Santa Clara Valley
Urban Runoff
Pollution Prevention Program

Watershed Monitoring and Assessment Program

Integrated Monitoring Report
Part E: Water Quality Monitoring Cost Summary

Water Years 2014-2019

Submitted in compliance with Provision C.8.h.v of NPDES Permit No. CAS612008,
Order No. R2-2015-049

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1.0 INTRODUCTION

This Integrated Monitoring Report (IMR) Part E: Monitoring Costs Summary, Water Years[1] (WYs) 2014 through 2019 was prepared by the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP or Program), on behalf of its 15 member agencies (13 cities/towns, the unincorporated County of Santa Clara, and the Santa Clara Valley Water District), which are subject to the National Pollutant Discharge Elimination System (NPDES) stormwater permit for Bay Area municipalities referred to as the Municipal Regional Permit (MRP). The MRP was first adopted by the San Francisco Bay Regional Water Quality Control Board (SFRWQCB or Regional Water Board) on October 14, 2009 as Order R2-2009-0074 (SFRWQCB 2009; referred to as MRP 1.0). On November 19, 2015, the Regional Water Board updated and reissued the MRP as Order R2-2015-0049 (SFRWQCB 2015; referred to as MRP 2.0).

This report fulfills the requirements of provision C.8.h.v(4) of MRP 2.0, which requires that the IMR include a budget summary for each monitoring requirement. As such, this report includes the costs expended by SCVURPPP member agencies, through contributions to the Program, from WY 2014 through WY 2019 to comply with provision C.8 requirements. The previous IMR submitted to the Regional Water Board in 2014 summarized costs associated with monitoring activities conducted during WY 2012 and WY 2013 in compliance with MRP 1.0 (SCVURPPP 2014).

Water quality monitoring required by provision C.8 of MRP 2.0 is intended to assess the condition of water quality in the Bay area receiving waters (creeks and the Bay); identify and prioritize stormwater-associated impacts, stressors, sources, and loads; identify appropriate management actions; and detect trends in water quality over time, including the effects of stormwater control measure implementation. The Program conducts creek water quality monitoring and monitoring projects in the Santa Clara Valley (Lower South Bay) in collaboration with the Regional Monitoring Coalition (RMC), and actively participates in the San Francisco Bay Regional Monitoring Program (RMP), which focuses on assessing Bay water quality and associated impacts. This section provides a summary of monitoring costs expended by the Program and provides qualitative estimates of the water quality benefits gained through monitoring that was conducted to comply with MRP 2.0.

2.0 WATER QUALITY MONITORING COST SUMMARY

Table 2.1 presents the Program's costs to comply with provision C.8 of MRP 2.0. Monitoring costs presented in this section are associated with those incurred in (WYs) 2014 through 2019, which correspond to the Program's FY 2013-14 through FY 2018-19 budgets.[2] Costs presented include all aspects of implementing provision C.8, including:

- Monitoring program coordination and management,
- Program/project planning,
- Sample and data collection,

[1] Most hydrologic monitoring occurs for a period defined as a Water Year, which begins on October 1 and ends on September 30 of the named year. For example, Water Year 2019 (WY 2019) began on October 1, 2018 and concluded on September 30, 2019.

[2] Costs presented do not include costs incurred by Permittees to implement other water quality monitoring activities and programs required by other NPDES permits issued to Permittees (e.g., POTW monitoring, Aquatic pesticide application monitoring, stream maintenance program monitoring, etc.)

- Laboratory analyses,
- Quality assurance/quality control (QA/QC),
- Data evaluation and analysis,
- Data interpretation and reporting, and
- Information management.

Direct financial contributions were made to the RMP by SCVURPPP on behalf of Co-permittees and NPDES permit fee surcharges paid by Co-permittees. Funds used by the State and/or Regional Water Board to fund its Surface Water Ambient Monitoring Program (SWAMP) are also included in the reported costs.

