

URBAN CREEKS MONITORING REPORT

PART E: ANNUAL TRASH MONITORING STATUS REPORT

Water Year 2022 (October 2021 – September 2022)



Submitted in Compliance with
NPDES Permit No. CAS612008 (Order No. R2-2022-0018)
Provision C.8.h.iii.(2)



*A Program of the City/County Association of Governments
of San Mateo County*

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CREDITS

This report is submitted by the participating agencies in the



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City of Burlingame
Town of Colma
City of Daly City
City of East Palo Alto

City of Foster City
City of Half Moon Bay
Town of Hillsborough
City of Menlo Park
City of Millbrae
City of Pacifica
Town of Portola Valley
City of Redwood City

City of San Bruno
City of San Carlos
City of San Mateo
City of South San Francisco
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List of Acronyms

ACCWP	Alameda Countywide Clean Water Program
BAMSC	Bay Area Municipal Stormwater Collaborative
BASMAA	Bay Area Stormwater Management Agencies Association
CCCWP	Contra Costa Clean Water Program
CPS	Connector Pipe Screen
FCS	Full Capture System
FCSE	Full Capture System Equivalent
HDS	Hydrodynamic Separator
MRP	Municipal Regional Permit
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
OVRTA	On-land Visual Trash Assessment
QAPP	Quality Assurance Project Plan
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SMCWPPP	San Mateo Countywide Water Pollution Prevention Program
SSA	Solano Stormwater Alliance
TAG	Technical Advisory Group
UCMR	Urban Creeks Monitoring Report
USEPA	Environmental Protection Agency
WQIF	Water Quality Improvement Fund
WY	Water Year

1.0 Introduction

This *Urban Creeks Monitoring Report (UCMR) Part E: Annual Trash Monitoring Status Report, Water Year¹ (WY) 2022* was prepared by the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP). SMCWPPP is a program of the City/County Association of Governments (C/CAG) of San Mateo County. Each incorporated city and town in the county, OneShoreline, and the County of San Mateo share a common 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 (SFBRWQCB or Regional Water Board) on October 14, 2009 as Order R2-2009-0074 (SFBRWQCB 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 (SFBRWQCB 2015; referred to as MRP 2.0). The current, and third, version of the MRP (i.e., MRP 3.0, SFBRWQCB 2022) was issued by the Regional Water Board as Order R2-2022-0018 and became effective July 1, 2022.

This report fulfills the requirements of provision C.8.h.iii.(2) of MRP 3.0 for summarizing trash monitoring accomplishments from the preceding water year (i.e., WY 2022) conducted in compliance with provision C.8.e (Trash Monitoring) of the MRP.² Consistent with the requirements of provision C.8.e, trash monitoring activities in WY 2022 focused on conducting initial planning tasks in preparation for trash monitoring activities that will begin in WY 2024. This report summarizes trash monitoring planning actions from July 1, 2022 (when MRP 3.0 became effective) through September 30, 2022 (the end of WY 2022).

2.0 Trash Monitoring Requirements

The level of trash in California's receiving waters has increased substantially over the past few decades, causing one of the state's most significant water quality issues (SWRCB 2015). Over the last decade, MRP Permittees have invested significant public resources to implement source controls and stormwater infrastructure improvement/upgrades to reduce the amount of trash discharged from their municipal separate storm sewer systems (MS4s) to receiving waters. Many of these actions are prescribed by provision C.10 of the MRP which mandates that Permittees achieve a 100% reduction of trash in stormwater discharges from baseline (2009) levels by June 2025.

With the adoption of MRP 3.0 in WY 2022, the Regional Water Board also added significant trash monitoring requirements. Provision C.8.e directs Permittees to conduct trash monitoring at MS4 outfalls and in receiving waters, and prescribes specific monitoring location criteria, methods and frequencies that must be achieved to address the management questions and monitoring questions listed below. Provision C.8.e.v requires that Permittees submit a "collective" (i.e., regional) Trash Monitoring Plan that demonstrates how the requirements in provision C.8.e will be met. Permittees must submit the Trash Monitoring Plan to the Regional

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 2022 (WY 2021) began on October 1, 2021 and concluded on September 30, 2022.

² Monitoring data collected pursuant to other C.8 provisions (e.g., Pollutants of Concern Monitoring, Pesticides & Toxicity Monitoring, and Trash Monitoring) are reported in other Parts of the SCVURPPP Urban Creeks Monitoring Reporting series (UCMR) for WY 2022.

Water Board Executive Officer (EO) for approval by July 31, 2023. The Trash Monitoring Plan should be designed to address the following management and monitoring questions:

Management Questions:

1. Have Permittees' trash management actions effectively prevented trash from their jurisdictions from discharging to receiving waters?
2. Are discharges of trash from areas within Trash Management Areas controlled to a low trash generation level causing and/or contributing to adverse trash impacts in receiving water?

