



## Protecting Alameda County Creeks, Wetlands & the Bay

October 16, 2017

Mr. Bruce Wolfe  
Executive Officer  
Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland CA 94612

399 Elmhurst St.  
Hayward, CA  
94544  
p. 510-670-5543

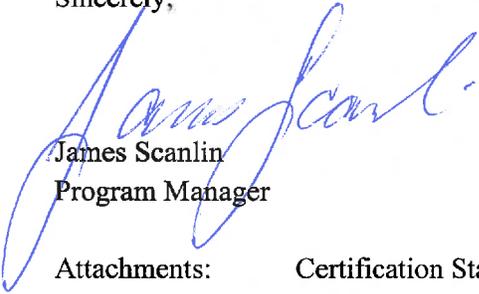
**SUBJECT: SUBMITTAL OF THE ALAMEDA COUNTYWIDE CLEAN WATER PROGRAM POLLUTANTS OF CONCERN MONITORING REPORT FOR WATER YEAR 2017**

Dear Bruce:

As you know, various submission and reporting provisions of the Municipal Regional Stormwater Permit (MRP) authorize Permittee implementation and compliance through coordination of the countywide stormwater programs. The member agency Permittees of the Alameda Countywide Clean Water Program (ACCWP) through their Management Committee, and in conformance with the Memorandum of Agreement signed by their governing bodies, have authorized and directed me to prepare and submit certain reports as part of their compliance with submission of MRP-required reports.

Therefore, with this letter, I am submitting this ACCWP Pollutants of Concern Monitoring Report for Water Year 2017 on behalf of and for the benefit of the ACCWP member agency Permittees. By signing this letter on behalf of ACCWP, I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. [40CFR 122.22(d)].

Sincerely,

  
James Scanlin  
Program Manager

Attachments: Certification Statement (1 page)  
ACCWP Pollutants of Concern Monitoring Report

### MEMBER AGENCIES:

Alameda  
Albany  
Berkeley  
Dublin  
Emeryville  
Fremont  
Hayward  
Livermore  
Newark  
Oakland  
Piedmont  
Pleasanton  
San Leandro  
Union City  
County of Alameda  
Alameda County Flood  
Control and Water  
Conservation District  
Zone 7 Water Agency

## **Certification Statement**

### **Report contents**

This submittal by the Alameda Countywide Clean Water Program of the Pollutants of Concern Monitoring Report for Water Year 2017 is in compliance with provision C.8.h.iv of the MRP in reporting monitoring accomplishments and planned efforts pursuant to MRP Provision C.8.f, Pollutants of Concern Monitoring.

### **Third party monitoring**

Please note that consistent with provision C.8.a.iv of the original MRP (Order R2-2009-074) in effect during part of the reporting period and C.8.a.iii of the reissued MRP (Order R2-2015-0049), portions of the water quality monitoring requirements were fulfilled or partially fulfilled by third party monitoring in Water Year 2017, as described in Section 1.3 of the attached Pollutants of Concern Monitoring Report:

- The Regional Monitoring Program for Water Quality in San Francisco Bay (RMP) conducted a portion of the data collection in Water Year 2017 on behalf of Permittees, pursuant to provision C.8.f. The results of that monitoring will be reported as available in the Urban Creeks Monitoring Report for Water Year 2017.
- Additionally, data addressing the Trends monitoring information need described in C.8.f was collected by the State of California's Surface Water Ambient Monitoring Program (SWAMP) through its Stream Pollutant Trend Monitoring Program at two Alameda County locations. As stated in provision C.8.a.iii Permittees may continue using these data to comply with applicable monitoring requirements included in provision C.8.f. The schedule for SWAMP's review and reporting of data collected pursuant to this provision, however, differs from the schedule described in the MRP.

Per provision C.8.a.iv of the original MRP, the Permittees requested in March 2013 that the Executive Officer adjust the MRP due dates for these reporting deliverables to synchronize with the third party reporting schedules of SWAMP and the RMP, and we ask that this adjustment be continued for the current permit term.



