URBAN CREEKS MONITORING REPORT

SAN MATEO COUNTY MRP PERMITTEES

Water Year 2021
(October 2020 – September 2021)

EXECUTIVE SUMMARY



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

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program

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

March 31, 2023

CREDITS

This report is submitted by the participating agencies in the

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.
www.flowstobay.org

Town of Atherton	City of Foster City	City of San Bruno
City of Belmont	City of Half Moon Bay	City of San Carlos
City of Brisbane	Town of Hillsborough	City of San Mateo
City of Burlingame	City of Menlo Park	City of South San Francisco
Town of Colma	City of Millbrae	Town of Woodside
City of Daly City	City of Pacifica	County of San Mateo
City of East Palo Alto	Town of Portola Valley	SM County Flood and Sea Level Rise Resiliency District
	City of Redwood City	

Prepared for:

San Mateo Countywide Water Pollution Prevention Program (SMCWPPP)
555 County Center, Redwood City, CA 94063
A Program of the City/County Association of Governments (C/CAG)

Prepared by:

EOA, Inc.
1410 Jackson St., Oakland, CA 94610

TABLE OF CONTENTS

List of Figures

INTRODUCTION AND BACKGROUND

This *Urban Creeks Monitoring Report* (UCMR) for Water Year 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, the County of San Mateo, and the San Mateo County Flood and Sea Level Rise Resiliency District (OneShoreline) share a common National Pollutant Discharge Elimination System (NPDES) stormwater permit for San Francisco 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 (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 Regional Water Board subsequently updated and revised the MRP as Order R2-2022-0018 (SFBRWQCB 2022; referred to as MRP 3.0), which took effect on July 1, 2022.

This UCMR, including all appendices and attachments, fulfills the requirements of Provision C.8.h.iii. of MRP 3.0 for reporting all data collected in Water Year 2022 (WY 2022; October 1, 2021 – September 30, 2022) pursuant to Provision C.8. Data presented in this report were submitted in electronic SWAMP-comparable formats by SMCWPPP to the Regional Water Board on behalf of San Mateo County Permittees and pursuant to Provision C.8.h.ii. of the MRP and may be obtained via the California Environmental Data Exchange Network (CEDEN). Data collected in prior water years (i.e., WYs 2012 – WY 2021) pursuant to provision C.8 of MRP 1.0 and MPR 2.0 are presented in annual Urban Creeks Monitoring Reports (SMCWPPP 2015, 2016, 2017, 2018, 2019, 2021, 2022) and periodic Integrated Monitoring Reports (SMCWPPP 2014, 2020). The older data are also available on CEDEN.

Water quality monitoring required by Provision C.8 of the MRP is intended to evaluate the effectiveness of stormwater control actions; assess the condition of water quality in Bay Area receiving waters (creeks and the Bay); identify and prioritize stormwater runoff associated impacts, stressors, sources, and loads; identify appropriate management actions; and detect trends in water quality over time.

Provision C.8.a. (Compliance Options) of the MRP allows Permittees to address monitoring requirements through regional collaboration, their countywide or area-wide stormwater program, and/or individually. On behalf of San Mateo County Permittees, SMCWPPP conducts creek water quality monitoring and monitoring projects in collaboration with the Bay Area Municipal Stormwater Collaborative (BAMSC)[1] Regional Monitoring Coalition (RMC). Furthermore, SMCWPPP actively participates in the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP), which focuses on assessing Bay water quality and associated impacts. In compliance with Provision C.8.c. of the MRP (San Francisco Estuary Receiving Water Monitoring), SMCWPPP also provides financial contributions towards implementing the RMP.[2]

Monitoring data were collected in accordance with the RMC Quality Assurance Project Plan (QAPP; BASMAA 2020) and the RMC Standard Operating Procedures (SOPs; BASMAA 2016). Where applicable,

[1] The BAMSC was formed in 2021 upon dissolution of the Bay Area Stormwater Management Agencies Association (BASMAA) as a 501(c)(3) non-profit organization.

[2] See https://www.sfei.org/programs/sf-bay-regional-monitoring-program for details on the RMP.

and in compliance with Provision C.8.b. of the MRP (Monitoring Protocols and Data Quality), methods described in the QAPP and SOP are comparable with methods specified by the California Surface Water Ambient Monitoring Program (SWAMP) Quality Assurance Program Plan (QAPrP). Provision C.8.a.iii. allows Permittees to use third-party data meeting provision C.8.b. data quality objectives to satisfy monitoring requirements.