The costs listed in Table 1 illustrate the considerable (~$6.8 M) resources that SCVURPPP has expended over the course of WYs 2014-2019 towards complying with water quality monitoring requirements described in provision C.8 and addressing the SWAMP surcharge included with NPDES permit fees. Average total annual costs to SCVURPPP Co-permittees during this six-year timeframe were roughly $1.1M. These costs covered the following monitoring activities:

- San Francisco Bay Estuary Receiving Water Monitoring (RMP) - Co-permittee monetary contributions and Program and Co-permittee staff time spent actively participating in the RMP, including participation in the RMP Steering Committee, Technical Review Committee, and numerous Work Groups and Strategy Teams, in compliance with MRP 2.0 provision C.8.c.
- Creek Status Monitoring – Preparation, coordination, management and implementation of the Program's Creek Status Monitoring Program, which is implemented in compliance with MRP 2.0 provision C.8.d.
- Stressor/Source Identification (SSID) Projects - Preparation, coordination, management and implementation of SSID projects that were implemented in compliance with MRP 2.0 provision C.8.e.
- Pollutants of Concern Monitoring - Preparation, coordination, management and implementation of the SCVURPPP Pollutants of Concern (POC) Monitoring Program that was implemented in compliance with MRP 2.0 provision C.8.f. Please note that the costs included in the category do not include those associated with POC source property investigations that are conducted to comply with provisions C.11/12, not necessarily provision C.8.
- Pesticides and Toxicity Monitoring - Preparation, coordination, management and implementation of the SCVURPPP Pesticides and Toxicity Monitoring Program that was implemented in compliance with MRP 2.0 provision C.8.g.
- Data Management & QA/QC – Coordination and implementation of the SCVURPPP Water Quality Monitoring Data Management and Quality Assurance Program, which implements all aspects of data management and quality assurance procedures required by MRP 2.0 provision C.8.b, and consistent with approved Standard Operating Procedures (SOPs) and Quality Assurance Project Plans (QAPPs).
- Reporting – Analysis, interpretation and reporting of all data collected via the Program's Creek Status Monitoring, SSID projects, POC Monitoring, and Pesticides and Toxicity Monitoring Programs, consistent with MRP 2.0 provision C.8.h.

- NPDES Surcharge: SWAMP - Monetary contributions provided by Co-permittees to the State of California as part of the SWAMP surcharge issued to Co-permittee as part of their annual NDPES fee.

Table 2.1. Water quality monitoring cost summary for implementing MRP provision C.8 during Water Years (WYs) 2014-2019. See text on the previous page for the activities that are included in each monitoring line item.

MRP 2.0 Subprovision		Costs During WYs 2014-2019 (6 years)	Average Costs per WY	% of Costs
C.8.b	Data Management & Quality Assurance/Quality Control (QA/QC)	$414,153	$69,025	6.1%
C.8.c	San Francisco Bay Estuary Receiving Water Monitoring (RMP)	$1,346,123	$224,354	19.7%
C.8.d	Creek Status Monitoring	$2,266,644	$377,774	33.2%
C.8.e	Stressor/Source Identification (SSID) Projects	$508,581	$84,763	7.4%
C.8.f	Pollutants of Concern (POC) Monitoring	$1,522,106	$253,684	22.3%
C.8.g	Pesticides and Toxicity Monitoring	$114,793	$19,132	1.7%
C.8.h	Reporting	$342,028	$57,005	5.0%
NA	NPDES Surcharge - Surface Water Ambient Monitoring Program (SWAMP)	$317,532	$52,922	4.6%
Totals		**$6,831,961**	**$1,138,660**	**100%**

3.0 RELATIVE COSTS AND BENEFITS OF MRP-REQUIRED WATER QUALITY MONITORING

Monitoring activities funded by Co-permittees consistent with the C.8 provision, generate information designed to answer core management questions outlined in the MRP. In many instances, these management questions are further refined into scientific monitoring questions, which help develop and implement appropriate monitoring designs. These scientific monitoring questions are generally described in program/project-specific SCVURPPP monitoring plans.

This section provides a qualitative cost-benefit evaluation of the of the water quality monitoring data collection programs implemented by SCVURPPP to comply with MRP provision C.8. The cost-benefit evaluation was conducted based on the ability of the Program to answer core management and program/project-specific scientific monitoring questions using the data collected in compliance with MRP provision C.8. The results of the evaluation are presented in Table 3.1 and are discussed in the following section. The results of this evaluation were used to identify the recommendations for water quality monitoring that would be conducted under MRP 3.0, the next version of the MRP. The recommendations for future monitoring are described in IMR Parts A, B, C, and D, and summarized in the Executive Summary for the IMR.

Table 3.1. Qualitative cost-benefit evaluation of water quality monitoring conducted under MRP 2.0 provision C.8.