# ALAMEDA COUNTYWIDE CLEAN WATER PROGRAM

## POLLUTANTS OF CONCERN MONITORING REPORT FOR WATER YEAR 2017

### MEMBER AGENCIES:

Alameda  
Albany  
Berkeley  
Dublin  
Emeryville  
Fremont  
Hayward  
Livermore  
Newark  
Oakland  
Piedmont  
Pleasanton  
San Leandro  
Union City  
County of Alameda  
Alameda County Flood  
Control and Water  
Conservation District  
Zone 7 Water Agency

Report prepared by  
Alameda Countywide Clean Water Program  
399 Elmhurst Street,  
Hayward, California 94544

Submitted to:  
California Regional Water Quality  
Control Board, San Francisco Bay  
Region

Final  
October 16, 2017

# Acknowledgements

Applied Marine Sciences contributed site information and maps to this report.

## Preface

This *Pollutants of Concern Monitoring Report for Water Year (WY) 2017* was prepared by the Alameda Countywide Clean Water Program (Program, ACCWP) per the Municipal Regional Permit (MRP, NPDES Permit No. CAS612008; Order No. R2-2015-0049) for urban stormwater issued by the San Francisco Bay Regional Water Quality Control Board. This report fulfills the requirements of MRP Provision C.8.h.iv for a report describing the allocation of sampling effort for POC monitoring for the forthcoming year (i.e., the water year that began October 1 of that year) and what was accomplished for POC monitoring during the preceding water year.

This report is submitted by ACCWP on behalf of the following Permittees:

- The cities of Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, and Union City;
- Alameda County;
- Alameda County Flood Control and Water Conservation District; and
- Zone 7 of the Alameda County Flood Control and Water Conservation District (Zone 7 Water Agency).

## List of Acronyms

<b>Acronym</b>	<b>Definition</b>
ACCWP	Alameda Countywide Clean Water Program (also Program)
BASMAA	Bay Area Stormwater Management Agencies Association
BMP	Best Management Practice
CEC	Chemicals of Emerging Concern
CEDEN	California Environmental Data Exchange Network
CW4CB	Clean Watersheds for a Clean Bay
DTSC	California Department of Toxic Substances Control
FY	Fiscal Year
mg/kg	milligrams per kilogram (parts per million)
MPC	BASMAA Monitoring and Pollutants of Concern Committee
MRP	Municipal Regional Stormwater Permit
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
PBDEs	Polybrominated Diphenyl Ethers
PCBs	Polychlorinated Biphenyls
PFAS	Perfluoroalkyl Sulfonates
PFOS	Perfluorooctane Sulfonates
POC	Pollutant of Concern
RMC	BASMAA Regional Monitoring Coalition
RMP	Regional Monitoring Program for Water Quality in San Francisco Bay
ROW	Right-of-Way
SAP	Sampling and Analysis Plan
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board (also Regional Water Board)
SFEI	San Francisco Estuary Institute
SPoT	SWAMP Statewide Stream Pollutant Trends Monitoring
SSC	Suspended Sediment Concentration
STLS	Small Tributaries Loading Strategy
SWAMP	Surface Water Ambient Monitoring Program
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
UCMR	Urban Creeks Monitoring Report
USEPA	US Environmental Protection Agency
WY	Water Year

# Table of Contents

Acknowledgements.....	i
Preface .....	ii
List of Acronyms.....	iii
1 Introduction.....	1
1.1 MRP Requirements and Report Organization .....	1
1.2 Background .....	1
1.3 Related Regional Activities and Third-Party Data.....	4
1.4 Overview of Alameda County POC Monitoring .....	7
1.5 Reporting for MRP Provision C.8. ....	10
2 POC Monitoring Accomplishments in WY2017 .....	11
3 Planned POC Monitoring in WY2018 .....	16
4 References .....	22

