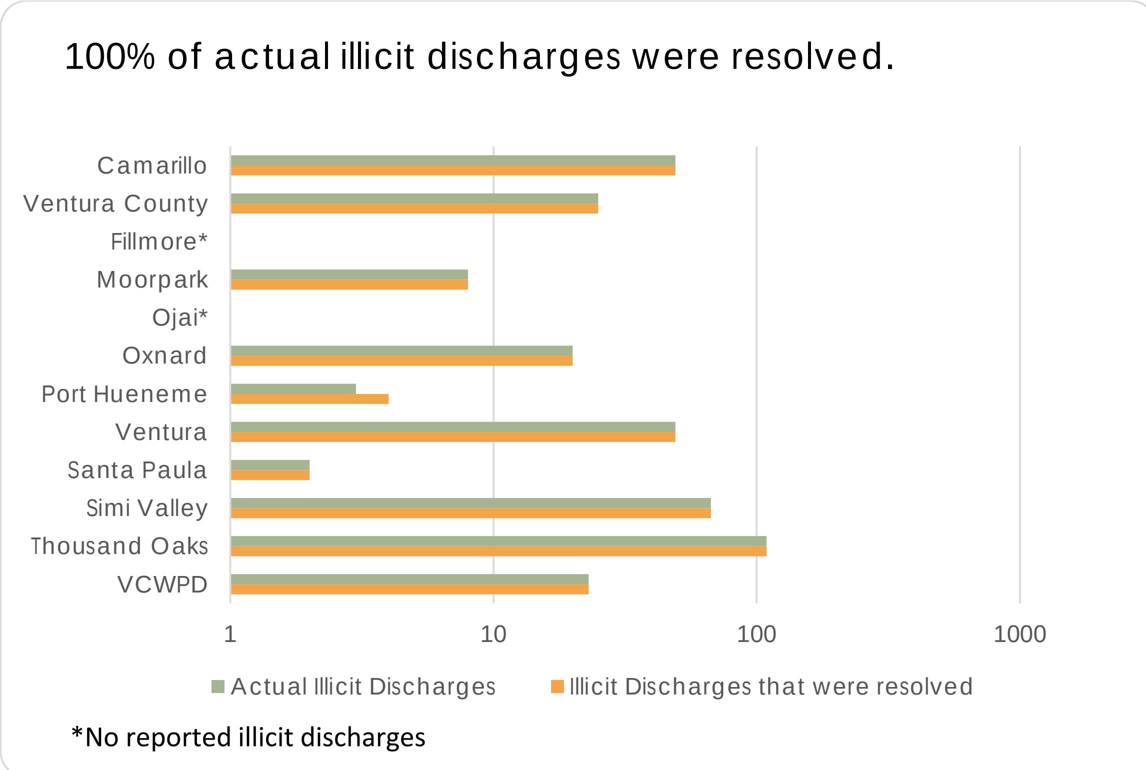
- The City of Ventura has provided the Principal Permittee with a map of all portions of the stormdrain system 18" in diameter and greater (not due until May 7, 2014). All field screening of all pipes 36" in diameter or greater and 50 years or older has been completed. The field screening protocols are used to identify, track, and eliminate all sources of illicit discharges or illicit connections.

8.4 ILLICIT DISCHARGE/CONNECTION INVESTIGATION AND ELIMINATION (CONTROL MEASURE ID2)

Timely investigations of reports of IC/ID are necessary to have the opportunity to determine the source, identify the responsible party and initiate any cleanup to reduce pollutants from such discharge to the MEP. This reporting year, the Permittees continued to:

- Provide educational materials and contact numbers for reporting illicit discharge/dumping when conducting stormwater inspections.
- Investigate the cause, determine the nature, and estimate the amount of discharge for each reported illicit discharge/dumping incident;
- Determine when possible the type of materials and source type for each reported illicit discharge/dumping incidents;
- Determine when possible the probable cause for the illicit discharge/dumping;
- Conduct enforcement or educational activities to prevent similar discharges from reoccurring;
- Verify that reported illicit discharge/dumping incidents were terminated and/or cleaned up;
- Refer illicit discharge/dumping or illicit connections to other agencies when appropriate;
- Identify and eliminate illicit connections;

Figure 8-5 Resolved Illicit Discharges



Performance Standard 8-10

Respond within one business day or discovery or report of a suspected illicit discharge and abate, contain, and/or cleanup the discharge			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Performance Standard 8-11

Investigate illicit discharges during or immediately following containment and cleanup activities			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

8.4.1 Legal authority

Although adequate legal authority existed for most potential pollutant discharges at the inception of the stormwater program in 1994, the Permittees determined for the first stormwater ordinance a Model Stormwater Quality Ordinance should be developed to provide a more uniform countywide approach and to provide a legal underpinning to the entire Ventura Countywide NPDES Stormwater Program.

Subsequently, all of the Permittees adopted largely similar versions of the model Stormwater Quality Ordinance. In addition, each Permittee has designated Authorized Inspector(s) responsible for enforcing the Ordinance. The Authorized Inspector(s) is the person designated to investigate compliance with, detect violations of, and/or take actions pursuant to the Ordinance. These ordinances prohibit un-permitted discharges, and provide the Permittees with legal standing and legal authority to prevent and remove illicit connections and illicit discharges. A Stormwater Quality Ordinance has been adopted in each Permittees' jurisdictions as indicated in Table 8-3.

The Permit requires each Permittee, no later than July of 2012, that its Storm Water Quality Ordinance authorizes the Permittee to enforce all requirements of the Permit. Preliminary review by Counsel for the Permittees have determined the existing ordinances are capable of enforcing the Permit, however will be made stronger through the adopting of an improved ordinance. The Permittees, led by the City of Moorpark, have drafted a model ordinance which served as the basis for each Permittee to authorize them to enforce all requirements of the Permit. Several of the Permittees have updated their existing ordinances or written entirely new ones.

Performance Standard 8-12

Take appropriate enforcement action to eliminate the illicit discharge			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai			☑
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Table 8-3 Ordinance Adoption Dates

Ordinance Adoption Dates		
Permittee	**Adopted Date**	**Amendment Date**
Camarillo	3/25/1998	12/12/2012
County of Ventura	10/2/2001	7/17/2012
Fillmore	7/8/2012	3/25/2014
Moorpark	1997	2008
Ojai	1999	
Oxnard	3/24/1998	3/24/2009
Port Hueneme	4/1/1998	
San Buenaventura	1/11/1999	5/31/2016
Santa Paula	1998	2010
Simi Valley	7/2/2012	
Thousand Oaks	10/14/1999	

Performance Standard 8-13

Legal authority to prevent and remove illicit connections and illicit discharges			
	Yes	No	In Progress
Camarillo	☑		
Ventura County	☑		
Fillmore	☑		
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme	☑		
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

8.4.2 Response to Illicit Connections

Investigation

Each Permittee detects and eliminates illicit connections within its municipal storm drain system. Any illicit connection identified by the Permittees during routine inspections, or reported by a third party is investigated. Appropriate actions are then taken to approve undocumented connections by permit procedures, or if determined to be an illicit connection use enforcement actions to pursue removal of those connections.

Performance Standard 8-14

Maintain a list of all connections under investigation for possible illicit connection and their status			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme			☑
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

An inspector takes samples of a suspected illicit discharge

If the discharge from an identified connection is determined to consist only of stormwater or exempted non-stormwater, is no longer considered an illicit connection and the connection will be allowed to remain. Permittees may elect to issue a permit for the connection or allow the connection to remain if information on the connection is documented, or the discharge will be permitted through a separate NPDES permit. If not, the connection will be terminated by voluntary action or through enforcement proceedings.

Screening implemented by the Permittees and has proven to be a very labor intensive effort resulting in very few suspect connections, and fewer actual illicit connections that need to be terminated. Countywide, of the six possible illicit connections five were identified as actual unpermitted illicit connections, and were terminated. Termination or formal enforcement of illicit connections must occur within 180 days.

Performance Standard 8-15

Complete investigation of reports of illicit connections to determine the source, nature, and volume of the discharge as well as the responsible party within 21 days			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme			☑
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Performance Standard 8-16

Terminate the connection using formal enforcement within 180 days of completion of the investigation				
	Yes	No	In Progress	N/A
Camarillo*	☑			
Ventura County	☑			
Fillmore*				☑
Moorpark*	☑			
Ojai*		☑		
Oxnard	☑			
Port Hueneme*		☑		
Ventura	☑			
Santa Paula*		☑		
Simi Valley	☑			
Thousand Oaks*	☑			
Watershed Protection				☑

*No illicit connections

Each of the Permittee also maintains a record of all connections currently under investigation for possible illicit discharge and tracks their status. The response time to an illicit connection is included in the Permittees' IC/ID database and does not exceed 21 days. The source, nature, and type of discharges from these connections, as well as the responsible party are also documented in the Permittees' IC/ID database. Summary statistics of the source of the illicit discharge from these connections is grouped with all other illicit discharges.

Performance Standard 8-17

Keep records of all illicit connection investigations and formal actions taken to eliminate all illicit connections			
	Yes	No	N/A
Camarillo	☑		
Ventura County	☑		
Fillmore			☑
Moorpark	☑		
Ojai	☑		
Oxnard	☑		
Port Hueneme			☑
Ventura	☑		
Santa Paula	☑		
Simi Valley	☑		
Thousand Oaks	☑		
Watershed Protection	☑		

Termination

The Permit requires the connection be terminated within 180 days of completion of the investigation. Upon confirmation of an illicit connection, the Permittees terminate the connection using formal enforcement within 180 days of completion of the investigation.

Documentation

The Permittees' IC/ID database documents the time by which the illicit connection is terminated. Owners of existing drains without appropriate permits (including encroachment permits) are notified to comply. For those drains where the owner is unresponsive or cannot be identified, each Permittee is responsible for deciding whether to formally accept the connection as part of their public drainage system or cap it off.

8.4.3 Response to Illicit Discharges

Upon receipt of a complaint, the Permittees investigate the source and nature of the IC/ID with the goals of:

- Eliminating the IC/ID through voluntary termination or enforcement action (when possible),
- Educating identified responsible parties,
- Direct any cleanup necessary to eliminate the discharge of pollutants, and
- Initiating enforcement actions as necessary

Investigation and Cleanup

Timely responses to reports of illicit discharges are necessary to have the opportunity to determine the source, identify the responsible party and initiate any necessary cleanup to reduce pollutants from such discharge to the MEP.

While the goal is to respond within 24 hours, most reports of illicit discharge are responded to within a few hours. Some Permittees have prioritized problem areas (geographical and/or activity-related) for inspection, cleanup and enforcement using the methods defined in the program. In the normal course of an investigation the responsible party will be directed to perform any possible clean-up. 100% of illicit discharges were investigated and 100% of confirmed illicit discharges were resolved.

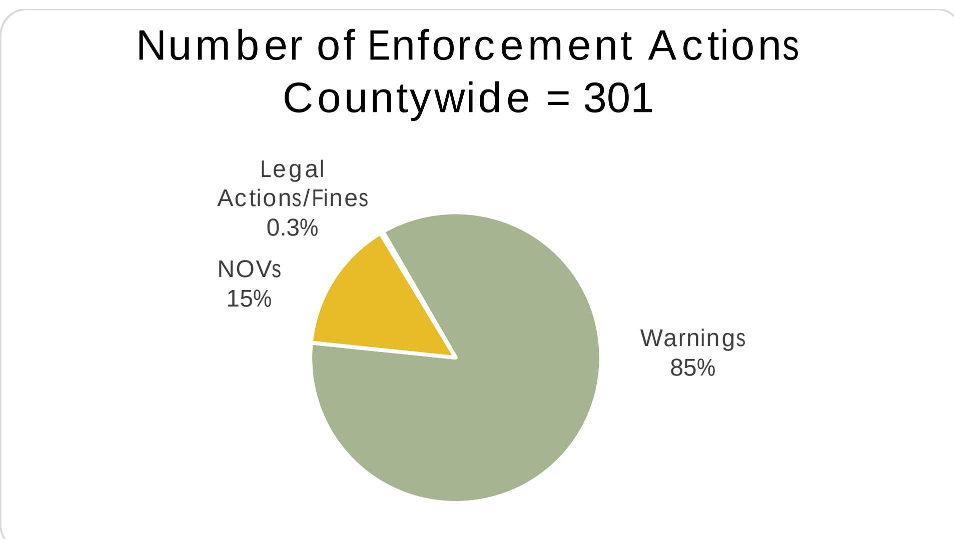
The discovery of potential or likely illicit discharges through business inspections has worked to reduce the number of overall illicit discharges.

Enforcement

Permittees continue to implement enforcement procedures to eliminate illicit discharges and illicit connections available through their legal authority of their respective ordinances. Most enforcement processes follow a common sequence. These typically include:

- Verbal or written warnings for minor violation
- Formal notice of violation or non-compliance with compliance actions and time frames
- Cease and desist or similar order to comply
- Specific remedies such as civil penalties (e.g., infraction), non-voluntary termination with cost recovery, referral for criminal penalties, or further legal action
- Authority to issue on site civil citations of $100

Figure 8-6 Enforcement Actions Countywide



Every time a responsible party is identified for an illicit discharge there is an opportunity for education and enforcement. Enforcement activity begins at the appropriate level as determined by the Permittees' authorized representative. For incidents more severe or threatening at the onset, enforcement starts at an increased level. Often times a verbal warning and requiring cleanup of the discharge is effective, if necessary the Permittee will charge the responsible party for cleanup services provided. Enforcement steps are accelerated if there is evidence of a clear failure to act, or an increase in the severity of the discharge. Enforcement actions for violating any of the provisions of the Permittees' ordinances may include any of the following or a combination thereof:

- Criminal Penalties
- Monetary punishment
- Imprisonment
- Civil Penalties

Education of targeted audiences occurs through inspections of illicit discharges, businesses, and construction activities. The importance of eliminating or mitigating non-stormwater discharges to local streams and channels is emphasized.

The capacity to issue civil citations has been added to the City of Oxnard's enforcement plan to ensure that repeat violators of local, state, and federal stormwater quality regulations are assessed a fine for their illicit (illegal) activities. The integration of this enforcement action allows the municipality to assess a $100.00 fee for those individuals or entities that receive a notice of violation (NOV) and thereafter again engage in the same illicit discharge activity. An additional $100.00 fine is assessed, per day and per violation, if a repeat violation is committed within a thirty (30) day period. If, after thirty (30) days, the same party is once again engaging in similar illicit activities then a $200.00 citation is given. A $500.00 fine is issued to fourth time perpetrators of an illicit discharge committed within sixty (60) days after the initial citation. Since current City policy allows the Mayor to delegate the authority to issue civil citations to designated employees, no changes to the City's stormwater ordinance were necessary. The only prerequisite imposed on these employees was that they receive training on civil citation writing from the City of Oxnard Code Enforcement Unit. Simply having the ability, and threat, to issue a civil citation has proven to be enough of a deterrent to discourage/eliminate future occurrences of the same type of illicit activities from the local residents and the construction/building communities.

Oxnard's inspectors have the capacity to issue civil citations up to $500 for illicit discharge activity.

Figure 8-7 Sources of Illicit Discharges

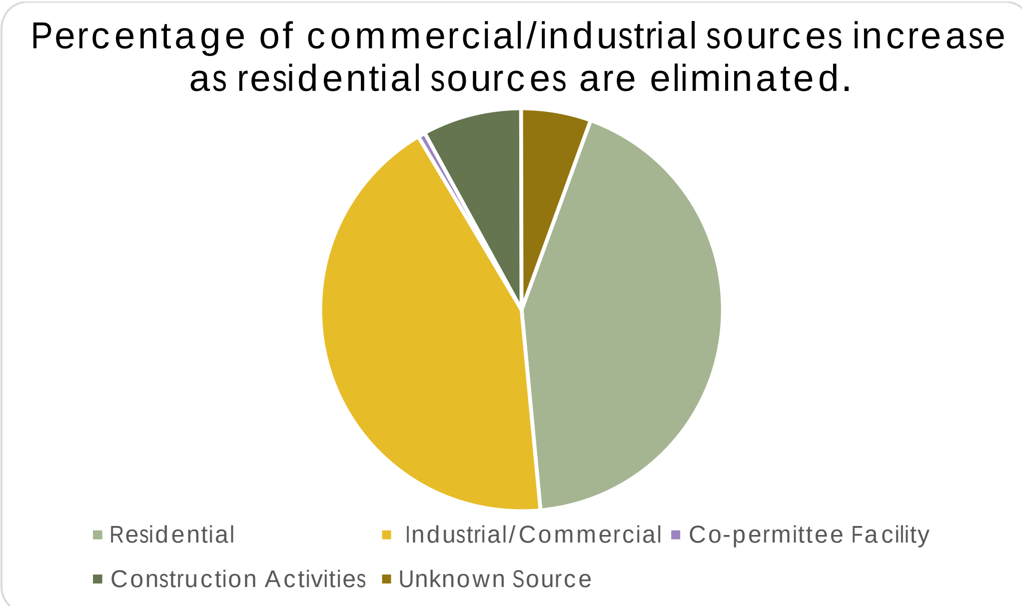


Figure 8-8 Illicit Discharges Incidents

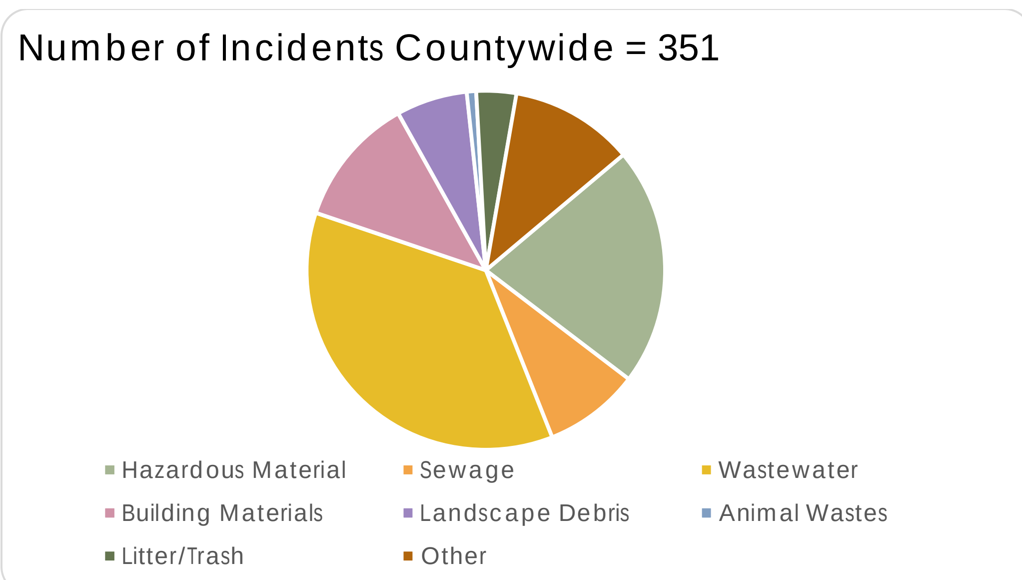
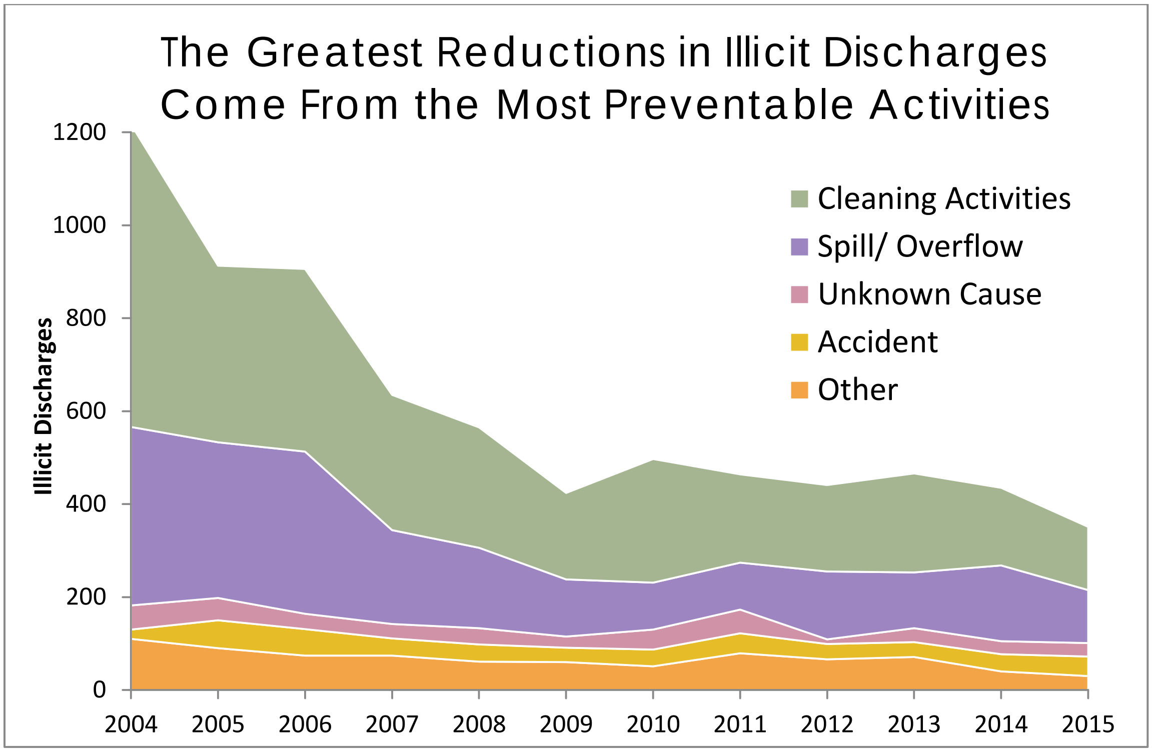


Figure 8-9 Trends in Illicit Discharges



Documentation

Permittees keep records of all illicit discharge discoveries, reports, responses, and enforcement and track the efforts during the Permit term in the Permittees' IC/ID database and summarized in the figures below.

As part of their field investigation of reported illicit discharges/dumping incidents, the Permittees attempt to determine the material's source. This investigation begins at the surface drainage system in the vicinity of suspected illicit discharges. This may include accessible areas in the public right-of-way adjacent to residences and businesses, catch basins, open channels near known points of discharge, and upstream manholes. If the source and responsible party can be determined, Permittees take one, or all, of the following actions when appropriate:

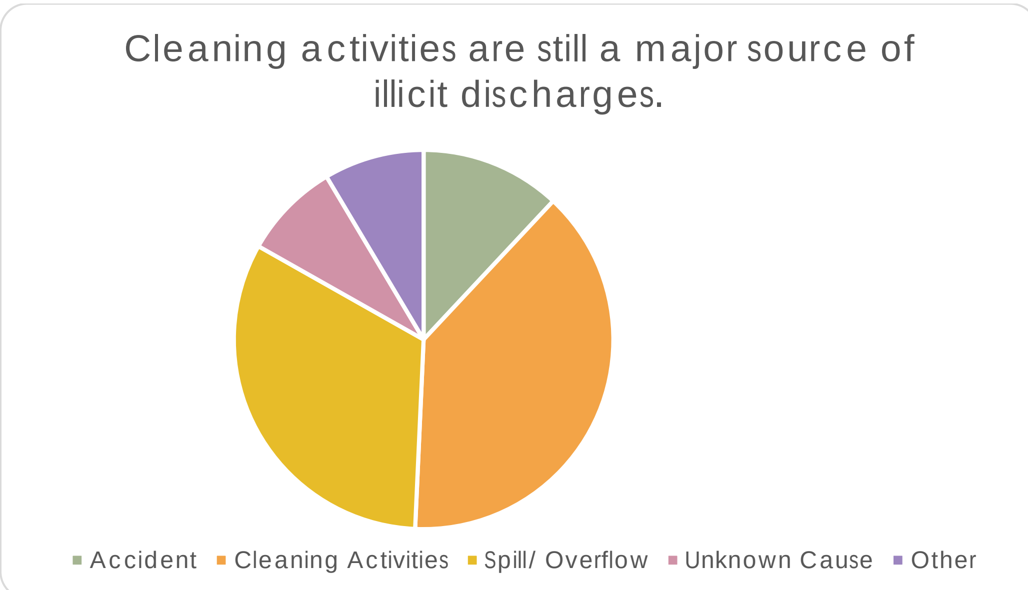
- Direct voluntary cleanup/termination;
- Initiate enforcement procedures;
- Take steps to prevent similar discharges from reoccurring.

When the source cannot be determined, the appropriate municipal department, or a contractor, will be notified to contain and clean up the material if possible. Because these situations and materials can vary, procedures vary as well. In general, the following steps are taken by Permittees to determine sources:

- Verify location of the spill/discharge;
- Containment and cleanup;

- Investigate the cause (look for origin);
- Determine the nature and estimate the amount of illicit discharge/dumped material;
- When appropriate, refer documented non-stormwater discharges/dumping or illegal connections to the proper agency for investigation; and
- If appropriate, notify the RWQCB and/other proper agencies.

Figure 8-10 Activities Leading to Illicit Discharges



8.5 TRAINING (CONTROL MEASURE ID3)

The Training Control Measure is important for the implementation of the IC/ID Program Element. An effective training program is one of the best pollution prevention BMPs that can be implemented because it prompts behavioral changes that are fundamentally necessary to protect water quality. The Permittees often evaluate the effectiveness of the training modules they offer by conducting pre- and post-training surveys used to assess a trainee's command of a topic before and after receiving training on the subject.

8.5.1 Conduct Training

Each Permittee targets staff based on the type of stormwater quality and pollution issues they may encounter. Targeted staff included illicit discharge inspectors, as well as field staff such as drainage, roadway, landscape, and facilities staff, industrial pretreatment inspectors, and code enforcement officers to help identify and report illicit discharges. Training is incorporated with existing business inspection, construction site, and public agency activity programs.

Staff is trained in a manner that provides adequate knowledge for effective illicit discharge identification, investigation, reporting and/or clean up. Training was achieved in a variety of ways, including informal "tailgate" meetings, formal classroom training; and/or self-guided training methods. During this reporting period, Permittees trained 1025 municipal staff on illicit discharge response and non-stormwater discharges. The staff trained by the Permittees is shown in figure 8-11 and training program is outlined in Table 8-4

Figure 8-11 Illicit Discharge and Illicit Connection Training

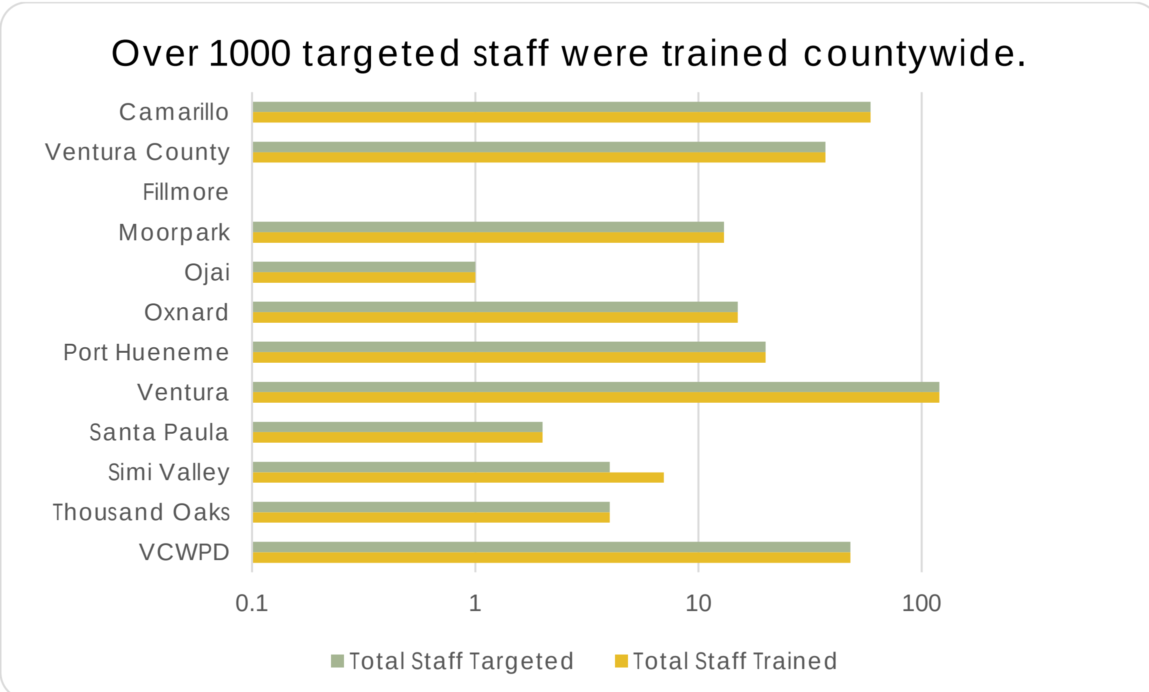


Table 8-4 Training Areas of Focus for the ID/IC Program Element

Target Audience	Format	Subject Material	Comments
• Illicit discharge inspectors • Drainage, roadway, landscape, and facilities staff • Industrial pretreatment inspectors • Code enforcement officers	• Classroom • On-site	• Identification • Investigation • Termination • Cleanup • Reporting of incidents • Documentation of incidents	• Subject varies by staff responsibility • Training seminars or workshops related to the program may be made available by other organizations

8.6 EFFECTIVENESS ASSESSMENT (CONTROL MEASURE ID4)

Effectiveness assessment is a fundamental component required for the development and implementation of a successful stormwater program. In order to determine the effectiveness of the IC/ID Program Element, a comprehensive assessment of the program data is conducted as part of the Annual Report. The results of this assessment are used to identify modifications that need to be made to the Program Element. Each year the effectiveness assessment is reviewed and revised as necessary.

By conducting these assessments and modifying the Program Element as needed, the Permittees ensure adaptive management is used as an effective management tool. Due to the types of data collected for the IC/ID Program, current and future assessments will primarily focus on Outcome Levels 1 through 4.

- Outcome Level 1 (L1) answers the question: Did the Permittees implement the components of the Permit?

- Outcome Level 2 (L2) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly increased the awareness of its target audience?

- Outcome Level 3 (L3) answers the question: Can the Permittees demonstrate that the control measure/performance standard significantly modified the behavior of a target audience?

- Outcome Level 4 (L4) answers the question: Can the Permittees demonstrate that the control measure/performance standard reduced the pollutant load?

The Permittees have effectively implemented an IC/ID program as described in the following sections. Past Annual Reports have documented the program and are available for public review at the Program's website. (L1)Detection of Illicit Connections and Illicit Discharges Public Outreach Implementation

Public Reporting

Each Permittee has identified staff serving as the contact person(s) for public reporting of IC/ID. The majority of the Permittees maintain a phone hotline to receive IC/ID complaints. (L1) Due to the need for timely response to illicit discharges Permittee web sites direct people to report by telephone to a "live person" instead of through email which, while quickly delivered, may not be read within the short time frame that a discharge is occurring. The Program maintains a website that contains the phone numbers for all the Permittees. (L1)

For the first few years as the Stormwater Program evolved and the public became more aware of what was not allowed down storm drains and so reports of IC/ID increased; however, since 2004 reports of IC/ID have demonstrated a leveling trend as shown in Figure 8-8. Since the public is more aware of IC/ID this likely represents a change in behavior for all but the willful violators and so fewer pollutants reaching the storm drains. (L3)

IC/ID Tracking

The Permit requires the mapping of all incidents of illicit connections to their storm drain system since January 2009 by May 7, 2012 at a scale and in a format specified by the Principal Permittee. The Permittees have mapped channels within their permitted area and the storm drain system. These maps were transmitted to the Principal Permittee and were incorporated into the Watershed Protection District's GIS system. (L1)

Screening for Illicit Connections

Screening has been implemented by the Permittees and has proven to be a very labor intensive effort resulting in very few suspect connections turning out to be illicit connections that need to be terminated. Of the six possible illicit connections five were identified as actual illicit connections, and all were terminated. As illicit connections are terminated it immediately reduces the discharge of pollutants. (L4)

8.6.1 Illicit Connection and Illicit Discharge Response and Elimination

Legal Authority

Legal authority for most potential pollutant discharges has existed since 1994. More recently Permittees adopted stormwater quality ordinances which more effectively and consistently ensure adequate legal authority across Permittees. (L1)

Response to Illicit Discharges and Illicit Connections

Each IC/ID complaint and the actions undertaken in response were documented. (L1) The Permittees responded to all reports of illicit discharge within 24 hours and often within a few hours. (L1) Where possible, the Permittees identified the source, nature, and volume of the discharge. Data shows that the source was identified 94.4% of the time. (L1) The Permittees took enforcement action as shown in figure 8-5. (L1)

The Permittees have developed an IC/ID Field Screening Protocol using the guidance from the "Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments".[2] In order to identify high priority areas for inspection, the Permittees have begun to map the storm drain system as a universal GIS storm drain map of the County. (L1) The Permittees investigated all illicit connections identified during inspections or reported by a third party within 21 days. (L1) Where possible, the Permittees determined the source, nature, and volume of the discharge.

8.6.2 Enforcement

Appropriate actions were then taken to approve undocumented connections or pursue removal of illicit connections. Upon confirmation of an illicit connection, the Permittees terminated the connection using formal enforcement within 180 days. (L1) (L4) Some of the Permittees maintained a list containing all connections under investigation for possible illicit connection and their status. (L1) The Permittees eliminated all known illicit connections during this reporting year. (L1)

8.6.3 Training

Conduct Training

The Permittees trained a total of 1025 municipal staff members. Each Permittee targets staff based on the type of stormwater quality and pollution issues they may encounter. Targeted staff included illicit discharge inspectors, drainage, roadway, landscape and facilities staff, industrial pretreatment inspectors, and code enforcement officers. This permitting year 99.4% of targeted staff members were trained. (L1)

8.6.4 Illicit Discharges and Illicit Connections Program Element Modifications

On an annual basis, the Permittees evaluate the results of the Annual Report, as well as the experience that staff implementing the program, to determine if any additional program modifications are necessary to comply with the Clean Water Act requirement to reduce the discharge of pollutants to the MEP.

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[2] *Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments*. The Center for Watershed Protection, Pitt R., October 2004. Chapter 13, 13.1,13.2, 13.3, 13.4

9 Water Quality Monitoring

9.1 OVERVIEW

As required by Order R4-2010-0108 (issued July 8, 2010), the Ventura Countywide Stormwater Quality Management Program monitored water chemistry, toxicity, and biological communities of creeks, rivers, and channels within Ventura County during the 2014/15 monitoring season. Similar to the previous two years, the 2014/15 water year was exceptionally dry in Ventura County. Rainfall during the typical wet season (October – April) was well below normal and the 2014/15 water year would have been one of the driest years on record for Ventura County, if not for the unusual storms during the dry season, which were enhanced by El Niño conditions. Few storms were forecast ≥ 0.25 inch and most of the storms reflected the forecasts. Several storms were scattered and showery, resulting in patchy areas of rainfall that could not be accurately predicted. The extremely dry conditions combined with the small number of qualifying storms, inaccurate forecasts and equipment and laboratory issues presented challenges to the Program and resulted in fewer complete sampling events than in previous years.

Monitoring locations for water chemistry and toxicity included Mass Emission stations and Major Outfall stations. Mass Emission stations are located in the lower reaches of the three major watersheds in Ventura County (Ventura River, Santa Clara River, and Calleguas Creek). Major Outfall stations, a component of the Stormwater Monitoring Program since 2009, are located in subwatersheds representative of each particular Permittee's contribution to downstream waters.

Water chemistry samples were collected at Mass Emission and Major Outfall stations during two to five rainfall events, with each site sampled once per event, when possible. The sampled rain events occurred on October 31 – November 1, 2014; December 2, 2014; December 12, 2014; April 7, 2015; and May 14, 2015. The wet season sampling (as defined in the Permit) ends on April 15, however the Program targeted an additional event in May to try to make up for some of the missing wet season records. Aquatic toxicity samples were collected from all fourteen sites during the first sampleable[3] wet event of the season, and none of the samples required a toxicity identification evaluation (TIE).

Samples were collected at Mass Emission and Major Outfall stations during one dry event which was split into three parts: Ventura River Watershed (ME-VR2, MO-MEI, and MO-OJA) on June 22-23, 2015; Santa Clara River Watershed (ME-SCR, MO-FIL, MO-SPA, MO-OXN, and MO-VEN) and the coastal watershed (MO-HUE) on June 30 – July 1, 2015; and Calleguas Creek Watershed (ME-CC, MO-CAM, MO-SIM, MO-MPK, and MO-THO) on July 6-7, 2015. Five sites (MO-MEI, MO-MPK, MO-SPA, MO-VEN, and MO-OXN) were dry so samples could not be collected and one site (MO-OJA) went dry during sampling so only a partial sampling was possible. A smaller subset of water chemistry samples was collected at each of the Major Outfall stations (or similar alternate location if no flow was observed) on August 18 and 19, 2015 as part of the dry-season, dry-weather monitoring prescribed in the NPDES Permit.

Aluminum, *E. coli* and fecal coliform were commonly found at elevated levels at most sites during wet-weather events. *E. coli* and fecal coliform concentrations were also regularly elevated during dry-weather events, but aluminum concentrations were not. Other constituents that were found at elevated levels during the 2014/15 monitoring season include chloride and total dissolved solids (usually seen predominantly during the dry-weather event, however they were also elevated at sites with little rain/flow this year), perchlorate (predominantly Event 1),

[3] MO-SPA grabs could not be collected during Event 1 due to a confrontational person onsite and ME-SCR did not flow until Event 3, so aquatic toxicity samples were collected from Event 2 and 3, respectively.

dissolved oxygen (dry season only), dissolved copper, dissolved zinc, total cadmium, total chromium, total selenium (dry weather only), ammonia, bis(2-ethylhexyl)phthalate, MBAS, pentachlorophenol, and pH (predominantly dry weather). Constituents that were seen at elevated levels at Mass Emission stations only once during the season include pH, chloride, total dissolved solids, total arsenic, total nickel, and bis(2-ethylhexyl)phthalate at ME-CC; nitrate+nitrite as nitrogen and the metals (total) arsenic, barium, beryllium, cadmium, chromium, nickel, and thallium at ME-SCR; and bis(2-ethylhexyl)phthalate and the polycyclic aromatic hydrocarbons dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene at ME-VR2. The Program is using this information to identify pollutants of concern and direct efforts to reduce their discharge from the storm drain system.

Bioassessment sampling was conducted as part of the Southern California Regional Bioassessment Study. Sampling for the original five-year study was completed in 2013 and interim study sampling was conducted in 2014. The second five-year study began in 2015. The 2015 Study includes perennial and nonperennial streams and is designed to look at both current stream condition as well as site trends. The Program surveyed ten randomly generated sites to assess condition (three in the Ventura River Watershed, three in the Calleguas Creek Watershed, three in the Santa Clara River Watershed, and one in the Santa Monica Bay Watershed) and five sites (two open land use and three developed land use) that were previously surveyed in 2008/2009 to track trends. The Principal Permittee's fixed (Integrator) sites at the three mass emission stations (ME-CC, ME-VR2, and ME-SCR) were also sampled once each for 2015. Sampling occurred between June 11 and August 13, 2015.

9.2 INTRODUCTION

This Annual Report summarizes the effort undertaken by the Ventura Countywide Stormwater Quality Management Program (Program) and the Stormwater Monitoring Program during the 2014/15 monitoring season. Pursuant to NPDES Permit No. CAS0040002, the Program must submit a Stormwater Monitoring Report annually by December 15th, and include the following:

- Results of the Stormwater Monitoring Program
- General interpretation of the results
- Tabular and graphical summaries of the monitoring data obtained during the previous year

Analysis of samples collected at various stations throughout the watershed gives an overall representation of the quality of stormwater discharges. The monitoring also aids in the identification of pollutant sources, as well as the assessment of Program effectiveness. Feedback provided by the monitoring program allows for changes to be made in the implementation of other Program aspects in order to resolve any problems and reduce pollutants that may exist. This adaptive management strategy should eventually show improved water quality through the stormwater monitoring program. The Stormwater Monitoring Program includes the following components.

9.2.1 Mass Emission Monitoring

Mass Emission stations are located in the lower reaches of the three major watersheds in Ventura County (Ventura River, Santa Clara River, and Calleguas Creek). As such, the Mass Emission drainage areas are much larger than the drainage areas associated with Major Outfall stations (described in Section 9.2.2), and include large contributions from other sources of discharge, such as wastewater treatment plants, agricultural runoff, non-point sources, and groundwater discharges.

The purpose of mass emission monitoring is to identify pollutant loads to the ocean and identify long-term trends in pollutant concentrations. This type of monitoring, in conjunction with the Major Outfall monitoring, is also useful in helping to determine if the Municipal Separate Storm Sewer System (MS4) is contributing to exceedances of water quality objectives by comparing results to applicable water quality objectives in the Los Angeles Region Water Quality Control Plan (Basin Plan) and the California Toxics Rule (CTR), as described in Section 9.6.

During the 2014/15 monitoring season, water quality samples from three wet-weather events and one dry-weather event were targeted for water chemistry analysis at each Mass Emission station, as required by the NPDES Permit. Due to drought conditions, inaccurate forecasts and equipment and laboratory issues, complete wet-weather event data sets were only able to be captured for two events at ME-CC and ME-VR2. Partial data sets were able to be collected from one additional event at ME-CC, three additional events at ME-VR2, and two events at ME-SCR. One qualifying dry-weather event was successfully captured for all three sites. Aquatic toxicity samples were collected at each Mass Emission station during the first sampled event of the 2014/15 monitoring year [Event 1 (October 31 – November 1, 2014) for ME-CC and ME-VR2 and Event 3 (December 12, 2014) for ME-SCR] and tested with the species that was determined to be the most sensitive to contaminants for each station, based on the results from the 2009/10 monitoring year. In addition, trend analysis was performed for all constituents using historical data from Mass Emission stations, in order to identify potential improvements or deterioration in chemical water quality since 2001.

9.2.2 Major Outfall Monitoring

The Permit requires sampling at one representative station (major outfall) for each Permittee's municipal separate storm sewer system (MS4). Many of the monitoring requirements for Major Outfall stations are similar to those for the Mass Emission stations, as are the reasons for undertaking this monitoring. Four of the stations were monitored beginning with the 2009/10 monitoring season and seven of the stations were new to the 2010/11 monitoring season. Station selection for these new sampling locations is described in Section 9.3.2.

During the 2014/15 monitoring season, water quality samples from three wet-weather events and one dry-weather event were targeted for water chemistry analysis at each of the eleven Major Outfall stations, as required by the NPDES Permit. Very dry antecedent conditions and low rainfall amounts provided additional challenges for the collection of qualifying, representative samples. Three wet events were sampled for all eleven stations, however low rainfall frequency and quantity, equipment malfunctions, and inaccurate forecasts led to an incomplete data set for the year. Issues at some sites included a malfunctioning field meter during Event 1, composite equipment malfunctions during Events 3 and 4, and insufficient rainfall and/or flow during Events 2, 4 and 6. Five sites were successfully sampled during the dry event (MO-CAM, MO-SIM, MO-THO, MO-HUE, and MO-FIL) , however five sites (MO-OXN, MO-MPK, MO-SPA, MO-VEN and MO-MEI) were dry and MO-OJA went dry partway through the event and before the grab samples could be collected.

Aquatic toxicity samples were collected at each of the Major Outfall stations during Event 1 (October 31 – November 1, 2014) except for MO-SPA, which was sampled during Event 2 (December 2, 2014) due to a confrontational person onsite during Event 1. Samples were tested with the species that was determined to be the most sensitive to contaminants for that station, based on the results from the 2009/10 or 2010/11 monitoring year, as applicable.

Using the data from the Major Outfall monitoring in conjunction with the Mass Emission monitoring, the Stormwater Monitoring Program will help the Program determine if an MS4 is potentially contributing to exceedances of water quality objectives by comparing results to applicable water quality objectives in the Basin Plan and the CTR. Over the course of many years, the data will be able to describe trends in waters from the Major Outfall stations over time. This information will be useful in evaluating the effectiveness of the Program implementation and provide Permittees with real data on which to base future management decisions.