This UCMR consists of five "Parts" (A-E) that address the major sub-provisions of MRP Provision C.8. The following sections of this Executive Summary summarize each UCMR Part:

- Part A: Creek Status Monitoring (conducted in compliance with MRP 2.0)
- Part B: Pesticides & Toxicity Monitoring
- Part C: Pollutants of Concern Monitoring
- Part D: Low Impact Development (LID) Effectiveness Monitoring
- Part E: Trash Monitoring

PART A: CREEK STATUS MONITORING

Part A of the UCMR presents all data collected in compliance with Provision C.8.d. (Creek Status Monitoring) of MRP 2.0, which was in effect for the majority of WY 2022 (i.e., October 1, 2021 through June 30, 2022). The monitoring strategy implemented by SMCWPPP in compliance with this provision is consistent with the RMC's Creek Status and Long-Term Trends Monitoring Plan (BASMAA 2012). The strategy includes regional ambient/probabilistic monitoring and local targeted monitoring. The probabilistic monitoring design was developed to remove bias from site selection such that ecosystem conditions can be objectively assessed on local (i.e., San Mateo County) and regional (i.e., RMC) scales. The targeted monitoring design focuses on sites selected based on the presence of significant fish and wildlife resources, as well as historical and/or recent indications of water quality concerns. Monitoring results are compared to "triggers" listed in MRP 2.0. Some triggers are equivalent to regulatory Water Quality Objectives (WQOs), while others are thresholds above (or below) which potential impacts to aquatic life or other beneficial uses may occur. Pursuant to MRP 2.0 Provision C.8.e., sites where triggers are exceeded (or not met) are considered for future stressor/source identification (SSID) projects. Creek Status Monitoring and the associated Stressor/Source Identification (SSID) projects are no longer required in MRP 3.0.[3]

A.1 Bioassessment

During WY 2022, SMCWPPP conducted biological assessments at ten targeted stream sites, all of which were previously sampled. Bioassessments include the collection of benthic macroinvertebrate and algae samples, measurement of general water quality and physical habitat parameters, and collection of water samples for laboratory analysis (i.e., nutrients). The California Stream Condition Index (CSCI), a statewide tool that translates benthic macroinvertebrate data into an overall measure of stream health, was used to assess biological condition.

[3] MRP 2.0 Creek Status Monitoring and SSID Projects were replaced with MRP 3.0 LID Effectiveness and Trash Monitoring, which are described in Parts D and E of this UCMR.

The CSCI scores across the ten bioassessment sites sampled in WY 2022 ranged from 0.61 to 1.13, with five sites having a score below the MRP trigger threshold of 0.795, which corresponds to the two lower condition categories (likely altered and very likely altered). Low CSCI scores are related to impacts to physical habitat typical for urbanized areas, such as creek channel modifications (e.g., lining with concrete) and contributing watersheds with high percentages of impervious surface. Four of the five sites with CSCI scores below 0.795 all have relatively high impervious area in their contributing watersheds (i.e., greater than ten percent). The other low-scoring site had minimal development in its watershed, but may have been impacted by the 2020 Big Basin Fire which burned in the upper areas of Pescadero Creek. Bioassessment sites and condition categories based on CSCI scores are shown in Figure ES-1.

All of the WY 2022 bioassessment sites were located in the Pescadero Creek, San Gregorio Creek and San Pedro Creek coastal watersheds. Five of the sites were also targeted for continuous temperature monitoring and two were targeted for continuous water quality monitoring.

Comparison of prior bioassessment data (i.e., WY 2018 to WY 2021) to WY 2022 results showed that biological conditions, based on CSCI scores, were relatively consistent across the ten sites over time.

A.2 Continuous Temperature and Water Quality Monitoring

Continuous monitoring of water temperature and general water quality in WY 2022 was conducted in compliance with Provisions C.8.d.iii. – iv. of MRP 2.0. Hourly temperature measurements were recorded at five sites located in the San Gregorio Creek and San Pedro Creek watersheds from April through the end of the permit term (i.e., June 30, 2022). Continuous (15-minute) general water quality measurements (pH, dissolved oxygen, specific conductance, temperature) were recorded at two sites in the San Gregorio Creek watershed during a two-week period in the spring. Continuous monitoring station locations are shown in Figure ES-1. Both creeks support migration, rearing and spawning habitat for existing coho salmon and steelhead populations. Temperature, pH, specific conductance, and DO levels followed predictable daily and seasonal patterns, and were generally consistent across the sites. Overall, water quality and temperature do not appear to be limiting factors for anadromous fish in San Gregorio Creek or San Pedro Creek.

A.3 Chlorine Monitoring

In compliance with Provision C.8.c.ii., free chlorine and total chlorine residual were measured at ten sites concurrent with bioassessment surveys. While chlorine residual has generally not been a concern in San Mateo County creeks, and the MRP triggers were not exceeded in WY 2022 samples, prior monitoring results suggest there are occasional trigger exceedances of free chlorine and total chlorine residual in the County. Trigger exceedances may be the result of one-time potable water discharges (e.g., pool dewatering), and it is generally challenging to determine the source of elevated chlorine from such episodic discharges.