## List of Tables

Table 1-1. Summary of ACCWP past and planned POC monitoring samples (third party samples in parentheses).....	7
Table 1-2. Types and Methods of POC monitoring conducted by ACCWP and third parties.....	9
Table 1-3. Index to Standard Reporting Content for POC Monitoring. ....	10
Table 2-1. WY2017 POC monitoring sites sampled by ACCWP and third parties. ....	11
Table 3-1. Planned number and type of WY2018 POC Monitoring samples by ACCWP and third parties.....	17

## List of Figures

Figure 2-1. WY 2017 POC Sampling Sites by ACCWP: Berkeley and Emeryville.....	13
Figure 2-2. WY 2016 POC Sampling Sites by ACCWP: Central and Southern Alameda County. ..	14
Figure 2-3. WY 2017 POC Sampling Sites by the RMP in Oakland.....	15
Figure 3-1. WY 2017 Sampling Interest Areas in Berkeley and Emeryville.....	19
Figure 3-2. WY 2018 Sampling Interest Areas in East Oakland. ....	20
Figure 3-3. Potential WY 2018 Sampling Interest Areas in Alameda.....	21

# 1 Introduction

## 1.1 MRP Requirements and Report Organization

This *Pollutants of Concern Monitoring Report for WY 2017* was prepared by the Alameda Countywide Clean Water Program (ACCWP) per the Municipal Regional Stormwater Permit (MRP) issued by the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB; Order No. R2-2015-0049). This report fulfills the requirements of MRP Provision C.8.h.iv to submit a report describing the allocation of sampling effort for POC monitoring for the forthcoming water year (beginning October 1 2017) and what was accomplished for POC monitoring during the preceding water year.

The introduction to this report provides an overview of MRP requirements and relevant POC monitoring activities by ACCWP and third parties. Section 2 includes the following information for the preceding Water Year, while Section 3 contains equivalent information projected for the forthcoming year, as available:

- Monitoring locations, with latitude-longitude coordinates;
- Number of samples collected and the method of collection or sub-type as classified in MRP Table 8.1;
- Purpose of sampling, i.e. specific relevance to the management question addressed; and
- Analytes measured.

## 1.2 Background

MRP Provision C.8.f Pollutants of Concern (POC) Monitoring requires monitoring directed toward addressing the following five priority POC management information needs:

1. Source Identification - identifying which sources or watershed source areas provide the greatest opportunities for reductions of POCs in urban stormwater runoff;
2. Contributions to Bay Impairment - identifying which watershed source areas contribute most to the impairment of San Francisco Bay beneficial uses (due to source intensity and sensitivity of discharge location);
3. Management Action Effectiveness - providing support for planning future management actions or evaluating the effectiveness or impacts of existing management actions;
4. Loads and Status - providing information on POC loads, concentrations, and presence in local tributaries or urban stormwater discharges; and
5. Trends - evaluating trends in POC loading to the Bay and POC concentrations in urban stormwater discharges or local tributaries over time.

Not all of the above information needs apply to all POCs; MRP Tables 8.1 and 8.2 specify the minimum types (corresponding to the above information needs), methods and frequencies of monitoring for each countywide stormwater program for the following POCs or POC groups:

- Polychlorinated Biphenyls (PCBs) and total mercury, for monitoring types 1-5;
- Copper, for monitoring types 4-5;
- Nutrients (Ammonium, Nitrate, Nitrite, Total Kjeldahl Nitrogen, Orthophosphate and Total Phosphorus to be analyzed in each sample), for monitoring types 4-5.
- Emerging Contaminants, which are to be addressed by a special study that addresses relevant management information needs for emerging contaminants (see section 1.3 below);
- Ancillary Parameters as necessary for each sample to address management questions for the above POCs, e.g. Total Organic Carbon (TOC) concurrent with PCBs where normalizing concentrations in water or sediment, Suspended Sediment Concentration (SSC) for water samples analyzed for PCBs or mercury for monitoring types 3, 4 or 5, and hardness in conjunction with copper samples from fresh water; and