9.2.3 Dry-Season, Dry-Weather Analytical Monitoring

The Permit requires the analysis of pollutant discharges from representative MS4 outfalls in each municipality and in the unincorporated County area during dry-weather between May 1 and Sept 30. The Stormwater Monitoring Program met this requirement by sampling once during the summer at or near Major Outfall stations, or at another pre-selected representative site if flow was insufficient at the Major Outfall station.

9.2.4 Bioassessment Monitoring

Prior to the adoption of the new Orders (No. 09-0057 in 2009 and its replacement, R4-2010-0108 in 2010), the Stormwater Monitoring Program performed bioassessment monitoring in the Ventura River watershed at fixed locations. That sampling effort was terminated in favor of a new program working to standardize bioassessment monitoring throughout Southern California undertaken by the Stormwater Monitoring Coalition of Southern California (SMC) and led by the Southern California Coastal Water Research Project (SCCWRP). The Stormwater Monitoring Program (Program) has participated in the regional program since 2009.

The first five year study was conducted from 2009 through 2013 during which time the Program performed bioassessment surveys at 15 random sites (six in the Ventura River Watershed, six in the Calleguas Creek Watershed, and three in the Santa Clara River Watershed) and three targeted perennial sites (ME-CC, ME-SCR, and ME-VR2) throughout the County each year. An interim study was conducted in 2014 to allow the SMC time to review the generated data and to provide information for developing the next five year study (2015-2019). The 2014 study included revisits to previously sampled sites for trend detection and repeated visits to new nonperennial reference sites to provide information for developing the next five year study.

The 2015-2019 Study includes perennial and nonperennial streams and is designed to look at both current stream condition as well as site trends. The Program surveyed ten randomly generated sites to assess condition (three in the Ventura River Watershed, three in the Calleguas Creek Watershed, three in the Santa Clara River Watershed, and one in the Santa Monica Bay Watershed) and five sites (two open land use and three developed land use) that were previously surveyed in 2008/2009 to track trends. The Principal Permittee's fixed (Integrator) sites at the three mass emission stations (ME-CC, ME-VR2, and ME-SCR) were also sampled once each for 2015. Sampling occurred between June 11 and August 13, 2015. The regional bioassessment effort is ongoing and will be modified and revised as new information becomes available.

9.3 MONITORING STATION LOCATIONS AND DESCRIPTIONS

9.3.1 Mass Emission Stations

Mass Emission stations are located in the three major Ventura County watersheds: Ventura River (ME-VR2), Santa Clara River (ME-SCR), and Calleguas Creek (ME-CC). In locating these stations, every effort was made to position the station as low as possible in the watershed to capture as much of the runoff as possible, while still remaining above tidal influence. See Figure 9-1 for the location of Mass Emission stations.

The ME-VR2 station is located at the Ojai Valley Sanitary District's wastewater treatment plant (WWTP) near Cañada Larga Road and captures runoff from the city of Ojai, several unincorporated communities (e.g., Meiners Oaks, Casitas Springs), a very small portion of the City of Ventura, and a large portion of undeveloped landscape, the latter of which comprises the bulk of the watershed. Monitoring at the ME-VR2 station was initiated during the 2004/05 monitoring season after landslide activity at the original Ventura River Mass Emission station, ME-VR, precluded further sampling at that location.

The ME-CC station is located along Camarillo Street (formerly University Drive) near California State University at Channel Islands and captures runoff from the cities of Camarillo, Thousand Oaks, Moorpark, and Simi Valley. This watershed has the largest urban influence (roughly 30% urbanized), but also includes significant contributions from agricultural runoff found predominantly in the lower two-thirds of the watershed. Monitoring at the ME-CC station was initiated during the 2000/01 monitoring season.

The ME-SCR station is located at the United Water Conservation District's (UWCD) Freeman Diversion Dam east of Saticoy and captures runoff from the cities of Santa Paula and Fillmore, communities upstream in Los Angeles County, agricultural fields, and a large amount of undeveloped landscape. Monitoring at the ME-SCR station was initiated during the 2001/02 monitoring season. Unlike at the other two Mass Emission stations, accurate measurement of flow at this location is not possible due to the configuration and operation of the diversion structure.

In dry conditions, the river is usually diverted to groundwater infiltration ponds. In wet-weather conditions, the Santa Clara River can also flow past the diversion dam through two other routes. One route is through the river diversion gate structure where the majority of wet-weather flow passes. The other route is over the diversion dam, a situation which occurs only during high flows generated by large storm events. Flood flows are monitored at the diversion dam by the Hydrology Section, but there is no flow meter installed at the river diversion gate due to complex hydraulics. A sonic water level sensor was installed in 2014 over the pond behind the diversion so that a gate opening would be noticed. A text message is automatically sent to sampling team members when the gate is opened, which lets them know the intake strainer could lose contact with the river. A special swing arm intake strainer has been installed to alleviate this potential problem, but the installation is still being refined.

9.3.2 Major Outfall Stations

Of the eleven Major Outfall stations, four were added to the Stormwater Monitoring Program in 2009 and seven were added in 2010. As directed by the NPDES Permit, these stations represent the runoff from each city/unincorporated county (Permittee) in which they are located. The four municipalities selected for inclusion in the 2009/10 Stormwater Monitoring Program were Camarillo (MO-CAM), Ojai (MO-OJA), unincorporated Meiners Oaks (MO-MEI) and Ventura (MO-VEN).[4] The stations in the seven remaining municipalities brought online for the 2010/11 monitoring year were Fillmore (MO-FIL), Moorpark (MO-MPK), Oxnard (MO-OXN), Port Hueneme (MO-HUE), Santa Paula (MO-SPA), Simi Valley (MO-SIM), and Thousand Oaks (MO-THO). Details of the land use of each city and the representative watershed can be found in Appendix A in Attachment D.

The MO-CAM station is located on Camarillo Hills Drain (a tributary of Revolon Slough) just north of Daily Drive in Camarillo. The predominant land use in the watershed is residential. Less than 8% of the watershed is commercial and less than 1% is agricultural.

The MO-OJA station is located on Fox Canyon Barranca (a tributary of San Antonio Creek) near the Ojai Valley Athletic Club in Ojai. Almost half of the watershed is classified as vacant, with residential land use comprising about 40%. About 3% of the watershed is commercial and about 5% is agricultural.

The MO-MEI station is located on Happy Valley Drain (a tributary of the Ventura River) near Rice Road in Meiners Oaks. Almost half of the watershed is classified as residential. Another quarter of the watershed is classified as vacant. About 3% of the watershed is commercial and about 15% is agricultural.

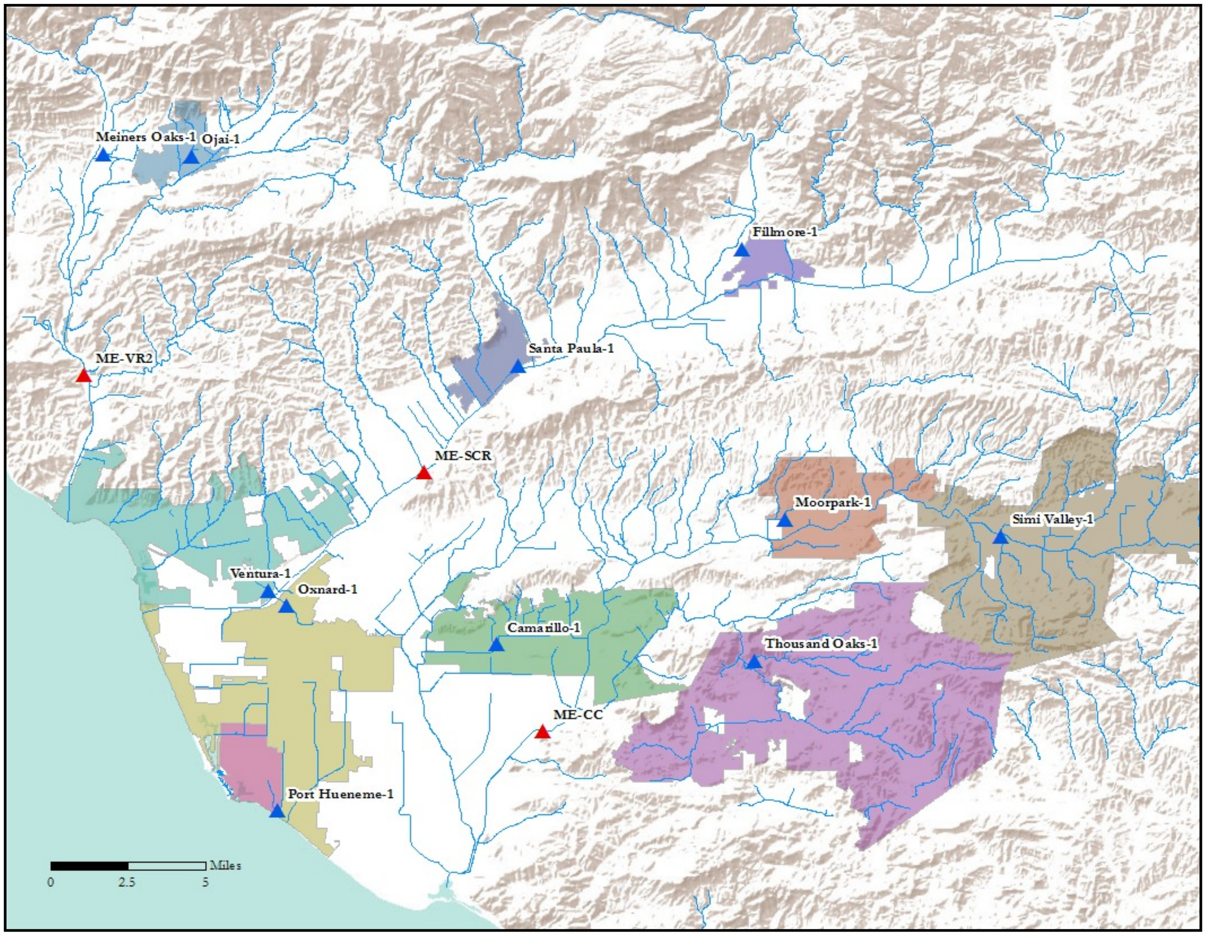
The MO-VEN station is located on Moon Ditch (a tributary to the Santa Clara River) near the US101-Johnson Drive interchange in Ventura. Over half of the watershed is residential and a quarter is commercial. Industrial land uses account for almost 7% of the watershed, while agriculture comprises less than 1% of the watershed.

The MO-FIL station is located on the North Fillmore Drain (a tributary of Sespe Creek) near Shiells Park in Fillmore. Almost half the watershed is residential and just over a third is classified as vacant. Agriculture land uses account for almost 7% of the watershed, while commercial comprises less than 1% of the watershed.

[4] Site names shown on the map reflect the names given to each site in the NPDES permit; site names throughout this report are shortened to those shown on chains-of-custody (COCs) for brevity. Under this naming convention, MO-CAM is synonymous with Camarillo-1, MO-FIL with Fillmore-1, MO-HUE with Port Hueneme-1, MO-OJA with Ojai-1, MO-OXN with Oxnard-1, MO-MEI with Meiners Oaks-1 (VCUnincorporated-1), MO-MPK with Moorpark-1, MO-SPA with Santa Paula-1, MO-SIM with Simi Valley-1, MO-THO with Thousand Oaks-1, and MO-VEN with Ventura-1.

The MO-MPK station is located on the Walnut[5] Canyon Drain (a tributary to Arroyo Las Posas) near the intersection of Los Angeles Avenue and Mira Sol Drive in Moorpark. Over half the watershed is classified as vacant, less than 10% of the land is residential, and almost 13% of the watershed is used for agriculture.

Figure 9-1 Mass Emission and Major Outfall Sampling Locations



The MO-OXN station is located on El Rio Drain (a tributary to the Santa Clara River) near the corner of Buckaroo Avenue and Winchester Drive in Oxnard. Most of the watershed is classified as residential, however almost 20% is commercial and less than 2% is agricultural.

The MO-HUE station is located on Hueneme Drain (a tributary of the J Street Drain at the Pacific Ocean) southeast of Bubbling Springs Park in Port Hueneme. The land use is predominantly residential, with commercial and vacant land uses accounting for only 3% each.

The MO-SPA station is located on the 11th Street Drain where it enters the Santa Clara River, east of the Santa Paula airport. About half of the watershed is classified as residential, less than 15% as commercial, and schools and transportation account for about 10% each.

[5] Incorrectly referred to as Gabbert Canyon in reports and documents prior to the 2012/13 Annual Report.

The MO-SIM station is located on Bus Canyon Drain (a tributary of the Arroyo Simi) near the intersection of 5th Street and Los Angeles Avenue in Simi Valley. Over half (57%) of the watershed is classified as vacant and about one third is residential. All other land uses account for less than 1% of the watershed each.

The MO-THO station is located on the North Fork Arroyo Conejo (a tributary to Conejo Creek) in the Hill Canyon WWTP. The main land uses in the watershed are residential (56%) and vacant land (31%). Figure 9-1 shows the location of the eleven Major Outfall and three Mass Emission stations.

9.4 METHODS

The NPDES Permit requires flow-paced sampling at monitoring stations where technically feasible. The reason for this type of sampling is two-fold. First, by collecting sub-samples (aliquots) based on flow, a more accurate representation of the Event Mean Concentration (EMC) of each constituent in the runoff can be achieved. Second, by multiplying the EMC by the total flow during sample collection, a mass of each constituent discharged during each sampling event can be estimated. Ideally, sampling events represent the entire hydrograph, however difficulties inherent in predicting precipitation quantity, intensity, and resulting runoff may result in partial representation of the complete storm event. Therefore, EMC are only representative of the sampling event duration and not the entire storm and mass emission quantities are calculated accordingly. These benefits are discussed further below.

Flow-paced sampling is not technically feasible at three sites, ME-SCR, MO-FIL, and MO-HUE. Since its installation in 2001, the monitoring station at ME-SCR has been monitored on a time-paced basis, as allowed by the RWQCB. This site is located at the UWCD's Freeman Diversion Dam, where irregular operation of the gates associated with the diversion dam makes it impossible to calculate flow. During most of the year, water is sent through a canal in which it is easy to calculate flow. However, during rainfall events and periodically throughout the year, the UWCD will close the gates to the diversion canal, allowing water to go through a high-velocity bypass or spill over the dam itself. Computing flow over the latter is difficult, given the breadth of the dam, which spans the entire river bottom. Computing flow through the bypass is impossible due to the wide ranges in water surface elevation and velocity. The MO-FIL station is located at an outfall into Sespe Creek and is subject to backwater due to plant growth and sediment deposition, which makes accurate flow determination impossible. The MO-HUE station is located in a canal which is drained via pumps that are triggered based on water surface elevation. The pumps are operated intermittently which makes flow-paced sampling inappropriate.

9.4.1 Precipitation

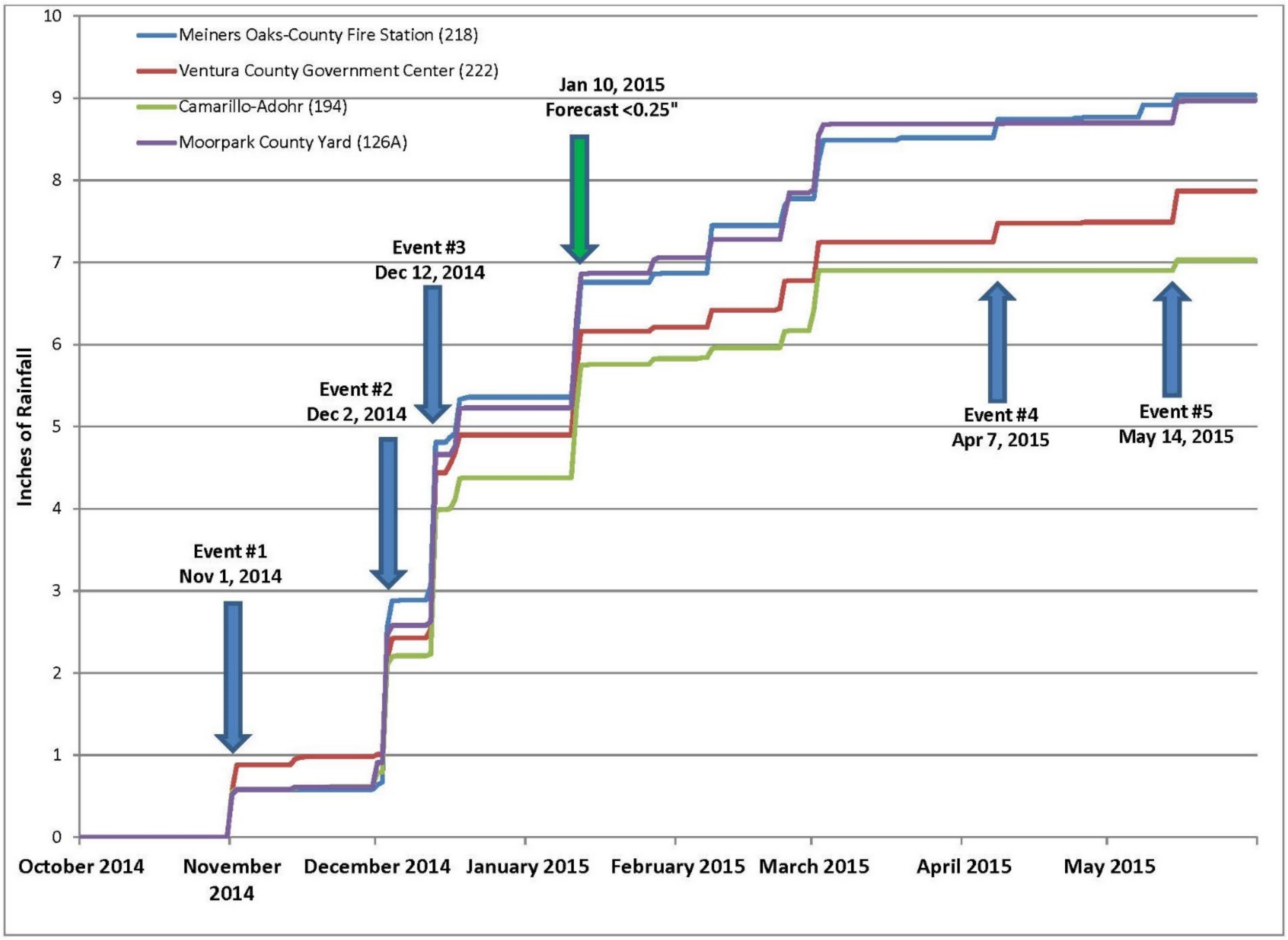
Precipitation amounts, both historical and predicted, are integral to performing flow-weighted sampling. Historical precipitation data is necessary to determine the relationship between rainfall and runoff. In the major watersheds with long-term Mass Emission stations, the rainfall-to-runoff (RTR) ratio is based on over 65 years of data and takes into account antecedent soil moisture conditions. These RTR tables have been used and refined by the Stormwater Monitoring Program for over 11 years.

At the time the Major Outfall stations were installed, the Stormwater Monitoring Program had access to real time precipitation data from the VCWPD's Hydrology section [part of the Automated Local Evaluation in Real Time (ALERT) network]; however it was not in a form that was usable by the Program. Changes to the processing of the ALERT data allowed the Program to capitalize on the already installed and maintained ALERT rainfall gauges. Most of the monitoring stations were able to use data from nearby ALERT gauges. Those monitoring stations that do not have nearby ALERT gauges (ME-SCR, ME-VR2, MO-CAM, MO-MEI, MO-VEN, and MO-HUE) have tipping bucket rainfall gauges (0.01" per tip) installed instead.

While the rainfall gauges purchased and maintained by the Stormwater Monitoring Program are of high quality, the data generated by these gauges are subjected to less stringent quality control measures than the "official" gauges maintained by the Hydrology section. Therefore, the Stormwater Monitoring Program has opted to show cumulative totals from representative ALERT gauges when indicating dates that actual sampling events occurred, as shown in Figure 9-2 Precipitation at Selected Sites. Gauge 218 is located in the Ojai Valley near the MO-MEI station. Gauge

222 is located at the County Government Center near the MO-VEN station. Gauge 194 is located at the base of the Conejo Grade, somewhat equidistant from the ME-CC and MO-CAM stations. Gauge 126A is located at the Moorpark County Yard near the MO-MPK station. Rainfall data gathered at specific monitoring stations can be found in Appendix B in Attachment D.

Figure 9-2 Precipitation at Selected Sites



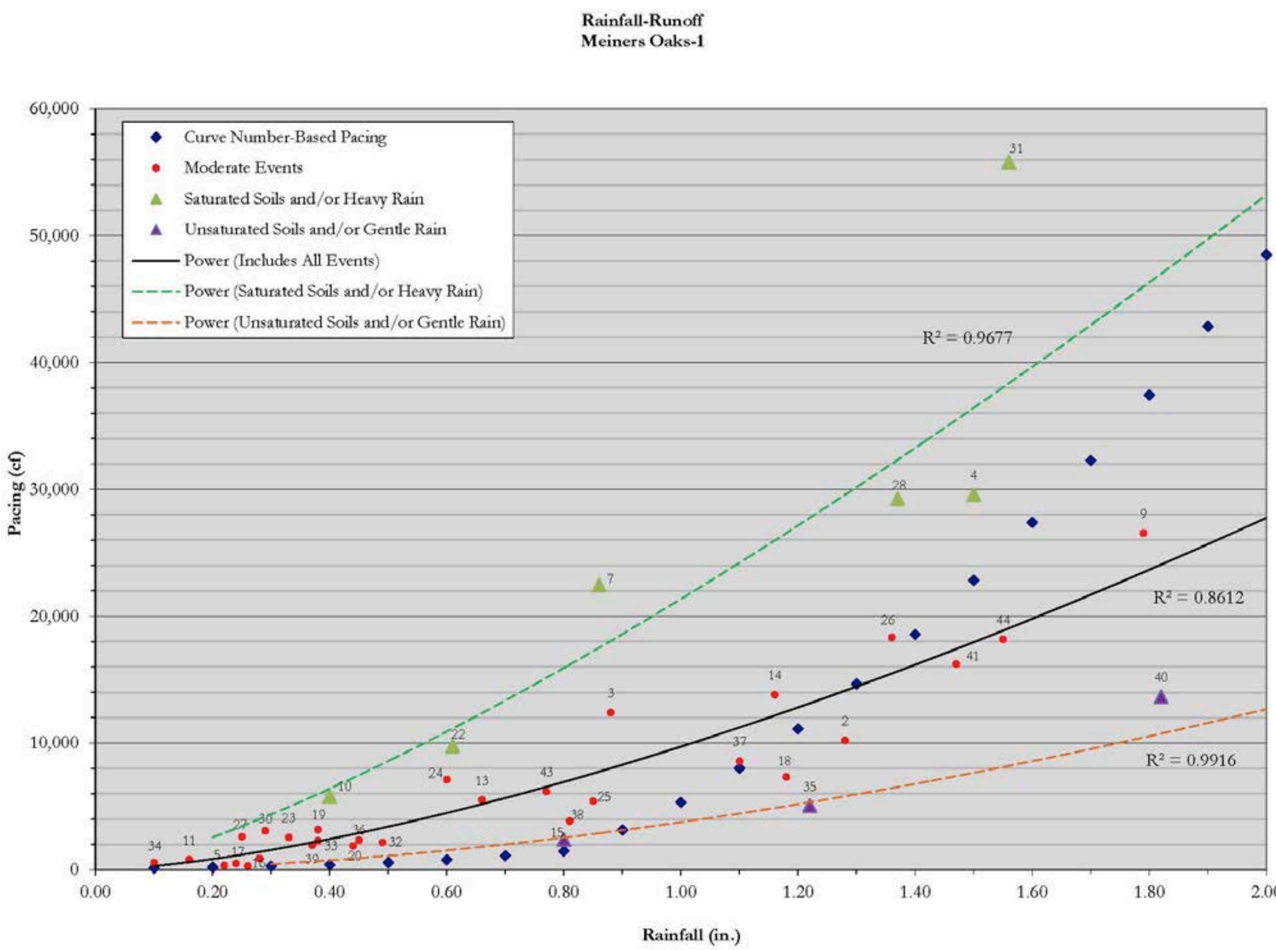
Note: The storm on January 10, 2015 was forecast to be too small to sample all the way up to the day of the event, by which time it was too late to sample.

9.4.2 Rainfall-to-Runoff Ratios

Prior to starting monitoring under the new Permit (before monitoring season 2009/10), the Stormwater Monitoring Program enlisted the VCWPD's Hydrology section to assist in modeling the expected rainfall-to-runoff (RTR) ratio for each new Major Outfall station. The Hydrology section used the NRCS Curve Number approach that is commonly used in hydrologic modeling. This model takes into account land use and soil types within each watershed, but relies on using a wetter soil moisture condition than actually exists for all but the largest of rainfall events. Despite these known limitations, these RTR ratios represented a good beginning point for flow-weighted sampler pacing. A further description of the methods and limitations of this approach, as described by the Hydrology section, can be found in Appendix C in Attachment D.

Over the course of the last five monitoring years, the Stormwater Monitoring Program refined these model results by comparing the runoff generated at each site with the corresponding rainfall, where runoff was sufficient to be detected by the equipment and rainfall was greater than 0.1 inch. The Program also tracks the antecedent soil moisture for each event, flagging it as “Dry”, “Moderate”, or “Wet”. This allows the Stormwater Monitoring Program to more accurately pace automated samplers based on the predicted size of each storm. Figure 9-3 shows an example of these pieces of information, as a function of the proper pacing of the automated sampler (see Section 9.4.3 for a further description of sampler pacing).

Figure 9-3. Example of Rainfall-to-Runoff Modeling Versus Actual Rainfall Events



9.4.3 **Flow-Paced Sampling**

To compute flow, ISCO flow meters were installed at all locations (except at the aforementioned ME-SCR, and at MO-HUE, where the pump station prevents flow from being able to be measured accurately). ISCO 4230 bubblers were installed at all other stations except MO-FIL and MO-SPA, which received ISCO 4250 area-velocity meters instead. By measuring pressure head and relating it to a rating table, ISCO 4230s are capable of calculating instantaneous discharge. Measurement accuracy of the 4230 is not affected by wind, steam, foam, turbulence, suspended solids, or rapidly changing head heights. These types of flow meters are extremely low maintenance and highly reliable and were, therefore, chosen over other contact (ISCO 4250 area-velocity) and non-contact (ISCO 4210 ultrasonic) types of flow measuring devices when possible. ISCO 4250 area-velocity meters use Doppler technology to directly measure average velocity in the flow stream, while the integral pressure transducer measures liquid depth to determine flow area. The 4250 then calculates flow rate by multiplying the area of the flow stream by its average velocity. The 4250 is best for applications where weirs or flumes are not practical, or where submerged, full pipe, surcharged, and reverse flow conditions may occur, such as at the MO-FIL and MO-SPA monitoring sites.

Flow-paced sampling involves collecting sub-samples (aliquots) on a volumetric flow interval basis, with a set aliquot volume collected at passage of each equal, pre-set flow volume, and then compositing these aliquots into one sample for analysis. In its simplest terms, flow-paced sampling can be achieved by estimating the total flow that will pass a sampling location (which, itself, is dependent on predicted rainfall amounts and intensities) and dividing that by the number of aliquots to be taken. Using Figure 9-3 above as an example, an approximate 0.6" rainfall event would generate about 0.25 million cubic feet of runoff, which when divided by 35 (the number of aliquots the Stormwater Monitoring Program attempts to take per event at each site) provides the proper pacing of around 7,000 cubic feet per aliquot (see data point #24). As mentioned above, this pacing volume is highly dependent on other variables such as intensity and antecedent soil moisture conditions.

Although composite samplers are automated, Stormwater Monitoring Program staff actively monitored storm and flow conditions during each event in order to adaptively adjust the sampler to capture the best representation of storm flow. This was made possible by the telemetry capabilities of the Stormwater Monitoring Program. Prior to the 2009/10 monitoring season, Stormwater Monitoring Program staff members were required to visit each site as the timing and amounts of predicted rainfall changed. Each site is now equipped with a cellular modem that allows remote changes to sampler pacing, enabling conditions and alarms. Furthermore, the data from each of these sites is pushed via a static IP address to a centrally located SQL server and is accessible in near real-time format. Due to this set-up, site visits were only necessary to set up the site initially, take grab samples, collect composite sample bottles, and correct physical problems with the site. A schematic of this set-up is shown in Figure 9-4. An example of the data available to Stormwater Monitoring Program staff in the Storm Control Center is shown in Figure 9-5.

Figure 9-4. Schematic of Remote Data Delivery and Access

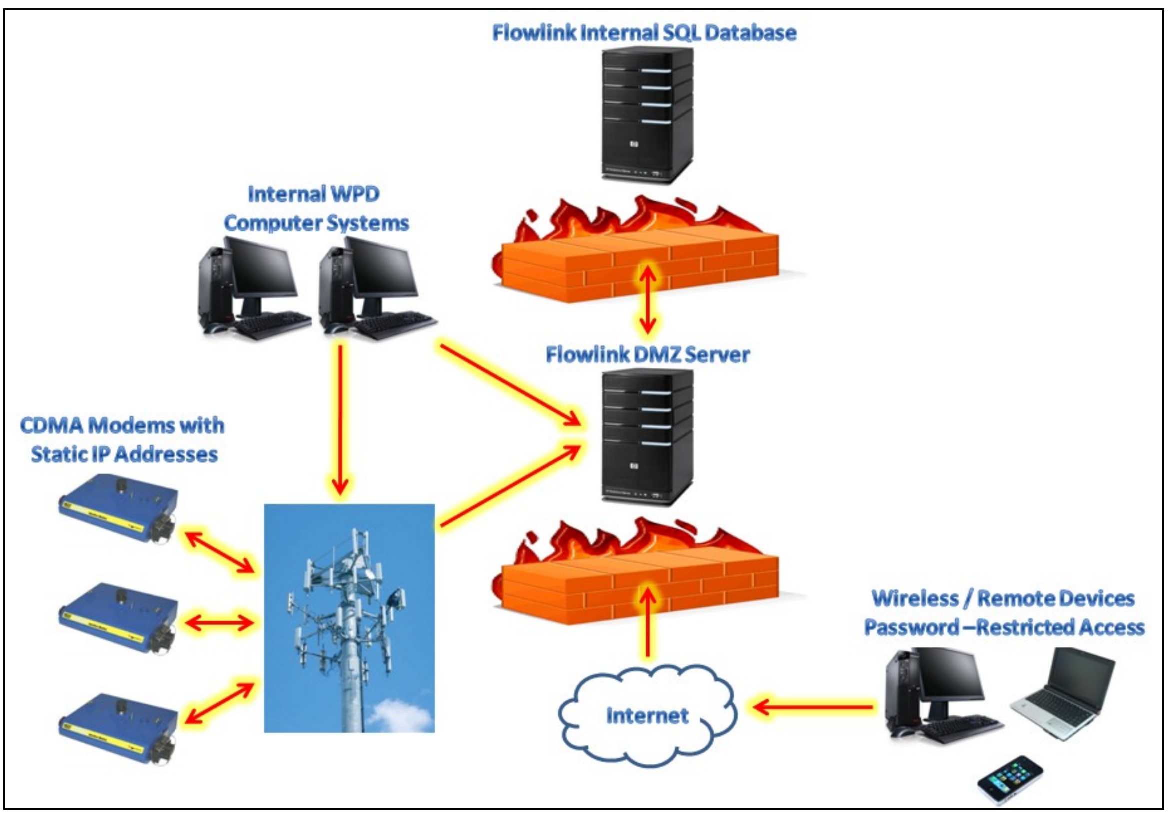


Figure 9-5. Real-Time Data Available in Storm Control Center

9.4.4 **Sample Collection**

As detailed in the NPDES Permit, the Stormwater Monitoring Program is to sample one dry-weather and three wet-weather events at the mass emission and major outfall stations during each Permit year. Wet-weather events are described as “discharge resulting from a storm event that is 0.25 inches or greater” preceded by at least 7 days of dry weather (<0.10” each day). Mass Emission Station wet-weather events have the additional criteria of a greater than 20% increase in base flow. The Permit emphasizes capturing the first event of the year, as well as the first part of each storm, both of which can be described as the first flush.

Due to the unusually dry wet season, the Stormwater Monitoring Program encountered difficulties in sampling the necessary quantity and type of events dictated by the NPDES Permit. The lack of qualifying storms (>0.25” rain forecast after seven days of dry weather) combined with the overall low precipitation amounts resulted in less runoff at the sites in both wet and dry weather. The required number of wet events were sampled for all sites, however the full complement of analytes was unable to be sampled for some sites during some events. Reasons for incomplete events included limited or localized rainfall, inaccurate forecasts, equipment malfunctions, and extremely dry antecedent conditions. Eight sites were successfully sampled in dry weather (ME-CC, ME-SCR, ME-VR2, MO-CAM, MO-SIM, MO-THO, MO-HUE, and MO-FIL). One site was partially sampled in dry weather (MO-OJA) due to flow terminating during the event. Five sites (MO-MPK, MO-MEI, MO-SPA, MO-VEN, and MO-OXN) were dry and therefore did not have sufficient runoff available for sample collection, so were not sampled during the dry event. This should not be interpreted as a missed sample, rather as zero discharge of pollutants since removing dry weather flows is a goal of the Program.

Table 9-1 shows site flow and event durations. In Table 9-1, Start Date/Time and End Date/Time describe the length of time the automated sampler was actually taking samples. The true time of the rainfall and related runoff event was always longer; since the samplers were programmed to begin taking samples after flow had risen to greater than 20% of base flow, which took 0.10” to 0.25” of rainfall, depending on the antecedent conditions and sampling location.[6] Furthermore, flow often continued after the automated sampler had completed its sampling program, because of the Stormwater Monitoring Program’s goal to ensure that enough aliquots were taken to perform the required analyses. Because of this goal, the Stormwater Monitoring Program tried to err on the conservative side, pacing the samplers a bit quicker than the RTR tables dictated. As the RTR tables are refined, this error will become smaller, but will never completely disappear due to the inherent error in rainfall predictive abilities by both commercial and public weather forecasters. The relative timing of the onset of rainfall, commencement of the sampling program and duration of the flow for each site can be found in the event hydrographs located in Appendix B in Attachment D and is described further in the event descriptions, below.

The sampling methods and sample handling procedures used during the 2014/15 monitoring year are described in *Ventura Countywide Stormwater Monitoring Program: Water Quality Monitoring Standard Operating Procedures, 2009-2014*.

[6] This range represents the amount of rainfall needed to generate measurable flow at the monitoring station. Smaller amounts of rainfall generated positive flow in watersheds with proportionally more impervious area. All automated sampling programs were designed to begin when the water in the creek or channel exceeded the elevation of the intake strainer by more than a couple hundredths of a foot, effectively capturing the “first flush.”

Table 9-1: Site Flow Data, Precipitation Data, and Event Durations

Site ID	Event No.	Event Date[a]	Average Flow (CFS) (Calc)	Total Rainfall (inches)	Sampler Start[b] Date, Time	Sampler End[b] Date, Time	Event Duration (HH:MM)	Days since end of previously measurable rain	Total Rainfall (inches) Previous Storm
ME-CC	1	11/1/2014	94.67	0.52	11/1/2014 0:17	11/1/2014 10:41	10:24	245	0.75
	2	12/2/2014	NA	1.08	NA	NA	NA	2	0.12
	3	12/12/2014	1827.89	1.84	12/12/2014 2:46	12/12/2014 8:35	5:49	9	1.28
	4[f]	4/7/2015	NA	0.00	NA	NA	NA	NA	NA
	5[f]	5/14/2015	NA	0.12	NA	NA	NA	NA	NA
	6	7/7/2015	6.61	0.00	7/6/2015 9:28	7/7/2015 5:27	19:59	53	0.12
ME-VR2	1	10/31/2014	2.25	0.97	10/31/2014 22:53	11/1/2014 3:25	4:32	215	0.12
	2	12/2/2014	2.79	1.30	12/2/2014 9:57	12/3/2014 10:59	25:02	31	0.97
	3	12/12/2014	7.06	1.87	12/12/2014 1:11	12/12/2014 6:33	5:22	9	1.30
	4	4/7/2015	NA	Est 0.2	NA	NA	NA	37	0.19
	5	5/14/2015	NA	Est 0.2	5/14/2015 22:00	5/15/2015 6:32	8:32	NA	NA
	6	6/23/2015	NA	0.00	6/22/2015 10:00	6/23/2015 9:14	23:14	NA	NA
ME-SCR[c]	1	11/1/2014	xxx	0.72	NA	NA	NA	245	0.72
	2	12/2/2014	xxx	1.18	NA	NA	NA	31	0.72
	3	12/12/2014	xxx	1.58	12/12/2014 1:38	12/12/2014 10:34	8:56	9	1.18
	4	4/7/2015	xxx	0.33	NA	NA	NA	37	0.56
	5	5/14/2015	xxx	0.22	5/14/2015 15:37	5/15/2015 0:06	8:29	37	0.33
	6	7/1/2015	xxx	0.00	6/30/2015 10:00	7/1/2015 8:40	22:40	47	0.22

Site ID	Event No.	Event Date[a]	Average Flow (CFS) (Calc)	Total Rainfall (inches)	Sampler Start[b] Date, Time	Sampler End[b] Date, Time	Event Duration (HH:MM)	Days since end of previously measurable rain	Total Rainfall (inches) Previous Storm
MO-CAM	1	10/31/2014	504.06	0.61	10/31/2014 21:45	10/31/2014 22:16	0:31	245	0.70
	2	12/2/2014	NA	1.15	NA	NA	NA	NA	0.61
	3	12/12/2014	666.63	1.96	12/12/2014 1:46	12/12/2014 2:27	0:41	9	1.25
	4 [f]	4/7/2015	NA	0.03	NA	NA	NA	NA	NA
	5	5/14/2015	34.15	0.20	5/14/2015 14:28	5/14/2015 16:53	2:25	75	0.56
	6	7/7/2015	[d]	0.00	7/6/2015 9:53	7/7/2015 8:33	22:40	53	0.20
MO-MEI	1	10/31/2014	24.29	0.53	10/31/2014 21:21	10/31/2014 21:45	0:24	214	0.10
	2	12/2/2014	6.29	2.05	12/2/2014 7:53	12/3/2014 9:54	26:01	31	0.53
	3	12/12/2014	24.21	1.89	12/12/2014 0:45	12/12/2014 5:23	4:38	9	2.05
	4	4/7/2015	3.97	0.20	4/7/2015 13:50	4/7/2015 14:43	0:53	37	0.24
	5	5/14/2015	NA	0.03	NA	NA	NA	NA	NA
	6	6/23/2015	DRY[e]	0.00	DRY	DRY	DRY	14	0.10
MO-OJA	1	10/31/2014	45.89	0.80	10/31/2014 21:15	10/31/2014 21:39	0:24	214	0.15-0.22
	2	12/2/2014	18.96	1.98	12/2/2014 7:53	12/2/2014 15:03	7:10	31	0.80
	3	12/12/2014	56.56	2.18	12/12/2014 0:14	12/12/2014 1:55	1:41	9	2.44
	4	4/7/2015	5.62	0.26	4/7/2015 13:50	4/7/2015 14:39	0:49	36	0.31
	5	5/14/2015	NA	0.12	NA	NA	NA	NA	NA
	6	6/23/2015	[d]	0.00	6/22/2015 9:02	6/23/2015 8:16	23:14	13	0.21
MO-VEN	1	10/31/2014	231.21	0.54	10/31/2014 21:30	10/31/2014 21:56	0:26	245	0.72

Site ID	Event No.	Event Date[a]	Average Flow (CFS) (Calc)	Total Rainfall (inches)	Sampler Start[b] Date, Time	Sampler End[b] Date, Time	Event Duration (HH:MM)	Days since end of previously measurable rain	Total Rainfall (inches) Previous Storm
	2	12/2/2014	15.33	1.29	12/2/2014 7:38	12/3/2014 3:08	19:30	31	0.76
	3	12/12/2014	77.88	1.98	12/11/2014 22:07	12/12/2014 2:00	3:53	9	1.29
	4 [f]	4/7/2015	NA	0.04	NA	NA	NA	NA	NA
	5 [f]	5/14/2015	NA	0.07	NA	NA	NA	NA	NA
	6	7/1/2015	-	0.00	DRY	DRY	DRY	122	0.30
MO-OXN	1	10/31/2014	55.49	0.54	10/31/2014 21:31	10/31/2014 22:28	0:57	245	0.72
	2	12/2/2014	15.01	1.29	12/2/2014 7:30	12/3/2014 3:38	20:08	31	0.76
	3	12/12/2014	49.79	1.98	12/11/2014 22:04	12/12/2014 2:03	3:59	9	1.29
	4 [f]	4/7/2015	NA	0.04	NA	NA	NA	NA	NA
	5 [f]	5/14/2015	NA	0.07	NA	NA	NA	NA	NA
	6	7/1/2015	DRY[e]	0.00	DRY	DRY	DRY	122	0.30
MO-HUE[c]	1	11/1/2014	xxx	0.50	10/31/2014 21:19	11/1/2014 5:49	8:30	245	0.95
	2	12/2/2014	NA	1.66	NA	NA	NA	2	0.18
	3	12/12/2014	xxx	1.86	12/12/2014 1:24	12/12/2014 7:38	6:14	9	1.66
	4 [f]	4/7/2015	NA	0.11	NA	NA	NA	NA	NA
	5 [f]	5/14/2015	NA	0.07	NA	NA	NA	NA	NA
	6	7/1/2015	[d]	0.00	6/30/2015 9:06	7/1/2015 8:20	23:14	21	0.19
MO-SPA	1	10/31/2014	30.53	0.69	10/31/2014 21:40	10/31/2014 22:23	0:43	215	0.20
	2	12/2/2014	5.50	1.31	12/2/2014 7:52	12/3/2014 4:02	20:10	31	0.69
	3	12/12/2014	13.50	1.88	12/11/2014 22:33	12/12/2014 3:26	4:53	10	1.31

Site ID	Event No.	Event Date[a]	Average Flow (CFS) (Calc)	Total Rainfall (inches)	Sampler Start[b] Date, Time	Sampler End[b] Date, Time	Event Duration (HH:MM)	Days since end of previously measurable rain	Total Rainfall (inches) Previous Storm
	4 [f]	4/7/2015	NA	0.01	NA	NA	NA	NA	NA
	5	5/14/2015	2.72	0.55	5/14/2015 10:18	5/14/2015 15:56	5:38	73	0.39
	6	7/1/2015	DRY[e]	0.00	DRY	DRY	DRY	48	0.55
MO-FIL[c]	1	10/31/2014	xxx	0.67	10/31/2014 22:03	11/1/2014 3:43	5:40	215	0.36
	2	12/2/2014	xxx	1.56	12/2/2014 8:13	12/3/2014 1:12	16:59	31	0.67
	3	12/12/2014	xxx	1.86	12/12/2014 1:57	12/12/2014 8:10	6:13	9	1.56
	4 [f]	4/7/2015	xxx	0.10	NA	NA	NA	NA	NA
	5	5/14/2015	xxx	0.65	5/14/2015 15:02	5/14/2015 20:14	5:12	74	0.57
	6	7/1/2015	xxx	0.00	6/30/2015 6:59	7/1/2015 6:14	23:15	47	0.65
MO-SIM	1	11/1/2014	49.58	0.48	10/31/2014 22:28	10/31/2014 23:09	0:41	214	0.17
	2	12/2/2014	NA	1.34	NA	NA	NA	2	0.40
	3	12/12/2014	141.76	2.00	12/12/2014 1:51	12/12/2014 3:20	1:29	9	0.17
	4 [f]	4/7/2015	NA	0.00	NA	NA	NA	NA	NA
	5	5/14/2015	10.77	0.29	5/14/2015 13:46	5/14/2015 19:22	5:36	74	0.74
	6	7/7/2015	[d]	0	7/6/2015 8:10	7/7/2015 6:49	22:39	53	0.29
MO-MPK	1	10/31/2014	17.96	0.52	10/31/2014 22:17	10/31/2014 23:08	0:51	214	0.17
	2	12/2/2014	NA	1.55	NA	NA	NA	2	0.30
	3	12/12/2014	141.26	2.08	12/12/2014 2:09	12/12/2014 3:00	0:51	9	1.67
	4 [f]	4/7/2015	NA	0.00	NA	NA	NA	NA	NA

Site ID	Event No.	Event Date[a]	Average Flow (CFS) (Calc)	Total Rainfall (inches)	Sampler Start[b] Date, Time	Sampler End[b] Date, Time	Event Duration (HH:MM)	Days since end of previously measurable rain	Total Rainfall (inches) Previous Storm
	5	5/14/2015	2.15	0.26	5/14/2015 20:57	5/14/2015 21:47	0:50	74	0.83
	6	7/7/2015	DRY[e]	0.00	DRY	DRY	DRY	28	0.11
MO-THO	1	11/1/2014	51.25	0.36	10/31/2014 22:10	11/1/2014 0:51	2:41	246	0.16
	2	12/2/2014	NA	1.47	NA	NA	NA	2	0.14
	3	12/12/2014	768.82	2.07	12/12/2014 2:35	12/12/2014 3:26	0:51	10	1.47
	4 [f]	4/7/2015	NA	0.00	NA	NA	NA	NA	NA
	5	5/14/2015	13.50	0.31	5/14/2015 20:08	5/15/2015 2:46	6:38	74	0.80
	6	7/7/2015	0.70	0.00	7/6/2015 8:43	7/7/2015 7:23	22:40	27	0.13

* All times PST
Note 1: Crew arrived onsite at 21:30 PST to collect grab samples. Agitated/confrontational person was onsite. Crew did not sample for safety reasons.
NA Not available
[a] Event Date describes the date on which composite sampling began for a particular monitoring event.
[b] Start Date/Time and End Date/Time describe the duration samples were actually taken. All times PST
[c] Time-paced as flows cannot be accurately measured at these sites. ME-SCR: During wet weather the Santa Clara River flows through the river diversion gate and over the diversion dam. Currently, there is no flow meter installed at the river diversion gate where a majority of the wet weather flow passes. MO-FIL: Site experiences ponding and backwater effects due to natural bottom channel. MO-HUE: Flow is dependent on the release of water at the Hueneme pump station.
[d] Flow is below the threshold levels for measurement.
[e] Insufficient flow over 24 hours available for sample collection.
[f] Non-qualifying event, < 0.15” rainfall.