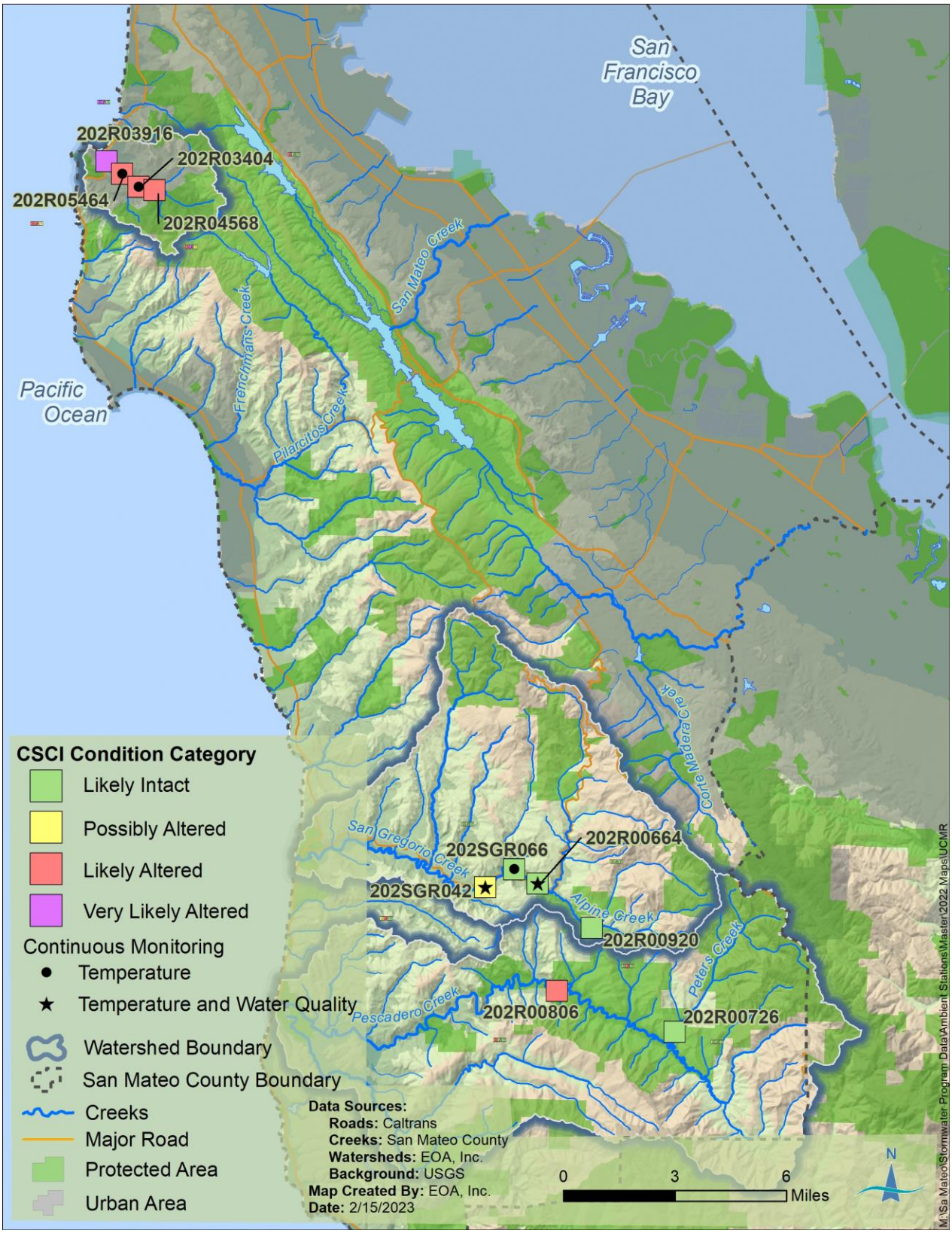

Figure ES-1. Biological condition categories based upon CSCI scores for 10 bioassessment sites in San Mateo County, WY 2022.

A.4 Creek Status Monitoring Recommendations

Impacts to urban streams identified through creek status monitoring are likely the result of long-term changes in stream hydrology, channel geomorphology, in-stream habitat complexity, and other modifications associated with urban development and associated impervious surfaces, and, to a lesser extent, pollutants typically found in urban watersheds. San Mateo County MRP Permittees are actively implementing many stormwater runoff management programs to address these stressors and pollutants found in local creeks and the Bay, with the goal of protecting these natural resources and their Beneficial Uses. Through the continued implementation of MRP-associated Best Management Practices and other watershed management programs, SMCWPPP anticipates that stream conditions and water quality in local creeks and the Bay will continue to improve over time.