ACCWP's POC monitoring activities during the permit term will be coordinated with information needs for other permit-related activities which include:

- **Implementation and planning of PCB and Mercury controls** to achieve TMDL load reductions are driven by targets for PCB load reductions, but mercury reductions are also to be considered and accounted for when addressing most of the following:
  - Provisions C.11/12.a require Permittees to identify watersheds and management areas where control measures are currently being implemented and/or will be implemented during the permit term. In WY2014 ACCWP and other BASMAA programs developed an outline of screening and sampling steps to identify on-land PCB sources for abatement and also characterize broader areas with high likelihood of PCB discharge as described in ACCWP 2016 (monitoring type 1). Ongoing sampling of urban sediments in publicly owned rights-of way (ROWs) is an important tool for refining the initial descriptions of management areas delineated in ACCWP (2017b) and thus supports identification and application of additional control measures in these areas (indirectly, monitoring type 3). For screening purposes samples are analyzed for total mercury, PCB congeners by EPA method 8082, TOC, %fines, and density. Due to the difficulty of associating individual sediment samples to specific source properties, in WY 2017 ACCWP shifted its source identification sampling to a screening strategy of compositing surface sediments from broader "interest areas" or "halos" that surround groups of High or Medium Likelihood parcels.
  - Provisions C.11/12.b require MRP Permittees to develop and implement an assessment methodology and data collection program to quantify mercury and PCBs loads reduced

through implementation of pollution prevention, source control, and treatment control measures. BASMAA (2017) built on previously developed methodologies described in MRP provision C.12 and the MRP Fact Sheet to provide an interim methodology to be used during this permit term, based on relative yields of mercury and PCB from different land use categories. The report's default yield coefficients are estimates of the mass of each POC contributed by an area of a particular land use per unit time, derived mainly from previous source identification studies (monitoring type 1) or watershed monitoring (monitoring types 2 or 4). New monitoring data collected during this permit term may be considered in future recommendations for updates to the yield-based accounting system.

- Provisions C.11/12.c and d include requirements for reasonable assurance analyses (RAAs) demonstrating that sufficient Green Infrastructure and other control measures will be implemented to attain the TMDL wasteload allocations at milestone dates in the future. RAA modeling assumptions will be based on the accounting system and its refinements; besides improvements in land-use yields, monitoring of specific control measures or Best Management Practices (BMPs) to confirm their effectiveness for PCB reductions will be helpful and a BASMAA project is designing BMP monitoring (monitoring type 3) in WY 2018 to address priority data gaps needed to support RAA development. Project costs are shared by all BASMAA programs, which will share credit equally for the resulting samples regardless of their actual geographic distribution within the MRP region.
- Provision C.12.e requires Permittees to collect at least 20 composite samples (throughout the permit-area) of caulk and other sealants used in storm drains and between concrete curbs and street pavement and investigate whether PCBs are present in such material and in what concentrations, as a subtype of source identification (monitoring type 1). A BASMAA regional project has developed a monitoring design for sampling to occur in late WY 2017 or early WY2018, for ACCWP will share credit equally with the other large programs.
- **BMP effectiveness monitoring** of a demonstration pair of media filters at the Ettie Street Pump Station in Oakland (monitoring type 3). A monitoring design for the system was developed through the Clean Watersheds for a Clean Bay (CW4CB) project with a commitment by ACCWP for implementation, which was delayed due to procurement requirements of the EPA grant. Because the filters will only receive a fraction of storm event runoff, the influent data will not be usable for load estimation. One of the goals of the BASMAA regional project for BMP effectiveness monitoring is to evaluate and recommend alternative mixtures to be tested in ACCWP's follow-up monitoring of the demonstration filters.
- **Pesticides and Toxicity Monitoring** (Provision C.8.g) requires wet weather and dry weather monitoring of water toxicity in urban creeks along with dry weather toxicity testing and chemical analyses of fine-grained depositional sediment. For WY 2017 ACCWP selected 2 new