Composite and grab samples were collected at all mass emission and major outfall stations, when possible. Composite samples were collected in glass containers and then delivered to the lab, where they were split by agitating the bottle, pouring off the necessary volume into a sample bottle, and repeating as necessary. When the splitting of a composite sample was performed, the composite sample was continually agitated to provide as much "non-invasive" mixing as possible. Sample splitting allows homogeneous aliquots of a single, large water sample to be divided into several smaller sub-samples for different analyses. The volume of sample collected depended upon the volume required by the lab to perform requested water quality and QA/QC analyses.

Grab samples were collected for analytes that are not suitable for composite sampling (e.g. cannot use an intermediary container, are likely to volatilize, or require immediate preservation. Grab samples were taken as close to mid-stream, mid-depth as possible by immersing the sample bottle directly in the water (see Figure 9-9-6). In some situations, site conditions precluded such sampling and alternative sampling techniques were used. At the larger, deeper Mass Emission stations, grab samples were often gathered near the bank, but still in positive flow, with the help of a long, extended swing sampler (see Figure 9-7) when necessary. This technique was also employed at some of the Major Outfall stations where getting into the channel would have compromised personnel safety.

Figure 9-9-6. Grab Sampling at Mid-Stream, Mid-Depth

For constituents analyzed from samples required to be collected as “grabs,” samples were ideally taken at the peak runoff flow to provide the best estimate for an event mean concentration (EMC). In practice, it was difficult to both predict the peak flow for each site and to allocate manpower such that all sites were grab-sampled at the storm event peak flow. It should be noted that peak flow times varied for each monitoring station due to the size and inherent characteristics of the watershed in which the site was located, as well as varying durations and intensities of rainfall. All grab and composite wet weather samples collected during the 2014/15 monitoring season are considered best available estimates of storm EMCs.

The chemical analysis of some constituents is not possible to be accurately performed on samples transported to a laboratory setting and must be performed in the field. These constituents were analyzed using pre-calibrated field meters <u>at the time when grab samples were collected</u>. All field meters were calibrated according to manufacturers’ directions, using vendor-supplied calibration solutions where applicable

In an effort to maintain quality control for the sampling program, the sampling crew, in cooperation with the analytical laboratories, has minimized the number of laboratories and sample bottles used for analysis. This has minimized bottle breakage, increased efficiency, and reduced the chances for contamination of the samples. Also, dedicated monitoring team leaders were used to provide consistent sample collection and handling.

As a means of documenting all preparatory, operational, observational, and concluding activities of a monitoring event, the Stormwater Monitoring Program produced an event summary for each monitoring event. These event summaries include, but are not limited to, information related to event duration, predicted and actual precipitation, weather conditions, the programming of sampling equipment, equipment malfunctions, sample collection and handling, and sample tracking with respect to delivery to analytical laboratories. All event summaries associated with the 2014/15 monitoring season are presented in Appendix D in Attachment D.

Figure 9-7. Grab Sampling Using Extended-Reach Swing Sampler

The Stormwater Monitoring Program also documented the actual samples it collected at each monitoring site – and the date and time of collection – during the course of an event by completing a chain of custody (COC) form for each sampling event. The COC form not only documented sample collection, but also notified an analytical laboratory that a particular sample should be analyzed for a certain constituent or group of constituents, oftentimes specifying the analytical method to be employed. Finally, the COC form acted as an evidentiary document noting how many samples were relinquished – and at what date and time – to a particular laboratory by the Stormwater Monitoring Program. All chain of custody forms associated with the 2014/15 monitoring season are presented in Appendix E in Attachment D.

The QA/QC sampling schedule was designed to be flexible in response to changing conditions, with the analytical chemistry laboratory being instructed to utilize VCWPD samples for MS/MSD and laboratory duplicate analyses when sample volume was sufficient, rather than for specific sites for each event. This flexibility is of benefit for several reasons. First, as is often the case, rainfall duration and intensity were difficult to predict, especially in the early part of the season. Second, extremely dry antecedent conditions made forecasting flow conditions at the various monitoring locations complicated. Finally, site-specific complications can affect sample volume. An example of this is the operation of the diversion canal at ME-SCR by UWCD, which can leave the primary intake line of the sampler out of contact with the water, thereby causing insufficient sample volume as the sampler pulls air instead of river water. The Stormwater Monitoring Program has attempted to deal with the situation at this site by installing a swing arm intake line, which is designed to stay submerged at changing water levels however the lack of sampleable events prevented the verification of the new model. The flexibility in QA/QC sampling station selection allows the laboratory more options for using VCWPD samples for QA/QC tests than would otherwise be possible, due to the ability to select sites with surplus sample volume.

Event 1 (Wet)

Event 1 was the first flush of the season and occurred October 31 – November 1, 2015. Samples were collected from all sites with the exception of ME-SCR, which did not have flow. Weather forecasts were confident that rain would begin late evening on the 31st, with 0.25” to 0.50” in all areas. More rain fell than was expected, with 0.5” - 1” at most sites across the county. The YSI 85 field meter, which is used to collect dissolved oxygen, conductivity, and salinity measurements malfunctioned for the monitoring crew sampling MO-MPK, MO-SIM, MO-THO, and MO-FIL so these records are unavailable for these sites. Grab samples were not able to be collected at MO-SPA due to a confrontational person onsite.

Event 2 (Wet)

The second monitoring event of the season occurred on December 2-3, 2014. The Ventura River and Santa Clara River watersheds were sampled. Several sites, including most of the Calleguas Creek watershed, received over 0.1” rainfall (much greater than forecast) on November 30, 2014 so were excluded from this sample event due to the Permit requirement of 7 days of <0.1” rainfall prior to an event. Weather forecasts produced on the 1st showed rain beginning mid-morning on the 2nd with 1” to 2” in all areas. On the 2nd, forecasts were higher at 2” to 4” in all areas. Sites were reprogrammed for the higher amounts, which did not occur and therefore sample volume was limited at some sites. MO-FIL was successfully sampled. Limited volume was collected at MO-OXN, MO-SPA, MO-VEN, ME-VR2, MO-MEI, and MO-OJA so the laboratory analyzed the methods according to the Program’s priority list and not all analytes could be tested. ME-SCR did not flow during this event. ME-CC, MO-MPK, MO-SIM, MO-THO, and MO-HUE were not sampled due to the rainfall of November 30. MO-CAM was not sampled so that it could be sampled during an event in conjunction with its mass emission station (ME-CC)

Event 3 (Wet)

Event 3 occurred on December 12-13, 2014. Forecast amounts were 1” to 2” coast and 2” to 4” foothills and mountains. County-wide storm 1.5” – 2.5” fell across the county. All sites were successfully sampled, with the exception of ME-SCR, where the intake line was only partially submerged in the water (fast flow combined with rope length used to keep intake from the bottom sediments resulted in intake riding on water surface) and so the sampler was only able to pull partial samples and the priority list was utilized by the laboratory.

Event 4 (Wet)

Event 4 occurred on April 7-8, 2015. The two major outfall sites in the Ventura River watershed (MO-MEI and MO-OJA) received approximately one quarter inch of rain and were successfully sampled. Part of the sampling line at ME-VR2 became disconnected and could not be reattached in time, so composite samples could not be collected, however the site also did not see the 20% flow increase required by the Permit. The Santa Clara River and Calleguas Creek watersheds were set up for sampling but did not receive qualifying rainfall with the exception of ME-SCR, so they were excluded from this event. Part of the intake line at ME-SCR was kinked resulting in no composite sample for that site.

Event 5 (Wet)

Event 5 occurred on May 15, 2015. Forecasts on the morning of the 14th were around 0.50” and dropped to around 0.25” by the afternoon. The event was showery and unpredictable for grab sample collection so grabs were only collected at the mass emission stations. By the morning of the 15th, the front was offshore and being kept there by east winds so the larger second band of rain seen in the forecasts did not make it to Ventura County. MO-OJA and MO-MEI were not sampled during this event (insufficient rainfall and permit wet requirements complete). MO-HUE did not get enough rain to trigger and MO-OXN and MO-VEN were collected but analysis was canceled due to disqualifying rainfall amounts (0.07”). MPK received qualifying rainfall however limited flow resulted in low sample volume and the priority list was utilized by the laboratory. An error by the bacteria laboratory resulted in no results for the submitted mass emission station samples.

Event 6 (Dry)

The dry-weather sampling was organized and conducted in three parts (by major watershed) during June and July 2015. The dry-weather event is typically conducted in April, however late season rains caused the events to be postponed. The Ventura River Watershed sites (ME-VR2, MO-OJA, and MO-MEI) were sampled on June 22-23, approximately two weeks after the last rainfall, however there was no runoff at MO-MEI (as had been the case for most of the wet season) so samples could not be collected, and flow at MO-OJA ceased overnight so limited sample volume was available and grabs could not be collected. The Santa Clara River Watershed sites (ME-SCR, MO-FIL, MO-SPA, MO-OXN, and MO-VEN) and MO-HUE (Coastal Watershed Site) were sampled on June 30 – July 1, approximately two to six weeks after the last rainfall, depending on site. ME-SCR, MO-FIL, and MO-HUE were successfully sampled. MO-OXN, MO-VEN, and MO-SPA were dry and could not be sampled. The Calleguas Creek Watershed (ME-CC, MO-CAM, MO-SIM, MO-MPK, and MO-THO) was sampled on July 6-7, approximately four to seven weeks after the last rainfall, depending on site. There was no flow at MO-MPK so samples could not be taken.

2015-DRY

The dry-season, dry-weather grab samples were collected from representative MS4 outfalls on two days, August 18 and 19, 2015. Fillmore-1 (MO-FIL), Moorpark-2 (DRY-MPK2), Santa Paula-2 (DRY-SPA2), Simi Valley-1 (MO-SIM), Thousand Oaks-1 (MO-THO), and Unincorporated-4 (DRY-UNI4) were sampled on August 19, 2015. Camarillo-1 (MO-CAM), Ojai-6 (DRY-OJA6), Port Hueneme-3 (DRY-HUE3), Oxnard-1 (MO-OXN), and Ventura-1 (MO-VEN) were sampled on August 20, 2015. There was at least 72 hours of dry weather preceding each sampling event.

During the dry sampling events, Stormwater Monitoring Program staff deployed sand-weighted silicone dams where necessary to allow very low flows to pool up to sampleable depths. This provided the depth needed to submerge the grab bottles and/or automated sampler intake line to facilitate successful sample collection (see Figure 9-8). This innovative technique is further discussed in *Ventura Countywide Stormwater Monitoring Program: Water Quality Monitoring Standard Operating Procedures, 2009-2014*.

Figure 9-8. Typical Wet-Season, Dry-Weather Sampling Configuration

A summary of the site status for each monitored event is provided in the table below.

Table 9-2. 2014/15 Site and Event Status

	Event 1 (first flush)	Event 2 (rained less than forecast)	Event 3 (countywide)	Event 4 (patchy rain)	Event 5 (short storm)	Event 6
MO-HUE	-	NQ-Time	-	NQ-Rain	NQ-Rain	-
ME-CC	-	NQ-Time	-	NQ-Rain	No bacti	-
MO-CAM	-	NQ-Time	-	NQ-Rain	No grabs	-
MO-MPK	No YSI	NQ-Time	-	NQ-Rain	No grabs Limited	Dry
MO-SIM	No YSI	NQ-Time	-	NQ-Rain	No grabs	-
MO-THO	No YSI	NQ-Time	-	NQ-Rain	No grabs	-
ME-SCR	Dry	Dry	Limited	Bacti only (equip)	No bacti	-
MO-FIL	No YSI	-	-	NQ-Rain	No grabs	-
MO-OXN	-	Limited	-	NQ-Rain	NQ-Rain	Dry
MO-SPA	No grabs	Limited	-	NQ-Rain	No grabs	Dry
MO-VEN	-	Limited	-	NQ-Rain	NQ-Rain	Dry
ME-VR2	-	Limited	-	Grabs only (equip)	No bacti	-
MO-MEI	-	Limited	-	-	NQ-Rain	Dry
MO-OJA	-	Limited	-	-	NQ-Rain	Limited

Key:
- Full data set available.
Mass Emission station
No YSI: The YSI 85 meter malfunctioned. No dissolved oxygen, conductivity, or salinity records available.
Dry: There was no or insufficient flow to collect samples.
No grabs: Grab samples (bacteria, dissolved oxygen, conductivity, salinity, pH, temperature, cyanide, gasoline range organics, oil and grease, and volatile acids) were not collected.
NQ-Time: Non-qualifying event due to the Permit requirement that there be at least 7 days of dry weather before sampling.
NQ-Rain: Rainfall was less than the 0.15 inches needed to qualify as a sampleable event according to the Permit.
Equip: An equipment malfunction affected sample quantity. The intake was above water level in Event 3; the ME-SCR intake line kinked and the ME-VR2 intake line disconnected during Event 4.
No bacti: Bacteria samples were collected and submitted to the laboratory, however laboratory error resulted in no results.

Limited: Limited composite volume collected resulting in priority list being utilized by laboratory. Incomplete data set available.

9.4.5 Analyses Performed

Attachment G of the Permit lists the constituents to be analyzed for each event[7]. In addition to this broad suite of analytes, Attachment B specifies other site-specific analytes that have been identified as problematic pollutants in previous years of water quality sampling. These, and any unrequested analytes for which results are obtained during method analysis, were incorporated into the sampling program and appear in the tables below.

Table 9-3 shows those analytes that were gathered as discrete samples. Table 9-4 shows those analytes that were gathered as composite samples. All laboratory chemical analyses of environmental samples and preseason equipment blank samples were performed by Weck Laboratories, with the exception of analyses for indicator bacteria, which were performed by the Ventura County Public Health Lab.

Table 9-3. Analytes Derived from Discrete (Grab) Samples

Method	Classification	Constituent
MMO-MUG	Bacteriological	Total Coliform
MMO-MUG	Bacteriological	E. Coli
SM 9221 E	Bacteriological	Fecal Coliform
Enterolert	Bacteriological	Enterococcus
ASTM D7511	Conventional	Cyanide
EPA 624	Organic	2-Chloroethyl vinyl ether
	Organic	Methyl tert-butyl ether (MTBE)
EPA 1664A	Hydrocarbon	Oil and Grease
EPA 8015B	Hydrocarbon	Gasoline Range Organics
Varies	Toxicity	Toxicity
Field Meter	Conventional	Conductivity
	Conventional	DO
	Conventional	DO
	Conventional	pH
	Conventional	Salinity
	Conventional	Specific Conductance
	Conventional	Temperature

Table 9-4. Analytes Derived from Composite Samples

Method	Classification	Constituent
EPA 160.4	Conventional	Volatile Suspended Solids
EPA 180.1	Conventional	Turbidity
EPA 200.7	Cation	Calcium
	Cation	Magnesium
	Conventional	Hardness as CaCO3
	Metal	Iron
	Metal	Iron
EPA 200.8	Metal	Aluminum

[7] For Permit sections A. Mass Emission and B. Major Outfalls only. The constituents for Section C. Dry Weather Analytical Monitoring are listed separately in that section and are detailed in Section 9.10 of this report.

Method	Classification	Constituent
	Metal	Aluminum
	Metal	Antimony
	Metal	Antimony
	Metal	Arsenic
	Metal	Arsenic
	Metal	Beryllium
	Metal	Beryllium
	Metal	Cadmium
	Metal	Cadmium
	Metal	Chromium
	Metal	Chromium
	Metal	Copper
	Metal	Copper
	Metal	Lead
	Metal	Lead
	Metal	Nickel
	Metal	Nickel
	Metal	Selenium
	Metal	Selenium
	Metal	Silver
	Metal	Silver
	Metal	Thallium
	Metal	Thallium
	Metal	Zinc
	Metal	Zinc
EPA 218.6	Metal	Chromium VI
EPA 245.1	Metal	Mercury
	Metal	Mercury
EPA 300.0	Anion	Chloride
	Anion	Fluoride
EPA 314.0	Anion	Perchlorate
EPA 350.1	Nutrient	Ammonia as N
EPA 351.2	Nutrient	TKN
EPA 353.2	Nutrient	Nitrate + Nitrite as N
EPA 365.1	Nutrient	Phosphorus as P
EPA 365.1	Nutrient	Phosphorus as P
EPA 410.4	Conventional	COD
EPA 420.4	Conventional	Phenolics
EPA 515.3	Pesticide	2,4,5-T
	Pesticide	2,4,5-TP
	Pesticide	2,4-D
	Pesticide	2,4-DB
	Pesticide	3,5-Dichlorobenzoic acid
	Pesticide	Acifluorfen
	Pesticide	Bentazon
	Pesticide	Dalapon
	Pesticide	DCPA (Dacthal)
	Pesticide	Dicamba
	Pesticide	Dichlorprop
	Pesticide	Dinoseb
	Pesticide	Pentachlorophenol

Method	Classification	Constituent
	Pesticide	Picloram
EPA 525.2	Organic	Benzo(a)pyrene
	Organic	Bis(2-ethylhexyl)adipate
	Organic	Bis(2-ethylhexyl)phthalate
	Pesticide	Alachlor
	Pesticide	Atrazine
	Pesticide	Bromacil
	Pesticide	Butachlor
	Pesticide	Captan
	Pesticide	Chloropropham
	Pesticide	Cyanazine
	Pesticide	Diazinon
	Pesticide	Dimethoate
	Pesticide	Diphenamid
	Pesticide	Disulfoton
	Pesticide	EPTC
	Pesticide	Metolachlor
	Pesticide	Metribuzin
	Pesticide	Molinate
	Pesticide	Prometon
	Pesticide	Prometryn
	Pesticide	Simazine
	Pesticide	Terbacil
	Pesticide	Thiobencarb
	Pesticide	Trithion
EPA 525.2m	Pesticide	Azinphos methyl
	Pesticide	Bolstar
	Pesticide	Chlorpyrifos
	Pesticide	Coumaphos
	Pesticide	Demeton-O
	Pesticide	Demeton-S
	Pesticide	Diazinon
	Pesticide	Dichlorvos
	Pesticide	Dimethoate
	Pesticide	Disulfoton
	Pesticide	Ethoprop
	Pesticide	Ethyl parathion
	Pesticide	Fensulfothion
	Pesticide	Fenthion
	Pesticide	Malathion
	Pesticide	Merphos
	Pesticide	Methyl parathion
	Pesticide	Mevinphos
	Pesticide	Naled
	Pesticide	Phorate
	Pesticide	Ronnel (Fenchlorphos)
	Pesticide	Stirophos (Tetrachlorvinphos)
	Pesticide	Tokuthion
	Pesticide	Trichloronate
EPA 547	Pesticide	Glyphosate
EPA 608	PCB	PCB Aroclor 1016

Method	Classification	Constituent
	PCB	PCB Aroclor 1221
	PCB	PCB Aroclor 1232
	PCB	PCB Aroclor 1242
	PCB	PCB Aroclor 1248
	PCB	PCB Aroclor 1254
	PCB	PCB Aroclor 1260
	Pesticide	4,4'-DDD
	Pesticide	4,4'-DDE
	Pesticide	4,4'-DDT
	Pesticide	Aldrin
	Pesticide	alpha-BHC
	Pesticide	alpha-Chlordane
	Pesticide	beta-BHC
	Pesticide	Chlordane (technical)
	Pesticide	delta-BHC
	Pesticide	Dieldrin
	Pesticide	Endosulfan I
	Pesticide	Endosulfan II
	Pesticide	Endosulfan sulfate
	Pesticide	Endrin
	Pesticide	Endrin aldehyde
	Pesticide	gamma-BHC (Lindane)
	Pesticide	gamma-Chlordane
	Pesticide	Heptachlor
	Pesticide	Heptachlor epoxide
	Pesticide	Methoxychlor
	Pesticide	Toxaphene
EPA 625	Organic	1,2,4-Trichlorobenzene
	Organic	1,2-Dichlorobenzene
	Organic	1,2-Diphenylhydrazine
	Organic	1,3-Dichlorobenzene
	Organic	1,4-Dichlorobenzene
	Organic	2,4,6-Trichlorophenol
	Organic	2,4-Dichlorophenol
	Organic	2,4-Dimethylphenol
	Organic	2,4-Dinitrophenol
	Organic	2,4-Dinitrotoluene
	Organic	2,6-Dinitrotoluene
	Organic	2-Chloronaphthalene
	Organic	2-Chlorophenol
	Organic	2-Nitrophenol
	Organic	3,3'-Dichlorobenzidine
	Organic	4,6-Dinitro-2-methylphenol
	Organic	4-Bromophenyl phenyl ether
	Organic	4-Chloro-3-methylphenol
	Organic	4-Chlorophenyl phenyl ether
	Organic	4-Nitrophenol
	Organic	Acenaphthene
	Organic	Acenaphthylene
	Organic	Anthracene
	Organic	Benz(a)anthracene

Method	Classification	Constituent
	Organic	Benzidine
	Organic	Benzo(a)pyrene
	Organic	Benzo(b)fluoranthene
	Organic	Benzo(g,h,i)perylene
	Organic	Benzo(k)fluoranthene
	Organic	Bis(2-chloroethoxy)methane
	Organic	Bis(2-chloroethyl)ether
	Organic	Bis(2-chloroisopropyl)ether
	Organic	Bis(2-ethylhexyl)phthalate
	Organic	Butyl benzyl phthalate
	Organic	Chrysene
	Organic	Dibenz(a,h)anthracene
	Organic	Diethyl phthalate
	Organic	Dimethyl phthalate
	Organic	Di-n-butylphthalate
	Organic	Di-n-octylphthalate
	Organic	Fluoranthene
	Organic	Fluorene
	Organic	Hexachlorobenzene
	Organic	Hexachlorobutadiene
	Organic	Hexachlorocyclopentadiene
	Organic	Hexachloroethane
	Organic	Indeno(1,2,3-cd)pyrene
	Organic	Isophorone
	Organic	Naphthalene
	Organic	Nitrobenzene
	Organic	N-Nitrosodimethylamine
	Organic	N-Nitrosodi-N-propylamine
	Organic	N-Nitrosodiphenylamine
	Organic	Phenanthrene
	Organic	Phenol
	Organic	Pyrene
	Pesticide	Pentachlorophenol
EPA 8015B	Hydrocarbon	Diesel Range Organics
	Hydrocarbon	Oil Range Organics
EPA 8270C	Organic	1-Methylnaphthalene
	Organic	2,4,5-Trichlorophenol
	Organic	2,4,6-Trichlorophenol
	Organic	2,4-Dichlorophenol
	Organic	2,4-Dimethylphenol
	Organic	2,4-Dinitrophenol
	Organic	2-Chlorophenol
	Organic	2-Methylnaphthalene
	Organic	2-Methylphenol
	Organic	2-Nitrophenol
	Organic	3-/4-Methylphenol
	Organic	4,6-Dinitro-2-methylphenol
	Organic	4-Chloro-3-methylphenol
	Organic	4-Nitrophenol
	Organic	Acenaphthene
	Organic	Acenaphthylene

Method	Classification	Constituent
	Organic	Anthracene
	Organic	Benz(a)anthracene
	Organic	Benzo(a)pyrene
	Organic	Benzo(b)fluoranthene
	Organic	Benzo(g,h,i)perylene
	Organic	Benzo(k)fluoranthene
	Organic	Chrysene
	Organic	Dibenz(a,h)anthracene
	Organic	Fluoranthene
	Organic	Fluorene
	Organic	Indeno(1,2,3-cd)pyrene
	Organic	Naphthalene
	Organic	Phenanthrene
	Organic	Phenol
	Organic	Pyrene
	Pesticide	Pentachlorophenol
SM 2320 B	Conventional	Alkalinity as CaCO3
SM 2510 B	Conventional	Specific Conductance
SM 2540 C	Conventional	Total Dissolved Solids
SM 2540 D	Conventional	Total Suspended Solids
SM 5210 B	Conventional	BOD
SM 5310 C	Conventional	Total Organic Carbon
SM 5540 C	Conventional	MBAS

9.5 QUALITY ASSURANCE / QUALITY CONTROL

The following is a discussion of the results of the quality assurance and quality control (QA/QC) analysis performed on the 2014/15 stormwater quality monitoring data. The data were evaluated for overall sample integrity, holding time exceedances, contamination, accuracy, and precision using field- and lab-initiated QA/QC sample results according to the Stormwater Monitoring Program's *Data Quality Evaluation Plan* and *Data Quality Evaluation Standard Operating Procedures*. The *Data Quality Evaluation Plan* (DQEP) describes the process by which water chemistry data produced by the Stormwater Monitoring Program are evaluated. Data quality evaluation is a multiple step process used to identify errors, inconsistencies, or other problems potentially associated with Stormwater Monitoring Program data. The DQEP contains a detailed discussion of the technical review process, based on U.S. Environmental Protection Agency (EPA) guidance and requirements set forth by the Stormwater Monitoring Program used to evaluate water quality monitoring data. The DQEP provides a reference point from which a program-consistent quality assurance/quality control (QA/QC) evaluation can be performed by the Stormwater Monitoring Program. The *Data Quality Evaluation Standard Operating Procedures* (SOPs) document provides a set of written instructions that documents the process used by the Stormwater Monitoring Program to evaluate water quality data. The SOPs describe both technical and administrative operational elements undertaken by the Stormwater Monitoring Program in carrying out its DQEP. The SOPs act as a set of prescriptive instructions detailing in a step-by-step manner how District staff carry out the data evaluation and data quality objectives set forth in the DQEP. QA/QC sample results from the 2014/15 monitoring season are presented in Appendix F in Attachment D.

QA/QC sample collection and analysis relies upon QA/QC samples collected in the field (such as equipment blank, field duplicate, and matrix spike samples), as well as QA/QC samples prepared and analyzed by the analytical laboratory (i.e., lab-initiated samples, such as method blanks, filter blanks, and laboratory control spikes) performing the analysis. The actual chemical analysis of field-initiated and lab-initiated QA/QC samples is conducted in an identical manner as the analysis of field-collected environmental samples. After all analyses are complete, the results of the field-initiated and lab-initiated QA/QC sample results are compared to particular data quality objectives (DQOs), also commonly referred to as "QA/QC limits." These limits are typically established by the analytical laboratory based on EPA protocols and guidance. However, in some cases, the Stormwater Monitoring Program will set a particular DQO, such as the QA/QC limit for field duplicate results.

QA/QC sample results are evaluated in order to compare them to their appropriate QA/QC limits and identify those results that fall outside of these limits. The QA/QC evaluation occurs in two separate steps as the laboratory will review those results that fall outside of its QA/QC limits and typically label these results with some type of qualification or note. If a QA/QC sample result falls grossly outside of its associated QA/QC limit, and thus indicates that there is a major problem with the lab's instrumentation and/or analytical process, then the laboratory should re-run both the affected QA/QC and environmental samples as necessary. The second step in the QA/QC evaluation process occurs when the Stormwater Monitoring Program performs an overall sample integrity evaluation, as well as specific holding time, contamination, accuracy, and precision checks. This second evaluation step provides an opportunity to thoroughly review the Stormwater Monitoring Program's data to identify potential errors in a laboratory's reporting of analytical data and/or recognize any significant data quality issues that may need to be addressed. After this evaluation the Stormwater Monitoring Program is ready to qualify their environmental data as necessary based on the findings of the QA/QC assessment.

Data qualification occurs when the Stormwater Monitoring Program assigns a particular program qualification to an analytical result as a means to notify data users that the result was produced while one or more DQOs or QA/QC limitations were exceeded. Environmental sample results are qualified in order to provide the user of these data with information regarding the quality of the data. Depending on the planned use of the data, qualifications may help to determine whether or not the data are appropriate for a given analysis. In general, data that are qualified with anything other than an "R" (used to signify a rejected data point) are suitable for most analyses. However, the qualifications assigned to the data allow the user to assess the appropriateness of the data for a given use. The Stormwater Monitoring Program used its NDPES Stormwater Quality Database to conduct a semi-automated QA/QC evaluation of the current season's data contained in the database. The use of the database allows the Stormwater Monitoring Program to expedite and standardize the QA/QC evaluation of its monitoring data in conjunction with the use of the DQEP and SOPs. After reviewing the qualifications assigned to each qualified data point in the 2014/15 monitoring year data set, the environmental data are considered to be of high quality and sufficient for all future general uses. However, all data qualifiers should be reviewed and considered prior to the use of the data in a specific analysis or application. Environmental data from the 2014/15 monitoring season are presented in Appendix G in Attachment D.

Both environmental and field-initiated QA/QC samples were collected in the field using clean sampling techniques. To minimize the potential for contamination, Weck Laboratories cleaned all bottles used for composite samples. Only new containers were used for grab sample collection, with the appropriate preservative added to grab bottles by Weck Laboratories. Intake lines for the automated samplers were flushed with 1% nitric acid and distilled water prior to the first event of the season, with the exception of MO-HUE, which was flushed with distilled water only as the sample intake is inaccessible preventing nitric acid recovery. Intake lines were flushed with distilled water before and after each successive event for the remainder of the season. Designated sampling crew leaders were used to ensure that consistent sample collection and handling techniques were followed during every monitoring event.

Field-initiated QA/QC samples performed by the Stormwater Monitoring Program during the 2014/15 monitoring season included field blanks, field duplicates, and equipment blanks. Equipment blanks are typically prepared prior to the start of the monitoring season to check that tubing, strainers, and sample containers aren't sources of contamination for the Stormwater Monitoring Program's environmental samples. Tubing equipment blanks were collected from the sampling equipment by passing blank water through cleaned tubing and into brand new sample bottles. Composite bottle equipment blanks were collected by adding blank water to a composite bottle and allowing it to sit at <4°C for 24 hours before being split at the laboratory into brand new sample bottles for analysis. Equipment blanks were submitted to the analytical laboratory and analyzed using the same methods as those employed for routine environmental sample analysis.

9.5.1 **Equipment Blanks**

Equipment blanks, often referred to as pre-season blanks, were collected prior to the monitoring season to test for contamination in sample containers (e.g., composite bottles) and sample equipment (e.g., intake lines, tubing, and strainers). This process consists of running laboratory-prepared blank water through sampler tubing to identify potential contamination of field-collected samples as a result of "dirty" tubing. The blank water (ultrapure deionized water) used to evaluate contamination of composite bottles and tubing can also be analyzed in order to check for contamination of this analytical sample medium. Equipment blank "hits" or measured concentrations above the laboratory's quantitation limit (RL, PQL, etc.) for a constituent are assessed and acted upon using the guidelines listed below:

1. The Stormwater Monitoring Program requests that the laboratory confirm the reported results against lab bench sheets or other original analytical instrument output. Any calculation or reporting errors should be corrected and reported by the laboratory in an amended laboratory report.

2. If the previous step does not identify improperly reported results, then the analytical laboratory should be asked to identify any possible sources of contamination in the laboratory.

3. If no laboratory contamination is identified, then a note should be made that documents that the equipment blank results indicate that the sample equipment may have introduced contamination into the blank samples.

When practical, remedial measures are initiated by the Stormwater Monitoring Program to replace or re-clean sampling equipment and re-analyze equipment blank samples in an effort to eliminate field contamination. Only the results of field-initiated and laboratory-initiated QA/QC samples associated with the environmental samples collected for any given monitoring event are used to qualify Stormwater Monitoring Program environmental samples. However, pre-season analyses provide useful information regarding possible sources of environmental sample contamination and insight into how contamination issues might be resolved.

Preseason equipment blank "Carboy Blank" (composite bottle) and "Tubing Blank" (intake line cleaned with nitric acid (HNO_3) and distilled water) samples were collected for the 2014/15 monitoring year on August 20, 2014. The "Tubing Blank" sample was collected through the intake line at MO-VEN after flushing the line with1 liter of HNO_3 and two liters of distilled water. The Carboy Blank samples were split off from ultrapure deionized water that had been added to a clean composite bottle and left to sit in a cooler on ice (at 0 - 4 degrees Celsius) for 24 hours. The blanks were analyzed by EPA 200.8 for total metals (iron by EPA 200.7), EPA 245.1 for total mercury, EPA 353.2 for nitrate + nitrite as nitrogen, EPA 625 for semi-volatile organics, and EPA 525.2 (the primary method used for bis(2-ethylhexyl)phthalate due to its lower RL) .

Two organics were detected in the preseason Tubing Blanks, however they were present at such small quantities that they would not contribute significantly to any CTR exceedances of environmental samples. The organics were diethyl phthalate (1.5 µg/L) and di-n-butyl phthalate (DNQ 0.36 µg/L) which have CTR thresholds of 120,000 and 12,000 µg/L, respectively. NO3+NO2-N was DNQ (0.011 mg/L), which is < $1/10^{th}$ of the BP regulatory threshold of 1 mg/L NO2 and 10 mg/L NO3. The detection may be due to the HNO3 flush performed immediately prior to sample collection. The amount is low enough that it should not contribute to exceedances of the objectives in an environmental sample.

Several constituents were detected at DNQ levels in the lines and carboy blanks. The amounts detected are less than $1/10^{th}$ the regulatory thresholds relevant for environmental samples, with the exception of mercury, and bis(2-ethylhexyl)phthalate. The mercury laboratory blank contained DNQ amounts of mercury at 4 ng/L, while the lines and carboy samples were both DNQ 7 ng/L. The RL is 50 ng/L. The EPA 625 bis(2-ethylhexyl)phthalate result of 2.4 µg/L is suspect due to high bias in the LCS. The companion EPA 525.2 analysis was ND at <1.1 µg/L.

Since total copper in the carboy sample was 0.85 µg/L, which is above the RL of 0.5 µg/L, and all the QC results were within limits, the detected copper warranted additional investigation. The laboratory re-analyzed the sample for total copper at 0.51 µg/L. The CTR limits for copper are in its dissolved form and are calculated using water hardness. The equipment blank analyses are for total copper. VCSQMP outfall samples have always been above 100 µg/L hardness in dry weather, therefore the detected level of copper is less than 1/10th of the threshold for dissolved copper with a water hardness of 100 mg/L, 8.96 µg/L. For wet weather, VCSQMP outfall samples can be below 100 mg/L hardness, therefore the wet weather threshold used is 0.18 µg/L, calculated for a hardness of 1 µg/L.

A second composite bottle was shipped to the laboratory (clean and dry). The laboratory was instructed to perform a blank analysis on one bottle by adding a sufficient quantity (to perform requested analyses) of ultrapure water directly to composite bottle (without using an intermediary container), cap bottle, swirl water around to maximize contact with interior bottle surfaces, then split sample to perform requested analyses (EPA 525.2, EPA 625, EPA 200.8-total copper only). No organics were detected. Copper was DNQ. There may have been some contamination in the bottles that the ultrapure was supplied in for Event 1, since the elimination of that step also eliminated the contaminants of concern.

Based on these results, the Stormwater Monitoring Program determined that cleaning procedures were adequate Furthermore, no environmental samples were qualified by the Stormwater Monitoring Program based on the results of pre-season equipment blank analyses. The cleaning procedures will be reexamined during the preseason tests prior to the 2015/16 monitoring season.

Table 9-5. Constituents Detected in Preseason Equipment Blanks

		Detections	**Detections**	**2014/15**
Constituent	Reporting Limit (µg/L)	Carboy Blank (HNO3,Methanol) Concentration (µg/L)	Tubing Blank (distilled) Concentration (µg/L)	Environmental Sample Range (when detected) Concentration (µg/L)
		Carboy	MO-VEN	All Sites
Aluminum	5	3.4 [a]	6.9	7.2 [a] – 340,000
Chromium	0.2	0.048 [a]	0.16 [a]	0.08 [a] - 580
Copper	0.5	0.85	0.26 [a]	0.6 - 860
Iron	10	-	5.5 [a]	11 – 660,000
Mercury	0.05	0.007 [a]	0.007 [a]	<0.0039 – 1.2
Nickel	0.8	-	0.18 [a]	0.82 - 870
Silver	0.2	0.012 [a]	0.028 [a]	<0.012 – 2.4
Zinc	5	1.9 [a]	1.1 [a]	1.2 [a] – 2,400
Nitrate + Nitrite as N	100	-	11	56 [a] - 9900
Bis(2-ethylhexyl)phthalate	5	2.4 [a]	-	<1.1 - 80
Diethyl phthalate	1	-	1.5	<0.15 – 5.3
Di-n-butylphthalate	1	0.37 [a]	0.36 [a]	<0.24 – 0.36 [a] (and <2.4)

[a] DNQ

9.5.2 Field and Laboratory Duplicates

Duplicate samples – both field duplicates and lab duplicates – are collected in the field using the same techniques as used for all environmental sample collection. For composite samples, a larger volume of water is collected during the monitoring event and then the duplicates are split in the field (when generating a field duplicate) or in the lab (when generating a lab duplicate) while constantly mixing the contents of the composite containers to ensure the production of homogeneous duplicate samples. The Stormwater Monitoring Program does not collect field duplicates for composite samples as samples are not split in the field due to the risk of sample contamination and breakage. In the case of grab samples, two samples are collected side-by-side or in immediate succession into separate sample bottles when collecting an environmental sample and its field duplicate. Depending on the volume of water required to perform a particular analysis, a lab duplicate analysis of a grab sample may require the collection of additional sample, or may be run on a single environmental sample.

Field duplicate grab samples were collected during Event 1 and 6 at MO-THO and Event 2 at MO-OXN and achieved a 100% success rate for the 8 constituents. Laboratory-initiated laboratory duplicate samples were analyzed on non-project samples for Events 1 – 6, Laboratory duplicate samples were also analyzed for ME-CC (Event 1 and 6), ME-SCR (Event 3, 5, and 6), ME-VR2 (Event 1 and 3), MO-FIL (Event 2 and 6), MO-HUE (Event 1), MO-MEI (Event 1), MO-OJA (Event 4), MO-OXN (Event 3), MO-SPA (Event 3), MO-THO (Event 3), and MO-SIM (Event 3). Results are shown in Table 9-6 and Table 9-7. All 142 laboratory duplicates were within the limits for relative percent difference (RPD).

Table 9-6. Field Duplicate Success Rates

Classification	Constituent	Method	Total Samples	Samples Outside DQO	Success Rate
Bacteriological	Total coliform / *E. coli*	MMO-MUG	2	0	100
Bacteriological	Fecal coliform	SM 9221 E	1	0	100
Conventional	Cyanide	ASTM D7511	3	0	100
Hydrocarbon	Gasoline Range Organics	EPA 8015B	3	0	100
Hydrocarbon	Oil and grease	EPA 1664A	3	0	100
Organic	2-Chloroethyl vinyl ether	EPA 624	3	0	100
Organic	Methyl tert-butyl ether (MTBE)	EPA 624	3	0	100

Table 9-7. Laboratory Duplicate Success Rates

Classification	Constituent	Method	Total Samples	Samples Outside DQO	Success Rate
Anion	Chloride	EPA 300.0	2	0	100
Anion	Fluoride	EPA 300.0	2	0	100
Anion	Perchlorate	EPA 314.0	3	0	100
Conventional	Alkalinity as CaCO3	SM 2320 B	14	0	100
Conventional	Biochemical Oxygen Demand	SM 5210 B	10	0	100
Conventional	Chemical Oxygen Demand	EPA 410.4	8	0	100
Conventional	Cyanide	ASTM D7511	2	0	100
Conventional	MBAS	SM 5540 C	1	0	100
Conventional	pH	SM 4500-H+ B	1	0	100
Conventional	Specific Conductance	SM 2510 B	12	0	100
Conventional	Total Dissolved Solids	SM 2540 C	22	0	100
Conventional	Total Organic Carbon	SM 5310 C	1	0	100
Conventional	Total Suspended Solids	SM 2540 D	21	0	100
Conventional	Turbidity	EPA 180.1	9	0	100
Conventional	Volatile Suspended Solids	EPA 160.4	12	0	100
Nutrient	Ammonia as N	EPA 350.1	4	0	100
Nutrient	Nitrate + Nitrite as N	EPA 353.2	3	0	100
Nutrient	Phosphorus as P	EPA 365.1	10	0	100
Nutrient	TKN	EPA 351.2	5	0	100

9.5.3 Holding Time Exceedances

Most analytical methods used to analyze water quality samples specify a certain time period in which an analysis must be performed in order to ensure confidence in the result provided from the analysis.[8] A holding time can be either the time between sample collection and sample preparation (the preparation holding time limit) or between the sample preparation and sample analysis (the analysis holding time limit). If a particular sample doesn't require any pre-analysis preparation, then the analysis holding time is the time between sample collection and sample analysis.

These elapsed times are compared to holding time values (typically provided in EPA guidance for analytical methods) to determine if a holding time exceedance has occurred. Elapsed times greater than specified holding time limits are considered to exceed the Stormwater Monitoring Program's DQO for this QA/QC sample type. All holding times were met by laboratories during the 2014/15 monitoring season, with the exceptions as shown in Table 9-8.

Table 9-8. Holding Time Success Rate

Classification	Total Samples	Samples Outside DQO	Success Rate (%)
Anion	162	0	100
Bacteriological	25	0	100
Cation	130	0	100
Conventional	712	10[a]	98.6
Hydrocarbon	182	0	100
Metal	1814	0	100
Nutrient	430	0	100
Organic	6509	1[b]	99.98
PCB	315	0	100
Pesticide	5315	0	100

[a] Total chlorine residual is a Pollutant of Concern for ME-CC due to the contributions of wastewater treatment plants. The method requires that this constituent be analyzed "immediately" and the Permit requires that it be sampled as a composite sample, which combined results in an exceedance of the hold time for each event. The holding time for pH is 15 minutes so pH samples analyzed by the laboratory were outside of this limit.
[b] One sample was re-extracted and re-analyzed to confirm the original result but the re-extraction was performed outside the hold time.