The Creek Status Monitoring program (required by Provision C.8.d. of MRP 2.0) was eliminated with the adoption of MRP 3.0 in July 2022. Biological assessments, continuous temperature and water quality monitoring, chlorine testing, and pathogen indicator monitoring are no longer required during the next permit term. As a result, there are no recommendations associated with these monitoring parameters provided in this report. However, in compliance with Provision C.8.h.vi. of MRP 3.0, SMCWPPP will work with its RMC partners to collectively submit (by March 31, 2024) a comprehensive analysis of all bioassessment monitoring conducted by the RMC during MRP 1.0 and 2.0 for Water Years 2012 through 2021.

PART B: PESTICIDES AND TOXICITY MONITORING

Toxicity testing provides a tool for assessing the toxic effects (acute and chronic) of all chemicals in water or sediment collected from receiving waters and allows the cumulative effect of the pollutant present in the sample to be evaluated. Because different test organisms are sensitive to different classes of chemicals, several different organisms are monitored. Sediment and water chemistry monitoring for a variety of potential pollutants is conducted synoptically with toxicity monitoring to provide preliminary insight into the possible causes of any toxicity observed. Provision C.8.g. requires SMCWPPP to collect and analyze one dry season sample per year for toxicity and sediment chemistry. An additional two wet weather water samples, analyzed for toxicity and pesticides, are required during the permit term if collected as part of a regional (RMC) effort. SMCWPPP typically selects a new bottom-of-the-watershed station each year to build a geographically diverse pesticides and toxicity database.

Part B of the UCMR presents all data collected in compliance with Provision C.8.g. (Pesticides and Toxicity Monitoring). In WY 2022, samples were collected from the downstream portion of Pescadero Creek. Statistically significant toxicity to any of the analyzed test organisms was not observed, and pesticide concentrations in the sediment sample were all very low, with all values reported below the method detection limit. These results did not show any evidence that pesticides are causing impairments to aquatic life in Pescadero Creek.

In WY 2023, SMCWPPP will coordinate with the RMC to fulfill the MRP 3.0 wet weather Pesticides & Toxicity Monitoring requirements. Wet weather samples will be collected from Colma Creek and San Mateo Creek. The WY 2023 dry weather sample will be collected from Colma Creek if sufficient fine sediment material is available.

PART C: POLLUTANTS OF CONCERN (POC) MONITORING

Pollutants of Concern (POC) monitoring is intended to assess inputs of POCs to the Bay from local tributaries and urban runoff, provide information to support implementation of TMDL water quality restoration plans and other pollutant control strategies, assess progress toward achieving wasteload allocations (WLAs) for TMDLs, and help resolve uncertainties associated with loading estimates for POCs. In WY 2022, SMCWPPP conducted POC monitoring for PCBs and mercury. For PCBs, the evaluating focused on progress to-date towards identifying source areas and properties in San Mateo County. In this context, all of the relevant and readily available sediment and stormwater runoff chemistry data collected in San Mateo County were evaluated, ranging back to the early 2000s.

Specific monitoring stations sampled in WY 2022 are mapped in Figure ES-2, including a location where the statewide Stream Pollution Trends (SPoT) Monitoring Program collected a bedded sediment sample from San Mateo Creek for copper analysis (the SPoT Monitoring Program gathers data each year to help evaluate long term trends in pollutant levels).

Part C of the UCMR reports on and interprets POC monitoring data and fulfills the requirements of MRP Provision C.8.h.iii. for reporting a summary of Provision C.8.f. POC Monitoring conducted during WY 2022. Highlights from the WY 2022 POC monitoring program include the following:

- In WY 2022, SMCWPPP continued to collect and analyze POC samples in compliance with MRP Provision C.8.f. Yearly minimum sampling requirements specified in Provision C.8.f. were met for all POC monitoring parameters.
- SMCWPPP's PCBs and mercury monitoring has generally focused on San Mateo County WMAs containing high interest parcels with land uses potentially associated with PCBs. Consistent with MRP requirements, the focus has been on PCBs, with ancillary and secondary benefits assumed to be realized for mercury. This report summarized progress to-date towards identifying PCBs source areas and properties (see Section 5.0). In this context, it evaluated all the relevant and readily available sediment and stormwater runoff PCBs chemistry data collected in San Mateo County through WY 2022, ranging back to the early 2000s. This included POC monitoring data collected directly by SMCWPPP and appropriate data collected by third parties such as the RMP's Small Tributary Loading Strategy (STLS).
- To-date, composite samples of stormwater runoff have been collected from the bottom of 49 San Mateo County urban catchments of interest (Watershed Management Areas or WMAs) and over 400 individual and composite grab samples of sediment have been collected within priority WMAs. All of these samples were analyzed for PCBs and mercury to help characterize the catchments and identify source areas and properties. Most samples were collected in the public ROW. The grab sediment samples were collected from a variety of types of locations, including manholes, storm drain inlets, driveways, streets, and sidewalks, often adjacent to or nearby high interest parcels with land uses associated with PCBs and/or other characteristics potentially associated with pollutant discharge (e.g., poor housekeeping, unpaved areas). SMCWPPP's PCBs and mercury monitoring program has also included collecting sediment samples in the public ROW (e.g., from streets and the MS4) by every known PCBs remediation site in San Mateo County, to the extent applicable and feasible.