dry weather toxicity and sediment chemistry monitoring sites at the base of urban watersheds which, along with the WY 2016 sites, are also suitable for characterizing the status of copper and nutrients, and building a baseline for future trends monitoring (monitoring types 4 and 5)<sup>1</sup>. Copper analysis is required for the sediment sample by MRP Table 8.5. Wet weather toxicity monitoring is to be accompanied by pesticide analyses of water samples, and is planned to be initiated in WY 2018 as a joint effort by the BASMAA Regional Monitoring Coalition (RMC), in which case a total of ten samples shall be collected over the Permit term from all of the MRP jurisdictions, with a minimum of six samples collected by the end of the third water year of the permit term. While the regional sampling sites have not yet been selected, it is expected that at least 3 of the 4 Alameda County sites sampled in WYs 2016 or 2017 will be sampled. ACCWP also plans to collect additional copper and nutrient wet-weather grab samples at the Alameda County pesticide-toxicity monitoring sites.

- **Creek Status Monitoring** (Provision C.8.d) includes sampling of nutrients in association with biological assessment sampling. At present the selection of sampling sites is determined by a regional probabilistic design and screening protocol; however a regional report planned for FY 2017/18 may suggest how up to 20% of each year's sites may be chosen for other reasons as allowed in C.8.d.i(6). Future POC monitoring of types 4 and 5 may be coordinated with Creek Status sites according to guidance on information needs from the San Francisco Bay Nutrient Management Strategy (described below).

### 1.3 Related Regional Activities and Third-Party Data

MRP Provision C.8.a.iii allows Permittees to use data collected by a third-party organization to fulfill a monitoring requirement, provided the data are demonstrated to meet data quality objectives comparable to those of the statewide Surface Water Ambient Monitoring Program (SWAMP) as described in Provision C.8.b. This section briefly describes third-party data collection activities by two programs that meet these criteria and are relevant to ACCWP's POC Monitoring objectives as summarized in section 1.4:

- The Regional Monitoring Program (RMP)
- The Stream Pollution Trends (SPoT) Monitoring Program, which is the long-term trends component of SWAMP.

---

<sup>1</sup> One of these sites, 204CVY010 at Castro Valley Creek, was extensively used for stormwater monitoring in earlier permits and may be useful in the future for confirming long-term trends in copper concentrations in water as a mandated phase-out is implemented of copper in vehicle brake pads.

The **RMP Small Tributaries Loading Strategy** (STLS) coordinates monitoring efforts between BASMAA and the RMP to address the management information needs identified above. Ongoing design and priorities are set by the STLS Team, which includes representatives from BASMAA, Water Board staff, RMP staff from San Francisco Estuary Institute (SFEI) and technical advisors. The STLS Multi-Year Plan was originally developed to provide an alternative monitoring approach to default requirements in Provision C.8.e of the previous MRP (R2-2009-0074), which listed management information needs similar to those in the current permit.

Watershed monitoring is a major element of the STLS, and SFEI's efforts in this area during WYs 2015 through 2017 focused on a "Characterization Reconnaissance" monitoring design that reflects an increasing focus towards finding watersheds and land areas within watersheds that contain PCB sources (monitoring types 1 and 2) and could be candidates for management actions by stormwater programs. In addition to watershed monitoring, RMP-funded elements of the STLS include a Regional Watershed Spreadsheet Model for estimating pollutant loads to the Bay, for which calibration can be improved and updated loads using results from the characterization monitoring (monitoring type 4) and a Long-Term Trends Strategy to guide future monitoring design that will apply to monitoring type 5.