9.5.4 Other QA/QC Methods and Analyses

A variety of other QA/QC methods are used by the Stormwater Monitoring Program and associated laboratories to determine the quality of the data. These include method blanks, matrix spikes and matrix spike duplicates (MS/MSD), surrogate spikes, and laboratory control samples. For many of these, the relative percent difference between two separate samples is computed to determine whether or not the laboratory has achieved the necessary DQO, as described in Section 9.5. Results of QA/QC analyses performed on individual samples can be found in Appendix F and Appendix G in Attachment D.

[8] A sample that remains unanalyzed for too long a period of time sometimes shows analytical results different from those that would have been observed had the sample been analyzed earlier in time. This difference is due to the breakdown, transformation, and/or dissipation of substances in the sample over time.

9.5.5 **QA/QC Summary**

In summary, a total of 11,977 environmental results were obtained through laboratory analysis during the 2014/15 monitoring season. Of these, 11,869 met all DQOs for that particular sample, which translates into the Stormwater Monitoring Program achieving a 99.1% success rate in meeting program data quality objectives. No samples were rejected from the dataset.

Overall, the wet-weather and dry-weather events monitored during the 2014/15 monitoring season produced a high quality data set in terms of the low percentage of qualified data, as well as the low reporting levels achieved by the laboratories analyzing the Stormwater Monitoring Program's water quality samples.

9.6 WATER QUALITY RESULTS

The NDPES Permit requires the Stormwater Monitoring Program to report the results of stormwater monitoring to the Regional Board in two ways. First, within 90 days of a monitoring event, analytical results must be submitted electronically and must highlight elevated constituent levels relative to Basin Plan and CTR acute criteria. The Stormwater Monitoring Program met this requirement for all monitoring events during the 2014/15 season. Second, an Annual Storm Water Report must be submitted by December 15th, and must highlight those same elevated levels relative to applicable water quality objectives. The contents of this report fulfill that requirement.

For the analysis of wet-weather data (Events 1-5), the Basin Plan objectives and the acute, freshwater objectives in the CTR were used. For some constituents, the California Toxics Rule does not contain acute objectives. Prior to the 2011/12 Annual Report, the Stormwater Monitoring Program used the California Toxics Rule Human Health (Organisms Only) objectives for these cases because these constituents had no other objectives for comparison. However, since these objectives are based on long-term exposure and stormwater discharges are infrequent and of short duration, it was decided that comparing short term stormwater discharges to the long-term chronic criteria was not an accurate representation of the risk of stormwater discharges to Human Health. CTR chronic criteria were not used for wet-weather analyses because acute criteria better reflect the short-term storm event exposure experienced by organisms, as compared to the long-term exposure considered by chronic criteria.

For the analysis of dry-weather data (Event 6 and 2015-DRY), the Basin Plan objectives and the most stringent of the CTR chronic freshwater objectives (Criterion Continuous Concentration), CTR Human Health (Organisms Only), or CTR Human Health (Water & Organisms) were used. Previously, if the CTR did not contain chronic freshwater objectives for a constituent, the CTR Human Health (Organisms Only) was used. In evaluating the criteria, the Stormwater Monitoring Program determined that the MUN designation in the Basin Plan indicates that Human Health Criteria should be considered in evaluating dry-weather exceedances due to their potential for long-term exposure, therefore CTR Human Health (Water & Organisms) is now being considered as well.

9.6.1 **Corrections to BPO Objectives and Reporting of Exceedances**

The Program uses its water quality database to identify water quality monitoring results that are above California Toxics Rule (CTR) and Basin Plan (BP) objectives. The database performs these calculations using a pre-programmed set of reference values for the CTR and Basin Plan, including site specific objectives. The reference values are stored in the CTR water quality objectives and Basin Plan water quality objectives (BPO) reference tables, and are used for these calculations to reduce the likelihood of human error.

There were no changes to the CTR or BP objectives during the 2014/15 monitoring year so no changes were made to the reference tables. However, the database was updated to accurately determine, calculate, and compare ammonia objectives with sample results based on the Basin Plan updates as described in the 2012/13 Annual Report and re-stated below. The objectives and comparisons are determined using the flow charts and formulas provided in Appendix K in Attachment D.

Ammonia

Ammonia BPO are determined for each site/sample based on salinity and pH, and in the case of dry weather and saltwater samples, temperature. Freshwater objectives are used for samples that are at or below 1 ppt salinity. Saltwater objectives (un-ionized ammonia objective converted to total NH3-N using the formula in Appendix K in Attachment D) are used for samples that are at or above 10 ppt. Samples that are between 1 ppt and 10 ppt use the more stringent of the freshwater or saltwater objectives. Program staff has reviewed the BP amendments and developed a flow chart to determine which ammonia BPO formulas should be used to calculate the appropriate objective for each site for both wet (acute objective) and dry (chronic objective) monitoring events. The flow charts are included in Appendix K in Attachment D.

There are two formulas for calculating freshwater dry weather (chronic) objectives and the selection of the appropriate formula depends on whether Early Life Stages (ELS) of fish are present or absent in the reach. ELS are presumptively present unless listed as absent in the Basin Plan or a site-specific study is conducted. For the Ventura County mass emission and major outfall stations, the sites that are designated COLD and/or MIGR are also designated "ELS Present", conversely, the sites that are not designated COLD/MIGR are designated "ELS Absent".

For Ventura County, waters within the Calleguas Creek Watershed, with the exception of Mugu Lagoon, the Estuary, and Reach 2 (Estuary to Portrero Rd), are not designated COLD/MIGR, therefore Program stations without a COLD/MIGR designation in this watershed include the mass emission station (ME-CC) and major outfall stations (MO-CAM, MO-MPK, MO-SIM, and MO-THO). Waters within Ventura County that are designated COLD and/or MIGR, include the reaches applicable to the remaining Program mass emission stations (ME-SCR and ME-VR2) and major outfall stations(MO-FIL, MO-SPA, MO-OXN, MO-VEN, MO-HUE, MO-OJA, and MO-MEI).

The correct calculation of ammonia BPO requires the collection of salinity, pH, and temperature data in addition to the total ammonia as nitrogen analysis. Salinity, pH, and temperature are measured in situ in the field using handheld meters at the time that event grab samples are collected, as the samples require immediate measurement in order to reflect the site conditions to which the organisms are exposed. Ammonia is collected as a composite sample and is analyzed at the laboratory within 28 days of sample collection (28-day holding time). Comparisons of the composite ammonia value to the grab BPO provide the best available assessment of compliance, given the restraints in collecting relevant sample data.

9.7 2014/15 WATER QUALITY OBJECTIVE EXCEEDANCES AND ELEVATED LEVELS

Table 9-9 presents water quality objective exceedances at Mass Emission stations based on an analysis of the 2014/15 wet-season stormwater monitoring data. Constituents that were found at elevated levels[9] at sites upstream (i.e., related Major Outfall stations) are shown in bold and highlighted (see Section 9.7.3 through Section 9.7.6 for a discussion of the relationship between the Mass Emission and Major Outfall stations).

Table 9-10 presents the elevated levels of constituents at Major Outfall stations based on an analysis of the 2014/15 wet-season stormwater monitoring data. Constituents that exceeded the water quality objective at sites downstream (i.e., related Mass Emission stations) are shown in bold and highlighted (again, see Section 9.7.3 through Section 9.7.6 for a discussion of the relationship between the Mass Emission and Major Outfall stations).

[9] "Elevated levels" is used to describe those concentrations that are above a particular water quality standard. These amounts are not referred to as "exceedances," as has been done for the Mass Emission stations, since, technically, those standards are only applicable to receiving waters, not to the outfalls that were monitored.

9.7.1 **Urban Runoff Impacts on Receiving Waters**

Pursuant to Part 2 of the Permit, the Permittees are required to determine whether discharges from their municipal separate storm sewer systems are causing or contributing to a violation of water quality standards (WQS). Additionally, Permittees are responsible for preventing discharges from the MS4 of stormwater or non-stormwater from causing or contributing to a condition of nuisance. Specifically, the Order contains the following Receiving Water Limitations Language:

1. Discharges from the MS4 that cause or contribute to a violation of water quality standards are prohibited.

2. Discharges from the MS4 of stormwater, or non-stormwater, for which a Permittee is responsible, shall not cause or contribute to a condition of nuisance.

Compliance with the above Receiving Water Limitations is achieved by the Permittees through implementation of control measures and other actions to reduce pollutants in stormwater and non-stormwater discharges in accordance with the requirements of the Permit. The following section presents a discussion of WQS exceedances that occurred during the wet-weather and dry-weather monitoring events during the 2014/15 monitoring year.

9.7.2 **"Cause or Contribute" Evaluation Methodology**

The evaluation used to determine if a pollutant is persistently causing or contributing to the exceedance of a WQS in receiving waters consists of three steps:

1. The water quality data collected at a mass emission site in the same watershed is used as the receiving water to compare to relevant WQS contained in the CTR and Basin Plan.

2. When a receiving water concentration exceeded a WQS for a particular constituent, the urban runoff concentration of said constituent measured at a Major Outfall in that watershed was compared to the WQS. If an elevated level relative to the associated WQS for said constituent was observed in both urban runoff and the receiving water, then the WQS exceedance in the receiving water was determined "likely caused or contributed to by urban runoff." However, this comparison does not consider the frequency or persistence of WQS exceedances for a given constituent.

3. The persistence of a WQS exceedance was determined by evaluating the number of times (frequency) that a constituent was observed at an elevated level in urban runoff and in excess of the WQS for the receiving water for a particular type of monitoring event (wet or dry) over the course of the monitoring season. If two or more elevated levels in urban runoff and WQS exceedances in the receiving water were observed for a particular constituent over the course of the monitoring season, then the WQS exceedances of said constituent were determined to be persistent. Ideally, an assessment of persistency would be based on a larger data set (e.g., 10 events or more) and an assumed percentage of exceedances (e.g., 50%), but given the need for an annual assessment two or more exceedances from the existing, limited data set were used as the criterion to determine persistence.

Table 9-9. Water Quality Objective Exceedances at Mass Emission Stations

Site	Constituent	2014/15-1 (Wet)	2014/15-2 (Wet)	2014/15-3 (Wet)	2014/15-4 (Wet)	2014/15-5 (Wet)	2014/15-6 (Dry)	2015-DRY	Applicable Standard
ME-CC	*E. coli*	**1467**	NQ	**6867**	NQ	NQ		NA	235 MPN/100 mL (BP)
	Fecal Coliform	**130000**	NQ	**540000**	NQ	NQ	**8000**	NA	400 MPN/100 mL (BP)
	Chloride ^		NQ		NQ	NQ	**230**	NA	SSO: 150 mg/L (Basin Plan)
	Total Dissolved Solids ^		NQ		NQ	NQ	**1000**	NA	SSO: 850 mg/L (Basin Plan)
	Total Chlorine Residual	0.4 (DNQ)	NQ	0.61	NQ	NQ		NA	0.1 mg/L (Basin Plan)
	Aluminum, total	**21000**	NQ	**81000**	NQ	NQ		NA	1,000 µg/L (Basin Plan)
	Arsenic, total		NQ	16	NQ	NQ		NA	10 µg/L (Basin Plan)
	Chromium, total	53	NQ	**270**	NQ	NQ		NA	50 µg/L (Basin Plan)
	Nickel, total		NQ	230	NQ	NQ		NA	100 µg/L (Basin Plan)
	Bis(2-ethylhexyl)phthalate (M)		NQ		NQ	NQ	**7.3** **<1.1** **<2.3**	NA	4 µg/L (Basin Plan) EPA 525.2 RL=3 EPA 525.2 RL=3 EPA 625 RL=5
ME-SCR	*E. coli*	No Flow	No Flow	**912**		Lab Error		NA	235 MPN/100 mL (BP)
	Fecal Coliform	No Flow	No Flow	**110000**	>1600000	Lab Error	13000	NA	400 MPN/100 mL (BP)
	Chloride ^	No Flow	No Flow		NS	120	130	NA	SSO: 80 mg/L (BP)
	Total Dissolved Solids ^	No Flow	No Flow	1700	NS	1600	**1800**	NA	SSO: 1,300 mg/L (BP)
	Aluminum, total	No Flow	No Flow	**340000**	NS		1300	NA	1,000 µg/L (BP)
	Arsenic, total	No Flow	No Flow	40	NS			NA	10 µg/L (BP)
	Barium, total	No Flow	No Flow	1500	NS			NA	1,000 µg/L (BP)
	Beryllium, total	No Flow	No Flow	25	NS			NA	4 µg/L (BP)
	Cadmium, total	No Flow	No Flow	**22**	NS			NA	5 µg/L (BP)
	Chromium, total	No Flow	No Flow	580	NS			NA	50 µg/L (BP)
	Nickel, total	No Flow	No Flow	870	NS			NA	100 µg/L (BP)
	Thallium, total	No Flow	No Flow	5.9	NS			NA	2 µg/L (BP)
	Nitrate + Nitrite as N	No Flow	No Flow	8.9	NS			NA	10 mg/L (BP)
ME-VR2	*E. Coli*	**1081**	**910**	**959**	7701	Lab Error		NA	235 MPN/100 mL (BP)
	Fecal Coliform	**13000**	**1400**	**79000**	**>1600000**	Lab Error	1600	NA	400 MPN/100 mL (BP)
	Bis(2-ethylhexyl)phthalate (M)			7.9 <2.3	NS (equip)			NA	4 µg/L (BP) EPA 525.2 RL=3 EPA 625 RL=5
	Dibenz(a,h)anthracene		NS		NS (equip)		<0.08 0.14	NA	0.0044 µg/L (CTR) EPA 625 RL=2 EPA 8270C RL=0.1
	Indeno(1,2,3-cd)pyrene		NS		NS (equip)		<0.12 0.16	NA	0.0044 µg/L (CTR) EPA 625 RL=2 EPA 8270C RL=0.1
Highlighted: Elevated level of same constituent in one or more related major outfalls									

Table 9-10. Elevated Levels at Major Outfall Stations

Site	Constituent	2014/15-1 (Wet) Value	2014/15-2 (Wet) Value	2014/15-3 (Wet) Value	2014/15-4 (Wet) Value	2014/15-5 (Wet) Value	2014/15-6 (Dry) Value	2015-DRY Value	Applicable Standard
MO-CAM	*E. Coli*	**17329**	NQ	**19863**	NQ	NS		368	235 MPN/100 mL (BP)
	Fecal Coliform	**13000**	NQ	**350000**	NQ	NS	**50000**	NS	400 MPN/100 mL (BP)
	MBAS		NQ		NQ	0.72		NS	0.5 mg/L (BP)
	Perchlorate		NQ		NQ		21	NS	6 µg/L (BP)
	pH		NQ	8.72	NQ	NS	9.85	8.59	6.5 -8.5 pH Units (BP)
	Aluminum, total	**7800-HBM**	NQ	**11000**	NQ	7600		NS	1,000 µg/L (BP)
	Copper, dissolved		NQ		NQ		50		29.29 µg/L (CTR)
	Bis(2-ethylhexyl)phthalate (M)		NQ	19 <2.3	NQ	3.2 9.1	**1.5 (DNQ)** **8.1**	NS	4 µg/L (BP) EPA 525.2 RL=3 EPA 625 RL=5
MO-FIL	*E. Coli*	7915	19863	**17300**	NQ	NS			235 MPN/100 mL (BP)
	Fecal Coliform	110000	33000	**280000**	NQ	NS		NS	400 MPN/100 mL (BP)
	Total Dissolved Solids ^				NQ		**1400**	NS	SSO: 1,300 mg/L (BP)
	Perchlorate	20			NQ			NS	6 µg/L (BP)
	Aluminum, total	4100	1500	**6200**	NQ	1900		NS	1,000 µg/L (BP)
	Cadmium, total	5.3		**15**	NQ			NS	5 µg/L (BP)
	Selenium, total				NQ		11	NS	5 µg/L (CTR)
	Pentachlorophenol (M)	0.16 (DNQ) 0.86 (DNQ) 1.2	0.19 (DNQ) 1.1 0.9 (DNQ)	0.19 (DNQ) 1.1 0.82 (DNQ)	NQ	0.06 (DNQ) 1.1 (DNQ) 3.6 (DNQ)		NS	EPA 515.3 RL=0.2,0.2,0.2 1 µg/L (BP) EPA 625 RL=1,1,1,2 EPA 8270C RL=1,1,1,5
MO-HUE	*E. Coli*	7300	NQ	113700	NQ	NQ	512	NS	235 MPN/100 mL (BP)
	Fecal Coliform	>1600000	NQ	350000	NQ	NQ	>1600000	NS	400 MPN/100 mL (BP)
	Ammonia as N		NQ		NQ	NQ	1.2	NS	0.478 mg/L (SW 4-Day)
	Aluminum, total	1300	NQ	2400	NQ	NQ		NS	1,000 µg/L (BP)
	Benz(a)anthracene (M)		NQ		NQ	NQ	<0.19 0.2	NS	0.0044 µg/L (CTR) EPA 625 RL=1 EPA 8270C RL=0.1
	Benzo(a)pyrene (M)		NQ		NQ	NQ	0.07 <0.13 0.31	NS	0.0044 µg/L (CTR) EPA 525.2 RL=0.1 EPA 625 RL=1 EPA 8270C RL=0.1

Site	Constituent	2014/15-1 (Wet) Value	2014/15-2 (Wet) Value	2014/15-3 (Wet) Value	2014/15-4 (Wet) Value	2014/15-5 (Wet) Value	2014/15-6 (Dry) Value	2015-DRY Value	Applicable Standard
	Benzo(b)fluoranthene (M)		NQ		NQ	NQ	<0.14 0.35	NS	0.0044 µg/L (CTR) EPA 625 RL=1 EPA 8270C RL=0.1
	Benzo(k)fluoranthene (M)		NQ		NQ	NQ	<0.22 0.25	NS	0.0044 µg/L (CTR) EPA 625 RL=1 EPA 8270C RL=0.1
	Chrysene (M)		NQ		NQ	NQ	<0.19 0.18	NS	0.0044 µg/L (CTR) EPA 625 RL=1 EPA 8270C RL=0.1
	Dibenz(a,h)anthracene (M)		NQ		NQ	NQ	<0.08 0.11	NS	0.0044 µg/L (CTR) EPA 625 RL=2 EPA 8270C RL=0.1
	Indeno(1,2,3-cd)pyrene (M)		NQ		NQ	NQ	<0.12 0.27	NS	0.0044 µg/L (CTR) EPA 625 RL=2 EPA 8270C RL=0.1
DRY-HUE3	*E. Coli*	NS	NS	NS	NS	NS	NS	44100	235 MPN/100 mL (BP)
	Dissolved Oxygen	NS	NS	NS	NS	NS	NS	3.98	5 mg/L (BP)
MO-MEI	*E. Coli*	**24196**	**19863**	**19863**	**21100**	NQ	No Flow	NS	235 MPN/100 mL (BP)
	Fecal Coliform	**79000**	**33000**	**240000**	**50000**	NQ	No Flow	NS	400 MPN/100 mL (BP)
	MBAS				0.71	NQ	No Flow	NS	0.5 mg/L (BP)
	Aluminum, total	17000	3500	11000	2400	NQ	No Flow	NS	1,000 µg/L (BP)
	Copper, dissolved				15	NQ	No Flow	NS	10.69 µg/L (CTR)
	Zinc, dissolved				110	NQ	No Flow	NS	95.37 µg/L (CTR)
	Bis(2-ethylhexyl)phthalate (M)				<1.1 6.2	NQ	No Flow	NS	4 µg/L (BP) EPA 525.2 RL=3 EPA 625 RL=5
	Pentachlorophenol (M)	0.78 1.2 2.1		0.19(DNQ) 1.1 0.95 (DNQ)		NQ	No Flow	NS	EPA 515.3 RL=0.2 1 µg/L (BP) EPA 625 RL=1 EPA 8270C RL=1
DRY-UNI4	*E. Coli*	NS	NS	NS	NS	NS	NS	488	235 MPN/100 mL (BP)
	pH	NS	NS	NS	NS	NS	NS	9.02	8.5 pH Units (BP)
MO-MPK	*E. Coli*	**17329**	NQ	**12033**	NQ	NS	No Flow	NS	235 MPN/100 mL (BP)
	Fecal Coliform	**79000**	NQ	**7900**	NQ	NS	No Flow	NS	400 MPN/100 mL (BP)
	Perchlorate	12	NQ		NQ		No Flow	NS	6 µg/L (BP)

Site	Constituent	2014/15-1 (Wet) Value	2014/15-2 (Wet) Value	2014/15-3 (Wet) Value	2014/15-4 (Wet) Value	2014/15-5 (Wet) Value	2014/15-6 (Dry) Value	2015-DRY Value	Applicable Standard
	Aluminum, total	**9100 HBM**	NQ	**63000**	NQ	16000	No Flow	NS	1,000 µg/L (BP)
	Cadmium, total		NQ	5.7	NQ		No Flow	NS	5 µg/L (BP)
	Chromium, total		NQ	**88**	NQ		No Flow	NS	50 µg/L (BP)
	Pentachlorophenol (M)	0.39 0.96 (DNQ) 1.3	NQ	1.2 1.8 1.7	NQ	NS	No Flow	NS	1 µg/L (BP) EPA 515.3 RL=0.2 EPA 625 RL=1 EPA 8270C RL=1
DRY-MPK2	pH	NS	NS	NS	NS	NS	NS	9.99	8.5 pH Units (BP)
MO-OJA	*E. Coli*	**24196**	**24196**	**110000**	**1725**	NQ	NS	NS	235 MPN/100 mL (BP)
	Fecal Coliform	**1600000**	**94000**	**920000**	**>1600000**	NQ	NS	NS	400 MPN/100 mL (BP)
	Chloride ^					NQ	380	NS	SSO: 60 mg/L (BP)
	Total Dissolved Solids ^					NQ	1300	NS	SSO: 800 mg/L (BP)
	MBAS				0.58	NQ	NS	NS	0.5 mg/L (BP)
	Aluminum, total	5000 HBM	11000	**27000**	3500	NQ		NS	1,000 µg/L (BP)
	Copper, dissolved	84			11	NQ		NS	49.61, 8.34 µg/L (CTR)
	Pentachlorophenol (M)	0.41 1 1.6	NS		0.22 1.1 0.72 (DNQ)	NQ	NS	NS	1 µg/L (BP) EPA 515.3 RL=0.2, 0.2 EPA 625 RL=1, 1 EPA 8270C RL=1, 1
DRY-OJA6	*E. Coli*	NS	NS	NS	NS	NS	NS	3076	235 MPN/100 mL (BP)
MO-OXN	*E. Coli*	19863	12997	**17329**	NQ	NQ	No Flow		235 MPN/100 mL (BP)
	Fecal Coliform	33000	130000	**240000**	NQ	NQ	No Flow	NS	400 MPN/100 mL (BP)
	Perchlorate	25			NQ	NQ	No Flow	NS	6 µg/L (BP)
	MBAS	0.66			NQ	NQ	No Flow	NS	0.5 mg/L (BP)
	pH	6.4			NQ	NQ	No Flow		6.5-8.5 pH Units (BP)
	Aluminum, total	6600	3900	**6300**	NQ	NQ	No Flow	NS	1,000 µg/L (BP)
	Copper, dissolved		14		NQ	NQ	No Flow		7.32 µg/L (CTR)

Site	Constituent	2014/15-1 (Wet) Value	2014/15-2 (Wet) Value	2014/15-3 (Wet) Value	2014/15-4 (Wet) Value	2014/15-5 (Wet) Value	2014/15-6 (Dry) Value	2015-DRY Value	Applicable Standard
	Zinc, dissolved	170	70		NQ	NQ	No Flow		140, 67.88 µg/L (CTR)
	Pentachlorophenol (M)	0.28 0.84 (DNQ) 7.1 (DNQ)			NQ	NQ	No Flow	NS	EPA 515.3 RL=0.2 1 µg/L (BP) EPA 625 RL=1 4.77 µg/L (CTR) EPA 8270C RL=10
MO-SIM	*E. Coli*	**17329**	NQ	**24196**	NQ	NS		2682	235 MPN/100 mL (BP)
MO-SIM	Fecal Coliform	**1600000**	NQ	**22000**	NQ	NS	**110000**	NS	400 MPN/100 mL (BP)
MO-SIM	Chloride ^		NQ		NQ		**180**	NS	SSO: 150 mg/L (BP)
MO-SIM	Total Dissolved Solids ^		NQ		NQ		**2200**	NS	SSO: 850 mg/L (BP)
MO-SIM	Aluminum, total	**3300 HBM**	NQ	**11000**	NQ	4200		NS	1,000 µg/L (BP)
MO-SIM	Selenium, total		NQ		NQ		33	NS	5 µg/L (CTR)
MO-SIM	Pentachlorophenol (M)			0.2 1.1 0.84 (DNQ)		0.32 5.6 (DNQ) 7.5 (DNQ)		NS	EPA 515.3 RL=0.2, 0.2 1 µg/L (BP) EPA 625 RL=1, 10 4.77 µg/L (CTR) EPA 8270C RL=1, 10
MO-SPA	*E. Coli*	NS		**15531**	NQ	NS	No Flow	NS	235 MPN/100 mL (BP)
MO-SPA	Fecal Coliform	NS	49000	**1600000**	NQ	NS	No Flow	NS	400 MPN/100 mL (BP)
MO-SPA	Perchlorate	27			NQ		No Flow	NS	6 µg/L (BP)
MO-SPA	pH	NS	6.26		NQ	NS	No Flow	NS	6.5-8.5 pH Units (BP)
MO-SPA	MBAS	0.62			NQ	0.79	No Flow	NS	0.5 mg/L (BP)
MO-SPA	Aluminum, total	10000	2600	**6800**	NQ	7400	No Flow	NS	1,000 µg/L (BP)
MO-SPA	Copper, dissolved	23	16		NQ		No Flow	NS	18.69, 7.32 µg/L (CTR)
MO-SPA	Zinc, dissolved	210	69		NQ		No Flow	NS	157, 67.88 µg/L (CTR)
MO-SPA	Bis(2-ethylhexyl)phthalate (M)			11 80	NQ		No Flow	NS	4 µg/L (BP) EPA 525.2 RL=3 EPA 625 RL=25
MO-SPA	Pentachlorophenol (M)	0.66 1.3 2.3		0.65 1.4 2.7	NQ	0.45 5.8 (DNQ) 7.6 (DNQ)	No Flow	NS	EPA 515.3 RL= 0.2, 0.2, 0.2 1 µg/L (BP) EPA 625 RL= 1, 1, 10 EPA 8270C RL= 1, 1, 10
DRY-SPA2	*E. Coli*	NS	NS	NS	NS	NS	NS	2359	235 MPN/100 mL (BP)
DRY-SPA2	pH	NS	NS	NS	NS	NS	NS	9.22	6.5-8.5 pH Units (BP)

Site	Constituent	2014/15-1 (Wet) Value	2014/15-2 (Wet) Value	2014/15-3 (Wet) Value	2014/15-4 (Wet) Value	2014/15-5 (Wet) Value	2014/15-6 (Dry) Value	2015-DRY Value	Applicable Standard
MO-THO	*E. Coli*	**3100**	NQ	**19863**	NQ	NS		677	235 MPN/100 mL (BP)
	Fecal Coliform	**4700**	NQ	**240000**	NQ	NS	**1100**	NS	400 MPN/100 mL (BP)
	pH		NQ	8.61	NQ	NS			6.5-8.5 pH Units (BP)
	Chloride ^	180	NQ		NQ		**160**	NS	SSO: 150 mg/L (BP)
	Total Dissolved Solids ^	940	NQ		NQ			NS	SSO: 850 mg/L (BP)
	Ammonia as N		NQ		NQ		1.2	NS	1.103 mg/L (FW 30-Day)
	Aluminum, total	**2500**	NQ	**25000**	NQ	9900		NS	1,000 µg/L (BP)
	Chromium, total		NQ	**68**	NQ			NS	50 µg/L (BP)
MO-VEN	*E. Coli*	3873	2046	**17329**	NQ	NQ	No Flow	12997	235 MPN/100 mL (BP)
	Fecal Coliform	7900	46000	**>1600000**	NQ	NQ	No Flow		400 MPN/100 mL (BP)
	Perchlorate	10			NQ	NQ	No Flow		6 µg/L (BP)
	Aluminum, total	4800	1400	**12000**	NQ	NQ	No Flow		1,000 µg/L (BP)
	Copper, dissolved		12		NQ	NQ	No Flow	170	9.35, 29.29 µg/L (CTR)
	Zinc, dissolved	170			NQ	NQ	No Flow		127 µg/L (CTR)
Highlighted: Exceedance of same constituent in related receiving water (mass emission)									

Notes:
Blank cells indicate the result was within water quality objectives or was not required to be analyzed.
^ Site Specific Objectives
NQ: Non-qualifying event (e.g. due to insufficient time since last rainfall, or insufficient rainfall).
DNQ: Detected below the reporting limit and therefore concentration cannot be confidently quantified.
NS: Not sampled.
NA: Not applicable
Event 2: Less rain fell than was forecast, therefore insufficient sample was collected at most sites for analyzing the full suite of tests. The priority list was utilized to determine which tests to run.
(M): These constituents are each measured by two or more different methods which can yield significantly different results. The Program considers the method with the lowest Reporting Limit (RL) as primary, but reports all results as required. RLs are indicated in order by event in the "Applicable Standard" column.
HBM: This result includes a qualifier of HB-MSR, which indicates that the QA/QC for the matrix spike was above the allowable limits, and therefore the "true" concentration may be lower than the measured concentration.
Total Chlorine Residual: The sample is measured as soon as possible after arriving at the laboratory but is analyzed outside of the extremely short holding time (asap or 15 minutes) for this analyte.

9.7.3 Ventura River Mass Emission Station (ME-VR2) Water Quality Objective Exceedances and Elevated Levels Corrections

The Ventura River Mass Emission station (ME-VR2) was installed during the 2004/05 monitoring year when the original station, ME-VR was decommissioned due to safety concerns as a result of landslide activity. The station was moved approximately one mile downstream to a safe location, while still representative of the runoff of the Ventura River watershed. The new location for the station put it into a different reach of the river according to the Basin Plan (between the confluence with Weldon Canyon and Main Street rather than between Casitas Vista Road and the confluence with Weldon Canyon), with higher limits for total dissolved solids (TDS), sulfate, chloride, boron, and nitrogen. Of these constituents, TDS, chloride, and nitrogen are monitored as part of the NPDES Permit by the Stormwater Monitoring Program. The limits in the Program's database were not updated for the new location until the 2011 annual report, and they are now correct for the current location. These changes and revised exceedances were explained in the 2011 annual report.

Table 9-11: Comparison of MO-MEI and ME-VR2 Relative to Water Quality Standards

Constituent (Unit)	Unincorporated-1 Major Outfall (MO-MEI)	Receiving Water (ME-VR2)	Water Quality Standard (Basin Plan or CTR)	
2014/15-1 (Wet) – Oct 31, 2014				
E. coli (MPN/100 mL)	**24,196**	**1,081**	235	BP
Fecal Coliform (MPN/100 mL)	**79,000**	**13,000**	400	BP
2014/15-2 (Wet) – Dec 2, 2014				
E. coli (MPN/100 mL)	**19,863**	**910**	235	BP
Fecal Coliform (MPN/100 mL)	**33,000**	**1,400**	400	BP
2014/15-3 (Wet) – Dec 12, 2014				
E. coli (MPN/100 mL)	**19,863**	**959**	235	BP
Fecal Coliform (MPN/100 mL)	**240,000**	**79,000**	400	BP
Bis(2-ethylhexyl)phthalate (μg/L)	<1.1	**7.9 (<2.3)**	4	BP
2014/15-4 (Wet) – Apr 7, 2015				
E. coli (MPN/100 mL)	**21,100**	**7,701**	235	BP
Fecal Coliform (MPN/100 mL)	**50,000**	**>1,600,000**	400	BP
2014/15-5 (Wet) – May 14, 2015				
No exceedances in Receiving Water during this event. The bacteria results are unavailable for ME-VR2 due to laboratory error. MO-MEI was not sampled due to non-qualifying rainfall.				
2014/15-6 (Dry) – June 23, 2015				
Fecal Coliform (MPN/100 mL)	**Dry**	**1,600**	400	BP
Dibenz(a,h)anthracene (μg/L)	**Dry**	**0.14**	0.0044	CTR
Indeno(1,2,3-cd)pyrene (μg/L)	**Dry**	**0.16**	0.0044	CTR

9.7.1 Ventura River Watershed Receiving Water Limit Evaluation

Urban stormwater runoff and urban non-stormwater flows were evaluated at two Major Outfall locations in the Ventura River Watershed during the 2014/15 season: Unincorporated-1 (MO-MEI) and Ojai-1 (MO-OJA). Both of these Major Outfalls are located upstream of the ME-VR2 Mass Emission station (see Figure 9-1), and therefore water quality data collected at ME-VR2 were used to represent receiving water quality in the "cause or contribute" evaluation conducted for both Major Outfalls. Table 9-11 and Table 9-12 show the constituents that exceeded WQS in the downstream receiving water and compares them to the levels measured at the Major Outfalls, MO-MEI and MO-OJA, respectively. Receiving water exceedances where the urban runoff from the applicable Major Outfalls was outside of WQS are shown in bold.

Table 9-12: Comparison of MO-OJA and ME-VR2 Relative to Water Quality Standards

Constituent (Unit)	Ojai-1 Major Outfall (MO-OJA)	Receiving Water (ME-VR2)	Water Quality Standard (Basin Plan or CTR)	
2014/15-1 (Wet) – Oct 31, 2014				
E. coli (MPN/100 mL)	**24,196**	**1,081**	235	BP
Fecal Coliform (MPN/100 mL)	**1,600,000**	**13,000**	400	BP
2014/15-2 (Wet) – Dec 2, 2014				
E. coli (MPN/100 mL)	**24,196**	**910**	235	BP
Fecal Coliform (MPN/100 mL)	**94,000**	**1,400**	400	BP
2014/15-3 (Wet) – Dec 12, 2014				
E. coli (MPN/100 mL)	**110,000**	**959**	235	BP
Fecal Coliform (MPN/100 mL)	**920,000**	**79,000**	400	BP
Bis(2-ethylhexyl)phthalate (μg/L)	3.8	**7.9 (<2.3)**	4	BP
2014/15-4 (Wet) – Apr 7, 2015				
E. coli (MPN/100 mL)	**1,725**	**7,701**	235	BP
Fecal Coliform (MPN/100 mL)	**>1,600,000**	**>1,600,000**	400	BP
2014/15-5 (Wet) – May 14, 2015				
No exceedances in Receiving Water during this event. The bacteria results are unavailable for ME-VR2 due to laboratory error. MO-OJA was not sampled due to non-qualifying rainfall.				
2014/15-6 (Dry) – June 23, 2015				
Fecal Coliform (MPN/100 mL)	NS	**1,600**	400	BP
Dibenz(a,h)anthracene (μg/L)	NS	**0.14**	0.0044	CTR
Indeno(1,2,3-cd)pyrene (μg/L)	NS	**0.16**	0.0044	CTR

9.7.2 Santa Clara River Watershed Receiving Water Limit Evaluation

Urban stormwater runoff and urban non-stormwater flows were evaluated at four Major Outfalls in the Santa Clara River Watershed during the 2014/15 season: Fillmore-1 (MO-FIL), Santa Paula-1 (MO-SPA), Oxnard-1 (MO-OXN), and Ventura-1 (MO-VEN). Two of these stations, MO-FIL and MO-SPA, are located upstream of the ME-SCR Mass Emission station (see Figure 9-1), and therefore water quality data collected at ME-SCR were used to represent receiving water quality in the "cause or contribute" evaluation conducted for both Major Outfalls. The other two stations, MO-OXN and MO-VEN, are located downstream of the ME-SCR Mass Emission station (see Figure 9-1). Because the ME-SCR station is located upstream of MO-OXN and MO-VEN, an assumption was required so that water quality data collected at ME-SCR could be considered to adequately represent Santa Clara River water quality downstream of the confluence of both MO-OXN and MO-VEN with the river. For comparison purposes it was assumed that pollutant concentrations in the Santa Clara River downstream of ME-SCR remain unchanged to those measured at ME-SCR to represent a hypothetical compliance point below the confluence of MO-OXN and MO-VEN and the Santa Clara River. With this assumption in effect, water quality data collected at ME-SCR were used to represent receiving water quality in the "cause or contribute" evaluation conducted for the MO-OXN and MO-VEN stations. Constituents exceeding WQS at the receiving water were compared to the urban runoff levels at the MO-FIL, MO-SPA, MO-OXN, and MO-VEN stations and are shown in Table 9-13 through Table 9-16 below. Receiving water exceedances where the urban runoff from the applicable Major Outfalls was outside of WQS are shown in bold.

Table 9-13: Comparison of MO-FIL and ME-SCR Relative to Water Quality Standards

Constituent (Unit)	Fillmore-1 Major Outfall (MO-FIL)	Receiving Water (ME-SCR)	Water Quality Standard (Basin Plan or CTR)	
2014/15-1 (Wet) – Oct 31, 2014				
No flow at ME-SCR for this event due to extremely dry antecedent conditions.				
2014/15-2 (Wet) – Dec 2, 2014				
No flow at ME-SCR for this event due to extremely dry antecedent conditions.				
2014/15-3 (Wet) – Dec 12, 2014				
E. coli (MPN/100 mL)	**17,300**	**912**	235	BP
Fecal Coliform (MPN/100 mL)	**280,000**	**110,000**	400	BP
Total Dissolved Solids (mg/L)	180	**1,700**	1,300	BP
Aluminum, Total (µg/L)	**6,200**	**340,000**	1,000	BP
Arsenic, Total (µg/L)	8.2	**40**	10	BP
Barium, Total (µg/L)	200	**1,500**	1,000	BP
Beryllium, Total (µg/L)	0.43	**25**	4	BP
Cadmium, Total (µg/L)	**15**	**22**	5	BP
Chromium, Total (µg/L)	25	**580**	50	BP
Nickel, Total (µg/L)	57	**870**	100	BP
Thallium, Total (µg/L)	1	**5.9**	2	BP
Nitrate + Nitrite as N (mg/L)	0.86	**8.9**	5	BP
Limited composite sample volume was available for analysis for ME-SCR due to equipment problems (fast flow combined with rope length used to prevent intake from clogging with bottom sediments resulted in intake riding on water surface).				
2014/15-4 (Wet) – Apr 7, 2015				
Fecal Coliform (MPN/100 mL)	NS	**>1,600,000**	400	BP
A kink in the ME-SCR sample intake line prevented composite samples from being collected during this event, therefore no composite results are available. The Major Outfall stations were not sampled this event due to non-qualifying rainfall.				
2014/15-5 (Wet) – May 14, 2015				
Chloride (mg/L)	6.3	**120**	80	BP
Total Dissolved Solids (mg/L)	180	**1,600**	1,300	BP
No bacteria results are available for this event due to an error by the bacteria laboratory. Grabs were not taken at the Major Outfall sites during this event. MO-VEN and MO-OXN were not sampled due to insufficient rainfall.				
2014/15-6 (Dry) – July 1, 2015				
Fecal Coliform (MPN/100 mL)	<2	**13,000**	400	BP
Chloride (mg/L)	77	**130**	80	BP
Total Dissolved Solids (mg/L)	**1,400**	**1,800**	1,300	BP
Aluminum, Total (µg/L)	9.8	**1,300**	1,000	BP

NS: Not sampled.

Table 9-14: Comparison of MO-SPA and ME-SCR Relative to Water Quality Standards

Constituent (Unit)	Santa Paula-1 Major Outfall (MO-SPA)	Receiving Water (ME-SCR)	Water Quality Standard (Basin Plan or CTR)	
2014/15-1 (Wet) – Oct 31, 2014				
No flow at ME-SCR for this event due to extremely dry antecedent conditions.				
2014/15-2 (Wet) – Dec 2, 2014				
No flow at ME-SCR for this event due to extremely dry antecedent conditions.				
2014/15-3 (Wet) – Dec 12, 2014				
E. coli (MPN/100 mL)	**15,531**	**912**	235	BP
Fecal Coliform (MPN/100 mL)	**1,600,000**	**110,000**	400	BP
Total Dissolved Solids (mg/L)	60	**1,700**	1,300	BP
Aluminum, Total (µg/L)	**6,800**	**340,000**	1,000	BP
Arsenic, Total (µg/L)	3.7	**40**	10	BP
Barium, Total (µg/L)	170	**1,500**	1,000	BP
Beryllium, Total (µg/L)	0.3	**25**	4	BP
Cadmium, Total (µg/L)	0.88	**22**	5	BP
Chromium, Total (µg/L)	12	**580**	50	BP
Nickel, Total (µg/L)	14	**870**	100	BP
Thallium, Total (µg/L)	0.09 (DNQ)	**5.9**	2	BP
Nitrate + Nitrite as N (mg/L)	0.78	**8.9**	5	BP
Limited composite sample volume was available for analysis for ME-SCR due to equipment problems (fast flow combined with rope length used to prevent intake from clogging with bottom sediments resulted in intake riding on water surface).				
2014/15-4 (Wet) – Apr 7, 2015				
Fecal Coliform (MPN/100 mL)	NS	**>1,600,000**	400	BP
A kink in the ME-SCR sample intake line prevented composite samples from being collected during this event, therefore no composite results are available. The Major Outfall stations were not sampled this event due to non-qualifying rainfall.				
2014/15-5 (Wet) – May 14, 2015				
Chloride (mg/L)	8.1	**120**	80	BP
Total Dissolved Solids (mg/L)	140	**1,800**	1,300	BP
No bacteria results are available for this event due to an error by the bacteria laboratory. Grabs were not taken at the Major Outfall sites during this event.				
2014/15-6 (Dry) – July 1, 2015				
Fecal Coliform (MPN/100 mL)	NS	**13,000**	400	BP
Chloride (mg/L)	NS	**130**	80	BP
Total Dissolved Solids (mg/L)	NS	**1,800**	1,300	BP
Aluminum, Total (µg/L)	NS	**1,300**	1,000	BP
There was no discharge from MO-SPA for Event 6.				

NS: Not sampled.

Table 9-15: Comparison of MO-OXN and ME-SCR Relative to Water Quality Standards

Constituent (Unit)	Receiving Water (ME-SCR)	Oxnard-1 Major Outfall (MO-OXN)	Water Quality Standard (Basin Plan or CTR)	
2014/15-1 (Wet) – Oct 31, 2014				
No flow at ME-SCR for this event due to extremely dry antecedent conditions.				
2014/15-2 (Wet) – Dec 2, 2014				
No flow at ME-SCR for this event due to extremely dry antecedent conditions.				
2014/15-3 (Wet) – Dec 12, 2014				
E. coli (MPN/100 mL)	**912**	**17,329**	235	BP
Fecal Coliform (MPN/100 mL)	**110,000**	**240,000**	400	BP
Total Dissolved Solids (mg/L)	**1,700**	69	1,300	BP
Aluminum, Total (μg/L)	**340,000**	**6,300**	1,000	BP
Arsenic, Total (μg/L)	**40**	3.7	10	BP
Barium, Total (μg/L)	**1,500**	140	1,000	BP
Beryllium, Total (μg/L)	**25**	0.24	4	BP
Cadmium, Total (μg/L)	**22**	0.83	5	BP
Chromium, Total (μg/L)	**580**	14	50	BP
Nickel, Total (μg/L)	**870**	17	100	BP
Thallium, Total (μg/L)	**5.9**	0.1 (DNQ)	2	BP
Nitrate + Nitrite as N (mg/L)	**8.9**	0.39	5	BP
Limited composite sample volume was available for analysis for ME-SCR due to equipment problems (fast flow combined with rope length used to prevent intake from clogging with bottom sediments resulted in intake riding on water surface).				
2014/15-4 (Wet) – Apr 7, 2015				
Fecal Coliform (MPN/100 mL)	**>1,600,000**	NS	400	BP
A kink in the ME-SCR sample intake line prevented composite samples from being collected during this event, therefore no composite results are available. The Major Outfall stations were not sampled this event due to non-qualifying rainfall.				
2014/15-5 (Wet) – May 14, 2015				
Chloride (mg/L)	**120**	NS	80	BP
Total Dissolved Solids (mg/L)	**1,800**	NS	1,300	BP
No bacteria results are available for this event due to an error by the bacteria laboratory. Grabs were not taken at the Major Outfall sites during this event. MO-VEN and MO-OXN were not sampled due to insufficient rainfall.				
2014/15-6 (Dry) – July 1, 2015				
Fecal Coliform (MPN/100 mL)	**13,000**	NS	400	BP
Chloride (mg/L)	**130**	NS	80	BP
Total Dissolved Solids (mg/L)	**1,800**	NS	1,300	BP
Aluminum, Total (μg/L)	**1,300**	NS	1,000	BP
There was no discharge from MO-OXN for Event 6.				