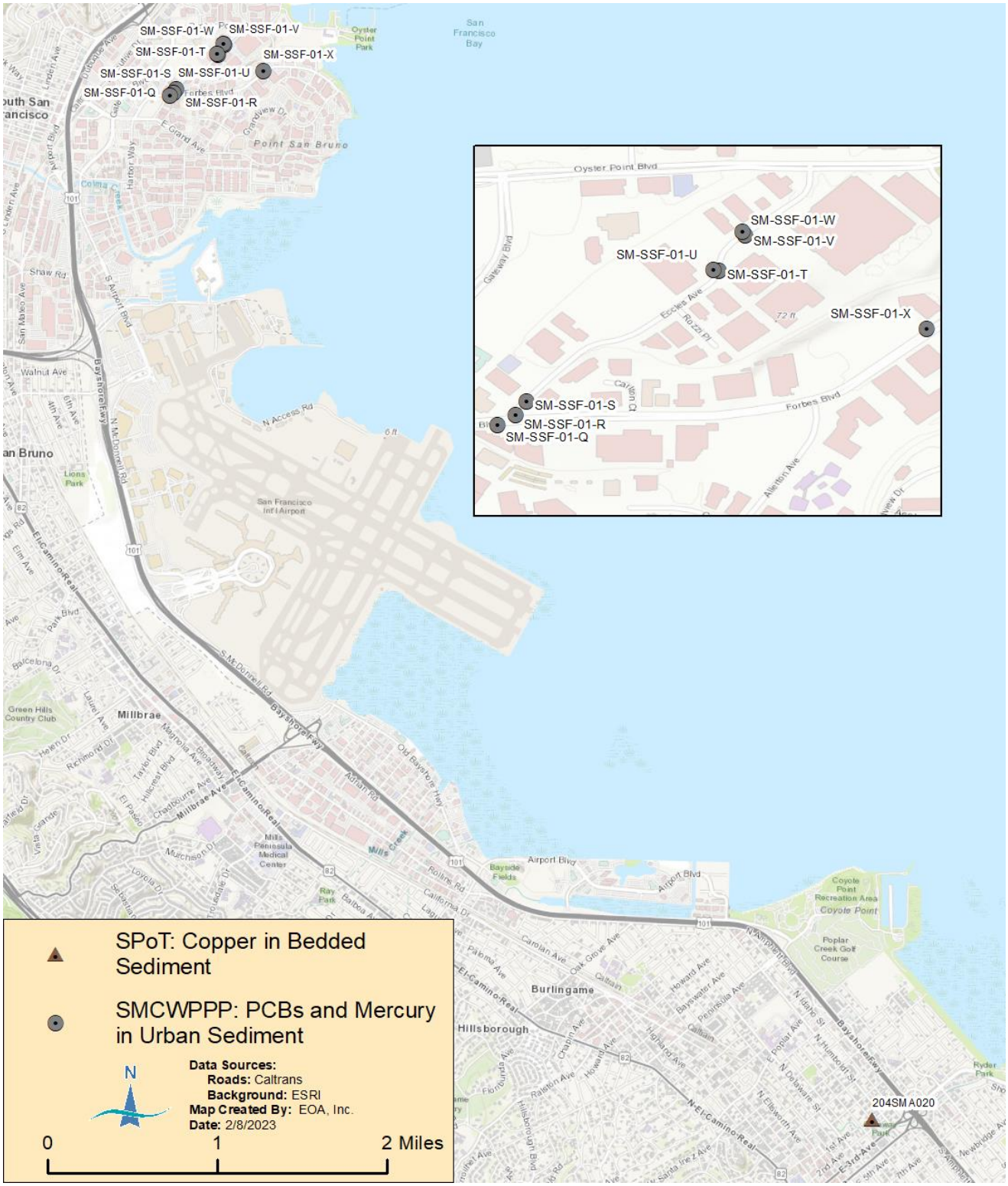

Figure ES-2. POC Monitoring Stations in San Mateo County, WY 2022.