SFEI staff collaborated with BASMAA stormwater programs to identify suitable locations for collection of composite stormwater grab samples that were analyzed for PCBs, total mercury, total metals, SSC, grain size and TOC/DOC. Priority sites in Alameda County target channels or outfalls in older industrial drainages that are often tidally influenced, which limits their sampleability based on the timing of storm events in relation to the tidal cycle. In WY 2017 six Alameda County sites were sampled as described in Section 2 (final Site IDs for these sites have not been established).

The **RMP PCB Strategy** is engaged in a multi-year effort to develop Conceptual Models of PCB fate and transport in selected nearshore portions of SF Bay called Priority Margin Units (PMUs), in order to clarify contributions from adjacent watersheds to Bay impairment, inform future management decisions and tracking of trends in PCB loads from those watersheds. The first Conceptual Model report for the Emeryville Crescent was drafted in early 2016 using available data from the RMP and other sources. The report concluded that the Crescent experiences relatively quick turnover of PCB loads through exchange of water and sediment with the open Bay, and that foodweb monitoring would be a promising indicator for tracking future response to projected load reductions in the watershed.

For the second Conceptual Model report for San Leandro Bay in WY 2017, additional funds were made available from supplemental environmental project (SEP) penalty funds for field studies in August 2016.

PCBs were analyzed in sediment, water and biota (sport fish, small prey fish, and benthos) collected at the confluences of 3 main “inputs” to San Leandro Bay: the Airport Channel, the confluence of San Leandro Creek and Damon Slough (Zone 12 Line K) and the Oakland Estuary channel between Oakland and Alameda. Due to budget constraints, biological samples were analyzed in phases and the food web findings will be reported in a final Conceptual Model report in early WY 2018.

The **RMP Chemicals of Emerging Concern (CECs) Strategy** is a “living” document developed by the RMP Emerging Contaminants Work Group to guide RMP special studies on CECs using a tiered risk and management action framework. BASMAA’s representatives to the various RMP workgroups and Technical Review Committee are working to ensure that this strategy will address the requirement in MRP Table 8.2 that Permittees conduct or cause to be conducted a special study that addresses relevant management information needs for emerging contaminants<sup>2</sup>.

The RMP also provides support for the **San Francisco Bay Nutrient Management Strategy**, an initiative begun in 2012 to develop scientific information needed to make decisions about assessing and managing potential nutrient impacts to the Bay. The STLS Team has asked SFEI staff working on the Nutrient Strategy about information needs regarding nutrients in stormwater but to date has not received any response suggesting additional nutrient data would be useful from the STLS characterization sites, which have been selected based on likelihood of PCB sources.

The main goal of the **SPoT Monitoring Program** is to determine long-term trends in stream contaminant concentrations and effects statewide. For this purpose the program has established a network of approximately 100 sites throughout the state where it samples depositional stream sediments collected near the base of watersheds<sup>3</sup>. Bay Area sites selected by Regional Water Board staff include two in Alameda County which are identified in Section 2.

Tier 1 contaminants analyzed at all SPoT sites include total mercury, copper and other metals, and PCB congeners (analyzed by EPA Method 8082M). After the first 5 years of mostly annual monitoring Phillips et al. (2014) recommended that the monitoring design be modified so that

---

<sup>2</sup> The special study must account for relevant CECs in stormwater and would address at least perfluorooctane Sulfonates (PFOS), perfluoroalkyl sulfonates (PFAS), and alternative flame retardants being used to replace PBDEs. The Emerging Contaminant Work Group (ECWG) has completed studies addressing PFOS and PFAS, and has budgeted a 2019 Conceptual Model report on alternative flame retardants (AFRs). The STLS Team assisted in developing the AFR project concept and will provide planning assistance to the ECWG for more detailed study scoping during 2018.