Monitoring Questions:

1. What is the trash condition and approximate level of trash (volume, type, and size) within and discharging into receiving waters in areas that receive MS4 runoff controlled to a low trash generation via the installation of full trash capture devices, or the implementation of other trash management actions equivalent to full trash capture systems?
2. Does the level of trash in the receiving water correlate strongly with the conditions of the tributary drainage area of the MS4?

2.1 Outfall Monitoring

In San Mateo County, a minimum of two outfalls must be monitored during a minimum of three wet weather events per year beginning October 1, 2023. Monitoring must be conducted with netting devices (or equivalent devices) attached to the end of the outfall pipe or other equivalent location that allows for capture of trash discharging through the MS4. Targeted outfalls must drain areas that are controlled to the low trash generation level and must be representative with respect to the types of trash controls present across the region. Provision C.8.e.ii also requires direct measurement of flow at the monitoring station (to calculate loading) and collection of data on the type of material collected.

2.2 Receiving Water Monitoring

The MRP requires Permittees to implement a pilot program to directly sample sections of receiving waters that receive runoff primarily from MS4 outfalls that drain tributary areas controlled to the Low trash generation level. In San Mateo County, one receiving water location must be monitored during a minimum of three wet weather events per year beginning October 1, 2024. Targeted storm events should be likely to result in discharges of trash through the MS4 system, and targeted receiving water monitoring locations should not be downstream of direct discharge sites (e.g., homeless encampments, illegal dumping sites). Provision C.8.e.ii also requires direct measurement of flow at the monitoring station (to calculate loading) and collection of data on the type of material collected.

2.3 Technical Advisory Group

To assist in development and implementation of a scientifically-sound Trash Monitoring Plan, provision C.8.e.iv requires Permittees to form and convene a Technical Advisory Group (TAG) which includes impartial science advisors and Water Board staff. The TAG will be asked to review and provide input on site selection, monitoring methods, permitting, and analysis methods, results, and conclusions. Prior to the submission of the Trash Monitoring Plan, the TAG must be convened at least biannually. Thereafter, it shall be convened at least annually to

provide continued feedback regarding the implementation of the Trash Monitoring Plan. In addition, provision C.8.e.v requires Permittees to provide opportunities for input on development of the Trash Monitoring Plan by interested parties and scientific experts other than those participating in the TAG.

3.0 WY 2022 Trash Monitoring Accomplishments

The trash monitoring methods prescribed in the MRP have never be conducted in the region, state, or even nationwide. Limited direct experience with installation of trash nets on MS4 outfalls to creeks (or within creeks themselves) for monitoring purposes presents challenges to provision C.8.e implementation. However, during the limited portion of WY 2022 when MRP 3.0 was in effect (i.e., July 1 through September 30, 2022), SMCWPPP made significant progress towards convening the Trash TAG, identifying potential outfall locations for monitoring, developing a grant application to support receiving water trash monitoring, and developing Program-specific sections of the collective Trash Monitoring Plan that will meet the requirements of provision C.8.e.

SMCWPPP joined with other countywide stormwater programs subject to the MRP to form the Bay Area Municipal Stormwater Collaborative (BAMSC) Trash Monitoring workgroup. Other members of the group include:

- Alameda Countywide Clean Water Program (ACCWP)
- Contra Costa Clean Water Program (CCCWP)
- Santa Clara Valley Urban Runoff Pollution Prevention Program (SMCWPPP)
- Solano Stormwater Alliance (SSA)

The BAMSC Trash Monitoring workgroup meets at least every other month to discuss issues related to development of the Trash Monitoring Plan, convening of the TAG, site selection, monitoring methods, permitting, and other requirements related to implementation of provision C.8.e. In addition, this workgroup developed and submitted a grant application for funding under the San Francisco Bay Water Quality Improvement Fund (WQIF) to support trash monitoring, public outreach, and information dissemination.

3.1 WQIF Application

In September 2022, the San Mateo City/County Association of Governments (C/CAG) submitted a grant application for funding via the US Environmental Protection Agency (USEPA) San Francisco Bay Water Quality Improvement Fund (WQIF; EPA-R9-SFBWQIF-22-01). The application was collectively developed by and submitted on behalf of all Trash Monitoring Workgroup members. A total of \$3.36 million in funding was requested to support the *Watching Our Watersheds – Improving Trash Monitoring Methods and Pollution Prevention Strategies through Regional Partnerships in the Bay Area* project. Roughly an equivalent level of funding is pledged by workgroup members as match to the grant funds. If awarded, the grant and match funds will support TAG coordination and TAG-member honorariums; evaluation of trash source control measures; implementation of a public outreach campaign; trash monitoring planning, permitting, and implementation; trash characterization and associated public engagement events; and dissemination of information and knowledge gained through trash monitoring via a guidance document, a web portal, and a Bay Area trash symposium.