- During WY 2022, SMCWPPP collected an additional eight sediment samples in City of South San Francisco and analyzed each for PCBs and mercury. Sampling stations were located in two catchments with old industrial land uses, designated Watershed Management Areas (WMAs) 314 and 315. Some stormwater runoff samples previously collected from the bottom of these catchments had showed elevated PCBs concentrations, but specific source properties had not been identified. As in previous years, the primary goal of the WY 2022 PCBs and mercury monitoring was to attempt to identify PCBs source properties or areas, including along the public ROWs of railways within the catchments, but all the samples had relatively low PCBs concentrations. Efforts to-date have not identified any specific source area(s) within WMAs 314 and 315.
- In accordance with MRP requirements, a comprehensive QA/QC program was implemented by SMCWPPP covering all aspects of POC monitoring that was conducted during WY 2022. Overall, the results of the QA/QC review suggest that the data generated during WY 2022 POC monitoring were of sufficient quality for the purposes of this program. While some data were flagged in the project database, none of the data was rejected.
- Figure ES-3 is a map illustrating the current status of WMAs in San Mateo County, based upon the monitoring data collected through WY 2022. Based upon total PCBs concentration in sediment and/or PCBs particle ratio in stormwater runoff samples, each WMA is placed in one of the following categories, to help prioritize future efforts to conduct additional monitoring and implement PCBs controls:
    1. Samples > 0.5 mg/kg PCBs, source properties identified.
    2. Samples > 0.5 mg/kg PCBs, source properties not identified.
    3. Samples 0.2 – 0.5 mg/kg PCBs.
    4. Samples <0.2 mg/kg PCBs.
    5. No samples collected.
- In WY 2023, SMCWPPP will continue to participate in the RMP's STLS and Emerging Contaminants Work Group (ECWG) and will continue to provide augmented financial contributions to support the ECWG.
- In WY 2023, SMCWPPP will collect composite stormwater runoff samples in San Mateo County during storm events and sediment samples for PCBs and mercury analysis. SMCWPPP will complete a plan (currently under development) for stormwater runoff and sediment monitoring during WY 2023 that will include more detail on proposed numbers of samples and locations and the associated Management Questions that will be addressed.
- In WY 2023, SMCWPPP will initiate effectiveness monitoring at Low Impact Development (LID) facilities in WY 2023. Pending guidance from a Technical Advisory Group, flow (or time) weighted composites will be collected at the influent and effluent of the LID facilities during three storm events (if feasible), and samples will be analyzed for POC constituents mercury, PCBs, and copper.
- In WY 2023, SMCWPPP will work with its BAMSC RMC regional partners to begin implementation of the RWL Assessment Report.