NS: Not sampled.

[a] Water quality monitoring data collected at ME-SCR were used in the receiving water "cause or contribute" evaluation as downstream surrogate data to represent the water quality in the Santa Clara River at a compliance point below the confluence of MO-OXN and the Santa Clara River.

Table 9-16: Comparison of MO-VEN and ME-SCR Relative to Water Quality Standards

Constituent (Unit)	Receiving Water (ME-SCR)	Ventura-1 Major Outfall (MO-VEN)	Water Quality Standard (Basin Plan or CTR)	
2014/15-1 (Wet) – Oct 31, 2014				
No flow at ME-SCR for this event due to extremely dry antecedent conditions.				
2014/15-2 (Wet) – Dec 2, 2014				
No flow at ME-SCR for this event due to extremely dry antecedent conditions.				
2014/15-3 (Wet) – Dec 12, 2014				
E. coli (MPN/100 mL)	**912**	**17,329**	235	BP
Fecal Coliform (MPN/100 mL)	**110,000**	**>1,600,000**	400	BP
Total Dissolved Solids (mg/L)	**1,700**	86	1,300	BP
Aluminum, Total (μg/L)	**340,000**	**12,000**	1,000	BP
Arsenic, Total (μg/L)	**40**	7.6	10	BP
Barium, Total (μg/L)	**1,500**	190	1,000	BP
Beryllium, Total (μg/L)	**25**	0.55	4	BP
Cadmium, Total (μg/L)	**22**	1	5	BP
Chromium, Total (μg/L)	**580**	24	50	BP
Nickel, Total (μg/L)	**870**	26	100	BP
Thallium, Total (μg/L)	**5.9**	0.19 (DNQ)	2	BP
Nitrate + Nitrite as N (mg/L)	**8.9**	0.62	5	BP
Limited composite sample volume was available for analysis for ME-SCR due to equipment problems (fast flow combined with rope length used to prevent intake from clogging with bottom sediments resulted in intake riding on water surface).				
2014/15-4 (Wet) – Apr 7, 2015				
Fecal Coliform (MPN/100 mL)	**>1,600,000**	NS	400	BP
A kink in the ME-SCR sample intake line prevented composite samples from being collected during this event, therefore no composite results are available. The Major Outfall stations were not sampled this event due to non-qualifying rainfall.				
2014/15-5 (Wet) – May 14, 2015				
Chloride (mg/L)	**120**	NS	80	BP
Total Dissolved Solids (mg/L)	**1,800**	NS	1,300	BP
No bacteria results are available for this event due to an error by the bacteria laboratory. Grabs were not taken at the Major Outfall sites during this event. MO-VEN and MO-OXN were not sampled due to insufficient rainfall.				
2014/15-6 (Dry) – July 1, 2015				
Fecal Coliform (MPN/100 mL)	**13,000**	NS	400	BP
Chloride (mg/L)	**130**	NS	80	BP
Total Dissolved Solids (mg/L)	**1,800**	NS	1,300	BP
Aluminum, Total (μg/L)	**1,300**	NS	1,000	BP
There was no discharge from MO-VEN for Event 6.				

NS: Not sampled.

[a] Water quality monitoring data collected at ME-SCR were used in the receiving water "cause or contribute" evaluation as downstream surrogate data to represent the water quality in the Santa Clara River at a compliance point below the confluence of MO-VEN and the Santa Clara River.

9.7.3 **Calleguas Creek Watershed Receiving Water Limit Evaluation**

Urban stormwater runoff and urban non-stormwater flows were evaluated at four Major Outfalls in the Calleguas Creek Watershed during the 2014/15 season: Camarillo-1 (MO-CAM), Moorpark-1 (MO-MPK), Simi Valley-1 (MO-SIM), and Thousand Oaks-1 (MO-THO). Three of these Major Outfalls (MO-MPK, MO-SIM, and MO-THO) are located upstream of the ME-CC Mass Emission station (see Figure 9.1), and therefore water quality data collected at ME-CC were used to represent receiving water quality in the "cause or contribute" evaluation conducted for these Major Outfalls. As stated earlier, MO-CAM is located in a different subwatershed than the closest receiving water location, the ME-CC station, monitored by the Program (see Figure 9-1). MO-CAM is tributary to Revolon Slough, which is tributary to Calleguas Creek several miles downstream of ME-CC. Similar to the ME-SCR station in the Santa Clara River watershed, an assumption was made so that water quality data collected at ME-CC could be considered to adequately represent Calleguas Creek water quality downstream of the confluence of Revolon Slough and the creek. It was assumed that pollutant concentrations in Calleguas Creek downstream of ME-CC remain the same as those measured at ME-CC to a hypothetical compliance point below the confluence of Revolon Slough and Calleguas Creek. With this assumption in effect, water quality data collected at ME-CC were used to represent receiving water quality in the "cause or contribute" evaluation conducted for the MO-CAM Major Outfall. Constituents exceeding WQS at the receiving water were compared to the urban runoff levels at the MO-MPK, MO-SIM, MO-THO, and MO-CAM stations and are shown in Table 9-17, Table 9-18, Table 9-19, and Table 9-20 below. Receiving water exceedances where the urban runoff from the applicable Major Outfalls was outside of WQS are shown in bold.

Table 9-17: Comparison of MO-MPK and ME-CC Relative to Water Quality Standards

Constituent (Unit)	Moorpark-1 Major Outfall (MO-MPK)	Receiving Water (ME-CC)	Water Quality Standard (Basin Plan or CTR)	
2014/15-1 (Wet) – Oct 31, 2014				
E. coli (MPN/100 mL)	**17,329**	**1,467**	235	BP
Fecal Coliform (MPN/100 mL)	**79,000**	**130,000**	400	BP
Total Chlorine Residual (mg/L)	NS	**0.4 (DNQ)**	0.1	BP
Aluminum, Total (µg/L)	**9,100**	**21,000**	1,000	BP
Chromium, Total (µg/L)	17	**53**	50	BP
2014/15-2 (Wet) – Dec 2, 2014				
Non-qualifying event due to >0.1” rain within preceding 7 days (more rain fell than forecast on Nov 30, 2015)				
2014/15-3 (Wet) – Dec 12, 2014				
E. coli (MPN/100 mL)	**12,033**	**6,867**	235	BP
Fecal Coliform (MPN/100 mL)	**7,900**	**540,000**	400	BP
Total Chlorine Residual (mg/L)	NS	**0.61**	0.1	BP
Aluminum, Total (µg/L)	**63,000**	**81,000**	1,000	BP
Arsenic, Total (µg/L)	8.9	**16**	10	BP
Chromium, Total (µg/L)	88	**270**	50	BP
Nickel, Total (µg/L)	95	**230**	100	BP
2014/15-4 (Wet) – Apr 7, 2015				
Non-qualifying rainfall amount at ME-CC and MO-MPK (<0.15”).				
2014/15-5 (Wet) – May 14, 2015				
Non-qualifying rainfall amount at ME-CC (<0.15”).				
2014/15-6 (Dry) – July 7, 2015				
Fecal Coliform (MPN/100 mL)	NS	**8,000**	400	BP
Chloride (mg/L)	NS	**230**	150	BP
Total Dissolved Solids (mg/L)	NS	**1,000**	850	BP
Bis(2-ethylhexyl)phthalate (µg/L)	NS	**7.3, <1.1, <2.3**	4	BP
There was no discharge from MO-MPK for Event 6.				

NS: Not sampled.

Table 9-18: Comparison of MO-SIM and ME-CC Relative to Water Quality Standards

Constituent (Unit)	Simi Valley-1 Major Outfall (MO-SIM)	Receiving Water (ME-CC)	Water Quality Standard (Basin Plan or CTR)	
2014/15-1 (Wet) – Oct 31, 2014				
E. coli (MPN/100 mL)	**17,329**	**1,467**	235	BP
Fecal Coliform (MPN/100 mL)	**1,600,000**	**130,000**	400	BP
Total Chlorine Residual (mg/L)	NS	**0.4 (DNQ)**	0.1	BP
Aluminum, Total (µg/L)	**3,300**	**21,000**	1,000	BP
Chromium, Total (µg/L)	9.9	**53**	50	BP
2014/15-2 (Wet) – Dec 2, 2014				
Non-qualifying event due to >0.1" rain within preceding 7 days (more rain fell than forecast on Nov 30, 2015)				
2014/15-3 (Wet) – Dec 12, 2014				
E. coli (MPN/100 mL)	**24,196**	**6,867**	235	BP
Fecal Coliform (MPN/100 mL)	**22,000**	**540,000**	400	BP
Total Chlorine Residual (mg/L)	NS	**0.61**	0.1	BP
Aluminum, Total (µg/L)	**11,000**	**81,000**	1,000	BP
Arsenic, Total (µg/L)	6	**16**	10	BP
Chromium, Total (µg/L)	20	**270**	50	BP
Nickel, Total (µg/L)	20	**230**	100	BP
2014/15-4 (Wet) – Apr 7, 2015				
Non-qualifying rainfall amount at ME-CC and MO-SIM (<0.15").				
2014/15-5 (Wet) – May 14, 2015				
Non-qualifying rainfall amount at ME-CC (<0.15").				
2014/15-6 (Dry) – July 7, 2015				
Fecal Coliform (MPN/100 mL)	**110,000**	**8,000**	400	BP
Chloride (mg/L)	**180**	**230**	150	BP
Total Dissolved Solids (mg/L)	**2,200**	**1,000**	850	BP
Bis(2-ethylhexyl)phthalate (µg/L)	<1.1, <2.3	**7.3, <1.1, <2.3**	4	BP

NS: Not sampled.

Table 9-19: Comparison of MO-THO and ME-CC Relative to Water Quality Standards

Constituent (Unit)	Thousand Oaks-1 Major Outfall (MO-THO)	Receiving Water (ME-CC)	Water Quality Standard (Basin Plan or CTR)	
2014/15-1 (Wet) – Oct 31, 2014				
E. coli (MPN/100 mL)	**3,100**	**1,467**	235	BP
Fecal Coliform (MPN/100 mL)	**4,700**	**130,000**	400	BP
Total Chlorine Residual (mg/L)	NS	**0.4 (DNQ)**	0.1	BP
Aluminum, Total (μg/L)	**2,500**	**21,000**	1,000	BP
Chromium, Total (μg/L)	10	**53**	50	BP
2014/15-2 (Wet) – Dec 2, 2014				
Non-qualifying event due to >0.1" rain within preceding 7 days (more rain fell than forecast on Nov 30, 2015)				
2014/15-3 (Wet) – Dec 12, 2014				
E. coli (MPN/100 mL)	**19,863**	**6,867**	235	BP
Fecal Coliform (MPN/100 mL)	**240,000**	**540,000**	400	BP
Total Chlorine Residual (mg/L)	NS	**0.61**	0.1	BP
Aluminum, Total (μg/L)	**25,000**	**81,000**	1,000	BP
Arsenic, Total (μg/L)	6.8	**16**	10	BP
Chromium, Total (μg/L)	**68**	**270**	50	BP
Nickel, Total (μg/L)	64	**230**	100	BP
2014/15-4 (Wet) – Apr 7, 2015				
Non-qualifying rainfall amount at ME-CC and MO-THO (<0.15").				
2014/15-5 (Wet) – May 14, 2015				
Non-qualifying rainfall amount at ME-CC (<0.15").				
2014/15-6 (Dry) – July 7, 2015				
Fecal Coliform (MPN/100 mL)	**1,100**	**8,000**	400	BP
Chloride (mg/L)	**160**	**230**	150	BP
Total Dissolved Solids (mg/L)	670	**1,000**	850	BP
Bis(2-ethylhexyl)phthalate (μg/L)	<1.1, <2.3	**7.3, <1.1, <2.3**	4	BP

NS: Not sampled.

Table 9-20: Comparison of MO-CAM and ME-CC Relative to Water Quality Standards

Constituent (Unit)	Receiving Water[a] (ME-CC)	Camarillo-1 Major Outfall (MO-CAM)	Water Quality Standard (Basin Plan or CTR)	
2014/15-1 (Wet) – Oct 31, 2014				
E. coli (MPN/100 mL)	**1,467**	**17,329**	235	BP
Fecal Coliform (MPN/100 mL)	**130,000**	**13,000**	400	BP
Total Chlorine Residual (mg/L)	**0.4 (DNQ)**	NS	0.1	BP
Aluminum, Total (µg/L)	**21,000**	**7,800**	1,000	BP
Chromium, Total (µg/L)	**53**	16	50	BP
2014/15-2 (Wet) – Dec 2, 2014				
Not sampled. Non-qualifying event for the rest of the watershed (including the relevant mass emission station) due to >0.1" rain within preceding 7 days (more rain fell than forecast on Nov 30, 2015)				
2014/15-3 (Wet) – Dec 12, 2014				
E. coli (MPN/100 mL)	**6,867**	**19,863**	235	BP
Fecal Coliform (MPN/100 mL)	**540,000**	**350,000**	400	BP
Total Chlorine Residual (mg/L)	**0.61**	NS	0.1	BP
Aluminum, Total (µg/L)	**81,000**	**11,000**	1,000	BP
Arsenic, Total (µg/L)	**16**	4.8	10	BP
Chromium, Total (µg/L)	**270**	20	50	BP
Nickel, Total (µg/L)	**230**	19	100	BP
2014/15-4 (Wet) – Apr 7, 2015				
Non-qualifying rainfall amount at ME-CC and MO-CAM (<0.15").				
2014/15-5 (Wet) – May 14, 2015				
Non-qualifying rainfall amount at ME-CC (<0.15").				
2014/15-6 (Dry) – July 7, 2015				
Fecal Coliform (MPN/100 mL)	**8,000**	**50,000**	400	BP
Chloride (mg/L)	**230**	**240**	150[b]	BP
Total Dissolved Solids (mg/L)	**1,000**	**1,200**	850[b]	BP
Bis(2-ethylhexyl)phthalate (µg/L)	**7.3, <1.1, <2.3**	**1.5 (DNQ), 8.1**	4	BP

NS: Not sampled.

[a] Water quality monitoring data collected at ME-CC were used in the receiving water "cause or contribute" evaluation as downstream surrogate data to represent the water quality in Calleguas Creek at a compliance point below the confluence of Revolon Slough and Calleguas Creek. The MO-CAM station is tributary to Revolon Slough.

[b] Site-specific Basin Plan objective for reach of Calleguas Creek where ME-CC is located. There are no waterbody specific objectives below the confluence of Revolon Slough and Calleguas Creek. Therefore, the level of chloride and total dissolved solids at MO-CAM are not flagged as elevated in Table 9-10 but are flagged here because they are above the BP objective for ME-CC.

9.7.4 Coastal Watershed

Urban stormwater runoff and urban non-stormwater flows were evaluated at one Major Outfall station that does not have an associated Mass Emission station located within the watershed. The MO-HUE station is located in Port Hueneme and discharges to the J Street Drain just upstream of where the drain enters the Ormond Beach lagoon.

The elevated levels seen at MO-HUE are listed in Table 9-10 and not in a separate table as there is not a Mass Emission station nearby to which comparisons would be relevant.

9.7.5 Discussion of Results above Water Quality Standards

A lack of rain combined with dry antecedent conditions and several equipment malfunctions reduced the number of samples and events that could be collected for the 2014/15 monitoring year. Fewer 2014/15 results are available for most mass emission and major outfall stations when compared to previous years, which limits the ability of the Program to compare data and draw conclusions from this year's events.

Aluminum, *E. coli* and fecal coliform were commonly found at elevated levels at most sites during wet-weather events. *E. coli* and fecal coliform concentrations were also regularly elevated during dry-weather events, but aluminum concentrations were not. Other constituents that were found at elevated levels during the 2014/15 monitoring season include chloride and total dissolved solids (usually seen predominantly during the dry-weather event, however they were also elevated at sites with little rain/flow this year), perchlorate (predominantly Event 1), dissolved oxygen (dry season only), dissolved copper, dissolved zinc, total cadmium, total chromium, total selenium (dry weather only), ammonia, bis(2-ethylhexyl)phthalate, MBAS, pentachlorophenol, and pH (predominantly dry weather). Constituents that were seen at elevated levels at Mass Emission stations only once during the season include pH, chloride, total dissolved solids, total arsenic, total nickel, and bis(2-ethylhexyl)phthalate at ME-CC; nitrate+nitrite as nitrogen and the metals (total) arsenic, barium, beryllium, cadmium, chromium, nickel, and thallium at ME-SCR; and bis(2-ethylhexyl)phthalate and the polycyclic aromatic hydrocarbons dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene at ME-VR2. The Program is using this information to identify pollutants of concern and direct efforts to reduce their discharge from the storm drain system. Individually, the Permittees have taken, or are committing to take specific actions such as studies, or the purchasing of new equipment to address pollutants found in their outfalls that may be causing or contributing to an exceedance of a water quality standard, or is only seen at an elevated level in their outfall, but not in the receiving water. These are detailed in Section 9.7.9 below

Pathogen Indicators

Urban runoff concentrations of *E. coli* and fecal coliform bacteria were detected above their respective Basin Plan objectives in all Major Outfall wet weather samples with the exception of *E. coli* at MO-SPA in Event 2. Wet weather receiving water exceedances were similar, with all three sites exceeding the objectives for both *E. coli* and fecal coliform bacteria during all monitored events with the exception of *E. coli* at ME-SCR in Event 4. These indicator bacteria are routinely measured at concentrations in excess of WQS during wet weather events.

For dry weather monitoring, all sampled Mass Emission and Major Outfall sites exceeded the fecal coliform objective during Event 6 (dry weather) with the exception of MO-FIL. No exceedances of the *E. coli* objective were observed during Event 6, however *E. coli* exceedances were observed during the dry season monitoring at all Major Outfall sites except Moorpark-2, Fillmore-1, and Oxnard-1. Table 9-2 summarizes data restrictions for the 2014/15 monitoring year

However, the elevated levels are not reflected in the water quality of the beaches. *Heal the Bay's 2014-15 Annual Beach Report Card (BRC)* gave all Ventura County Beaches an A grade for summer dry. 92% of samples received an A or B grade for dry weather, and 89% of the 27 sites monitored during wet weather received an A or B grade. Grades are given on an A to F scale, with higher grades representing lower risk of illness for beachgoers. According to the BRC, "This year Ventura County bested its five-year average during winter dry and wet weather and beat the statewide average for all three time periods."

The results of the Beach Water Quality Monitoring Program in Ventura County has been outstanding with Heal the Bay's *2014-15 Annual Beach Report Card* (BRC) stating, "Once again, summer dry water quality grades were excellent this past year, with 100% of locations receiving A grades. Winter dry were also excellent with 92% receiving an A." For wet weather, "89% of the 27 monitored locations in Ventura County received an A or B grade" and as in 2013-14, "Ventura County bested its five-year average during winter dry and wet weather and beat the statewide average for all three time periods."

Table 9-21 Pathogen indicators detected above Basin Plan Objective

Pathogen indicators detected above Basin Plan Objective						
Site	Event 1 (Wet)	Event 2 (Wet)	Event 3 (Wet)	Event 4 (Wet)	Event 5 (Wet)	Event 6 (Dry)
Calleguas Creek Watershed						
ME-CC	X	NQE	X	NQE	NQE	Fecal only
MO-CAM	X	NQE	X	NQE	NS	Fecal only
MO-MPK	X	NQE	X	NQE	NS	NS
MO-SIM	X	NQE	X	NQE	NS	Fecal only
MO-THO	X	NQE	X	NQE	NS	Fecal only
Santa Clara River Watershed						
ME-SCR	Dry	Dry	X	Fecal only	Lab error	Fecal only
MO-FIL	X	X	X	NQE	NS	Fecal only
MO-OXN	X	X	X	NQE	NQE	NS
MO-SPA	NS	Fecal only	X	NQE	NS	NS
MO-VEN	X	X	X	NQE	NQE	NS
Ventura River Watershed						
ME-VR2	X	X	X	X	Lab error	Fecal only
MO-OJA	X	X	X	X	NQE	NS
MO-MEI	X	X	X	X	NQE	NS
Coastal Watershed Unknown if outfall causing or contributing to exceedance						
MO-HUE	X	NQE	X	NQE	NQE	X
Dry – Not sampled during this event due to insufficient flow and/or rainfall at site NQE – Non-Qualifying Event with less than 0.15 inches of rain NS – Not sampled						

Bacteriological contamination is a common occurrence throughout California and the United States. However, a number of issues make compliance with existing standards challenging:

- The water quality standards are based on fecal indicator bacteria, not the actual pathogenic micro-organisms that can cause illness. As a result, it is difficult to ascertain whether a particular water concentration of indicator bacteria is associated with an increased risk of human illness. This complicates establishment of priority watersheds or drainage areas, and introduces considerable risk of spending significant amounts of resources to comply with bacteria standards but with little to no benefit to recreational beneficial uses.

- Urban (anthropogenic) sources, wildlife, bacterial regrowth and other non-urban sources all potentially contribute fecal indicator bacteria to outfalls and receiving waters. However, identifying the sources of bacteria impairment through sanitary surveys and source identification studies are costly and not always conclusive, as the science is still evolving.

- Even if likely dominant sources of fecal indicator bacteria can be identified, remediation or control of these sources is often difficult, e.g. high volumes of stormwater runoff, bacterial regrowth, and wildlife. There are only a limited number of BMPs that can effectively control fecal indicator bacteria pollution to these objectives, and they may not always be technically feasible at a given location.

Implementation of bacteria control strategies and BMPs

The Ventura Countywide Stormwater Quality Program has in place control strategies that directly address indicator bacteria concentrations in urban runoff. The existing Program includes a comprehensive residential public outreach program that uses radio, newspaper, online banners, outdoor bulletins, and transit shelters to educate the public about preventing animal waste from entering storm drains. The pollutant outreach campaign was expanded in 2009 to include the mailing of a brochure to horse owners, equestrian supply stores, and horse property owners. The brochure identified BMPs that horse owners should take to reduce bacteria in stormwater runoff. Section 3 - Public Outreach describes in detail the outreach conducted during the 2014/15 year. The Permittees also install dispensers for pet waste pickup bags at beaches, parks and trail heads. It is estimated that over 2 million pet waste bags are given out each year and there are now close to 400 pet waste bag dispensers throughout the County encouraging pet owners to pick up after their pets.

The efforts of the Illicit Discharges/Illicit Connections Program likely help to reduce bacteria in stormwater runoff by identifying and stopping illicit wastewater discharges. As indicator bacteria may also grow in natural environments and sediments, measures to prevent sediment transport may also help reduce bacteria in stormwater runoff. Steps to remove sediment from the storm drain system include street sweeping, catch basin cleaning, and maintenance of debris basin and publicly owned BMPs. Industrial and commercial inspections, construction inspection, and illicit discharge response and elimination therefore also represent significant efforts towards reducing the discharge of fecal indicator bacteria. These are covered respectively in Section 7 - Public Agency Activities, Section 4 - Industrial/Commercial Facilities Programs, Section 6 - Development Construction, and Section 8 - Illicit Connections and Illicit Discharges Elimination. Some Permittees have conducted field efforts to track bacteriological contamination detected at the Major Outfalls. General conclusions were that the data evaluation did not indicate specific identifiable sources because elevated concentrations were determined throughout the tested subwatershed areas (Section 8).

In addition to the municipal stormwater program, bacteria are being addressed through TMDL programs in Malibu Creek, Miscellaneous Ventura Coastal Watersheds (Hobie and Kiddie Beaches), and Santa Clara River. Various reaches of Calleguas Creek and Ventura River are also listed on the Section 303(d) list due to indicator bacteria impairment. The Malibu Creek and Ventura Coastal beaches Bacteria TMDLs have been in effect since January 24, 2006 and December 18, 2008, respectively. Implementation Plans for both dry-weather and wet-weather were prepared and submitted for both TMDLs and compliance monitoring has been conducted at Malibu Creek and Ventura Coastal beaches since 2007 and 2009, respectively. The Santa Clara River Bacteria TMDL went into effect on March 21, 2012 and a comprehensive in-stream bacteria water quality monitoring plan and TMDL implementation plan have been developed by the responsible parties according to the TMDL schedule. Addressing bacteriological impairments in the watershed is a challenging task. A number of BMPs implemented in Calleguas Creek and Ventura River watersheds to meet compliance with other TMDLs also address bacteriological impairment such as prohibition of illicit discharges and implementation of LID/Green Street retrofits. The Calleguas Creek TMDL MOA group developed a draft Bacteria Work Plan to address this problematic pollutant in the Calleguas Creek Watershed.

Developing control measures to reduce observed bacteria concentrations to meet water quality standards is challenging. Treatment measures to address bacteria are likely to be costly and difficult to implement (especially with respect to the infrequent and short-term but high volume events that compose stormwater runoff). As a result, implementing measures that will result in compliance with the existing water quality objectives at all times will be extremely difficult. Consequently, the tasks in the Calleguas Creek Draft Bacteria Work Plan are designed to address these complexities to the greatest extent possible and provide mechanisms for protecting the identified beneficial uses in the watershed as is feasible. The strategy outlined in this draft work plan will assess the beneficial uses and risks to human health from bacteria and use that information to develop a TMDL to address bacteriological impairments. In the near-term an educational program focusing on the requirements of local domestic animal waste ordinances and the effects of domestic animal waste on the watershed is being considered[10]. Like the metals TMDL, it is expected that the results from the bacteria TMDL will assist the municipal stormwater program in addressing this problematic pollutant because the successful efforts in Calleguas Creek can be applied throughout the County to address indicator bacteria.

As a means to better refine the implementation of BMPs that might result in additional reductions of indicator bacteria, the Program began performing source identification monitoring at Major Outfalls and Mass Emission stations in the 2013/14 Permit year. Knowing what bacteria sources (e.g. humans, dogs, birds, or horses) are responsible for the high levels of indicator bacteria will assist in the selection of BMPs better suited to control a particular bacteria source. The goal of this county-wide fecal indicator bacteria source identification study is to assess county-wide dry and wet weather sources of fecal pollution in receiving waters, MS4 and control sites, in order to provide a regional assessment framework, inform future local studies and BMP implementation efforts.

Dry and wet weather receiving water samples have been collected as part of the Bight ’13 Microbiology study and will continue to be collected through the wet season of 2015/2016. Additional wet weather sampling has been performed at all major outfalls and several control stations. The Program collaborated with SCCWRP to transfer technology of qPCR-based analysis of host-specific DNA markers to the Ventura County Public Health Laboratory. The Laboratory has been testing samples collected as part of the Bight ’13 Microbiology study for human DNA markers and will in the future analyze archived wet weather outfall samples for human and possibility other DNA markers.

A hybrid sampling design with probabilistic and targeted stations has been developed, with assistance from SCCWRP, for dry weather sampling of MS4 and control sites. A first round of sampling was completed during the summer of 2014, and included 22 outfall samples, 45 random MS4 samples and 6 random control samples. The study includes quantification of E. coli and up to three host-specific markers (including human, dog, horse and bird). All 73 samples collected in dry weather in 2014 have thus far been analyzed for human, dog and bird host-specific markers. All 73 samples were negative for the sensitive human maker HF 183. Dog markers were only detected in 11% of the samples, and bird in 37% of the samples. None of the three markers were detected in 60% of the samples and the detection proved independent of E. coli concentrations. The dominant source of E. coli remains unclear. A second round of sampling, and testing of a horse marker is anticipated. Analysis of host-specific markers for these samples is performed by Weston Laboratories, Inc. (Carlsbad, CA).

During the summer of 2012, the County of Ventura and VCWPD worked with SCCWRP to conduct comprehensive water quality monitoring to determine bacteria sources and to assess the risk to swimmers’ health from recreating at Hobie and Kiddie beaches. Human markers were frequently detected and additional work is being conducted to further reduce and eliminate anthropogenic sources.

These complex issues related to bacteriological contamination and impairment of beneficial uses have been considered and still need to be discussed among the regulators, regulated communities, and environmental groups with a goal to identify cost-effective water quality protective solutions in the near future.

Aluminum

Urban runoff and receiving water concentrations of aluminum were found above the 1,000 μg/L Basin Plan objective at all Major Outfall and Mass Emission stations for each monitored wet event during the 2014/15 season, with the exception of ME-VR2 (all events). ME-SCR was the only monitored station (receiving water or major outfall) above the objective for the dry event (Event 6). Aluminum is not analyzed for the dry season monitoring

[10] http://www.calleguascreek.org/ccwmp/4f.asp November 3, 2011.

event, 2015-DRY (grab samples). A summary of those monitoring sites where aluminum concentrations were observed above the Basin Plan objective is shown in Table 9-22.

Table 9-22 Aluminum detected above Basin Plan Objective

Aluminum detected above Basin Plan Objective						
Site	Event 1 (Wet)	Event 2 (Wet)	Event 3 (Wet)	Event 4 (Wet)	Event 5 (Wet)	Event 6 (Dry)
Calleguas Creek Watershed Outfalls not causing or contributing to exceedance – Event 6 (Dry)						
ME-CC	X	NQE	X	NQE	NQE	
MO-CAM	X	NQE	X	NQE	X	
MO-MPK	X	NQE	X	NQE	X	Dry
MO-SIM	X	NQE	X	NQE	X	
MO-THO	X	NQE	X	NQE	X	
Santa Clara River Watershed Outfalls not causing or contributing to exceedance – Event 5 (Wet), and Event 6 (Dry)						
ME-SCR	Dry	Dry	X	NS		X
MO-FIL	X	X	X	NQE	X	
MO-OXN	X	X	X	NQE	NQE	Dry
MO-SPA	X	X	X	NQE	X	Dry
MO-VEN	X	X	X	NQE	NQE	Dry
Ventura River Watershed Outfalls not causing or contributing to exceedance – All sampled events						
ME-VR2				NS		
MO-OJA	X	X	X	X	NQE	
MO-MEI	X	X	X	X	NQE	Dry
Coastal Watershed Unknown if outfall causing or contributing to exceedance						
MO-HUE	X	NQE	X	NQE	NQE	
Dry – Not sampled during this event due to insufficient flow and/or rainfall at site NQE – Non-Qualifying Event with less than 0.15 inches of rain NS – Not sampled						

Since the Program began monitoring for aluminum in 2004, it has frequently observed levels above the Basin Plan objective for the metal at all Program monitoring sites (receiving water and land use). Aluminum is found as a ubiquitous natural element in sediments throughout Ventura County geology. These sediments are mobilized during stormwater runoff events from urban, agriculture, and natural sources resulting in concentrations of aluminum in excess of the Basin Plan objective (a Title 22 drinking water objective). This is clearly shown by the highly elevated wet weather concentrations of the metal measured in all three watersheds monitored by the Program. Similar to the current season, dry weather aluminum concentrations observed above WQS during the past eight years have only been observed a limited number of times. With elevated levels of aluminum co-occurring in both urban runoff and receiving waters within the same watershed during the same monitoring event, it is likely that concentrations of aluminum in urban runoff can be considered contributing to the elevated level observed in receiving waters.

To investigate the high concentrations of total aluminum identified in urban runoff and surface waters in Ventura County, primarily during storm events, the Program conducted a historical data evaluation, and initiated new monitoring during the 2013/14 monitoring season. The findings are summarized below while the full aluminum data evaluation report can be found in the appendices of the 2013-2014 Annual Report.

The majority (74.2 percent) of all wet weather water quality samples collected by the Program for the aluminum study exceeded the Title 22 Primary MCL for total aluminum of 1,000 µg/L. However, upstream from anthropogenic activities 100% of wet weather samples exceeded the objective. In comparison, concentrations of total aluminum in dry weather samples appear to be a much smaller issue, with approximately six percent of samples exceeding the Title 22 Primary MCL.

Required to protect municipal and domestic supply (MUN) beneficial uses of receiving waters, the Program investigated the geospatial and seasonal trends in aluminum concentrations measured in the Ventura River, Santa Clara River, and Calleguas Creek watersheds. A better understanding of the major sources and factors contributing to elevated aluminum concentrations is needed to identify potential solutions. As aluminum occurs naturally in soils and sediments and is the most abundant metal in the earth's crust it is suspected that naturally occurring aluminum is the primary source, and sampling was designed to confirm this hypothesis.

Data evaluation for total aluminum is ongoing and includes surface water quality samples and soil samples. Data sources include the Ventura Countywide Stormwater Monitoring Program, Calleguas Creek Watershed Total Maximum Daily Load (TMDL) Compliance Monitoring Program (CCWTMP), Surface Water Ambient Monitoring Program (SWAMP), Southern California Stormwater Monitoring Coalition, and the Southern California Bight Monitoring Program. Recent monitoring was also performed on river sediments and on wet weather flows from pristine upstream areas in the three watersheds and included in this analysis.

A summary of the main conclusions of this evaluation are provided below.

- Wet weather exceedance rates of the Title 22 Primary MCL were greater than 50% for eleven of the fourteen individual Program monitoring sites. The three exceptions included the current mass emission station in the Ventura River Watershed, the City of Fillmore's major outfall, and the Port Hueneme major outfall.
- Average and median total aluminum concentrations measured in the Santa Clara River and Calleguas Creek watersheds were noticeably higher than those observed for the Ventura River watershed and the Port Hueneme major outfall that discharges to the Pacific Ocean.
- Agricultural discharges contribute higher levels of total aluminum to receiving waters than urban discharges (based on the CCCWTMP data set, which distinguished between runoff from different land use types).
- For dry weather monitoring, publically owned treatment works (POTWs) contribute very little total aluminum to surface waters (also based on the CCCWTMP data set). During wet weather events, POTW discharges are not monitored.
- Within the Calleguas Creek Watershed, upstream agricultural land use discharges appear to appreciably influence surface water total aluminum concentrations measured downstream of such discharges within a subwatershed.
- Correlation analyses of total aluminum and TSS, and total aluminum and flow:
    - Measured total aluminum and TSS concentrations were strongly correlated for both wet weather and combined dry and wet weather data.
    - Measured water column aluminum concentrations were more dependent on the amount of solids suspended in the water column than the flow transporting the aluminum and TSS (based on total aluminum concentrations at the mass emission sites correlating more strongly with TSS than with flow).
- Review of soils data in the three watersheds:
    - The total aluminum measured in water quality samples appears to be derived from the erosion of soil (based on the consistency between the average mass of total aluminum per mass of TSS in the water column and the range of total aluminum soil concentrations in Ventura County; and on the high correlation between total aluminum and TSS concentrations measured in Program water quality samples).
- Data gaps in historical monitoring and additional monitoring:
    - Data gaps were identified for upstream portions of the three watersheds where sediment and runoff is little influenced by anthropogenic activities. Monitoring was initiated at new upstream

locations in each of the three watersheds in December 2013 and February 2014 to help fill this gap.

- Natural background sites were monitored for water (December 2013 and February 2014) and sediment (December 2013) and data showed that upstream locations in each of the three watersheds also possess elevated water column and sediment aluminum concentrations. Wet weather aluminum at these background sites was seen from 19,000 µg/L to 250,000 µg/L.
- Limited stormwater runoff data collected from parking lots at the Ventura County Government Center in February and March 2014 also revealed elevated aluminum and TSS concentrations in half of the samples collected, even so these were much lower than the natural background with the highest concentration being only 2,100 µg/L.

The exceedingly high level of total aluminum detected in sediment and runoff from undeveloped areas suggests that wet weather aluminum will routinely exceed water quality objectives regardless of Permittee efforts. A sound scientific and regulatory approach to managing the elevated concentrations of aluminum observed in Ventura County surface waters will be needed to sufficiently protect beneficial uses potentially impacted by this naturally occurring metal.

Copper

There were no results above the CTR Criterion for dissolved copper in the receiving water samples collected during the 2014/15 monitoring year. Elevated levels of dissolved copper were observed in major outfall discharges at MO-SPA (Events 1 and 2), MO-OJA (Events 1 and 4), MO-OXN (Event 2), MO-VEN (Event 2), MO-MEI (Event 4) and MO-CAM (Event 6).

Based on the “cause or contribute” methodology, copper from urban outfalls was not determined to persistently cause or contribute to WQS exceedances because results for copper were not observed above the CTR criterion in receiving waters (i.e., measured at the receiving water stations). There is no evidence to conclude that copper in urban runoff appreciably impacted receiving water beneficial uses during the 2014/15 monitoring season.

This conclusion does not mean these data will be ignored by the Program as it is actively addressing copper. Permittees supported the Brake Pad Partnership and Senate Bill (SB) 346 adopted September 27, 2010 – that authorized legislation to phase out the copper contained in vehicle brake pads. SB 346, authored by Senator Christine Kehoe (D-San Diego), requires brake pad manufacturers to reduce the use of copper in brake pads sold in California to no more than 5% by 2021 and no more than 0.5% by 2025. This true source control action will help significantly reduce copper in urban runoff. Several of the Major Outfall sites are next to freeways or railroad lines (MO-CAM, MO-OXN, MO-SPA, and MO-VEN)) where copper-containing dust from vehicles and trains is continually produced and deposited; the SB346 legislation will help address this issue. In the future, similar legislation to address train brake pads may help to further reduce copper in runoff.

Table 9-23. Copper detected above California Toxics Rule Objective

Copper detected above California Toxics Rule Objective						
Site	Event 1 (Wet)	Event 2 (Wet)	Event 3 (Wet)	Event 4 (Wet)	Event 5 (Wet)	Event 6 (Dry)
Calleguas Creek Watershed Outfalls not causing or contributing to exceedance – All						
ME-CC		NQE		NQE	NQE	
MO-CAM		NQE		NQE		X
MO-MPK		NQE		NQE		Dry
MO-SIM		NQE		NQE		
MO-THO		NQE		NQE		
Santa Clara River Watershed Outfalls not causing or contributing to exceedance – All						
ME-SCR	Dry	Dry		NS		
MO-FIL				NQE		
MO-OXN		X		NQE	NQE	Dry
MO-SPA	X	X		NQE		Dry
MO-VEN		X		NQE	NQE	Dry
Ventura River Watershed Outfalls not causing or contributing to exceedance – All						
ME-VR2				NS		
MO-OJA	X			X	NQE	
MO-MEI				X	NQE	Dry
Coastal Watershed Unknown if outfall causing or contributing to exceedance						
MO-HUE		NQE		NQE	NQE	
Dry – Not sampled during this event due to insufficient flow and/or rainfall at site NQE – Non-Qualifying Event with less than 0.15 inches of rain NS – Not sampled						

Mercury

In 2011/12, the Program revised the method in which data is compared to CTR criteria, including the objectives for mercury. Previously, the Program compared the results to the Basin Plan Objectives (wet and dry weather), and CTR acute freshwater criteria (wet weather) or CTR chronic freshwater criteria (dry weather). For constituents without a CTR freshwater objective, the CTR Human Health (Organisms Only) objectives were used. The updated method continues to compare wet weather results to the freshwater acute criteria but if the constituent does not have an acute criterion, the chronic Human Health criteria are no longer used because they are based on long term, continuous exposure, which is inappropriate for storm water. For dry weather, chronic criteria are appropriate so the data is compared to the most stringent of the CTR chronic freshwater, Human Health (Water & Organisms), or Human Health (Organisms Only). This revision more accurately reflects the MUN designation of the outfalls and receiving waters.

No elevated mercury levels were observed above the Basin Plan Objective (2,000 ng/L) at any of the major outfalls or receiving water stations during wet and dry weather for the 2014/15 season. The CTR does not have a freshwater acute criterion for mercury, so there were no wet weather mercury exceedances of the CTR. There were also no exceedances of the most stringent CTR chronic criteria (Human Health – Water & Organisms, 51 ng/L) during dry weather. Based on the findings of this season, the Program does not consider mercury at this time to constitute a persistent pollutant in urban runoff that is causing or contributing to impairments of beneficial uses in the Ventura River Watershed, Santa Clara River Watershed, or Calleguas Creek Watershed.

Other Metals

For wet weather, arsenic (As) and nickel (Ni) were found above the Basin Plan objective at two receiving water sites (ME-CC and ME-SCR) during Event 3 but not at other stations or other events. Barium (Ba), beryllium (Be), and thallium (Tl) were also above the Basin Plan objectives at ME-SCR during Event 3 but not at the other stations or during other events. Cadmium (Cd) and chromium (Cr) were observed above the Basin Plan objectives and dissolved zinc (Zn) was observed above the CTR objective at multiple sites, including the receiving water sites ME-CC (Cr Event 1 and 3) and ME-SCR (Cr, Cd, Zn Event 3); and the Major Outfall stations MO-MPK (Cr and Cd Event 3), MO-THO (Cr Event 3), MO-FIL (Cd Events 1 and 3), MO-OXN (Zn Event 1 and 2), MO-SPA (Zn Event 1 and 2), MO-VEN (Zn Event 1), and MO-MEI (Zn Event 4).

The major outfalls do not appear to have contributed to the receiving water exceedances at ME-CC of chromium in Event 1, or arsenic and nickel in Event 3; or to the arsenic, barium, beryllium, chromium, nickel, and thallium exceedances at ME-SCR during Event 3. Some associated Major Outfalls may have caused or contributed to exceedances of the WQS for chromium at ME-CC (MO-MPK and MO-THO), and zinc and cadmium at ME-SCR (zinc at MO-OXN, MO-SPA, and MO-VEN, and cadmium at MO-FIL), as their measured concentrations were above the applicable WQS during one or more events.

Table 9-24. Other metals detected above Basin Plan and California Toxics Rule Objectives

Other metals detected above Basin Plan and California Toxics Rule Objectives						
Site	Event 1 (Wet)	Event 2 (Wet)	Event 3 (Wet)	Event 4 (Wet)	Event 5 (Wet)	Event 6 (Dry)
Calleguas Creek Watershed						
ME-CC	Cr	NQE	As, Cr, Ni	NQE	NQE	
MO-CAM		NQE		NQE		
MO-MPK		NQE	Cr, Cd	NQE		Dry
MO-SIM		NQE		NQE		Se
MO-THO		NQE	Cr	NQE		
Santa Clara River Watershed						
ME-SCR	Dry	Dry	As, Ba, Be, Cr, Cd, Ni, Tl	NS		
MO-FIL	Cd		Cd	NQE		Se
MO-OXN	Zn	Zn		NQE	NQE	Dry
MO-SPA	Zn	Zn		NQE		Dry
MO-VEN	Zn			NQE	NQE	Dry
Ventura River Watershed						
ME-VR2				NS		
MO-OJA					NQE	
MO-MEI				Zn	NQE	Dry
Coastal Watershed						
MO-HUE		NQE		NQE	NQE	
Dry – Not sampled during this event due to insufficient flow and/or rainfall at site NQE – Non-Qualifying Event with less than 0.15 inches of rain NS – Not sampled						

For dry weather, selenium (Se) was above the Basin Plan Objective at MO-SIM and MO-FIL in Event 6 but met the water quality objective at the receiving water stations for all stations and events.