MRP 2.0 Subprovision		Relative Costs of Implementing ($ - $$$$)[3]	Relative Benefit Towards Answering Core Management Questions (★ - ★★★★)	Evaluation Summary
C.8.c	San Francisco Bay Estuary Receiving Water Monitoring (RMP)	$$$$	★★★	Contributions to the RMP provided useful information on the status and trends of water quality in the Bay and provided supplemental information to help SCVURPPP identify PCBs and mercury source areas for management actions. Attempts to focus RMP-led monitoring on high priority issues remains an on-going challenge due to competing interests and information needs. Overall, the RMP provides useful information to track water quality conditions in the Bay and helps inform broad-scale management and policy directions based on science, but at a relatively high cost.
C.8.d	Creek Status Monitoring	$$$$	★★★	Creek status monitoring continued to provide useful information on the status of water quality in urban creeks that receive stormwater discharges, and the biological condition of those creeks. Many parameters were monitored, however, the utility of the data that the MRP requires to be collected is variable between parameters. Some parameters have provided valuable, baseline data or helped identify concerns that should be addressed. Other parameters were less useful and did not directly assist stormwater managers in validating, refining, or adjusting current practices. The high relative costs and the variability in the usefulness of data collected via this provision suggest that refinements are needed to improve the cost-effectiveness of Creek Status Monitoring during MRP 3.0.
C.8.e	Stressor/Source Identification (SSID) Projects	$$	★★★	SSID studies have provided useful information needed to help identify potential water quality concerns and sources of pollutants or environmental stress in Santa Clara Valley streams. However, complex watershed/runoff processes create challenges in differentiating the specific causes of stress and sources of pollutants and stressors in streams. The relatively moderate costs and moderate/high benefits of data collected via this provision suggest that SSID projects are cost-effective endeavors, but thatmethods and expections should be refined to improve the utility of the data collected during MRP 3.0.

[3] Qualitative categories for costs are based on the relative percentage of costs associated with each monitoring component. Costs for data management/QA and reporting were not included in the evaluation because their costs are functions of the other monitoring requirements/components. Qualitative categories are as follows:$ = 1-5%, $$ = 5-10%; $$$ = 10-15%; $$$$ = >15%.

MRP 2.0 Subprovision		Relative Costs of Implementing ($ - $$$$)[3]	Relative Benefit Towards Answering Core Management Questions (★ - ★★★★)	Evaluation Summary
C.8.f	Pollutants of Concern (POC) Monitoring	$$$$	★★★	Monitoring conducted under provision C.8.f provided valuable data on potential sources of POCs in Watershed Management Areas (WMAs) and helped prioritize land areas for further source property evaluations. Additionally, the data collected under this provision helped further understand the geographical distribution of POCs in the urban portion of the Santa Clara Basin. Although there were high relative costs associated with POC monitoring, there was a high level of benefit associated with the data collected during MRP 2.0. Nutrient and copper monitoring were less useful in answering monitoring questions associated with these pollutants. Considerations of whether similar POC data collection efforts are predicted to be useful during MRP 3.0 should be taken before MRP 3.0 POC monitoring requirements are finalized. As source property identification efforts become less fruitful, it may be helpful to shift POC monitoring resources away from source characterization and towards other priority monitoring questions (e.g., trends and control measure effectiveness).
C.8.g	Pesticides and Toxicity Monitoring	$	★★	There were relatively low costs expended by the Program for Pesticides and Toxicity Monitoring during MRP 2.0. Data collected via the statewide SPoT program provides important information on pesticide and toxicity trends in stream sediments and helps supplement important data needs. Low costs and low/moderate benefits suggest that refinements are needed to improve the cost-benefits of the data collected via provision C.8.g during MRP 3.0. Currently a statewide effort to develop an Urban Pesticide Coordinated Monitoring Program is underway, and the Program is actively participating in this process. For SCVURPPP, the goal is to stabilize costs for pesticide/toxicity monitoring, while improving and enhancing coordination of data collection efforts statewide with the California Department of Pesticide Regulation (DRP) to fill important information gaps that will improve the regulation of pesticides that effect stormwater quality.
NA	NPDES Surcharge - Surface Water Ambient Monitoring Program (SWAMP)	$$	★	Provided limited usefulness to local programs and stormwater managers. Benefits are not readily apparent. Moderate costs, with limited benefits.

REFERENCES

San Francisco Regional Water Quality Control Board (SFRWQCB). 2009. Municipal Regional Stormwater NPDES Permit. Order R2-2009-0074, NPDES Permit No. CAS612008. 125 pp plus appendices.

San Francisco Regional Water Quality Control Board (SFRWQCB). 2015. Municipal Regional Stormwater NPDES Permit. Order R2-2015-0049, NPDES Permit No. CAS612008. 152 pp plus appendices.

Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). 2014. Integrated Monitoring Report – Part A. Water Quality Monitoring. Water Years 2012 and 2013. March 15, 2014.