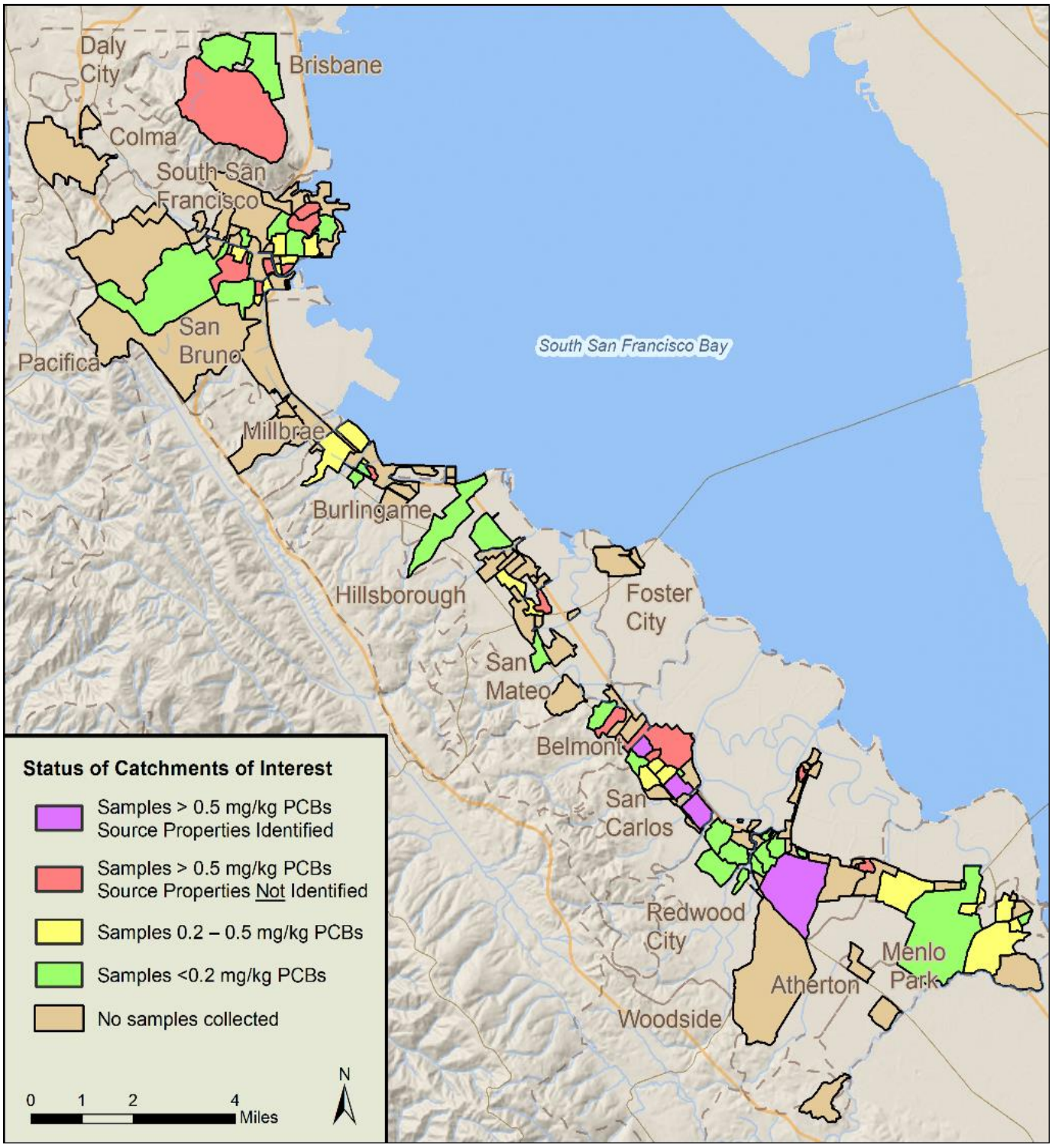

Figure ES-3. Status of PCBs source property investigations in San Mateo County Watershed Management Areas (WMAs), based upon total PCBs concentrations in sediment samples and/or PCBs particle ratio in stormwater runoff samples collected from the WMAs through WY 2022.

PART D: LOW IMPACT DEVELOPMENT (LID) MONITORING

MRP 3.0 is the first version of the MRP to specifically require LID effectiveness monitoring by all Permittees. Provision C.8.d. identifies specific parameters and monitoring frequencies that must be achieved to address management questions related to pollutant removal efficiencies of LID facilities and minimum levels of maintenance necessary to maintain effectiveness. In San Mateo County, a minimum of 25 water quality sampling events must be conducted during the MRP 3.0 permit term, with an annual minimum of three events beginning WY 2024. Each sampling event must consist of paired flow- (or time) weighted composite samples of the LID facility influent and effluent collected with automated samplers. Permittees are required to submit LID Monitoring Plans that demonstrate how the requirements in Provision C.8.d. will be met. Permittees must submit their Monitoring Plans to the Regional Water Board Executive Officer (EO) for approval by May 1, 2023 and must begin implementation of their approved or conditionally approved Monitoring Plans by October 1, 2023. To assist with development and implementation of scientifically sound LID Monitoring Plans, provision C.8.d.ii. requires Permittees to convene a Technical Advisory Group (TAG) which includes impartial science advisors and Regional Water Board staff.

In compliance with Provision C.8.h.iii.(1), Part D of the UCMR includes the LID Monitoring Status Report for WY 2022. Part D describes progress towards convening the LID TAG and developing the LID Monitoring Plan that SMCWPPP accomplished during the limited portion of WY 2022 when MRP 3.0 was in effect (i.e., July 1 through September 30, 2022). In WY 2023, SMCWPPP will continue to comply with Provision C.8.d. requirements and will prepare for beginning LID Monitoring in WY 2024.

PART E: TRASH MONITORING

Part E of the UCMR contains the Annual Trash Monitoring Status Report for WY 2022, submitted in compliance with Provision C.8.h.iii.(2) of MRP 3.0. This report describes Provision C.8.e. Trash Monitoring requirements and how SMCWPPP complied with the requirements during the limited portion of WY 2022 when MRP 3.0 was in effect (i.e., July 1 through September 30, 2022). 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 and monitoring questions specified in the MRP. In San Mateo County, a minimum of two outfalls must be monitored with nets (or equivalent devices) during a minimum of three wet weather events per year beginning October 1, 2023. In addition, a minimum of one receiving water location must be monitored with nets (or equivalent) during a minimum of three wet weather events per year beginning October 1, 2024. Permittees must submit a “collective” (assumed regional) Trash Monitoring Plan to the Regional Water Board EO for approval by July 31, 2023. 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 TAG that will be asked to review and provide input on site selection, monitoring methods, permitting, analysis methods, results, and conclusions.