The exact sources of the metals are elusive, however as these metals are strongly correlated to total suspended solids (TSS), they may be at least in part related to the elevated TSS concentrations, particularly for ME-SCR during Event 3 (TSS = 40,000 mg/L). Potential anthropogenic sources of cadmium, chromium and nickel in urbanized watersheds include roof runoff (from roof materials, industrial emissions deposits or atmospheric deposition)[11,12] and road/highway runoff (fuels and engine oils, exhaust emissions, tire and brake wear).[13] Beryllium is used in metal alloys for the aerospace industry, and electrical equipment. Arsenic is used in paints, dyes, metals, drugs, semi-conductors, fertilizers, and as a wood preservative. Sources of cadmium include corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; and runoff from waste batteries and paints. Chromium is used for making steel, alloys, dyes and pigments, and in leather and wood preservation and chrome plating. Nickel is mostly used to form alloys, and can be used in chemicals and allied products, petroleum refining, fabricated metal products, aircraft parts, machinery, household appliances, building construction, electrical equipment, motor vehicle construction, and ship building. Nickel can be produced through oil and coal combustion, nickel metal refining, sewage sludge incineration, manufacturing facilities, and other sources. Thallium is used in specialized electronic research equipment, and can be released by leaching from ore-processing sites, and discharged from electronics, glass, and drug factories. Barium is found in ores as a mixture of elements and can be released during the mining, refining, and production of barium compounds and the burning of coal and oil. Barium compounds can be used as drilling muds during oil and gas extraction, and to make paint, ceramics, bricks, glass, and rubber. The longevity of barium in the environment is dependent on what it is mixed with, and when combined with carbonate or sulfate, which are naturally found in water, it can persist for a long time. Zinc is used for die casting for automobiles, for galvanizing iron, and for roofing and gutters in buildings. It can be used as a pigment, as a heat disperser in rubber products, and for the negative plates in some electric batteries. Zinc occurs naturally but activities such as mining, coal and waste combustion, and steel processing can release it to the environment in unnatural amounts.

Selenium was detected above the CTR objective during dry weather Event 2014/15-6 at two major outfall sites: MO-FIL and MO-SIM. There were no selenium exceedances at the receiving water stations for the 2014/15 monitoring year. Sources of selenium include discharge from petroleum and metal refineries, erosion of natural deposits, and discharge from mines. Selenium is used in electronic and photocopier components, glass, pigments, rubber, metal alloys, textiles, petroleum, medical therapeutic agents, and photographic emulsions. Selenium is known to occur at elevated levels in Monterey Formation rocks (Miocene marine mudstone) which are common in Ventura County. The relative contributions of anthropogenic and natural sources to elevated selenium concentrations are not clear at this point.

Efforts to reduce metals in urban runoff

Because total metal fractions are associated with sediment, the Stormwater Program has a number of control measures and BMPs that address metals in general, and sediment specifically. These control measures include steps to remove sediment from the storm drain system through street sweeping, catch basin cleaning, debris basin maintenance and publicly owned BMPs. A thorough discussion of these programs is provided in Section 7 Public Agency Activities. Preventing sediments containing metals from entering the storm drain system is just as, if not more important than removing them after they enter the storm drain system. Industrial and commercial inspections, construction inspection, and illicit discharge response and elimination, are significant efforts targeted at eliminating the discharge of metals. These are covered respectively in Sections 4 Industrial/Commercial Facilities Programs, Section 6 Development Construction, and Section 8 Illicit Connections and Illicit Discharges Elimination.

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[11] Van Metre, P. C. and Mahler, B. J. (2003). The contribution of particles washed from rooftops to contaminant loading to urban streams, Chemosphere 52:1727-1741.

[12] http://www.sanjoseca.gov/ArchiveCenter/ViewFile/Item/1460

[13] Opher, T. and Friedler, E. (2010). Factors affecting highway runoff quality, Urban Water Journal 7:155-172.

In addition, the construction program element is structured to address sediment from construction sites and includes review of grading plans, requirements for sediment and erosion control BMPs, and field inspections to confirm BMP implementation. More recently the State Water Resources Control Board adopted WDR Order 2009-0009 DWQ (latest amendment 2012-0006-DWQ), the Construction General Permit, which covers all construction sites with greater than one acre of active land disturbance. The Construction General Permit incorporates a risk-based approach to address pollutants from construction sites including sediments and associated metals. The Construction General Permit includes rigorous site planning, numeric effluent and action limits, and minimum BMPs as a function of the site risk for discharging sediment. It is expected that this new Construction General Permit will provide further control of sediment from construction sites within Ventura County.

Although the transport of metals is not usually through direct actions of the public, public education of stormwater pollution prevention can reduce the overall transport of pollutants including sediment and dry weather runoff both which if reduced would also reduce metals. Current efforts can be further tailored to address sources of metals such as promoting household hazardous waste collection events to dispose of mercury containing compact fluorescent light bulbs and thermometers. Other efforts include the Brake Pad Partnership and Senate Bill (SB) 346, legislation that authorizes the phase out of copper from vehicle brake pads discussed above.

Beyond these efforts conducted under our municipal stormwater programs, certain metals (copper, nickel, selenium, and mercury) are being addressed under the various TMDL programs. These constituents have been identified as causing impairment in Calleguas Creek, its tributaries, and Mugu Lagoon. As a result a Metals Work Plan has been developed by the Calleguas Creek TMDL MOA Parties and is currently being implemented[14]. This multiple year plan provides the framework to (1) determine whether or not metals impairments still exist in the watershed, (2) develop site-specific objectives for copper and nickel, and (3) if necessary, identify the control measures needed to meet the TMDLs. It will be developed in two phases. A draft of Phase I of the implementation plan was issued in February 2015. The draft Phase I Implementation Plan conveys which pollutants are watershed priorities, the magnitude of reduction necessary to bring the priorities into compliance, where appropriate regulatory strategies may affect the water quality objectives, the BMPs to control the discharge of the priorities, and a framework to develop scenarios of watershed controls. Phase I will provide the Stakeholders with the tools and a roadmap to develop scenarios of regulatory strategies, institutional controls and watershed actions. Phase II of the plan will integrate developed scenarios into the modeling framework to demonstrate that the proposed actions will result in receiving water compliance with standards. Between Phases I and II, the stakeholders will collaboratively develop the implementation scenarios. The complete implementation plan will be comprised of work products developed in Phases I and II. It is expected that the control measures identified under this effort will inform the efforts to address aluminum and mercury in the Calleguas Creek and Santa Clara River watersheds.

Organics and Pesticides

Several organics are measured by more than one analytical method, which often have different reporting limits (RL) and can yield significantly different results[15]. The Program considers the method with the lowest RL as primary, however in some cases the primary method is below the objective, and the secondary method is not and vice versa. The Program is reporting those results that were above the objective according to the primary (lowest RL) method. Bis(2-ethylhexyl)phthalate was detected at elevated levels according to the primary method in several samples during the 2014/15 season: MO-CAM in Events 3, 5, and 6, and MO-SPA and ME-VR2 in Event 3. Pentachlorophenol was above the objective according to the primary method at MO-MPK in Event 3. Several

[14] http://www.calleguascreek.org/ccwmp/4d.asp November 3, 2011.

[15] Bis(2-ethylhexyl)phthalate results are obtained from two analytical methods used by the Program, EPA 525.2 and EPA 625. Pentachlorophenol results are obtained from three analytical methods used by the Program: EPA 515.3, EPA 625, and EPA 8270Cm. PAHs are measured by two to three analytical methods (depending on constituent) used by the Program, EPA 525.2, EPA 625, and EPA 8270C.

polycyclic aromatic hydrocarbons (PAHs) were present at elevated levels at ME-VR2 [dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene] and MO-HUE [benzo(a,h)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene] according to the primary method for dry weather Event 6.

Table 9-25 Organics and Pesticides detected above Basin Plan and/or CTR Objectives

Organics and Pesticides detected above Basin Plan and California Toxics Rule Objectives						
Site	Event 1 (Wet)	Event 2 (Wet)	Event 3 (Wet)	Event 4 (Wet)	Event 5 (Wet)	Event 6 (Dry)
Calleguas Creek Watershed						
ME-CC		NQE		NQE	NQE	Bis-2[16]
MO-CAM		NQE	Bis-2	NQE	Bis-2	Bis-2
MO-MPK		NQE	PCP	NQE		Dry
MO-SIM		NQE		NQE		
MO-THO		NQE		NQE		
Santa Clara River Watershed						
ME-SCR	Dry	Dry		NS		
MO-FIL				NQE		
MO-OXN				NQE	NQE	Dry
MO-SPA			Bis-2	NQE		Dry
MO-VEN				NQE	NQE	Dry
Ventura River Watershed						
ME-VR2			Bis-2	NS		PAH-Note 1
MO-OJA					NQE	Limited
MO-MEI					NQE	Dry
Coastal Watershed						
MO-HUE		NQE		NQE	NQE	PAH-Note 2

Dry – Not sampled during this event due to insufficient flow and/or rainfall at site
NQE – Non-Qualifying Event with less than 0.15 inches of rain
NS – Not sampled
PCP – Pentachlorophenol
Bis-2 – Bis(2-ethylhexyl)phthalate
PAH – Polycyclic Aromatic Hydrocarbons
Note 1 – Dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene
Note 2 – Benzo(a,h)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene

For 2014/15, one or more of the secondary methods for bis(2-ethylhexyl)phthalate and pentachlorophenol were above their water quality objectives (Basin Plan objective of 1 µg/L and CTR objective of 0.0044 µg/L, respectively). According to the primary methods, bis(2-ethylhexyl)phthalate shows a potential cause or contribute

[16] The original analysis by the method with the lowest reporting limit (EPA 525.2) included a qualifier of HB-LCSR, which indicates that the QA/QC for the lab control spike was outside of the allowable limits, and so the measured value (7.3 µg/L) may be higher than the "true" concentration. The analyte was re-extracted due to suspected laboratory contamination and was ND (<1.1 µg/L), however the re-analysis occurred out of holding time. The analysis of the original sample by the method with the higher reporting limit (EPA 625) was ND (<2.3 µg/L). Therefore, the actual concentration of bis(2-ethylhexyl)phthalate in this sample is uncertain.

relationship between ME-CC and MO-CAM. Pentachlorophenol concentrations in urban runoff did not affect downstream receiving water beneficial uses. PAHs were only observed during the dry weather event at two sites (ME-VR2 and MO-HUE) which indicates there is not a cause or contribute relationship for this constituent.

Bis(2-ethylhexyl)phthalate is ubiquitous in plastics and is therefore a common sampling and laboratory contaminant. A small fraction of method and equipment blanks have shown concentrations in the range of observed sample concentrations since 2009, however the levels during 2014/15 appear to be within limits for acceptable QA/QC. The source of the bis(2-ethylhexyl)phthalate contamination is unclear. Pentachlorophenol is a manufactured chemical that is used industrially as a restricted use pesticide and wood preservative for railroad ties, utility poles, and wharf pilings. It is not available to the general public and its use has been restricted to certified applicators since 1984. PAHs are typically combustion by products, and may be due to the incomplete burning of coal, oil and gas (e.g. automobile exhaust), garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot. PAHs are found in coal tar, crude oil, creosote, and roofing tar. The source of the PAH contamination in unclear.

Salts

Concentrations above WQS for salts (chloride and total dissolved solids) at the stations monitored by the Program recurred at ME-SCR and MO-THO (chloride only) during both wet and dry events throughout the monitoring season. Elevated levels were also observed at ME-CC, MO-SIM, MO-FIL, and MO-OJA during dry weather Event 6 only. This is in accordance with historical data from dry weather events, when flows are comprised of a larger groundwater component. In the Ventura River Watershed, the receiving water station ME-VR2 did not exceed the Basin Plan site-specific objectives, therefore there is no cause or contribute relationship for salts with MO-OJA in the Ventura River Watershed. The elevated levels of salts at MO-FIL co-occurred with the elevated levels at ME-SCR during dry Event 6, therefore MO-FIL may be contributing to the exceedance at ME-SCR. Similarly for ME-CC, the elevated levels at MO-THO and MO-SIM co-occur with the exceedances at ME-CC, therefore a cause or contribute relationship may be inferred. The area of Simi Valley is known to have high ground water levels with natural springs, seeps and artesian conditions in the western part of the County. In addition, there is a Salt TMDL that is evaluating monitoring and implementing solutions throughout the watershed. More information on this is provided below.

The Program is unable to evaluate if concentrations above salts objectives within the watershed are a persistent issue during any given monitoring season because the Program is limited to a single wet season-dry weather monitoring event. Additionally, the other dry weather event, the dry season-dry weather monitoring event, required to be conducted by the Program represents grab sampling (as opposed to composite sampling) and does not include a requirement to evaluate chloride and TDS. However, it is clear that historic monitoring data collected during dry weather sampling events show regular elevated levels of chloride and total dissolved solids concentrations in the Calleguas Creek Watershed, therefore it can be concluded that the issue is a persistent one.

Boron, chloride, sulfate, and total dissolved solids ("salts") are currently being addressed in the Calleguas Creek Watershed through the implementation of the Calleguas Creek Salts Total Maximum Daily Load (TMDL), adopted by the Los Angeles Regional Water Quality Control Board in October 2007. The CCW Salts TMDL only applies during dry weather and applies to the receiving water, not at tributary outfalls. During the first three years of the TMDL implementation plan for the watershed, the primary implementation action is water conservation, a program all Permittees have. The ultimate goal of the TMDL is to bring the watershed into "salt balance" where the inputs of salts are equal to or less than the amount of salts exported out of the watershed during dry weather. Water conservation on the part of municipalities reduces the input side of the equation. The salts loading calculation is performed on an annual basis and wet weather exports are not considered in the analysis. Beyond water conservation, the proposed implementation plan does not include many options for MS4 dischargers. Most of the planned actions are construction of groundwater desalters and wastewater treatment plants reverse osmosis as these are considered to be the major source of the salts. Municipal stormwater actions to control salts are limited due to the fact that most salts in runoff come from source water supplies. The primary course of action for municipalities is to reduce outdoor water use, thereby limiting the amount of runoff that may contain high salts from entering urban tributaries and receiving waters. Permittees have also taken steps to the prohibition of discharges from Salt

Water pools. Camarillo has conducted outreach to pool service companies and provided articles in their local newsletter to residents alerting them that they cannot discharge salt water pools to the storm drain system. The City of Thousand Oaks and Simi Valley also banned the discharge of salt water pools to the storm drain system. Self-regenerating water softeners are a source of salts in the watershed, though not commonly to the storm drain system. Permittees have prohibited their use at commercial and industrial facilities, while education is provided to discourage their use by residents. These are all efforts that should assist with reducing salts in the watershed.

Table 9-26 Salts detected above Basin Plan Site-specific Objectives

Salts detected above Basin Plan Objective						
Site	Event 1 (Wet)	Event 2 (Wet)	Event 3 (Wet)	Event 4 (Wet)	Event 5 (Wet)	Event 6 (Dry)
Calleguas Creek Watershed						
ME-CC		NQE		NQE	NQE	TDS & Chloride
MO-CAM		NQE		NQE		
MO-MPK		NQE		NQE		Dry
MO-SIM		NQE		NQE		TDS & Chloride
MO-THO	Chloride	NQE		NQE		Chloride
Santa Clara River Watershed						
ME-SCR	Dry	Dry	TDS	NS	TDS & Chloride	TDS & Chloride
MO-FIL				NQE		TDS
MO-OXN				NQE	NQE	Dry
MO-SPA				NQE		Dry
MO-VEN				NQE	NQE	Dry
Ventura River Watershed						
ME-VR2				NS		
MO-OJA					NQE	TDS & Chloride
MO-MEI					NQE	Dry
Coastal Watershed						
MO-HUE		NQE		NQE	NQE	
Dry – Not sampled during this event due to insufficient flow and/or rainfall at site NQE – Non-Qualifying Event with less than 0.15 inches of rain NS – Not sampled						

Other Constituents

No other constituents were found to cause or contribute to exceedances of water quality objectives.

The Program also measured pH levels below the Basin Plan's 6.5 – 8.5 standard unit range during wet weather at MO-OXN during Event 1 and at MO-SPA during Event 2, and above the maximum objective at MO-CAM and MO-THO during Event 3. The pH was also elevated at MO-CAM during dry weather (Event 6). Elevated pH is commonly observed during dry weather in concrete lined channels. No exceedances of the Basin Plan pH range objective were observed at any of the receiving water stations during the 2014/15 season. The lack of exceedances for pH at the receiving water stations indicates that pH levels in urban runoff did not affect receiving water beneficial uses with regard to this parameter.

Methylene Blue Active Substances (MBAS) were measured above the Basin Plan Objective of 5 mg/L at several major outfalls during the 2014/15 season, including MO-OXN (Event 1), MO-SPA (Events 1 and 5), MO-OJA and MO-MEI (Event 3), and MO-CAM (Event 5). MBAS measures anionic surfactants (i.e. detergents or foaming agents). Possible sources include residential car washing and cleaning of restaurant mats and outdoor areas. These issues are routinely the subject of the Business Inspection Program and Illicit Discharge Investigations. MBAS exceedances were not observed at the receiving water stations.

Table 9-27 Other constituents detected above Basin Plan Objective

Other Constituents detected above Basin Plan Objective						
Site	Event 1 (Wet)	Event 2 (Wet)	Event 3 (Wet)	Event 4 (Wet)	Event 5 (Wet)	Event 6 (Dry)
Calleguas Creek Watershed						
ME-CC	Chlorine Residual	NQE	Chlorine Residual	NQE	NQE	
MO-CAM		NQE	>pH	NQE	MBAS	Perchlorate >pH
MO-MPK	Perchlorate	NQE		NQE		Dry
MO-SIM		NQE		NQE		
MO-THO		NQE	>pH	NQE		Ammonia as N
Santa Clara River Watershed						
ME-SCR	Dry	Dry	NO3+NO2-N	NS		
MO-FIL	Perchlorate			NQE		
MO-OXN	Perchlorate MBAS <pH			NQE	NQE	Dry
MO-SPA	Perchlorate MBAS	<pH		NQE	MBAS	Dry
MO-VEN	Perchlorate			NQE	NQE	Dry
Ventura River Watershed						
ME-VR2				NS		
MO-OJA				MBAS	NQE	
MO-MEI				MBAS	NQE	Dry
Coastal Watershed						
MO-HUE		NQE		NQE	NQE	

Dry – Not sampled during this event due to insufficient flow and/or rainfall at site
NQE – Non-Qualifying Event with less than 0.15 inches of rain
NS – Not sampled
Chlorine Residual – Total Chlorine Residual
<pH – below minimum objective
>pH – above maximum objective
NO3+NO2-N – Nitrate plus nitrite as nitrogen

Elevated levels of ammonia as N were measured at MO-THO in Event 6 but the objectives were not exceeded at the corresponding receiving water stations so there is not a cause or contribute relationship. Common sources of ammonia include wastes (e.g. landfill leachate, septic seepage, industrial point sources), fertilizers (agricultural and urban runoff, manure application), and natural processes (atmospheric sources, riparian de-vegetation etc.).

Elevated levels of nitrate + nitrite as nitrogen and nitrate as nitrogen were observed at ME-SCR in Event 3 but were not observed in any of the major outfall samples in the 2014/15 monitoring year, therefore there does not appear to be a cause or contribute relationship between the MS4 and the receiving water. Nitrate is a main component of fertilizer, and nitrite oxidizes readily into nitrate. Agriculture is a large component of land use in the Santa Clara River Watershed.

Elevated levels of perchlorate were seen at MO-FIL, MO-OXN, MO-SPA, MO-VEN, and MO-MPK in Event 1 and at MO-CAM in Event 6. Perchlorate has both natural and manmade sources. It can be found in rocket propellant, fireworks, explosives, and road flares and as a contaminant in some bleach and fertilizers. It is primarily associated with defense contracting, military operations, and aerospace programs. Other uses of perchlorates include temporary adhesives, electrolysis baths, batteries, air bags, drying agents, etching agents, cleaning agents and bleach, and oxygen generating systems. Perchlorates are also used for making other chemicals. Many years ago, perchlorates were used as a medication in the United States to treat overactive thyroid glands, and they still have some medical uses in the United States and other parts of the world. Perchlorate is also used in treatment of side effects of amiodarone, a drug used in the treatment of cardiac arrhythmias and angina. Fireworks are legal in Fillmore, therefore the elevated levels of perchlorate that were seen at MO-FIL during Event 1 may have accumulated from celebrations involving fireworks (e.g. Independence Day). While fireworks are not legal in the other areas of Ventura County, they may have contributed to the perchlorate detected at the other sites.

Total chlorine residual is a Pollutant of Concern for ME-CC due to the contributions of wastewater treatment plants.

9.7.6 Individual Permittee Efforts on Pollutants Observed at Elevated Levels

Individually, the Permittees have taken, or are committing to take specific actions such as studies to purchasing new equipment to address pollutants found in their outfalls that may be causing or contributing to an exceedance of a water quality standard, or is only seen at an elevated level in their outfall, but not in the receiving water. These are detailed below.

Camarillo

Camarillo is an active participant in the Countywide Stormwater program and supports the actions that were discussed in the section above.

In addition to the countywide discussion in the monitoring section of the 2012-2013 annual report, please also refer to the "Public Outreach, Public Agency Activities, Construction, Planning and Land Development, Illicit Discharge, and Business Program" sections of the annual report for a list of actions Camarillo has taken and will continue to implement in the current year and future years to address elevated levels of bacteria, aluminum and other constituents that were found in our urban outfall monitoring station. The following are a few highlights of actions taken by Camarillo:

Camarillo educates its residents on pollution prevention controls via our local Cityscene Newsletter that is mailed to over 18,000 residents. Articles that assist with addressing the problems with bacteria, aluminum, chloride, copper and other constituents include information on how to control pet waste and construction debris such as sediment, proper use and application of pesticides and disposal of yard waste, proper disposal of swimming pool discharges, trash management, and proper maintenance of vehicles (please refer to the PIPP section of this report for a list of these articles). In addition to the Cityscene article to residents on swimming pool discharges, Camarillo conducted a mass mailout to pool service companies alerting them to the prohibition of salt water pool discharges and proper maintenance of swimming pools. Camarillo also mails and will continue to mail this same pool maintenance information to all pool construction permit applicants.

Camarillo was an active participant in the CASQA Brake Pad Partnership Subcommittee which was successful in getting legislation passed (SB-346) to reduce the level of copper in brake pads. The first visible steps to implement SB-346 are underway with the certification of brake pads for compliance with the toxic metals, asbestos, and copper standards being undertaken to meet the January 1, 2014 certification deadline.

Further, since several constituents may be attached to sediment, Camarillo recently increased the inspection of construction sites to quarterly for private developments and monthly for city capital improvement program projects which should help to ensure sediment and erosion controls are being properly applied. Further, Camarillo has two QSD/QSPson staff with the underlying certifications of CPSEC and CIESC to assist with insuring proper controls are being applied at construction sites. In addition, the stormwater program manager has obtained the CMS4S certification.

Further, with assistance from District staff, additional dry weather monitoring of bacteria was conducted in October 2012; however, there were no standout contributors to the higher levels of bacteria found at the urban outfall station. Although Camarillo completed the required illicit screening of outfalls in 2012, to address the higher levels of pH detected in the countywide dry weather monitoring in 2013 and 2014, we conducted further dry weather screening of the channel upstream of our urban outfall monitoring station in May, August and October 2013, May 2014, and July 2015.. The results of the screening did not locate any illegal discharges, only trickles of irrigation water. The pH levels taken in what little dry weather runoff was found were between 6.53 and 7.21. Camarillo will continue to screen this channel during dry weather runoff in the current Permit year.

In addition to the above actions, Camarillo is an active participant in the Calleguas Creek Watershed Management Program (CCWMP). Please refer to the December 15, 2015Calleguas Creek Watershed TMDL Monitoring Program Annual Report for the period of July 2014 to June 2015, which was sent to the Los Angeles Regional Water Quality Control Board staff. This report provides details on compliance with the TMDLs in which Camarillo is listed as a responsible party. At this point, the majority of special studies identified in the TMDLs have been completed and almost six years of TMDL monitoring data are available for analysis. Through a review of the special study results and monitoring data, it has been determined that some constituents will not meet the TMDL targets and allocations without implementing further actions. As a result, the stakeholders initiated development of an implementation plan to identify the additional actions necessary to meet the remaining TMDL requirements and 303(d) listings. The implementation plan will outline the steps Stakeholders will take to address the remaining water quality issues in the Calleguas Creek Watershed. It will be developed in two phases. A draft of Phase I of the implementation plan was issued in February 2015. The draft Phase I Implementation Plan conveys which pollutants are watershed priorities, the magnitude of reduction necessary to bring the priorities into compliance, where appropriate regulatory strategies may affect the water quality objectives, the BMPs to control the discharge of the priorities, and a framework to develop scenarios of watershed controls. Phase I will provide the Stakeholders with the tools and a roadmap to develop scenarios of regulatory strategies, institutional controls and watershed actions. Phase II of the plan will integrate developed scenarios into the modeling framework to demonstrate that the proposed actions will result in receiving water compliance with standards. Between Phases I and II, the stakeholders will collaboratively develop the implementation scenarios. The complete implementation plan will be comprised of work products developed in Phases I and II.

Also, please refer to the 2014-2015 Annual Report for the Revolon Slough and Beardsley Wash Trash TMDL, which was submitted to the Los Angeles Regional Board on December 15, 2015. This report provides monitoring results and Camarillo's compliance strategies being implemented and proposed for future years, which includes the installation of full capture trash devices in applicable catch basin inlets within the Revolon Slough/Beardsley Wash subwatershed by March 2016.

County of Ventura

The County is an active participant in the Countywide Stormwater program and supports the actions that were discussed in the section above. In addition, County participates and, in many cases, leads stakeholder efforts to meet monitoring and implementation of the effective TMDLs. Section 2.3.3 provides summary of plans, reports, and documentation produced by various TMDL responsible parties including the County and TMDL Memorandum of Agreement (MOA) groups to meet the TMDL implementation schedule requirements.

In response to elevated concentrations of some of the stormwater pollutants at the County's stormwater monitoring station, the County initiated stormwater treatment efforts in the County Unincorporated Urban areas. The County successfully applied for State grant funding for four stormwater retrofit projects including:

1. Ventura County Government Center Parking Lot Green Streets Retrofit project located at 800 S. Victoria Ave, Ventura, CA. Construction completed in September 2014. The project captures 100% of nuisance flows and the first flush stormwater discharges from 39 acres of impervious parking lot area for infiltration and groundwater recharge. Total project cost is $1.9M.

2. Meiners Oaks Urban Low Impact Development Retrofit project. Construction will be completed in March 2016. The project captures nuisance flows and stormwater runoff from 40% urbanized area (or over 36 acres) of Meiners Oaks community to meet Ventura River Algae TMDL compliance. Total project cost is $952,000.

3. El Rio Retrofit for Groundwater Recharge. Construction will be completed by May 2016. The project captures 100% nuisance flows and the first flush stormwater discharges from 46 acres of residential community of El Rio for infiltration and groundwater recharge. Total project cost is $1.3M.

4. Oak Park Green Streets Retrofit project. Approximately 95% project design is to treat about 1,700,000 cubic feet of runoff annually from over 82 acres of residential area in Oak Park. The proposed biofiltration treatment is to meet compliance with Malibu Creek Bacteria TMDL. Construction has not been scheduled yet due to some community discontent about proposed landscaping changes to the County's right-of-way road medians. Total cost for the awarded project is $1.75M.

Each of the above listed State funded project includes BMP effectiveness monitoring and educational outreach including free to public Ocean Friendly Garden™ (OFG) seminars and hands on workshops conducted in cooperation with Surfrider Foundation and Green Garden Group. In 2015, the County offered series of 5 OFG seminars and hands on workshops at the County Government Center. Next year, similar series are planned in the community of Meiners Oaks, CA.

The County has been working on identifying potential stormwater treatment opportunities within its urban areas as a part of on-going development of TMDL Implementation Plan for Calleguas Creek Watershed TMDLs. In addition, County has been conducting preliminary planning for the projects and actions listed in the Implementation Plans for Santa Clara River Bacteria TMDL and Ventura River Algae TMDL (both plans are included in Appendix E).

In summer of 2015, the County conducted a special bacteria ID study in the community of Oak Park, CA as a follow up and expansion of the special bacteria ID study completed in 2013. The studies were designed to provide information about the sources of bacteria originating within the community drainage areas and for detailed planning and prioritizing BMP implementation. The Technical Memorandum discussing the design and results of the 2013 study is provided in Appendix E. County is in the process of preparing report for the 2015 study, which will be submitted in the next Annual Report. In addition, the County has participated in the Countywide Bacteria Special Study since fall of 2013. Dry weather urban runoff and stormwater samples were collected at Casitas Springs, Oak View, and Meiners Oaks outfalls, which represent discharges from the County urban areas above receiving water monitoring (mass emission) station in Ventura River.

The County has cooperated with Ventura County Resource Conservation District (VC RCD) to provide outreach and education regarding nutrient pollution caused by mismanagement of horse manure in the County's watersheds. VC RCD staff organized community meetings, distributed educational brochures "Watershed Protection Tips for Horse Owners", and conducted site visit for BMP evaluation and design assistance. VC RCD staff has been very active and supportive of horse and cattle owners in Ventura River watershed during development of the Algae TMDL (approved in June 2013). Under County's contract, VC RCD worked with a number of horse owners to provide planning and design support for on-site structural stormwater treatment and horse manure management BMPs.

In cooperation with Channel Island Beach Community Services District (CIBCSD), the County has been diverting dry-weather runoff from County unincorporated community of Silver Strand subject to Ventura Coastal Beaches Bacteria TMDL. In December 2014, the County submitted to RWQCB Bacteria TMDL Draft Compliance Report for Harbor Beaches of Ventura County (Kiddie Beach and Hobie Beach) as required by the TMDL Implementation Plan (copy of this report is provided in Appendix E).

To meet compliance with Trash TMDLs, County installed full trash capture devices including 15 in Ventura River Watershed and 8 in Revolon/Slough and Beardsley Wash (RS/BW). Additional site assessments are in progress to complete 100% compliance in RS/BW and Malibu Creek Watersheds. The County has been working with TMDL Responsible Parties to conduct trash monitoring programs in all subject watersheds as documented in the TMDL Annual Reports submitted to RWQCB (copies of these reports are provided in Appendix E).

Moorpark

Bacteria: The City recognizes that bacteria appears to be a common problem in many watersheds throughout the country, not only in Ventura County. It remains to be determined how effective any particular BMP is in attaining reduced bacteria levels in stormwater flow.

Aluminum: Moorpark supports a Special Study to determine if aluminum is a naturally occurring metal in the soils of Ventura County.

Arsenic detection: may need further research as it might be naturally occurring.

The City believes that the reduction of detects for pesticides in stormwater is from the public's recognition of the negative impacts of pesticides on lawns and the importance of water conservation by reducing water run-off.

Oxnard

As indicated by the 2012/2013 storm water monitoring results, elevated levels of E.coli and fecal coliform were detected at the MO-OXN during multiple wet weather sampling events. The MO-OXN is located in the El Rio Drain which receives stormwater and nonstormwater runoff from the El Rio, East Vineyard, and North Ventura subwatersheds. The El Rio drain (a tributary to the Santa Clara River) is located near the corner of Buckaroo Avenue and Winchester Drive.

In an effort to prevent or reduce elevated levels of E. coli and fecal coliform, the City of Oxnard Technical Services Program –Source Control (TSP-SC) division implements a stormwater program with established Best Management Practices (BMPs). During the 2012/2013 Permit year, TSP-SC staff conducted a comprehensive investigation of the El Rio, East Vineyard, and North Ventura subwatersheds by reviewing land use data, business inventories, and critical source inspection records. TSP-SC staff inspected businesses with a focus on outdoor trash enclosures, outdoor storage of waste and materials, and grease interceptor/clarifier maintenance. BMP information was provided regarding surface cleaning, waste management, and grease interceptor/clarifier maintenance. In addition, TSP-SC staff met with Wastewater Collections staff to review sanitary sewer overflow and grease interceptor overflow response protocol and training was provided for illicit discharge response.

TSP-SC staff reviewed the municipal storm drain atlas to locate all infrastructures that discharges into the El Rio Drain. Staff conducted field screening activities and walked the channels to identify possible sources of bacteria and illicit connections. In one instance, TSP-SC staff identified a homeowner who was throwing dog feces over they're backyard wall onto the access road along the El Rio drain. The resident was issued a notice of violation with a directive to clean and abate the illicit discharge activities. TSP-SC staff have since followed up and verified compliance. We have found that storm drain field screening is a simple yet effective BMP and we will continue this practice on an ongoing basis.

TSP-SC staff went into communities and identified possible bacteria sources such as homeless encampments, excessive dog feces, and farm animals (goats, chickens, etc.). TSP-SC staff worked with other City departments to disseminate information on homeless shelters, RV dumping stations, and pet owner brochures. Additional dog poop bags and dispensers were provided for affected neighborhoods. Training was provided to City Code Compliance officers with a focus on illicit discharge response and BMP information forms were put in a share drive so that all

City departments could access and download the forms as needed. In addition, the Oxnard Commission on Homelessness meets monthly to collaborate with residents, businesses, and charity organizations to find solutions for the homeless and address the problems created by homeless encampments.

The City of Oxnard is also a participating agency in a subcommittee to address the requirements of the Santa Clara River TMDL which became effective March 21, 2012. The City of Oxnard in partnership with the Cities of Fillmore, Santa Paula, Ventura, and the County of Ventura, have prepared an In-Stream Compliance Monitoring Plan for the Estuary and Reach 3 of the Santa Clara River. The Plan has been submitted to the Los Angeles Regional Water Quality Control Board and we are currently awaiting approval to implement the Monitoring Plan. Most recently, the subcommittee met to discuss the preparation of an implementation plan to address the SCR TMDL. Subcommittee staff have begun preparation of a request for proposal to hire a consultant to prepare the plan.

Over the past few months, TSP-SC staff have begun to modify the storm water training program for the various city departments. While we have traditionally focused our training on MS4 Permit compliance and BMP implementation, we have begun to introduce the concepts low impact development and green infrastructure to all levels of employees with an understanding that this is the new direction for storm water quality compliance. The City of Oxnard has historically been proactive in implementing LID projects such as permeable grass parking lots and water efficient landscaping. Capital Improvement Project managers and engineers are strongly encouraged to implement LID concepts whenever possible.

In addition to training city staff, TSP-SC staff attend Inter-Neighborhood Council Forums to conduct storm water compliance presentations and discuss issues with Oxnard residents. Residents are allowed to ask questions or present concerns regarding storm water to applicable city personnel. This also serves as a forum to disseminate storm water BMP handouts, posters, and bookmarks.

In hopes of making future program improvements, the City of Oxnard voted to allocate a portion of the Ventura Countywide Stormwater Quality Program's 2013 budget to fund a special bacteria source tracking study. The study will be conducted by the Southern California Coastal Water Research Project as part of the 2013 Southern California Bight Regional Monitoring Program. In addition, the Program will be taking additional samples at all major outfalls to analyze for the human marker (HF183), for 3 storm events. HF183 marker results will indicate frequency of human contamination at sample locations. It is the intent that these sample results will provide us with primary sources of pathogen indicators to help us to better implement target specific BMPs.

As we look forward to the coming 2013-2014 year, we plan to better utilize the capabilities of our Graphic Information Systems (GIS) Department. Currently, we use smart phone technology to comply with our Trash TMDL monitoring requirements. TSP-SC staff have been attending bi-monthly meetings with GIS staff to explore options regarding the use of Freeance Data Collection software to more effectively track illicit discharges/illicit connections and build a user friendly database. Our goal is to build a user friendly system that allows us to remotely access historical data or input current data for specific locations using smart phone or tablet technology.

TSP-SC staff are constantly evaluating what programs and BMPs are most effective. We have enlisted the help of all city departments with the common goal of meeting our water quality standards and maintaining the beneficial uses for our receiving waters. The City of Oxnard has been and will continue to be proactive and diligent in its efforts to implement BMPs to prevent or reduce the discharge of E. coli and fecal coliform.

Simi Valley

Simi Valley has addressed the occurrences of high aluminum and bacteria at the MO-SIM sampling site by performing additional upstream water sampling. Staff conducted sampling events on September 5, 2013 for bacteria and aluminum and November 13, 2013 for bacteria. No samples for aluminum were taken during the November 13th sampling event due to the low results during the September 5th sampling event. The November 13th samples were collected at the same locations as the September sampling at Bus Canyon Channel and the Bus Canyon Tributary with additional samples collected upstream of both the original locations at the Bus Canyon Tributary and First Street and the Bus Canyon Channel and Royal Avenue. All samples were taken during dry weather with very low flows in both channels.

As was expected the pumped groundwater entering the channel was neither a source of aluminum nor bacteria. Total Coliform and Entrococcus were less at the November sampling date at the Bus Canyon Channel than during the September sampling, however Fecal Coliform was higher. The November samples were also lower for Total Coliform and Entrococcus at the Bus Canyon Tributary and Fecal Coliform was once again higher. The samples collected upstream of the Bus Canyon sampling location were lower for Total Coliform and Entrococcus and the same for Fecal Coliform. This channel runs through a residential area with a middle school on one side of the channel. The upstream samples taken for the Bus Canyon Tributary were higher for Total Coliform and Entrococcus and lower for Fecal Coliform. The higher results may be due to the very low flow and nearly stagnant conditions at the upstream sampling location. The Bus Canyon Tributary is in a residential area.

The high bacteria samples may be due to native animal sources, residents disposing of pet waste along the channel, or possibly human activity in the channels. Staff will continue to monitor the bacteria levels and provide more intensive public outreach regarding proper pet waste disposal and general watershed guidelines.

Thousand Oaks

The City of Thousand Oaks supports and participates with the countywide Stormwater Program to reduce the inadvertent discharge of pollutants that may occur from its MS4. Thousand Oaks City staff work cooperatively with all programs making up the stormwater program as outlined in this report.

As part of its stormwater commitment, the City maintains a vigorous inspection program to minimize sediment transport from development sites. Administratively, project conditions for new development and redevelopment have been in place for many years requiring zero-runoff from a Q2 storm event and significant on-site BMPs to mitigate suspended solids transport. The City has addressed sediment problems such as routing nuisance flow from over 100 acres into parkland and adding a CDS unit to treat highway runoff. Such measures may help abate high levels of aluminum that are a component of local soils.

Programs have been implemented to control elevated levels of E. coli. Dog bags, for example, are supplied by the City in areas where dog walking occurs such as parks and public parkways. Where creek reconnaissance has discovered inappropriate waste disposal, additional dispensers and signage have been installed. Further, a microbial source identification study has been done to gain information about ways to control bacteria from anthropogenic sources. From these results, information outlining bacteria risks were directly mailed residents in the affected drainage area.

The source of the elevated level of chromium is unknown. One surmise is that it results from the wear of brake linings. If this is the case, relief may be coming through the implementation of SB 346 sponsored by the Brake Pad Partnership. Other Mitigation measures will be devised as information about the source becomes available.

The City through its participation with the Salts TMDL Implementation Plan continues to address issues related to stranded salts. Other efforts include an inspection program that measures total dissolved solids to locate and stop salt pool discharges. While this test is not conclusive, suggestive readings trigger an investigation into equipment used to generate chlorine. Pool Maintenance companies were also mailed literature describing the restrictions of salt pool discharges in the subwatershed.

Thousand Oaks is currently participating with Phase I and Phase II Implementation Plans in order to maximize effectiveness in controlling contaminant sources. By supporting such programs, participating with the county Stormwater Program, and independent work, the City of Thousand Oaks continues to expand on its base of information and to reduce contaminants to its storm drain system.

9.7.7 Mass Emission Calculations

Mass loadings were estimated for constituents detected at the ME-CC and ME-VR2 Mass Emission stations during the 2014/15 monitoring season. Mass loadings could not be calculated at the ME-SCR station because total flow could not be accurately measured, as described in Section 9.3.1. Mass loadings could also not be calculated for ME-VR2 for Events 5 and 6 as the flow meter had been removed for repairs at the end of the 2014/15 wet season (April 2015) and was not repaired in time. These records are included in the table below to indicate when a constituent was present, but the mass load could not be calculated.

Constituents that are inappropriate for mass emission calculations (e.g. bacteria, alkalinity, DO, conductivity, specific conductance, hardness, salinity, temperature, pH, turbidity, dissolved metals, dissolved phosphorus, etc.) are excluded from the calculations.

Mass loads were calculated by using the average flow total flow volume between first and last aliquot collection in cubic feet divided by the time elapsed between the first and last aliquots in seconds] measured in cubic feet per second, (cfs) estimated over the duration of a monitoring event and the concentrations of detected constituents. For grabs, this is the concentration measured in the grab sample. For composites, this is the concentration measured in the composite bottle, which is a combination of aliquots collected during the event. Event duration was defined as the number of hours elapsed between the collection of the first and the final aliquots by the composite sampler at each site. Event durations during 2014/15 at the ME-CC and ME-VR2 stations lasted from 4.5 hours (Event 1 at ME-VR2) to 25 hours (Event 2 at ME-VR2). Based on the average flow rate for a sampling event, loadings were calculated in lbs/event to allow for comparisons between sites as well as between events (see example in Table 9-28). These mass loading estimates are presented in Table 9-29 and Table 9-30.

Table 9-28. Example Mass Loading Calculation

Event 1 at ME-CC
Chloride concentration: 150 mg/L Event duration: 10 hours, 24 minutes = 10.40 hours
Average flow rate: 94.67 cfs 94.67 x 7.48 gal/cf x 3.785 L/gal = 2680.28 L/sec
Load = concentration x volume 2680.28 L/sec x 150 mg/L = 402,041.72 mg/sec 402,041.72 mg/sec x 60 sec/min x 60 min/hr x 10.40 hr/event x 1 kg/10^6 mg x 2.2 lb/kg = **33,115 lb/event**

Table 9-29. Estimated Mass Loadings at ME-CC

Classification	Constituent	Event 1 (Wet) 11/1/2014 10.40 hrs. (lbs/event)	Event 3 (Wet) 12/12/2014 5.82 hrs. (lbs/event)	Event 6 (Dry) 7/7/2015 19.98 hrs. (lbs/event)
Anion	Chloride	33115	93000	6810
Anion	Fluoride	79.5	310	13.3
Cation	Calcium	17000	188000	2590
Cation	Magnesium	9650	144000	1500
Conventional	BOD	3090	14600	ND
Conventional	COD	68400	906000	385
Conventional	Cyanide	ND	12.9	ND
Conventional	MBAS	8.4*	ND	1.6
Conventional	Phenolics	7.3	97.8	ND
Conventional	Total Chlorine Residual	88.3*	1460	1.2*

Classification	Constituent	Event 1 (Wet) 11/1/2014 10.40 hrs. (lbs/event)	Event 3 (Wet) 12/12/2014 5.82 hrs. (lbs/event)	Event 6 (Dry) 7/7/2015 19.98 hrs. (lbs/event)
Conventional	Total Dissolved Solids	155000	906000	29600
Conventional	Total Organic Carbon	6180	3340	148
Conventional	Total Suspended Solids	161000	1960000	29.6*
Conventional	Volatile Suspended Solids	24300	310000	ND
Hydrocarbon	Diesel Range Organics	137	239	3.3
Hydrocarbon	Oil and Grease	ND	ND	ND
Hydrocarbon	Oil Range Organics	110	ND	ND
Metal	Aluminum (Total)	4640	193000	3.6
Metal	Antimony (Total)	0.18	0.38*	0.01*
Metal	Arsenic (Total)	2.2	38.2	0.1
Metal	Barium (Total)	48.6	1430	1
Metal	Beryllium (Total)	0.16	8.1	ND
Metal	Cadmium (Total)	0.35	11.5	0.005
Metal	Chromium (Total)	11.7	644	0.01
Metal	Chromium VI	0.02*	0.29	0.005
Metal	Copper (Total)	10.4	334	0.12
Metal	Iron (Total)	5960	286000	5
Metal	Lead (Total)	5.1	167	0.004*
Metal	Mercury (Total)	0.009*	0.57	0.0004*
Metal	Nickel (Total)	11.5	548	0.17
Metal	Selenium (Total)	0.42	4.8	0.02
Metal	Silver (Total)	0.03*	0.83	ND
Metal	Thallium (Total)	0.05	2	ND
Metal	Zinc (Total)	37.5	1050	0.44
Nutrient	Ammonia as N	183	954	ND
Nutrient	Nitrate + Nitrite as N	1390	6200	198
Nutrient	Nitrate as N	1370	5960	195
Nutrient	Phosphorus as P (Total)	839	16700	77
Nutrient	TKN	1430	26200	4.4
Organic	Bis(2-ethylhexyl)phthalate	ND	ND	0.22
Organic	Butyl benzyl phthalate	ND	ND	0.009*
Organic	Diethyl phthalate	ND	ND	0.008*
Pesticide	4,4'-DDE	0.007*	0.03*	ND
Pesticide	Chlorpyrifos	0.004	0.16	ND
Pesticide	DCPA (Dacthal)	0.49	8.6	0.04
Pesticide	Diazinon	0.02	0.02*	ND
Pesticide	Dichlorvos	ND	ND	ND
Pesticide	Dimethoate	0.002*	0.1	ND
Pesticide	Disulfoton	ND	ND	0.001*
Pesticide	Glyphosate	11.9	18.6	0.07*
Pesticide	Malathion	0.05	0.08	ND
Pesticide	Pentachlorophenol	ND	0.17*	0.02*
Pesticide	Prometryn	2.6	0.33	0.003*
Pesticide	Simazine	ND	0.41	ND

ND - Constituent not detected, and, therefore, no estimated mass loading was calculated.