<sup>3</sup>SPoT’s original design targeted large watersheds, but Regional Water Board staff, in consultation with BASMAA representatives, recommended sampling a range of sizes of urbanized Bay Area watersheds.

half of the sites continue to be sampled annually while the other half are sampled biannually, rotating in two groups to allow reallocation of funds for analysis of additional parameters at some sites. After the re-design for SPoT went into effect in 2015, fifty sites are considered "core" sites and are sampled every year, including the two Alameda County sites (Phillips et al. 2016). Results of SPoT 2013 and 2014 monitoring are included in the current 7-year report (Phillips et al. 2016). A ten-year synthesis report is planned to include data collected through 2017, with a draft expected by late 2018 (Bryn Phillips, pers. comment).

#### 1.4 Overview of Alameda County POC Monitoring

Table 1-1 lists the minimum sampling effort required by MRP Table 8.2 for the overall permit term and each year of monitoring, summarizes ACCWP's POC monitoring samples collected in the most recent WY and cumulatively since October 1, 2016, and shows estimated ACCWP POC monitoring effort in the forthcoming WY 2018, which are described in more detail in the following sections.

**Table 1-1. Summary of ACCWP past and planned POC monitoring samples (third party samples in parentheses).**

POC	Total Samples in permit term (min. in 1 yr)	Minimum by Year 4, ea. type	No. Samples in WY2017	Cumulative No. in permit term	Minimum No. Planned in WY2018
PCBs	80 (8)	8 : Type 1 8 : Type 2 8 : Type 3 8 : Type 4 8 : Type 5	8(6) : Type 1 (6) : Type 2 0 : Type 3 0 : Type 4 (2) : Type 5	20(10) : Type 1 (12) : Type 2 0 : Type 3 0 : Type 4 (6) : Type 5	25 (2) : Type 1 20 (2) : Type 2 6 : Type 3 0 : Type 4 (2) : Type 5
Total Mercury	80 (8)	8 : Type 4 8 : Type 5	8(6) : Type 1 (6) : Type 2 0 : Type 3 0 : Type 4 (2) : Type 5	20(10): Type 1 (10) : Type 2 0 : Type 3 0 : Type 4 (4) : Type 5	25 (2) : Type 1 20 (2) : Type 2 5 : Type 3 0 : Type 4 (2) : Type 5
Copper	20(2)	4: Type 4 4: Type 5	4(0) : Type 4 2(2) : Type 5	8(1) : Type 4 8(4) : Type 5	7 : Type 4 7 (2) : Type 5
Nutrients	20(2)	20 : Type 4	2 : Type 4 2 : Type 5	4 : Type 4 4 : Type 5	5 : Type 4 5 : Type 5
Emerging Contaminants	Not specified	Not specified	0	0	TBD

Table 1-2 summarizes the types and methods of monitoring used in relevant POC monitoring by ACCWP or third parties, as described above in Sections 1.2 and 1.3. The “Type-Method” abbreviations are used in the tables in Sections 2 and 3 to reference the management question(s) and details of sample matrix and collection methods as described in this table.