As of September 30, 2022, the USEPA had not made any decisions regarding WQIF awards. However, in January 2023, USEPA staff informally notified C/CAG that the project scored high

and would likely be selected for a second round (FY 2023) of WQIF funding with an anticipated project start date in the summer of 2023 (Luisa Valiela, USEPA Region 9 WQIF Grant Manager, personal communication).

3.2 Trash TAG

During WY 2022, the BAMSC Trash Monitoring workgroup began convening the TAG by identifying and communicating with technical experts who would eventually be invited to serve as Trash TAG members. It is anticipated that the first TAG meeting will take place in March 2023. The TAG members and their affiliations are listed below:

- **Tony Hale, PhD** - Director of the Environmental Informatics Program at the San Francisco Estuary Institute (SFEI).
- **Shelly Moore** - Executive Director of the Moore Institute for Plastic Pollution Research.
- **Tom Mumley, PhD** - Assistant Executive Officer at the San Francisco Bay Regional Water Board.
- **Dawn Petschauer** - Stormwater Program Administrator at the City of Pasadena.
- **Ted Von Bitner, PhD** - Assistant Vice President at WSP USA.

3.3 Trash Monitoring Plan Development

During WY 2022, SMCWPPP began implementing initial planning tasks in preparation for trash monitoring activities that will begin in WY 2024. The following sections summarize the tasks completed through September 30, 2022.

3.3.1 Selection of Outfalls

Provision C.8.e.ii.(1) requires that MS4 outfalls targeted for trash monitoring drain catchments that have been reduced to a low trash generation rate by either full capture system (FCS) installations or implementation of trash management actions equivalent to full capture systems (FCSE). Outfalls targeted for monitoring must also meet basic safety and logistical criteria, including the following:

- The outfall must be accessible. It must be located relatively close to a road or trail, without obstructions such as trees or dense woody vegetation, so that heavy nets full of trash and debris can be retrieved.
- The outfall characteristics must allow for the installation of a netting device to capture trash. Characteristics may include reinforced concrete pipe construction to attach the netting device; an adequate landing area below the outfall to support the net; and ideally, no existing structures (i.e., flapgate, clamshell check valves) already attached to the outfall.
- For the MRP trash monitoring program, SMCWPPP would like to avoid outfalls that require grading of creek banks and installation of new concrete pads, as these activities have the potential to impact important habitat and will trigger multiple environmental permits.
- The outfall must not drain to an area that is steeply sloped or vertical. Many outfalls in the County open directly into engineered channels with very steep or vertical banks. It is not feasible to install a net on these outfalls.

- The bottom of the outfall (i.e., the invert) must be above the water level expected during wet weather monitoring events. The net cannot be submerged nor can it be within the flow path of the creek.
- The outfall must not drain an area that is subject to flooding. Although unlikely, installation of a net at the outfall could slow or block flows and cause upstream flooding resulting private property damage, infrastructure damage, and risk to human health and safety. Many outfalls in these flood-prone settings are already equipped with a flapgate, which may make installation of a trash monitoring net difficult or preclude it entirely.
- The outfall must be located in an area that does not pose serious safety risks to field personnel. For example, outfalls located near homeless encampments are generally not considered safe and are vulnerable to equipment theft and vandalism.
- Ideally, the outfall is circular and made of concrete. Other shapes and sizes will require more extensive retrofitting to install the monitoring net.
- Ideally, the outfall drains an area that is smaller than 500 acres. Larger systems would require larger and significantly more expensive infrastructure and netting systems.
- Ideally, the outfall and area where the net rests do not serve as critical habitat for sensitive or endangered species. It is assumed that permitting at these sites would be challenging.

In WY 2022, SMCWPPP began the process of identifying outfalls for trash monitoring by conducting a Geographic Information System (GIS) analysis of “baseline” and “current” trash generation within MS4 catchments. Baseline trash generation serves as the starting point for each SMCWPPP Permittee’s Long-Term Trash Load Reduction Plan and for calculating trash load reductions. Current trash generation rates are based on the extent of trash control measure implementation to date. Trash control measures include structural full trash capture systems certified by the State Water Board (e.g., hydrodynamic separator (HDS) units, connector pipe screen (CPS) units) and non-structural control measures (e.g., street sweeping, on-land cleanups, public outreach). Current trash generation rates associated with non-structural control measures are documented using On-land Visual Trash Assessment (OVTA) data.