Classification	Constituent	Event 1 (Wet) 11/1/2014 10.40 hrs. (lbs/event)	Event 3 (Wet) 12/12/2014 5.82 hrs. (lbs/event)	Event 6 (Dry) 7/7/2015 19.98 hrs. (lbs/event)

* - Calculation of mass loading derived from result flagged as DNQ - constituent detected but not quantified (MDL < result < RL).

Table 9-30. Estimated Mass Loadings at ME-VR2

Classification	Constituent	Event 1 (Wet) 10/31/2014 4.53 hrs. (lbs/event)	Event 2 (Wet) 12/2/2014 25.03 hrs. (lbs/event)	Event 3 (Wet) 12/12/2014 5.37 hrs. (lbs/event)	Event 5 (Wet) 5/14/2015 8.53 hrs.	Event 6 (Dry) 6/23/2015 23.2 hrs.
Anion	Chloride	297	2190	1110	P	P
Anion	Fluoride	1.1	6.3	3.7	P	P
Cation	Calcium	300	1990	1210	P	P
Cation	Magnesium	86.2	576	326	P	P
Conventional	BOD	22.4	M	23	ND	ND
Conventional	COD	84.6	470	179	P	P*
Conventional	Cyanide	0.001*	ND	ND	P*	ND
Conventional	MBAS	0.15	0.94	0.23*	P*	P*
Conventional	Phenolics	0.03	M	0.22	P*	P*
Conventional	Total Chlorine Residual	0.08*	NA	NA	NA	NA
Conventional	Total Dissolved Solids	1010	14200	8080	P	P
Conventional	Total Organic Carbon	29.7	M	58.7	P	P
Conventional	Total Suspended Solids	48	M	136	P	P*
Conventional	Volatile Suspended Solids	9.1*	M	34.0*	ND	ND
Hydrocarbon	Diesel Range Organics	0.34	0.80*	0.60*	NS	P
Hydrocarbon	Oil and Grease	ND	ND	ND	P*	ND
Metal	Aluminum (Total)	1.9	2.3	4.5	P	P
Metal	Antimony (Total)	0.001*	0.003*	0.001*	P*	ND
Metal	Arsenic (Total)	0.005	0.03	0.01	P	P
Metal	Barium (Total)	0.15	1.1	0.62	P	P
Metal	Beryllium (Total)	ND	ND	0.0002	ND	ND
Metal	Cadmium (Total)	0.0003	0.001*	0.002	ND	ND
Metal	Chromium (Total)	0.004	0.006	0.009	P	P*
Metal	Chromium VI	0.0002*	0.001*	0.0003	P	P
Metal	Copper (Total)	0.01	0.05	0.02	P	P
Metal	Iron (Total)	2.7	10	7.7	P	P
Metal	Lead (Total)	0.002	0.003	0.005	P	P*
Metal	Mercury (Total)	0.00001*	ND	0.00005*	ND	P*
Metal	Nickel (Total)	0.01	0.11	0.05	P	P
Metal	Selenium (Total)	0.003	0.01	0.007	P	P
Metal	Silver (Total)	ND	0.0003*	0.001*	ND	ND
Metal	Zinc (Total)	0.03	0.07*	0.06	P*	P*
Nutrient	Ammonia as N	0.3	ND	0	ND	ND
Nutrient	Nitrate + Nitrite as N	1.7	2.8	2	P	P*
Nutrient	Phosphorus as P (Total)	0.85	3.9	2.1	P	P
Nutrient	TKN	6.9	7.5	3.7	P	ND
Organic	Benzo(g,h,i)perylene	ND	M	ND	ND	P
Organic	Bis(2-ethylhexyl)phthalate	ND	0.03*	0.07	ND	ND

Organic	Dibenz(a,h)anthracene	ND	M	ND	ND	P
Organic	Diethyl phthalate	0.01	M	0.05	P	P
Organic	Indeno(1,2,3-cd)pyrene	ND	M	ND	ND	P
Pesticide	Azinphos methyl	ND	ND	ND	P*	ND
Pesticide	Chlorpyrifos	0.0002	0.001	0.0003	ND	ND
Pesticide	Disulfoton	ND	ND	ND	P*	P*
Pesticide	Fensulfothion	ND	ND	ND	P	ND
Pesticide	Glyphosate	ND	M	ND	P	ND

ND - Constituent not detected, and, therefore, no estimated mass loading was calculated.
* - Calculation of mass loading derived from result flagged as DNQ - constituent detected but not quantified (MDL < result < RL).
NA - Not Applicable
P - Analyte present in sample but missing flow for mass load calculation
M - Analyte not analyzed due to limited sample volume

9.8 CONCENTRATION TRENDS

9.8.1 Methods

Trend analysis was performed for Ventura County's three mass emission station, using data collected between February 2001 (ME-CC and ME-VR/VR2) or November 2001 (ME-SCR) and April 2014. The trend analysis was performed separately for wet and dry weather events, and data for ME-VR and ME-VR2 were pooled to be consistent with the other stations, and to obtain sufficient data for trend analysis.

Concentration trends in time were determined by correlating the variables concentration and sampling date. Non-parametric statistical methods were used, based on the recommendations of Helsel and Hirsh (2002)[17], and therefore tests for normality or data transformations were not required. Trend analyses were performed for all constituents with more than 10% of the data above the limit of detection. Statistical procedures were based on Helsel and Hirsh (2002)[19] and Helsel (2012)[18], and varied based on the occurrence of observations qualified as non-detectable (NDs) and detectable but not quantifiable (DNQ), as summarized in Table 9-31. The statistical procedures used were able to incorporate variable detection and reporting limits. Trends were considered to be statistically significant at $p < 0.05$. Note that the non-parametric statistics do not assume or require linear trends.

Table 9-31. Statistical procedures and software for trend analysis

Statistic/Procedure	Constituent concentrations	Software
Kendall Tau	Always above reporting limit	Analyze-it for Microsoft Excel
Kendall Tau	< 90% of observations below detection limit, one detection limit, no DNQs	Analyze-it for Microsoft Excel
Kendall Tau	< 90% of observations below detection limit, multiple detection limits, no DNQs	R (package "NADA")
Wilcoxon score	< 90% of observations below reporting limit, DNQs and NDs occur	R (package "interval")
LOESS regression	n/a	R (function "loess")

[17] Helsel, D.R. and R. M. Hirsch, 2002. Statistical Methods in Water Resources. Techniques of Water Resources Investigations, Book 4, chapter A3. U.S. Geological Survey, 522 p.

[18] Helsel, D.R., 2012, Statistics for censored environmental data using Minitab® and R, 2nd ed., John Wiley & Sons, Inc., Hoboken, NJ, 324 p.

Whenever significant trends were found, we also determined if the trends were caused by one of the following co-variables: logarithm of flow (instantaneous for grabs, mean event flow for composites), logarithm of total suspended solids (for wet weather only) or antecedent dry period (time since last wet event with at least 0.1” of precipitation). Statistical procedures were based on Helsel and Hirsch (2002)[19] and consisted of (i) determining correlation (using Kendall Tau) between concentration and co-variables, (ii) if a significant correlation was observed, a non-parametric LOESS regression of concentration vs. co-variable was performed, (iii) the adjusted concentration was calculated by subtracting the LOESS trendline value from the concentration value, and (iv) the trend analysis was repeated for the adjusted concentrations versus time. The adjusted trends are a better representation of actual trends, and indicate if constituent concentrations *for a given flow*, or *for a given concentration of TSS*, have changed in time. Conversely, trends that are caused by patterns of flow, TSS or antecedent dry period would not be identified as significant trends in time.

Temporal trends of water quality exceedances were also determined. The total number of exceedances were summed and divided by the number of events for each monitoring year, for wet and dry events separately, in order to obtain an average number of exceedances per wet and dry event. For dry events, trends were determined between 2001 and 2014. For wet events, data prior to 2004 were not included, because some of the constituents that sometimes cause exceedances were not analyzed at the time. Statistical significance of trends was determined by correlating average annual number of exceedances with time (year) using Kendall Tau. All exceedances were determined by comparing to Basin Plan and CTR numerical water quality criteria, as detailed in Section 9.5.1.

9.8.2 **Concentration Trends**

Detailed information for all significant trends, including appropriate statistic (Kendall Tau or Wilcoxon score) and statistical significance, is shown in Table 9-32. Note that trends were adjusted for co-variables flow, TSS or antecedent dry period in Table 9-32. A summary of increasing and decreasing trends, including adjusted trends, is provided in Figure 9-9. None of the other constituents measured exhibited significant trends in time. The most relevant findings are discussed below, with example graphs to illustrate trends. Trends that were no longer significant after adjusting for effect of co-variables are not discussed below.

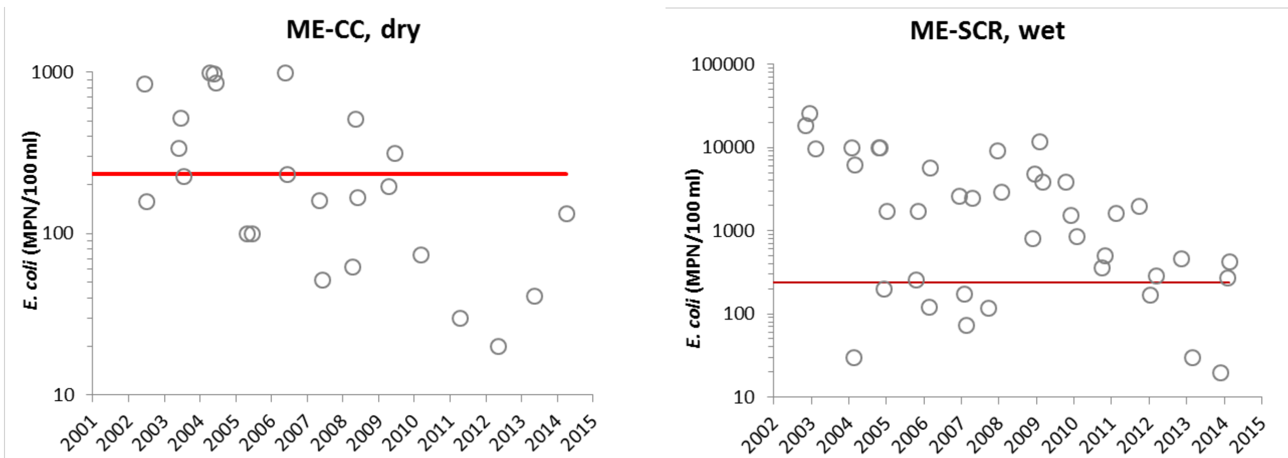
Figure 9-9. Summary of significantly increasing and decreasing trends at Mass Emission Stations. Decreasing trends are indicated by downward green arrows, increasing trends by upward red arrows. For metals, total fractions are indicated by full arrows, dissolved fractions by open arrows. Grey arrows indicate where a significant trend was initially found, but where adjusting for TSS (1), flow (2) or antecedent dry period (3) yielded non-significant trends.

Group	Analyte	DRY			WET		
		ME-CC	ME-SCR	ME-VR	ME-CC	ME-SCR	ME-VR
Bacteria	Coliforms, total					⬇	
	Coliforms, fecal	⬇					
	E. coli	⬇			⬇ 2	⬇	
	Enterococcus	⬇			⬇ 2	⬇ 3	
Nutrients	TKN	⬇	⬇		⬇ 2		⬇
	Phosphorus, dissolved	⬆ 2					
Conventional	Hardness						⬆
	TDS						⬆
	Chloride	⬆ 2			⬆ 2		⬆ 2
	Conductivity	⬆	⬇		⬆ 2		
	BOD	⬇	⬇				
	TOC	⬇	⬇				⬇ 1
	TSS						⬇ 2
	pH			⬇			
	Phenolics						⬇
Organics	Phenol					⬇	
	DEHP					⬇	
Pesticides	Dacthal	⬆				⬆	
	Diazinon	⬇			⬇		
Metals	Aluminum					⇩	
	Arsenic	⬆	⇩ ⬇		⬇ 1	⇩	
	Barium		⬇				
	Antimony				2 ⇩ ⬇		
	Cadmium				⬇ 1	⇩	⇩ ⬇ 1
	Chromium	⇩ ⬇	⇩	⇩ ⬇	⇩ ⬇ 1	⇩	⇩ ⬇ 1
	Chromium (VI)				⬇		
	Copper	⇩ ⬇	⇩ ⬇	⇩ ⬇	⬇ 1	⇩	1 ⇩ ⬇ 1
	Iron	⇩			⇩	⇩	⇩ ⬇
	Mercury				⬇ 1		
	Nickel	⇩ ⬇	⇩ ⬇	⇩ ⬇	⇩ ⬇ 1		⬇ 1
	Lead	⬇		⬇	⇩ ⬇ 1		1 ⇩ ⬇ 1
	Selenium	⇩	⇩		⇩ ⬇	⇩ ⬇ 1	⇩ ⬇
	Silver				⬇		
	Thallium				⬇ 1		
	Zinc	⇩ ⬇		⇩ ⬇	⬇ 1		⇩ ⬇ 1

Indicator bacteria

Dry-weather ***E. coli*** and ***Enterococcus*** concentrations have significantly decreased at ME-CC since 2001, to the point that water quality objectives are no longer exceeded at ME-CC (Figure 9-10). Decreasing **total coliform** and ***E. coli*** wet-weather concentrations were observed at ME-SCR.

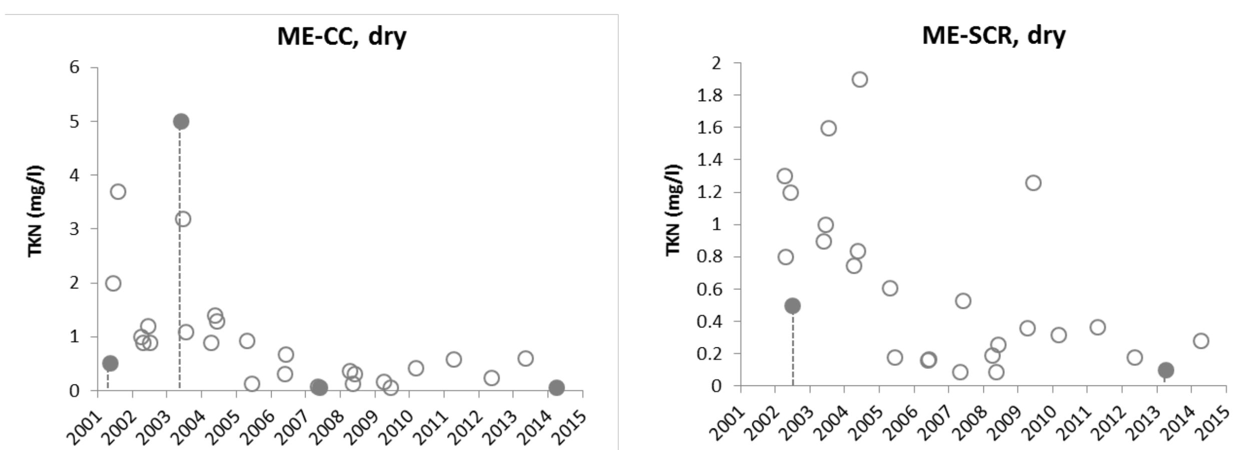
Figure 9-10. Decreasing E. coli concentrations at ME-CC (dry-weather) and ME-SCR (wet-weather). Red lines indicate Water Quality Objective.



Nutrients

Dry weather **TKN** concentrations decreased at ME-CC and ME-SCR (Figure 9-11), and wet weather TKN concentrations at ME-VR/VR2 only. The initially observed decreasing trend of wet weather TKN concentrations at ME-CC did not hold when accounting for flow magnitude. No trends were observed for other nitrogen and phosphorus species.

Figure 9-11. Dry weather Total Kjeldahl Nitrogen (TKN) concentrations at ME-CC and ME-SCR. Concentrations below the detection limit are indicated by full grey symbols at detection limit value, connected by dotted line to zero.



Conventional analytes

BOD and **TOC**, measures of organic compounds in water, exhibited decreasing dry-weather concentrations trends at ME-CC and ME-SCR. Patterns for both measures are the same at both locations, an example is shown in Figure 9-12.

Dry-weather **conductivity** has decreased at ME-SCR, but increased at ME-CC (Figure 9-13).

TDS and **hardness** increased at ME-VR for wet-weather (Figure 9-14). Concentrations of phenolics in wet-weather decreased at ME-VR, but note that these compounds have only been measured since 2009.

Figure 9-12. Decreasing dry-weather TOC concentrations at ME-SCR. Graph on right has different y-axis scale.

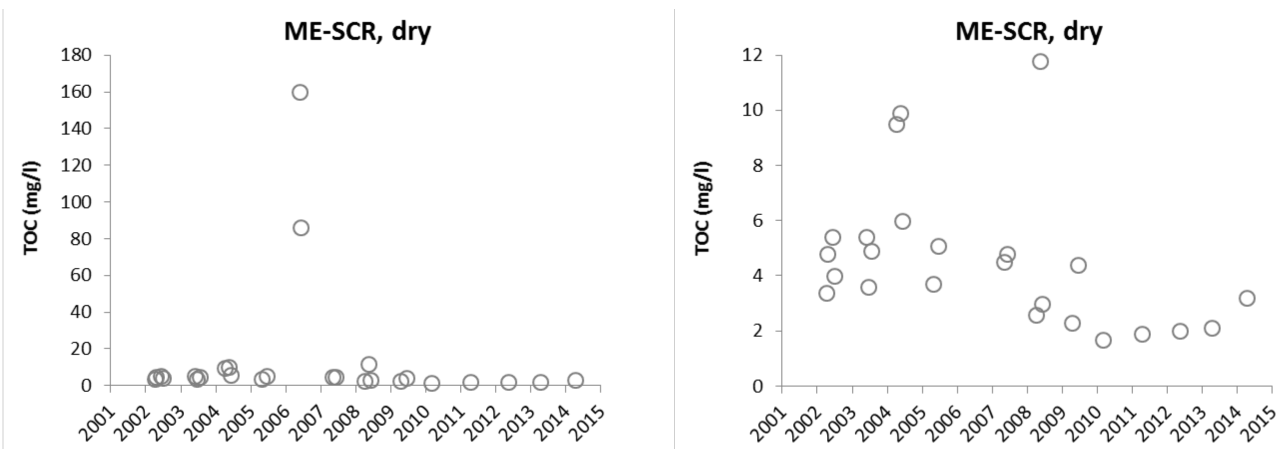


Figure 9-13. Dry weather Conductivity at ME-CC (increasing) and ME-SCR (decreasing).

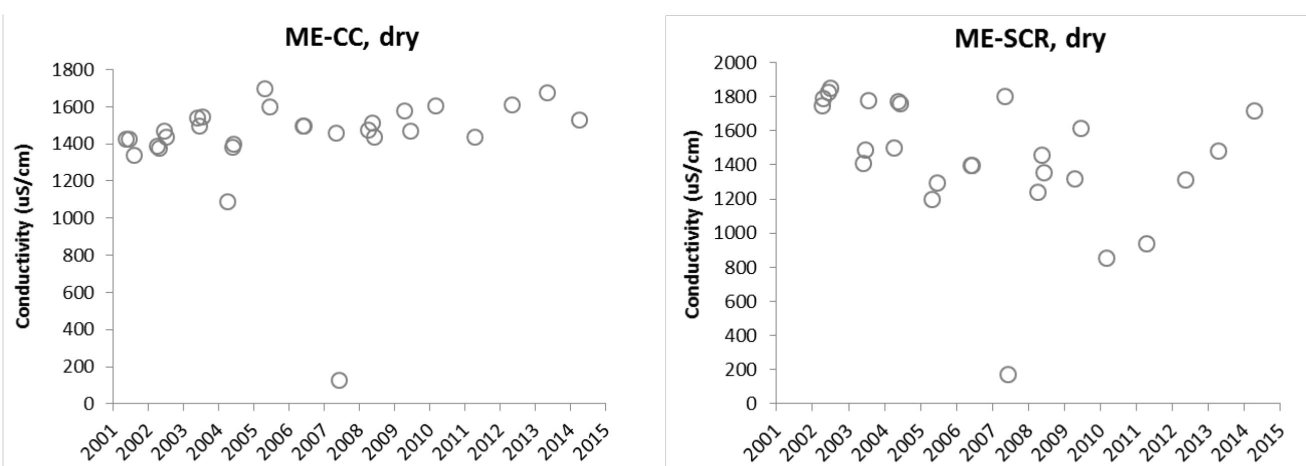
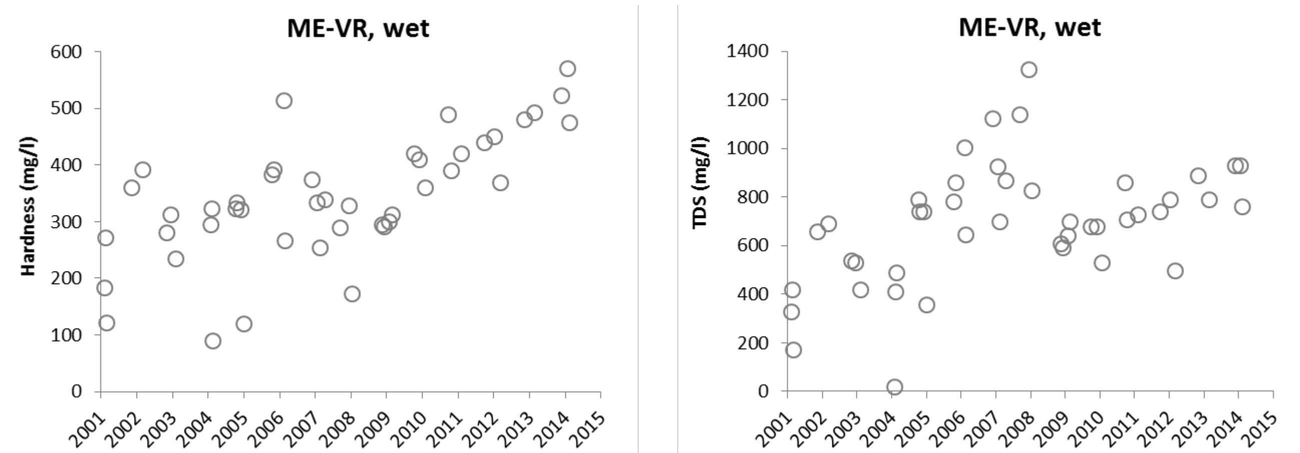


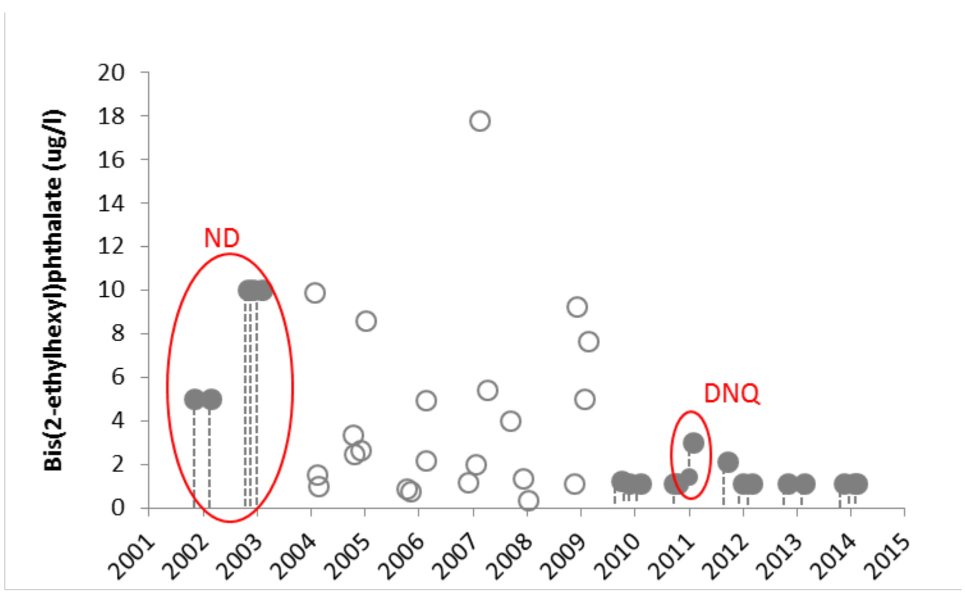
Figure 9-14. Increasing TDS and hardness at ME-VR during wet-weather.



Organic compounds and pesticides

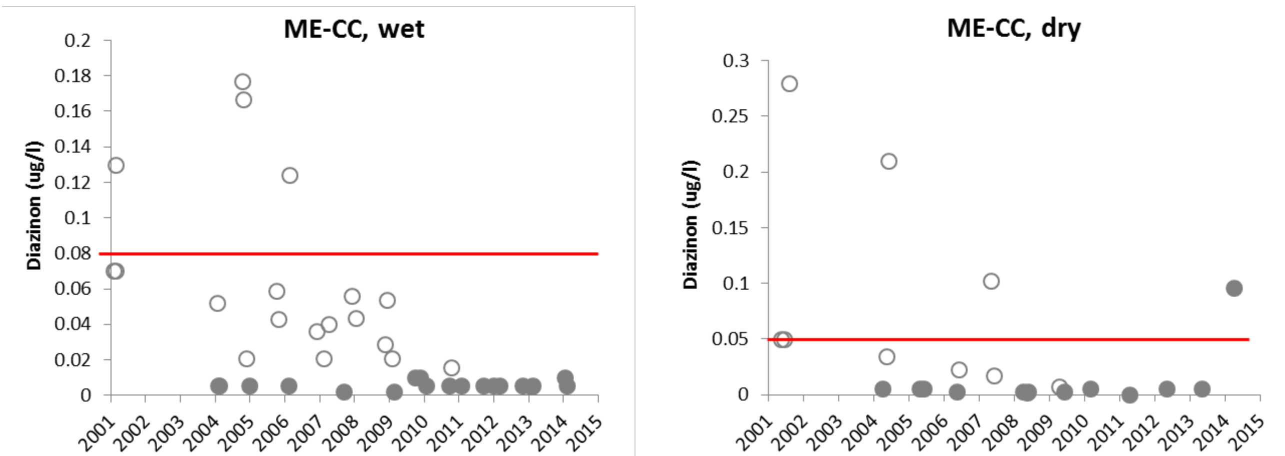
Wet-weather concentrations of bis(2-ethylhexyl)phthalate (DEHP) (Figure 9-15) and phenol decreased at ME-SCR. Phenol decreases were largely driven by exceptionally high concentrations in 2001, and measurements since December 2008 have consistently been below detection limit (0.35 µg/l or less).

Figure 9-15. Decreasing concentrations of bis(2-ehtylhexyl)phthalate at ME-SCR during wet-weather. Concentrations below the reporting or detection limit are indicated by full grey symbols at detection limit value, connected by dotted line to zero. Examples of occurrences of non-detects (ND) and detectable but non-quantifiable (DNQ) are shown in red.



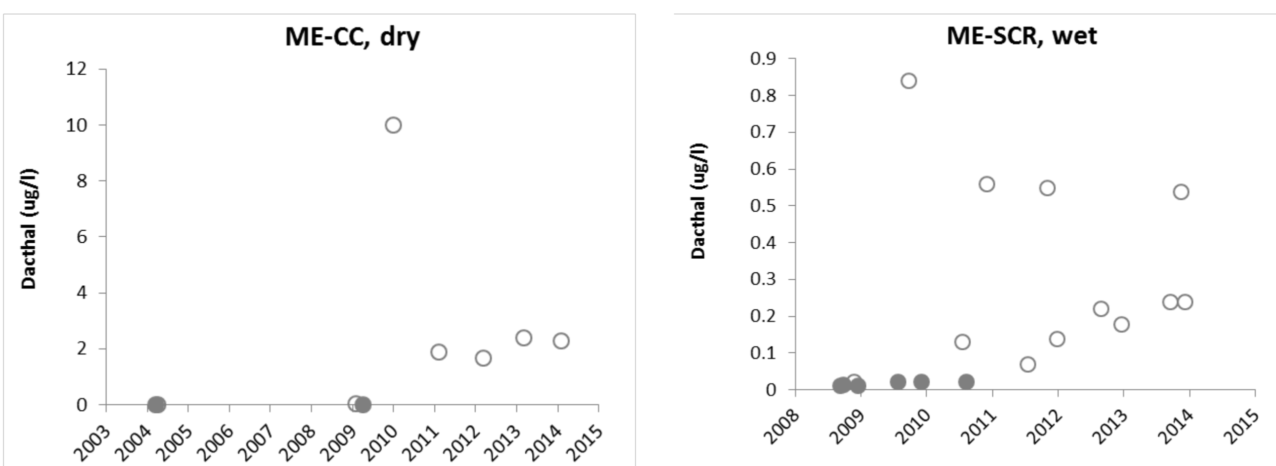
Dry and wet weather concentrations of the pesticide **diazinon** have decreased at ME-CC, to the point that concentrations higher than the Department of Fish and Game aquatic life criteria have not been observed since 2006 for wet weather and since 2007 for dry weather (Figure 9-16). The U.S. EPA phased out residential uses of diazinon, with a sales ban in the U.S. as of December 31, 2004, which appears to have effectively decreased concentrations at ME-CC. Remaining detections are likely due to the continued use by agriculture and commercial residential uses.

Figure 9-16. Diazinon trends at ME-CC. California Department of Fish and Game recommended criteria are shown by a red line (continuous concentrations for dry weather and maximum concentrations for wet weather). Concentrations below the detection limit are indicated by full grey symbols at detection limit value.



Concentrations of **dacthal**, used as a pre-emergence herbicide, have increased at ME-CC (dry-weather) and ME-SCR (wet-weather), since measurements started in 2004 and 2008, respectively. Concentrations do not exceed the USEPA IRIS Reference Dose (70 µg/l) and US EPA National Recommended Water Quality Criterion for protection of freshwater aquatic life of 14,300 µg/l (instantaneous maximum). However, the US EPA National Recommended Water Quality Criterion for protection of human health & welfare of 0.008 µg/l is usually exceeded. Note that none of the referenced criteria for dacthal are applied as water quality objective.

Figure 9-17. Concentrations of dacthal at ME-CC (dry-weather) and ME-SCR (wet-weather). Concentrations below the detection limit are indicated by full grey symbols at detection limit value.



Metals

Concentrations of many metals have decreased since 2001 at all mass emission stations. Decreasing dry-weather trends were observed for **chromium**, **copper**, **nickel** and **zinc** for both total and dissolved fractions, at most stations (examples for copper are shown in Figure 9-18). Dissolved concentrations of these metals decreased in some cases for wet-weather as well.

Selenium concentrations have also decreased in many cases since 2001. Only dissolved selenium concentrations decreased during dry-weather, but both dissolved and total fractions during wet-weather (Figure 9-19).

Concentrations decreases for **lead** were mostly observed during dry-weather, while those for **iron** and **cadmium** during wet-weather.

Arsenic concentrations have increased at ME-CC during dry-weather, but increases are small, and the maximum observed concentration of 4.5 µg/l is still well below the water quality objective of 50 µg/l.

Figure 9-18. Dry-weather dissolved and total copper concentrations at ME-SCR and ME-CC. Concentrations below the detection limit are indicated by full grey symbols at detection limit value.

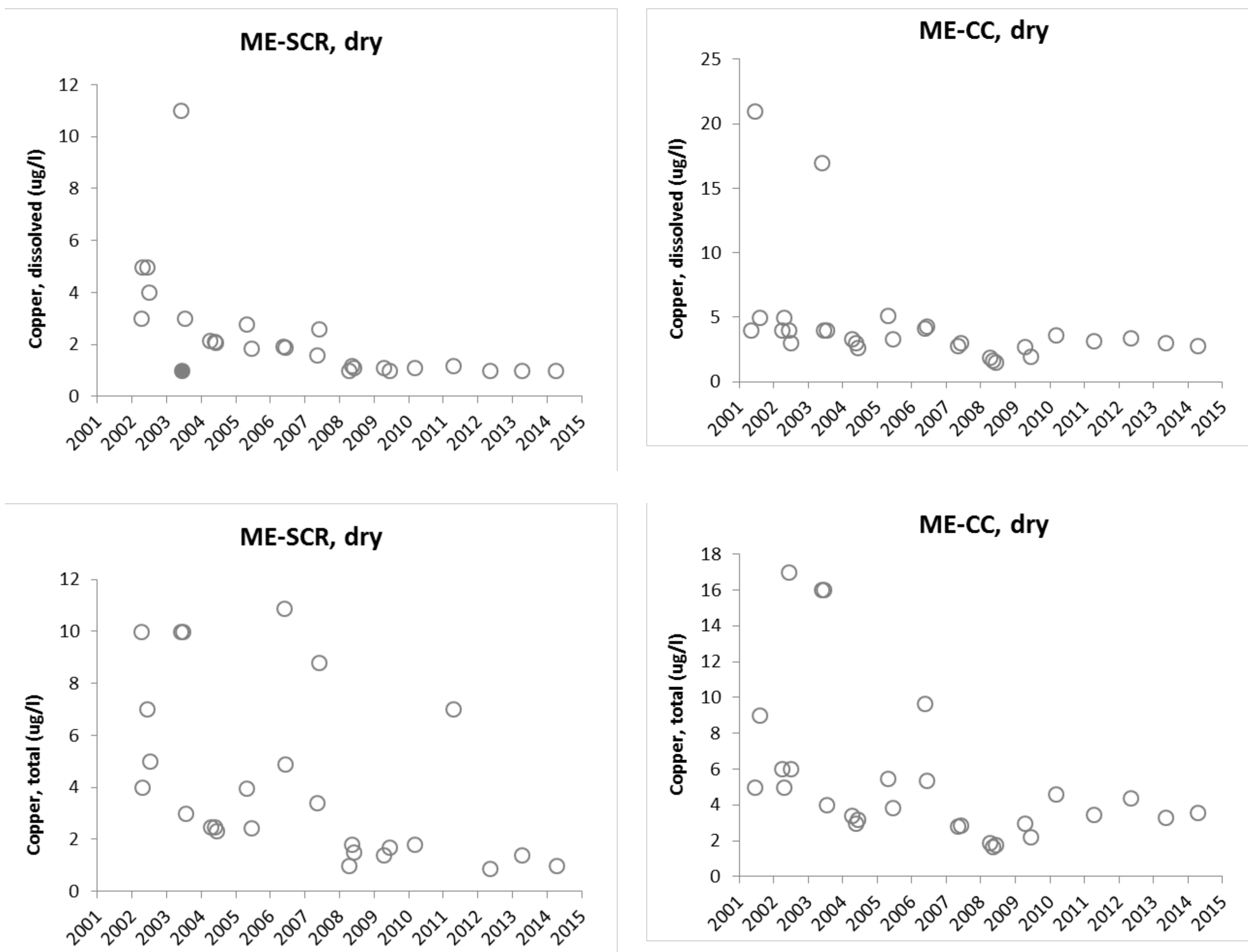


Figure 9-19. Wet-weather total and dissolved selenium concentrations at ME-CC. Concentrations below the detection limit are indicated by full grey symbols at detection limit value.

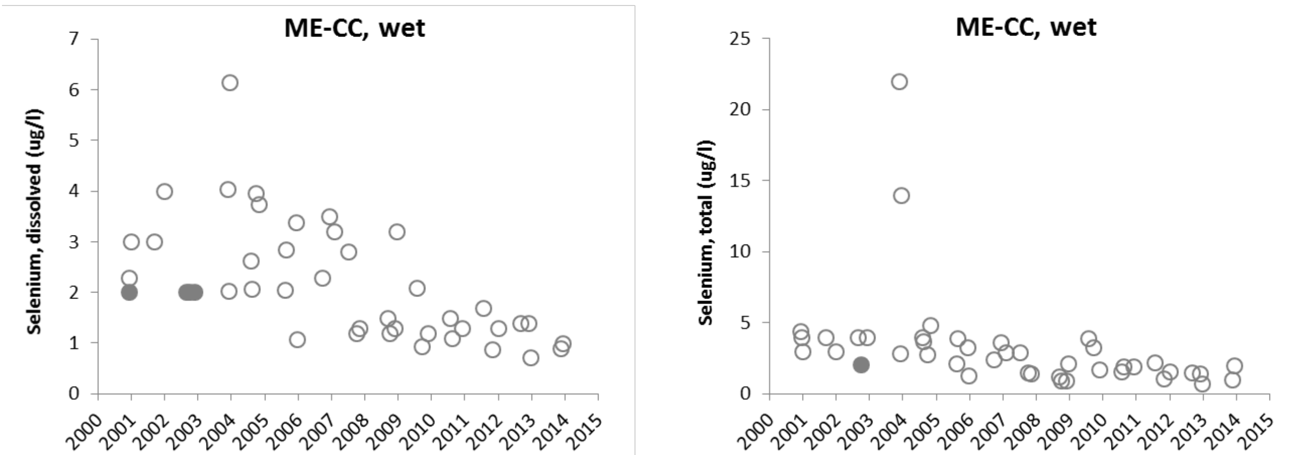
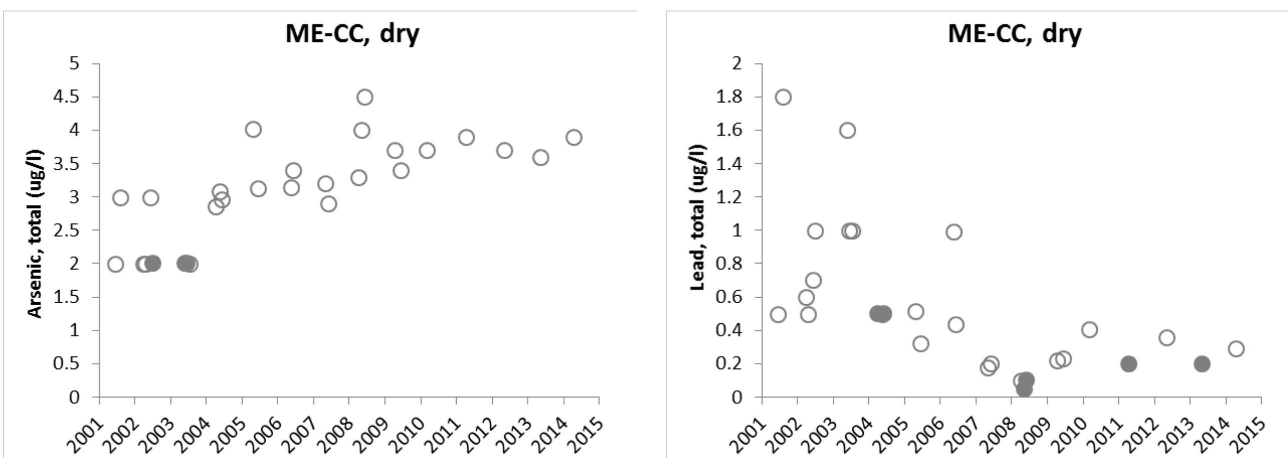


Figure 9-20. Dry-weather concentrations of arsenic and lead at ME-CC. Concentrations below the detection limit are indicated by full grey symbols at detection limit value.



Trends in Water Quality Exceedances

The number of exceedances per event was calculated by dividing the total number of exceedances each year by the number of events sampled. Calculations were performed for each station, separately for dry-weather and wet-weather. Wet-weather trends were only calculated from the 2003/04 season, as the number of analytes measured and analytical methods were too different in previous seasons. Trends are plotted in Figure 9-21, with LOESS trend lines and Kendall Tau statistic and significance.

The number of exceedances has decreased significantly at ME-CC, for dry-weather and wet-weather, and at ME-VR2, for wet-weather only. Higher numbers of wet-weather exceedances are often related to metal exceedances (in particular for cadmium, chromium and nickel), which are in turn correlated with TSS concentrations caused by high flow events. Therefore, the decreasing trends are caused, at least in part, by the high metal concentrations during the large storms observed in 2004 and 2005, implying that the decreasing trend may be reversed if larger storm events occur in the future.

No significant trend in exceedances was observed at ME-VR/VR2 during dry-weather. However, the number of exceedances per event at this location has always been very low, between zero and one, implying that decreasing trends will only be observed if no exceedances occur for several years in a row.

No significant trends in exceedances were observed at ME-SCR. The above average number of exceedances observed for the 2013/14 wet season was due to exceedances for chloride and total dissolved solids, likely related to drought conditions.

Table 9-32. Significant trends at mass emission stations, after adjusting for effects of co-variables. Test statistic is Kendall Tau correlation, unless indicated by asterisk, where test statistic is Wilcoxon score. Decreasing trends are indicated by negative Kendall Tau but positive Wilcoxon score statistics, and vice versa.