In WY 2022, SMCWPPP made significant progress towards convening the Trash TAG and developing Program-specific sections of the collective Trash Monitoring Plan that will meet the requirements of Provision C.8.e. In addition, SMCWPPP worked with other members of the BAMSC Trash Monitoring Workgroup to develop and submit a grant application for funding under USEPA’s San Francisco Bay Water Quality Improvement Fund (WQIF) to support trash monitoring, outreach, and information dissemination.

In WY 2023, SMCWPPP will continue to comply with Provision C.8.e. requirements. SMCWPPP will participate in development of a regional Trash Monitoring Plan, including identification of MS4 outfalls that can be monitored for trash during storm events using the methods prescribed in MRP 3.0, and implementation of MS4 retrofits such that outfall monitoring can begin by October 1, 2023. SMCWPPP will participate in the Trash TAG, which will initially meet in March 2023, and again in spring/summer 2023 to inform development of the Trash Monitoring Plan.

REFERENCES

BASMAA (Bay Area Stormwater Management Agency Association). 2016. Creek Status and Pesticides & Toxicity Monitoring Standard Operating Procedures, Final Version 3. Prepared for BASMAA by EOA, Inc. on behalf of the Santa Clara Urban Runoff Pollution Prevention Program and the San Mateo Countywide Water Pollution Prevention Program, Applied Marine Sciences on behalf of the Alameda Countywide Clean Water Program, and Armand Ruby Consulting on behalf of the Contra Costa Clean Water Program. 190 pp.

BASMAA (Bay Area Stormwater Management Agency Association) Regional Monitoring Coalition (RMC). 2020. Creek Status and Pesticides & Toxicity Monitoring Quality Assurance Project Plan, Final Version 4. Prepared for BASMAA by EOA, Inc. on behalf of the Santa Clara Urban Runoff Pollution Prevention Program and the San Mateo Countywide Water Pollution Prevention Program, Applied Marine Sciences on behalf of the Alameda Countywide Clean Water Program, and Armand Ruby Consulting on behalf of the Contra Costa Clean Water Program. 79 pp plus appendices.

BASMAA (Bay Area Stormwater Management Agency Association). 2012. Regional Monitoring Coalition Final Creek Status and Long-Term Trends Monitoring Plan. Prepared By EOA, Inc. Oakland, CA. 23 pp.

NMFS (National Oceanic and Atmospheric Administration National Marine Fisheries Services). 2010. Biological Opinion for the San Francisco Public Utilities Commission's proposed Lower Crystal Springs Dam Improvements (Corps File #30317S), Crystal Springs/San Andreas Transmission System Upgrade (Corps File #400143S), and San Joaquin Pipeline System (Corps File #2008-01001) projects in San Mateo and San Joaquin counties, California.

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.

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), 2017. Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin. Updated to reflect amendments adopted up through May 4, 2017. https://www.waterboards.ca.gov/sanfranciscobay/basin_planning.html. May 4, 2017.

San Francisco Regional Water Quality Control Board (SFRWQCB). 2225. Municipal Regional Stormwater NPDES Permit. Order R2-2022-0018, NPDES Permit No. CAS612008.

SMCWPPP (San Mateo Countywide Water Pollution Prevention Program). 2014. Part A of the Integrated Monitoring Report. Water Quality Monitoring. Water Years 2012 and 2013 (October 2011 – September 2013). March 15, 2014.

SMCWPPP (San Mateo Countywide Water Pollution Prevention Program). 2015. Urban Creeks Monitoring Report, Water Quality Monitoring Water Year 2014. March 15, 2015.

SMCWPPP (San Mateo Countywide Water Pollution Prevention Program). 2016. Urban Creeks Monitoring Report, Water Quality Monitoring Water Year 2015. March 31, 2016.

SMCWPPP (San Mateo Countywide Water Pollution Prevention Program). 2017. Urban Creeks Monitoring Report, Water Quality Monitoring Water Year 2016. March 31, 2017.

SMCWPPP (San Mateo Countywide Water Pollution Prevention Program). 2018. Urban Creeks Monitoring Report, Water Quality Monitoring Water Year 2017. March 31, 2018.

SMCWPPP (San Mateo Countywide Water Pollution Prevention Program). 2019. Urban Creeks Monitoring Report, Water Quality Monitoring Water Year 2018. March 31, 2019.

SMCWPPP (San Mateo Countywide Water Pollution Prevention Program). 2020. Integrated Monitoring Report. Water Year 2014 through Water Year 2019. March 31, 2020.

SMCWPPP (San Mateo Countywide Water Pollution Prevention Program). 2021. Urban Creeks Monitoring Report. Part A: Creek Status and Pesticides and Toxicity Monitoring. Water Year 2020. March 31, 2021.

SMCWPPP (San Mateo Countywide Water Pollution Prevention Program). 2022. Urban Creeks Monitoring Report. Part A: Creek Status and Pesticides and Toxicity Monitoring. Water Year 2021. March 31, 2022.