Outfalls with catchments meeting MRP criteria were assessed for accessibility and other logistical considerations using desktop reconnaissance (i.e., GIS data, satellite imagery, Google Street View) and field reconnaissance. SMCWPPP is continuing to look for outfalls that could be monitored for trash in San Mateo County and intends to complete this process in spring/summer 2023.

3.3.2 Monitoring Methods

Although trash control nets have been installed by cities and/or flood control districts at a few locations throughout the Bay Area, they do not have widespread implementation, and nets at outfalls for use as trash monitoring devices are even more rare. Therefore, the specific equipment necessary to conduct trash outfall monitoring is not well known, nor does SMCWPPP or other members of the BAMSC Trash Monitoring workgroup have experience retrofitting MS4 systems to install a trash monitoring netting systems. In WY 2022, SMCWPPP began searching for vendors and contractors with experience designing, fabricating, and installing trash capture nets to learn more about this equipment and how it can be installed and maintained in a practical manner to support trash monitoring. There appears to be just one vendor/contractor with this type of expertise in the Bay Area (i.e., Oldcastle Infrastructure, formerly KriStar). SMCWPPP and other members of the BAMSC Trash Monitoring workgroup plan to continue

working with Oldcastle in WY 2023 to understand potential trash net configurations, equipment needs, MS4 retrofit options, installation details, and maintenance opportunities.

3.3.3 Quality Assurance Project Plan

A key element of any monitoring program is a comprehensive Quality Assurance Project Plan (QAPP). The QAPP is a written document that describes the procedures that the monitoring project will use to ensure the data it collects and analyzes meet project requirements. In the interest of achieving regional consistency among Trash Monitoring conducted by MRP Permittees, the BAMSC Trash Monitoring Workgroup initiated a Project of Regional Benefit to develop a common QAPP for Trash Monitoring. Work on the QAPP will begin in WY 2023.

4.0 Recommendations

In WY 2023, SMCWPPP will continue to comply with provision C.8.e requirements. Specific WY 2023 tasks include:

- SMCWPPP will participate in the Trash TAG, which will initially meet in March 2023, and again in spring 2023 to inform development of the Trash Monitoring Plan.
- SMCWPPP will work with local municipalities to identify outfalls for trash monitoring and gain approval and local encroachment permits to conduct monitoring throughout the permit term.
- SMCWPPP will work with members of the BAMSC Trash Monitoring Workgroup and Regional Water Board staff to identify and pursue required regulatory and environmental permits.
- SMCWPPP will work with members of the BAMSC Trash Monitoring Workgroup and the Trash TAG to develop trash monitoring approaches and data evaluation methods. These will be documented in the regional QAPP.
- SMCWPPP will develop Program-specific sections of the Trash Monitoring Plan for TAG review. The draft plan will be updated based on comments received from the TAG and will be submitted by July 31, 2023 to the Regional Water Board EO for approval.
- SMCWPPP will acquire and install the necessary trash outfall monitoring equipment (e.g., nets and MS4 retrofits) at two outfalls so that monitoring can begin at the start of WY 2024 (i.e., October 1, 2023).
- The Trash Monitoring Plan, which must be submitted to the Regional Water Board for EO approval by July 31, 2023, will likely focus primarily on details related to trash outfall monitoring, which must begin October 1, 2023. Identification of sites and specific methods for trash receiving water monitoring, which must begin by October 1, 2024, will continue into WY 2024, with a revised Trash Monitoring Plan anticipated by July 31, 2024.
- The BAMSC Trash Monitoring Workgroup will continue to meet, as needed, to facilitate the Trash TAG and to discuss monitoring issues that may arise in the future.

5.0 References

- SFBRWQCB (San Francisco Bay Regional Water Quality Control Board). 2009. Municipal Regional Stormwater NPDES Permit. Order R2-2009-0074, NPDES Permit No. CAS612008. 125 pp plus appendices.
- SFBRWQCB (San Francisco Bay Regional Water Quality Control Board). 2015. Municipal Regional Stormwater NPDES Permit. Order R2-2015-0049, NPDES Permit No. CAS612008. 152 pp plus appendices.
- SFBRWQCB (San Francisco Bay Regional Water Quality Control Board). 2022. San Francisco Region Water Quality Municipal Regional Stormwater NPDES Permit. Order R2-2022-0018, NPDES Permit No. CAS612008.
- SWRCB (State Water Resources Control Board). 2015. Amendment to the Water Quality Control Plan for the Ocean Waters of California to Control Trash and Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California. Final Staff Report including the Substitute Environmental Documentation.