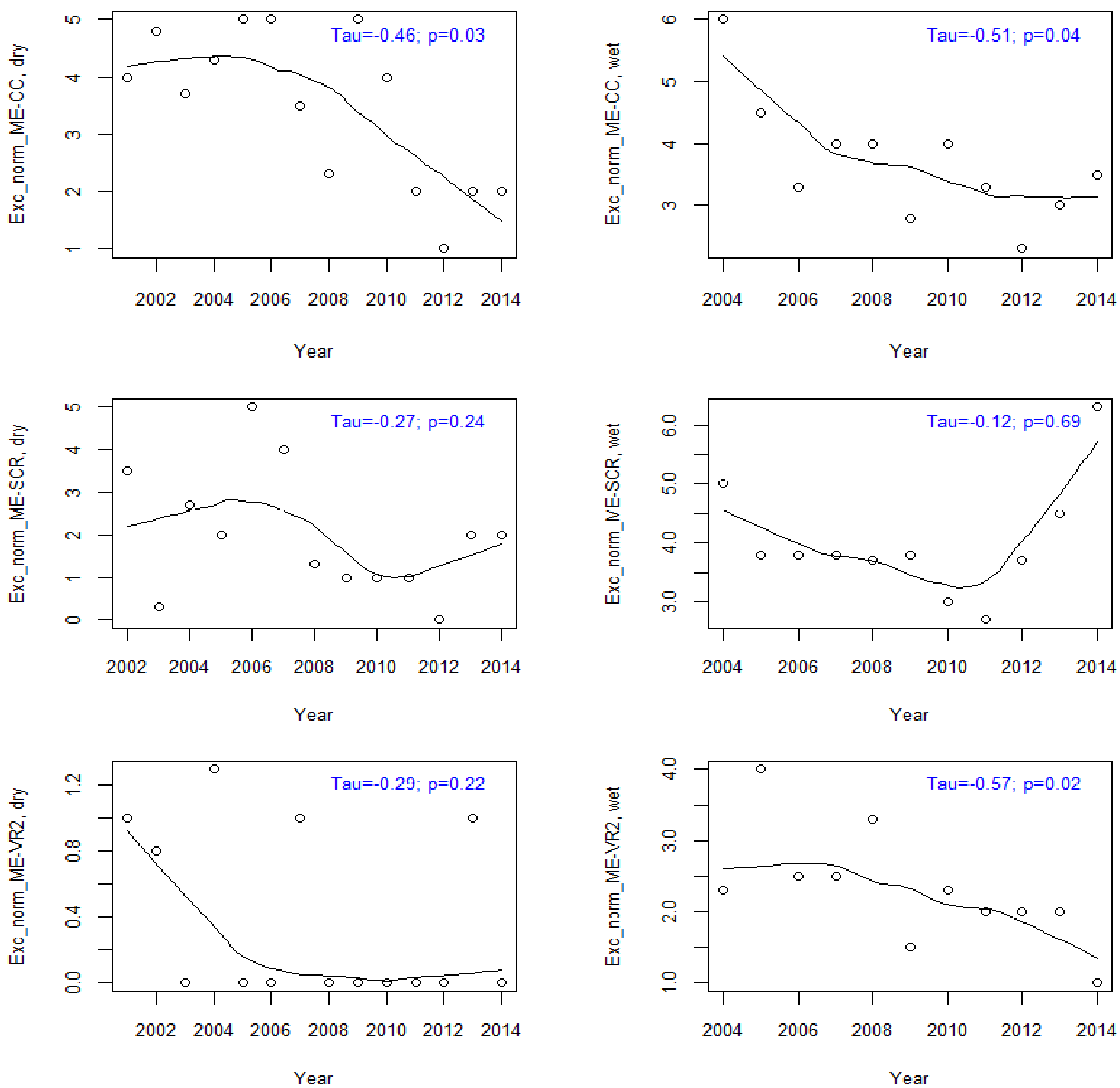
	DRY						WET					
	ME-CC		ME-SCR		ME-VR/VR2		ME-CC		ME-SCR		ME-VR/VR2	
	Statistic	P	Statistic	P	Statistic	P	Statistic	P	Statistic	P	Statistic	P
Coliforms, total									-0.30	0.008		
Coliforms, fecal	-0.32	0.026										
E. coli	-0.42	0.005							-0.36	0.002		
Enterococcus	-0.49	0.0009										
TKN	-0.42	0.001	9872*	0.009							-0.42	0.0001
P, d												
pH					-0.29	0.037						
TDS											0.25	0.017
Chloride												
Conductivity	0.33	0.01	-0.35	0.012								
BOD	12806*	0.002	7347*	0.049								
TOC	-0.31	0.02	-0.31	0.026								
TSS												
Hardness											0.24	0.02
Phenolics											2773*	0.024
Phenol									8524*	0.03		
DEHP									11753*	0.007		
Dacthal	-4601*	0.048							-3798*	0.008		
Diazinon	8250*	0.014					-0.37	0.001				
Al, d									7760*	0.02		
As, d			-0.32	0.02					12594*	0.005		
As, t	0.60	<0.0001	-0.44	0.01								
Ba, t			-0.57	0.05								
Sb, d												
Sb, t							-0.57	0.002				
Cd, d									11186*	0.005	16022*	0.0005
Cd, t												
Cr, d	17707*	<0.0001	11746*	0.0006	15076*	<0.0001	0.58	<0.0001	15839*	0.0001	21939*	<0.0001
Cr, t	12863*	0.002			14152*	0.0004						
Cr(VI)							6226*	0.028				
Cu, d	-0.30	0.027	-0.66	<0.0001	15666*	0.0002			16250*	0.0007		
Cu, t	-0.40	0.003	-0.50	0.0003	16430*	0.0001						
Fe, d	5645*	0.02					-0.40	0.02	6850*	0.012	7973*	0.002
Fe, t											-0.40	0.05
Hg, t												
Ni, d	-0.30	0.04	-0.40	0.005	-0.41	0.002	-0.35	0.0012				
Ni, t	-0.30	0.03	-0.34	0.02	-0.45	0.0009						
Pb, d							9535*	0.04				
Pb, t	13865*	0.0007			13082*	0.001						
Se, d	-0.34	0.01	-0.44	0.002			-0.36	0.0006	-0.39	0.0003	-0.32	0.0023
Se, t							-0.39	0.0002			-0.24	0.02
Ag, t							9829*	0.01				
Th, t												
Zn, d	-0.36	0.008			8787*	0.014					21995*	<0.0001
Zn, t	-0.41	0.002			13614*	0.0008						

Conclusions

Most of the 217 constituents currently monitored at the Mass Emission stations by the County have been monitored since 2001. Concentrations of thirty-five of these 217 constituents, including metals, bacteria, nutrients, salts and one pesticide, have decreased at one or more stations. Only five constituents exhibited increasing concentration trends, in all but one cases at only one of the stations. None of these constituents were causing water quality exceedances, based on Basin Plan and CTR numeric water quality criteria, at the stations where increasing trends were observed.

The average number of exceedances per event has decreased since 2001 at ME-CC and ME-VR/VR2. Decreasing trends during wet-weather could be attributed in part to smaller storm sizes and therefore fewer exceedances for some metals in recent years.

Figure 9-21. Average annual number of exceedances per event for dry-weather (left column) and wet-weather (right column) sampling. Lines represent LOESS curves, obtained by local regression modeling. Kendall Tau statistic and statistical significances are included for each set of data.



9.8.3 Water Quality Index

Description

The County of Ventura River Water Quality Index mathematically combines a number of variables, based on a large set of monitoring data, in one easily understood value. It was developed specifically for the County of Ventura to summarize chemical, microbiological and toxicity monitoring data, and is based on the Alberta River Water Quality Index (http://environment.alberta.ca/01275.html). The Index provides a simple snapshot of annual water quality conditions in the main rivers of the County, with a strong focus on its ability to meet applicable water quality objectives.

Methodology

The County of Ventura River Water Quality Index is calculated annually for each watershed, for dry and wet weather separately, based on the average of six sub-indices calculated for six variable groups:

- Salts
- Bacteria
- Nutrients
- Organics (includes pesticides)
- Metals
- Toxicity

The constituents included in the index were selected based on their relevance to river water quality. They include almost all constituents that have exceeded water quality objectives since 2004 in the County of Ventura receiving waters (excluding a few that correlate with other constituents) and all pesticides that were detected by the MS4 outfall monitoring program (often these do not have water quality objectives). Toxicity test results are included in the toxicity variable group.

Most chemistry and microbiology variables are currently measured once per year during dry weather and three times per year during storm events. Toxicity is currently measured for the first wet event per year (seasonal first flush).

The constituents included in the Ventura County River Water Quality Index are summarized in the table below, together with the water quality objectives or other environmentally relevant although not enforceable thresholds applicable during dry and wet weather.

Constituents	Units	Threshold dry	Threshold wet	Threshold reference
Salts				
Total Dissolved Solids	mg/l	SSO	SSO	WQO
Chloride	mg/l	SSO	SSO	WQO
Organics				
2,4,5-T	µg/L	70	n/a	US EPA IRIS Reference Dose
2,4-D	µg/L	70	70	WQO
2,4-DB	µg/L	56	n/a	US EPA IRIS Reference Dose
4,4'-DDE	µg/L	0.00059	n/a	WQO
4,4'-DDT	µg/L	0.00059	1.1	WQO
Aldrin	µg/L	0.00013	3	WQO
Azinphos methyl	µg/L	0.01	0.01	US EPA National Recommended Water Quality Criteria
Bromacil	µg/L	70	n/a	US EPA Drinking Water Health Advisory
Chlorpyrifos	µg/L	0.014	0.02	CA Department of Fish and Game Recommended criterion
Dalapon	µg/L	200	n/a	Drinking water MCL
DCPA (Dacthal)	µg/L	0.008	14300	US EPA IRIS Reference Dose
delta-BHC	µg/L	500	n/a	National Academy of Sciences Drinking Water Health Advisory
Demeton-O	µg/L	0.1	n/a	US EPA National Recommended Water Quality Criteria
Demeton-S	µg/L	0.1	n/a	US EPA National Recommended Water Quality Criteria
Diazinon	µg/L	0.05	0.08	CA Department of Fish and Game Recommended criterion
Dicamba	µg/L	210	n/a	US EPA IRIS Reference Dose
Dimethoate	µg/L	1	n/a	CA DPH Drinking Water Notification Level
Diphenamid	µg/L	200	n/a	CA DPH Drinking Water Notification Level
Glyphosate	µg/L	700	700	WQO
Malathion	µg/L	0.1	0.1	US EPA National Recommended Water Quality Criteria
Metolachlor	µg/L	44	100	US EPA Drinking Water Health Advisory
Pentachlorophenol	µg/L	1	1	WQO
Simazine	µg/L	4	4	WQO
Toxaphene	µg/L	0.00073	0.73	WQO
Benzo(a)pyrene	µg/L	0.0044	0.2	WQO
Chrysene	µg/L	0.0044	n/a	WQO
DEHP	µg/L	1.8	4	WQO
DEP	µg/L	23000	n/a	WQO
Bacteria				
E. coli	MPN/100 ml	235	235	WQO
Nutrients				
DO	mg/L	5	5	WQO

pH	pH units	6.5-8.5	6.5-8.6	WQO
Nitrate-N	mg/l	10	10	WQO
Ammonia-N	mg/l	calc	calc	WQO
MBAS	mg/l	0.5	0.5	WQO
Metals				
Aluminum, total	µg/L	1000	1000	WQO
Antimony, total	µg/L	6	6	WQO
Arsenic, total	µg/L	50	50	WQO
Barium, total	µg/L	1000	1000	WQO
Beryllium, total	µg/L	4	4	WQO
Cadmium, total	µg/L	5	5	WQO
Cadmium, dissolved	µg/L	calc	calc	WQO
Chromium, total	µg/L	50	50	WQO
Chromium, VI	µg/L	calc	calc	WQO
Copper, dissolved	µg/L	calc	calc	WQO
Lead, dissolved	µg/L	calc	calc	WQO
Mercury, total	µg/L	0.05	2	WQO
Nickel, total	µg/L	100	100	WQO
Nickel, dissolved	µg/L	calc	calc	WQO
Selenium, total	µg/L	5	50	WQO
Silver, dissolved	µg/L	calc	calc	WQO
Thallium, total	µg/L	2	2	WQO
Thallium, dissolved	µg/L	1.7	n/a	WQO
Zinc, dissolved	µg/L	calc	calc	WQO
Toxicity				
IC50	%	100	100	NPDES Permit

Notes SSO: site-specific objectives, n/a: not applicable, calc: threshold calculated based on other water quality parameters, WQO: water quality objective

The mathematical formula used to calculate the individual sub-indices is the same one as used by the province of Alberta, Canada. However due to unique aspects in climate, pollutants of concern, urbanization, monitoring programs and environmental regulations that apply to the County of Ventura, compiling of the overall Index is tailored to Ventura County.

The Index formula is based on three aspects of water quality that relate to water quality objectives:

- Scope (F1): how many constituents do not meet objectives?
- Frequency (F2): how frequently do measurements not meet objectives?
- Magnitude (F3): by how much do measurements not meet objectives?

Most constituent concentrations are compared to the applicable water quality objectives, as explained in the Ventura Countywide Stormwater Quality Management Program 2011/2012 Water Quality Monitoring Report. For some pesticides water quality objectives have not been adopted by the State Water Resources Control Board. In those cases, the most stringent thresholds available from the SWRCB's Water Quality Goals website were used (http://waterboards.ca.gov/water_issues/programs/water_quality_goals/search.shtml). Note that the calculations for constituents without water quality objectives is slightly different, as explained below, in order to reflect the priorities of the State Water Resources Control Board.

Index values are calculated annually for the six variable groups for each watershed, and separately for dry and wet weather events. The latter is important because water quality and pollutants of concern are often different during dry and wet weather, as our Mediterranean climate hardly produces rain between May and September. The sub-indices are then averaged to produce an overall River Water Quality Index for dry and wet weather events. Multiple indices can also be averaged to obtain an index for all watersheds combined, or for dry and wet weather combined, as in the following example for 2014/15:

Site	Event	Salts	Bacteria	Nutrients	Organics	Metals	Toxicity	Overall Index
ME-CC	Dry	17	100	100	93	100	n/a	82
	Wet	39	16	100	88	58	100	67
	Year	28	58	100	91	79	100	74
ME-SCR	Dry	16	100	100	97	96	n/a	82
	Wet	27	35	100	100	40	100	67
	Year	21	68	100	99	68	100	74
ME-VR	Dry	100	100	100	100	100	n/a	100
	Wet	100	17	100	92	100	100	85
	Year	100	59	100	96	100	100	92
All	Dry	44	100	100	97	99	n/a	88
	Wet	55	23	100	93	66	100	73
	Year	50	61	100	95	82	100	80

Rating System

Index results are reported as a number between 0 and 100, where 100 represents the best water quality, relative to objectives. The numbers are further ranked into five grades, each with a color code for graphing and mapping purposes:

Index score	Grade	Interpretation
96 – 100	A	Excellent – Guidelines almost always met
81 – 95	B	Very Good
66 – 80	C	Fair
46 – 65	D	Marginal
0 – 45	F	Poor – All constituents exceed guidelines with high frequency

Using the same example as above, the grades for 2014/15 are:

Site	Event	Salts	Bacteria	Nutrients	Organics	Metals	Toxicity	Overall Index
ME-CC	Dry	F	A	A	B	A	#N/A	B
	Wet	F	F	A	B	D	A	C
	Year	F	D	A	B	C	A	C
ME-SCR	Dry	F	A	A	A	A	#N/A	B
	Wet	F	F	A	A	F	A	C
	Year	F	C	A	A	C	A	C
ME-VR	Dry	A	A	A	A	A	#N/A	A
	Wet	A	F	A	B	A	A	B
	Year	A	D	A	A	A	A	B
All	Dry	F	A	A	A	A	#N/A	B
	Wet	D	F	A	B	C	A	C
	Year	D	D	A	B	B	A	C

What does the Index show?

Water quality has improved in Ventura County since 2003/04 (Figure 9-22). The current water quality in the County of Ventura is generally good, with B to C grades at most locations. Still, slightly reduced scores have been observed for the last three years.

Index scores are general best for ME-VR/VR2, followed by ME-SCR, and finally by ME-CC, likely related to the degree of urbanization and agriculture in each watershed (Figure 9-23). Water quality is usually better during dry weather events compared to storm events (Figure 9-24).

Trends of sub-indices are shown in Figure 9-24. The sub-indices quickly indicate what constituent classes are associated with drops of the overall Index. For instance, a low Index score in 2004/05 during wet weather (Figure 9-22) was caused by low sub-index scores for metals and toxicity.

For the current 2014/15 monitoring year, salts are mostly responsible for water quality impairments during dry weather, and bacteria and metals for impairments during wet weather. Lower scores for salts were observed during the past three years for dry and wet weather, at stations ME-CC and ME-SCR, which have been driving down overall index scores (Figure 9-24).

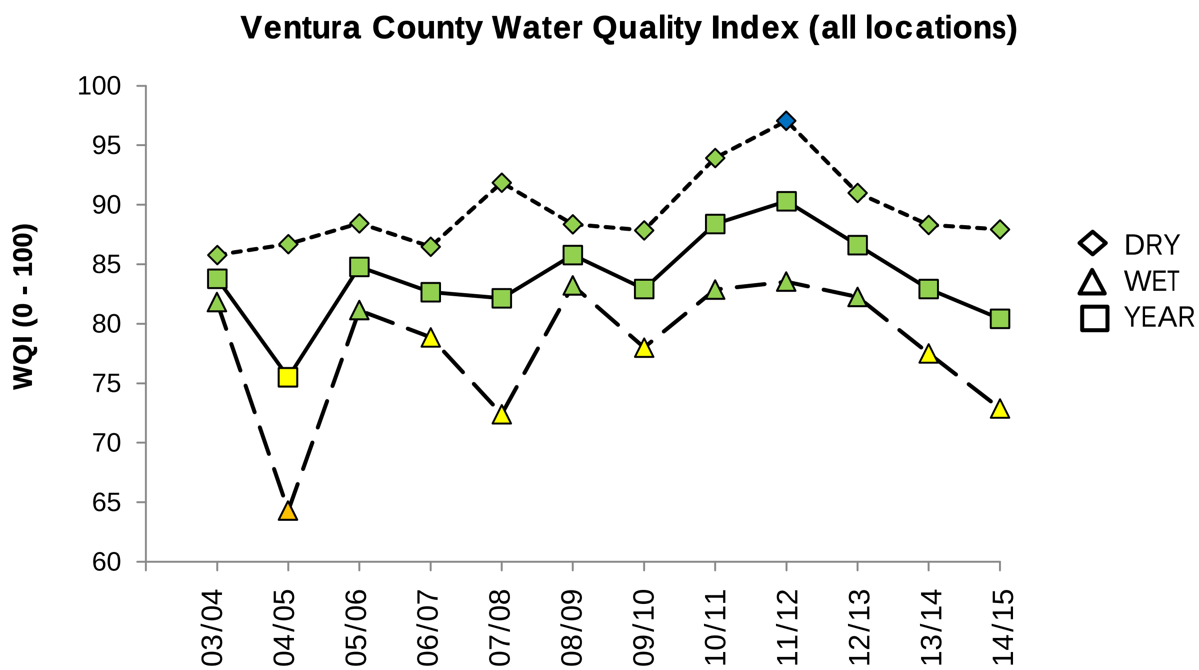


Figure 9-22 Water Quality Index trends for all locations combined.

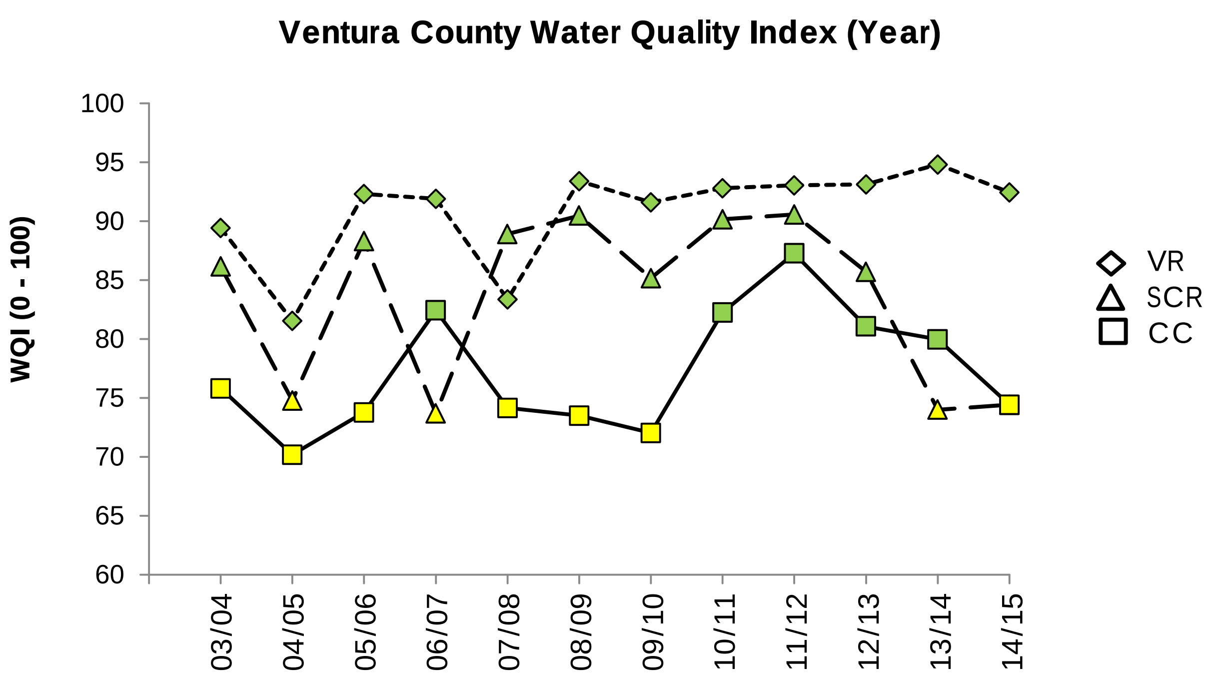


Figure 9-23 Combined wet and dry Water Quality Index trends for each receiving water station.

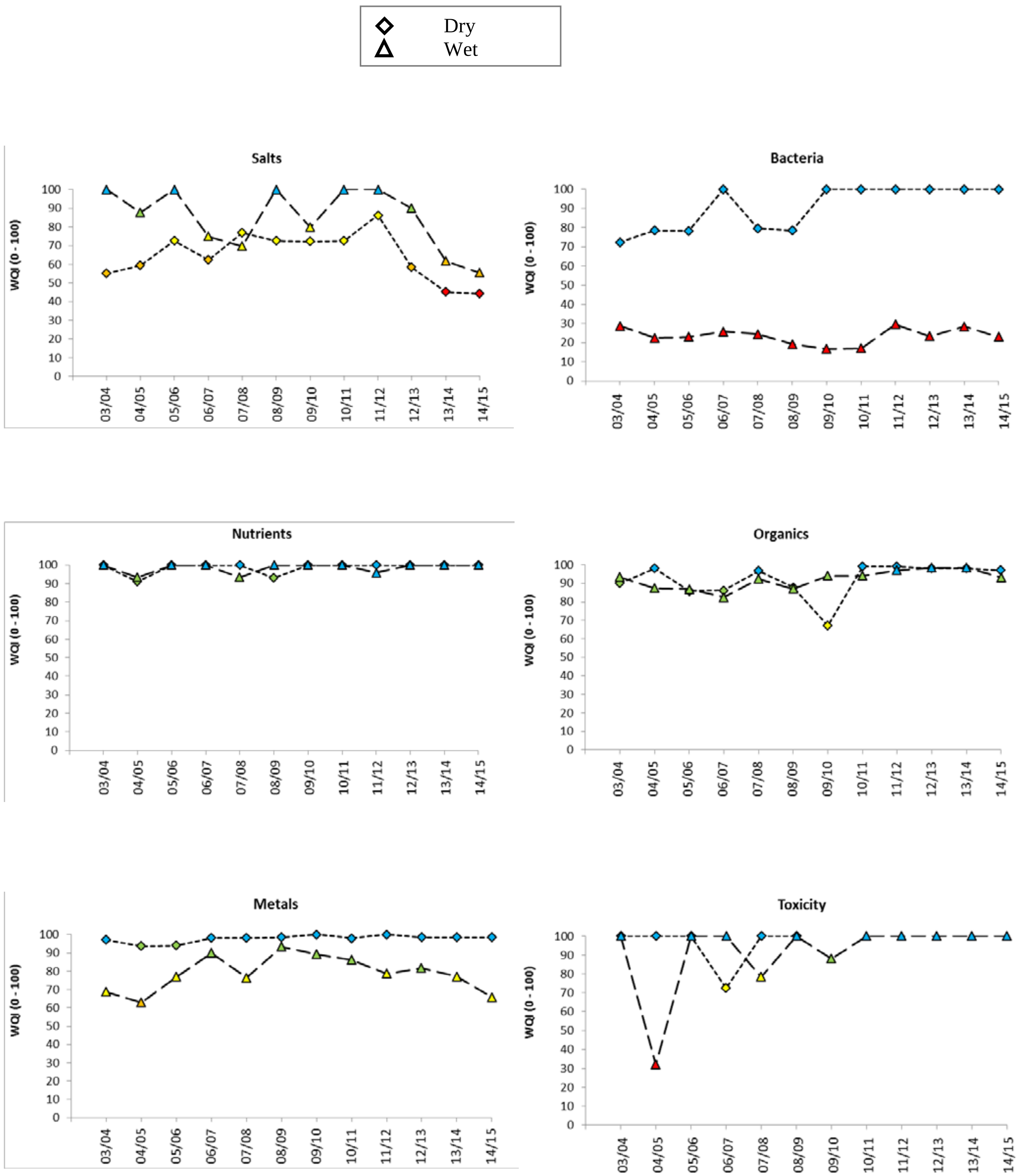


Figure 9-24 Sub-index trends with grades indicated by color codes

9.9 AQUATIC TOXICITY RESULTS

No receiving water samples from the Mass Emission stations or samples from the Major Outfall stations exhibited greater than 50% mortality during the 2014/15 monitoring season, which can be seen in the IC_{50} column of Table 9-34, where no value is < 100% (i.e. the undiluted sample did not kill half the organisms in the test), therefore no toxicity identification evaluations (TIE) were required.

The Stormwater Monitoring Program's NPDES Permit specifies that chronic toxicity monitoring must be conducted on all Mass Emission and Major Outfall stations. The Permit requires that for the first year a station is online for the Permit cycle, chronic toxicity testing is to be conducted using three species during two storm events, the first of the season plus one other. For the remainder of the Permit term, toxicity testing is to be conducted for the first storm of the season for each station using the most sensitive species determined during the initial year of sampling. For Mass Emission stations, the tests included three marine and estuarine species: topsmelt (*Atherinops affinis*), giant kelp (*Macrocystis pyrifera*), and purple sea urchin (*Strongylocentrotus purpuratus*). For the Major Outfall stations, the tests included three freshwater species: fathead minnow (*Pimephales promelas*), water flea (*Ceriodaphnia dubia*), and green algae (*Selenastrum capricornutum*).

The Permit requires that marine/estuarine species be used for the mass emission stations and for sites that discharge into marine receiving waters. Freshwater species must be used for sites that discharge into freshwater receiving waters. This means that marine species are required to be used in freshwaters, such as at the three mass emission stations, and freshwater species are required to be used at the major outfalls, including MO-HUE which is influenced by the Pacific Ocean via J Street Drain. Although flow from all sampling sites is ultimately discharged to the ocean, Mass Emission samples are freshwater with a very low salt concentration. The use of marine species for the Mass Emission sites requires the sample to be greatly manipulated by adding a large quantity of salt. Salt addition results in oxygen uptake and requires the sample to be vigorously aerated. The results from marine organisms for freshwater toxicity tests are less applicable to the existing conditions in the receiving water than freshwater organisms.

The most sensitive species was determined for seven stations (ME-CC, ME-SCR, ME-VR2, MO-CAM, MO-MEI, MO-OJA, and MO-VEN) during the 2009/10 monitoring year. The other seven stations (MO-FIL, MO-HUE, MO-MPK, MO-OXN, MO-SIM, MO-SPA, and MO-THO) were brought online for the 2010/11 monitoring year and the most sensitive species were determined from the results from that year. The most sensitive species for each site are shown in Table 9-33, and will be used for toxicity analysis during the first rainfall event of future years, as required by the NPDES Permit.

Table 9-33: Most Sensitive Species Selected for Annual Toxicity Testing

Site	Most Sensitive Species
ME-CC	Topsmelt*
ME-SCR	Purple sea urchin
ME-VR2	Topsmelt*
MO-CAM	Fathead minnow
MO-OJA	Fathead minnow
MO-MEI	Fathead minnow
MO-VEN	Water flea
MO-FIL	Water flea
MO-HUE	Water flea
MO-MPK	Green alga
MO-OXN	Fathead minnow
MO-SIM	Water flea
MO-SPA	Fathead minnow
MO-THO	Water flea

Event 1 was sampled on October 31 – November 1, 2015 for twelve of the fourteen sites. A sample could not be collected at MO-SPA due to the presence of an agitated and confrontational individual onsite so MO-SPA was sampled for toxicity during Event 2, on December 2, 2015. ME-SCR did not flow during Event 1 or Event 2, so its first flush was collected during Event 3 on December 12, 2014. The toxicity bioassay results are summarized in Table 9-34 and Table 9-35. More detailed results are available in Appendix I in Attachment D. All tests were performed as required.

MO-HUE discharges into J Street Drain, near where J Street Drain enters the Pacific Ocean. This area is influenced both by tides and by the status of the sand berm, which can cause backwater effects. Since the MO-HUE site salinity is strongly influenced by the ocean, with measured levels of 0.3-7.7 ppt, a different approach for selecting an organism is sometimes needed for this site. When salinity is below 2 ppt, *Cerioadaphnia* is the preferred organism as it was determined to be the most sensitive species and the samples used for that determination were both below 1 ppt. However, in higher salinity samples, a different organism is needed. Topsmelt (*Atherinops affinis*) is a euryhaline organism that can tolerate salinities of 3-36 ppt) and is the most sensitive species utilized for both ME-CC and ME-VR2. For MO-HUE toxicity bioassays, *Cerioadaphnia* will be utilized however if the salinity is determined to be above 2 ppt, a second bioassay using topsmelt (*Atherinops affinis*) is requested to verify whether salinity is the likely cause of any mortality.

The salinity for the MO-HUE sample (as measured on-site by the field crew) was 0.5 parts per thousand (ppt) at the time of sample collection. Since the most sensitive species for MO-HUE, *Ceriodaphnia dubia*, can tolerate a maximum salinity of 1-2 ppt, no additional species tests were required.

Table 9-34. Chronic Toxicity Results from Mass Emission Stations

			Topsmelt (*Atherinops affinis*)							
			Survival				**Biomass**			
Site	**Event**	**Event Date**	**NOEC (%)**	**Tuc**	**IC_{25} (%)**	**IC_{50} (%)**	**NOEC (%)**	**Tuc**	**IC_{25} (%)**	**IC_{50} (%)**
ME-CC	Event 1	11/1/2014	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
ME-VR2	Event 1	11/1/2014	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00

			Purple Sea Urchin (*Strongylocentrotus purpuratus*)			
			Fertilization			
Site	**Event**	**Event Date**	**NOEC (%)**	**Tuc**	**IC_{25} (%)**	**IC_{50} (%)**
ME-SCR*	Event 3	12/12/2014	100.00	1.00	>100.00	>100.00

Table 9-35 Chronic Toxicity Results from Major Outfall Stations

			Fathead minnow (*Pimephales promelas*)							
			Survival				**Reproduction**			
Site	**Event**	**Event Date**	**NOEC (%)**	**Tuc**	**IC_{25} (%)**	**IC_{50} (%)**	**NOEC (%)**	**Tuc**	**IC_{25} (%)**	**IC_{50} (%)**
MO-CAM	Event 1	11/1/2014	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-OJA	Event 1	11/1/2014	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-MEI	Event 1	11/1/2014	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-OXN	Event 1	10/31/2014	50.00	2.00	>100.00	>100.00	50.00	2.00	>100.00	>100.00
MO-SPA	Event 2	12/2/2014	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00

			Daphnid (*Ceriodaphnia dubia*)							
			Survival				**Reproduction**			
Site	**Event**	**Event Date**	**NOEC (%)**	**Tuc**	**IC_{25} (%)**	**IC_{50} (%)**	**NOEC (%)**	**Tuc**	**IC_{25} (%)**	**IC_{50} (%)**
MO-VEN	Event 1	10/31/2014	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-FIL	Event 1	10/31/2014	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-HUE	Event 1	11/1/2014	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-SIM	Event 1	11/1/2014	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-THO	Event 1	11/1/2014	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00

			Green alga (*Selenastrum capricornutum*)			
			Growth			
Site	**Event**	**Event Date**	**NOEC (%)**	**Tuc**	**IC_{25} (%)**	**IC_{50} (%)**
MO-MPK	Event 1	11/1/2014	100.00	1.00	>100.00	>100.00

9.10 DRY-SEASON, DRY-WEATHER ANALYTICAL MONITORING

As described in the NPDES Permit, dry weather monitoring is required once during each dry season (May 1 – September 30) at sites selected to be representative of runoff from each of the Permittees jurisdictions (each city and the county unincorporated area) in Ventura County.

9.10.1 2015 Dry Season Monitoring (DRY-2015)

For six jurisdictions, monitoring occurred at the associated Major Outfall monitoring station; however, as anticipated, inadequate flow was encountered at five of the Major Outfall stations prompting the sampling of alternate locations for these sites. Receiving water monitoring is not part of this Permit requirement. The six jurisdictions with sampleable dry-season, dry-weather Major Outfall locations were: Camarillo, Fillmore, Oxnard, Simi Valley, Thousand Oaks, and Ventura. For the remaining jurisdictions, the list of alternate sites was used to select a location with suitable flow. The Port Hueneme site was moved upstream to Bubbling Springs Park (Port Hueneme-3) to reduce ocean influence from the tidal/sand berm affected J Street Drain. Dry conditions at the remaining sites triggered the use of the alternate list, with sampling attempted at sites in the order they appear on the list. The County Unincorporated site was moved from Happy Valley Drain in Meiners Oaks to the Arroyo Santa Rosa in the Santa Rosa Valley (Unincorporated-4). The Moorpark site on Walnut Canyon was moved downstream to the confluence with Gabbert Canyon (Moorpark-2). The Santa Paula site on 11th Street Drain was moved to Fagan

Canyon (Santa Paula-2). Alternate sites 2-5 for Ojai were dry, therefore the additional site added in 2014 was sampled at Fox Canyon Tributary at Montgomery St., southeast of the Libbey Park tennis courts (Ojai-6).

Sampling took place on two days. Fillmore-1 (MO-FIL), Unincorporated-4 (DRY-UNI4), Moorpark-2 (DRY-MPK2), Santa Paula-2 (DRY-SPA2), Simi Valley-1 (MO-SIM), and Thousand Oaks-1 (MO-THO) were sampled on August 19, 2015. Camarillo-1 (MO-CAM), Port Hueneme-3 (DRY-HUE3), Oxnard-1 (MO-OXN), Ventura-1 (MO-VEN), and Ojai-6 (DRY-OJA6) were sampled on August 20, 2015. There was at least 72 hours of dry weather preceding each sampling event.

Grab samples for total coliform, *E. coli*, total hardness, total organic carbon, and three dissolved metals (copper, lead, and zinc) were collected and analyzed. Field observations and measurements were also taken. The results are presented in Appendix J and laboratory QA/QC is included in Appendix F in Attachment D. Constituents outside of water quality standards are in Table 9-36.

Table 9-36. Dry Season constituents detected above water quality standards

Dry Season 2013 Elevated Levels

Calleguas Creek Watershed

Constituent	MO-CAM	DRY-MPK2	MO-SIM	MO-THO	DRY-UNI4	Units	Basin Plan Objective	CTR Objective
E. coli	368		2,682	677	488	MPN/100 mL	235	
pH	8.59	9.99			9.02	pH Units	8.5	

Santa Clara River Watershed

Constituent	DRY-SPA2	MO-OXN	MO-FIL	MO-VEN	Units	Basin Plan Objective	CTR Objective
E. coli	2,359			12,997	MPN/100 mL	235	
pH	9.22				pH Units	8.5	
Copper, Dissolved				170 [a]	µg/L		29.28 [a]
[a] Default Hardness = 400 mg/L							

Ventura River Watershed

Constituent	DRY-OJA6				Units	Basin Plan Objective	CTR Objective
E. coli	3,076				MPN/100 mL	235	

Pacific Ocean

Constituent	DRY-HUE3				Units	Basin Plan Objective	CTR Objective
E. coli	44,100				MPN/100 mL	235	
Dissolved Oxygen	3.98				mg/L	5	

9.11 BIOASSESSMENT MONITORING

As written in the Permit, the Principal Permittee continued to participate in the Southern California Stormwater Monitoring Coalition (SMC) Southern California Regional Bioassessment Program (RBP). The RBP is run by the Southern California Coastal Waters Research Project (SCCWRP) with the participation and assistance of multiple agencies and organizations. The first five-year study was conducted from 2009-2013 and looked at the trend and condition of perennial waterbodies in southern California. In 2014, while the 2009-2013 data was being reviewed and analyzed, an interim one year study was performed to 1) validate and refine assessment tools for use in nonperennial streams by conducting repeat assessments at nonperennial reference sites during the monitoring season, and 2) see if changes in condition could be detected by revisiting perennial sites sampled early in the first RBP study cycle. The second five-year study builds on the preceding work by adding looking at both trend and condition components of perennial and nonperennial streams in Southern California. New components added for 2015 include measurements of hydromodification, bioanalytic screens for chemicals of emerging concern, and flow tracking for nonperennial trend sites.

For 2015-2019, the study participants were assigned a number of "trend" and "condition" sites. The number and type (split by land use) of trend sites were allocated to each participating agency by the RBP. The trend sites were originally sampled early in the RBP and will be visited annually during this five-year cycle. The Principal Permittee was allocated three "developed" and two "open space" trend sites. Condition sites are probabilistically generated perennial and nonperennial sites and a targeted number of sites was assigned to each participating agency based on Watershed. For the Principal Permittee, this means three in each of the Ventura River, Calleguas Creek, and Santa Clara River watersheds, and one in the Santa Monica Bay watershed.

For the trend and condition sites, the Principal Permittee received a list of potential sites for each category, and evaluated the potential sites to ensure they met the requirements of the RBP (e.g. non-hardened, accessible, water present, landowner permission etc.). Not all of the original trend assessments were performed by the Principal Permittee, therefore reconnaissance was performed on those sites as if they were new to the RBP. By the end of the sampling period, the Principal Permittee successfully sampled sites in accordance with the RBP allocation.

With help from Aquatic Bioassay & Consulting Laboratories, Inc. (ABC), sampling was conducted June 11, 2015 through August 13, 2015. The reconnaissance, chemistry, California Rapid Assessment Method (CRAM), physical habitat (P-HAB), time series (flow), and other field data were due and submitted by early November, 2015. Taxonomic identification of invertebrates and algae data is currently due to SCCWRP by February 28, 2015.

The final report for the 2009-2013 study is available at http://www.vcstormwater.org/images/Documents/844_SoCalStrmAssess.pdf. A technical and non-technical report summarizing the first year's data (2009) was released in 2011 and is available at SCCWRP's website www.sccwrp.org. SCCWRP and the SMC did not produce interim reports for the second through fourth years (2010 - 2012) of the study. Links to relevant reports will be included in future Annual Water Quality Monitoring Reports, as they become available.

9.12 BEACH WATER QUALITY MONITORING

The Permit requires the Program to fund beach water quality monitoring in accordance with procedures and locations used in AB411 monitoring at ten sites if funding from state and federal sources is not available. Those funds were available during the reporting period so the County of Ventura Environmental Health Department conducted ocean water quality monitoring at 40 sites along the Ventura County coast, including the ten sites listed in the Permit. The Program was not involved in the monitoring, however, the results of that monitoring is summarized in Table 9-37 below. Compliance with limits set by the State of California for all parameters was achieved in over 97.7% of samples. *Heal the Bay's 2014-15 Annual Beach Report Card (BRC)* gave all Ventura County Beaches an A grade for summer dry. 92% of samples received an A or B grade for dry weather, and 89% of the 27 sites monitored during wet weather received an A or B grade. Grades are given on an A to F scale, with higher grades representing lower risk of illness for beachgoers. According to the BRC, "This year Ventura County bested its five-year average during winter dry and wet weather and beat the statewide average for all three time periods."

Table 9-37 Beach Water Quality Monitoring Results July 1, 2013 through June 30, 2014

	Total Coliform (TC)	Fecal Coliform (FC)	Enterococcus (Entero)	FC:TC

Number of Samples	1,401	1,403	1,401	1,401
SS Limit (MPN/100mL)	10,000	400	104	N/A
SS Limit (Ratio)	N/A	N/A	N/A	Ratio > 0.1 and TC > 1,000
No. Samples > SS Limit	11	6	25	5
% Samples within limits	99.2	99.5	98.2	99.6

SS = Single Sample

9.13 PYRETHROID MONITORING

Pyrethroid insecticide monitoring of sediments is required by Monitoring Program No. CI 7388, as part of the Ventura County Municipal Separate Storm Sewer System National Pollutant Discharge Elimination System Permit, Order No. R4-2010-0108 (Permit). A first round of pyrethroid sediment monitoring was performed in 2012 and repeated in 2015.

For 2015, the District elected to add Calleguas Creek Watershed sites to the Study to increase comparability and avoid issues with different detection levels, sampling strategies, and reporting cycles. The second round of the Study was conducted in April 2015 by the District at two sites each in the Ventura River, Santa Clara River, and Calleguas Creek watersheds. Of the eight Permit-required pyrethroid pesticides, two were detected: bifenthrin (three sites) and permethrin (one site). One non-required pyrethroid (fenpropathrin at one site) and two non-pyrethroid pesticides (dichloran at one site and pendimethalin at three sites) were also detected. Hypothetical toxicity units (TU) based on *H. azteca* LC50s (as for 2012) were also calculated for pyrethroids detected in 2015 samples. All samples had hypothetical TUs below one with the exception of bifenthrin in only the CC Down duplicate, however there was not significant toxicity in the measured sample. Hypothetical TU could not be calculated for detected analytes without LC50s (the non-pyrethroids - pendimethalin and dichloran) and so their hypothetical contribution to toxicity is unknown. Similarly, if a pyrethroid is not detected, there is the possibility that it is present in concentrations below the method detection limit and so its contribution to sample toxicity is unknown. Pollutants other than those detected may also be contributing to toxicity, however this study was focused on pyrethroid pollutants.

All samples were subjected to a 10-day survival sediment bioassay using *Hyalella azteca*. Some toxicity was observed in 2015 at VR Down and SCR Up. None of the Permit required pyrethroids were detected at SCR up. Bifenthrin was detected in VR Down, however other sites with higher concentrations exhibited no toxicity, and the calculated hypothetical toxicity for VR Down based on the bifenthrin concentration was not toxic. No significant toxicity was observed in the 2012 study samples.

Due to the increased detection of pyrethroids and the presence of significant toxicity in some of the samples that may or may not be attributable to urban contributions of pyrethroids, the recommendation to mitigate urban contributions of pyrethroids in the three sampled watersheds is to target pesticide use in the Ventura Countywide Stormwater Management Program's (Program) upcoming education and outreach campaign.

The full Pyrethroid Monitoring Report is included as Appendix M in Attachment D.

9.14 TMDL MONITORING

TMDL monitoring is achieved by following the L.A. Regional Board's Executive Officer approved TMDL Monitoring and Reporting Plans prepared and implemented by the TMDL Responsible Parties. The Permit addresses the TMDL monitoring requirements by maintaining the responsibility of monitoring and reporting with the Responsible Parties of the TMDLs. Part 3 section A.5. of the Permit states:

> *"If TMDL requirements, including Implementation Plans and Reports, address substantially similar requirements as the MS4 permit, the Executive Officer may approve the applicable reports, plans, data or submittals under the applicable TMDL as fulfilling the requirements under the MS4".*

Monitoring for the TMDLs are performed under compliance monitoring plans approved by the L.A. Regional Board's Executive Officer, and the Permit does not include any monitoring or reporting for TMDLs beyond the adopted TMDL requirements. These approved plans detail the monitoring effort involved, including how and when the results are to be reported to the Regional Board, and do not incorporate the Program's Stormwater Monitoring Program.

TMDL monitoring requires significant coordination among multiple Responsible Parties, many of which do not operate MS4s. The District as Principal Permittee does not collect monitoring data for any TMDLs, but as an appropriate Responsible Party participates in the multi-stakeholder groups focusing on implementing TMDL requirements. Monitoring data that is gathered by the TMDL monitoring programs are reviewed, evaluated, and owned by the TMDL monitoring programs. The data cannot be officially used by individual Permittees or the District for reporting or public release until the final reports have been submitted to the Regional Board.

In the adoption of TMDLs by the Regional Board as Basin Plan Amendments, unique schedules for submittal of data and reports were established. TMDL monitoring is conducted in accordance with requirements and schedules outlined in Basin Plan Amendments and TMDL monitoring plans that are approved by the Regional Board Executive Officer independently of the Program requirements. Routinely, the reporting periods and dates for TMDL weekly, annual, or periodic reports and monitoring data submittals do not always correspond with the Countywide Stormwater Permit Annual Report due by December 15th each year.

Recognizing that reporting improvements could facilitate better understanding of watershed conditions, we have initiated discussions with the Calleguas Creek Watershed TMDL Parties in hopes of producing a better, more integrated report for both programs. However, progress on integration will require more than communication between MS4 and TMDL Responsible Parties, as the Regional Board will also have to be willing to allow changes in the approved monitoring programs in Ventura County (e.g. stormwater, wastewater, and agriculture waiver). Regional Board staff assistance has been requested in facilitating this integrated approach for the TMDL and MS4 monitoring program and could be improved if POTW and Ventura County Irrigated Lands Program monitoring programs are also considered.

Nonetheless, all available final TMDL reports and data for the reporting period of July 1st through June 30th have been compiled in Attachment E.