**Table 1-2. Types and Methods of POC monitoring conducted by ACCWP and third parties.**

<b>Type-Method Abbreviation</b>	<b>Sample Matrix</b>	<b>Type of Sampling Event/ Location</b>	<b>POCs (ancillary analytes)</b>	<b>Sampling program (note)</b>
1-SU	Sediment, urban	Dry weather/ on or near ROW surface receiving runoff from potential/likely source	PCBs, mercury	ACCWP (may be composited)
1,2-SU	Sediment, urban	Dry weather/ ROW surfaces in interest area containing potential/likely source(s)	PCBs, mercury	ACCWP (composited)
1,2-SB	Sediment, bedded	Dry weather/ in MS4 facilities or local channels	PCBs, mercury	ACCWP
1,2,4-WW	Runoff	Stormwater grab or composite/ lower watershed site	PCBs, mercury, some copper	RMP-STLS (characterization)
1,3-caulk	Caulk or sealant	Dry weather / storm drainage and roadway infrastructure or building structure	PCBs	BASMAA (regional project)
3-WW	Runoff	Stormwater/ influent and dual effluent composites for pilot treatment filters at Ettie St. Pump Station	PCBs, mercury, (copper, nutrients optional)	ACCWP (Ettie St. Pump Station BMP)
3-WW	Runoff	Stormwater influent/effluent samples from BMPs or experimental microcosms	PCBs, mercury	BASMAA (regional project)
4,5-WD	Runoff	Dry weather grab sample/ lower watershed integrative site	Copper, nutrients	ACCWP (Pesticides & Toxicity sites)
4,5-WW	Runoff	Stormwater grab or composite/ lower watershed integrative site	Copper, nutrients	ACCWP (Pesticides & Toxicity sites)
4,5-SB	Sediment, bedded in channel	Dry weather/ fine grained at lower watershed integrative site	Copper	ACCWP (Pesticides & Toxicity sites)
5-WW	Runoff	Details of design to be determined by STLS Long Term Trends Strategy	PCBs, mercury	RMP-STLS (Long-term Trends)
5-SB	Sediment, bedded in channels	Dry weather / lower watershed integrative site	PCBs, mercury, copper	SPoT

## 1.5 Reporting for MRP Provision C.8.

The MRP requires the following submittals by March 31 of each year:

- Electronic Reporting (C.8.h.ii)
- Urban Creeks Monitoring Report (UCMR, C.8.h.ii).

Table 1-3 lists Standard Report Content for monitoring reports as described in MRP Provision C.8.h.vi, and shows the distribution of the required content among this report and the above reporting deliverables.

**Table 1-3. Index to Standard Reporting Content for POC Monitoring.**

Standard Report Content	This Report	March 2017 submittal
(1) The purpose of the monitoring and briefly describe the study design rationale	Sections 2,3	UCMR
(2) Quality Assurance/Quality Control summaries for sample collection and analytical methods, including a discussion of any limitations of the data	N/A	UCMR
(3) Brief descriptions of sampling protocols and analytical methods	By reference only	UCMR, by reference
(4) Sample location description, including water body name and segment and latitude and longitude coordinates	Section 2 (coordinates only)	UCMR
(5) Sample ID, collection date (and time if relevant), media (e.g., water, filtered water, bed sediment, tissue)	Sections 2,3 as available	UCMR and Electronic Reporting
(6) Concentrations detected, measurement units, and detection limits	N/A	UCMR and Electronic Reporting
(7) Assessment, analysis, and interpretation of the data for each monitoring program component	Section 2 (Narrative)	UCMR
(8) A listing of volunteer and other non-Permittee entities whose data are included in the report	Section 1.x	UCMR
(9) Assessment of compliance with applicable water quality standards.	N/A	UCMR

## 2 POC Monitoring Accomplishments in WY2017

In WY 2017 ACCWP and third parties collected a total of 18 samples in 8 monitoring Type- method categories, as summarized in Table 2-1.

**Table 2-1. WY2017 POC monitoring sites sampled by ACCWP and third parties.**

Station Code or Sample ID	Sampling Program	Latitude	Longitude	Sample Date	Type-Method	Analytes
Berkeley-A	ACCWP	37.87988	-122.30607	10/26/16	1-SU	Mercury, PCBs
Berkeley-B	ACCWP	37.87734	-122.30222	10/26/16		
Berkeley-C	ACCWP	37.87881	-122.29827	10/26/16		
Berkeley-D	ACCWP	37.87412	-122.30424	10/26/16		
Berkeley-E	ACCWP	37.86782	-122.29873	10/26/16		
Berkeley-F	ACCWP	37.85683	-122.29264	10/26/16		
3rd-RR**	ACCWP	37.87262	-122.30258	10/26/16		
Emeryville-B	ACCWP	37.84686	-122.28925	10/26/16		
204WRD002	ACCWP	37.61716	-122.07352	7/13/2017	4,5-WD (4,5-SB*)	Copper, nutrients (*copper only)
205R01198	ACCWP	37.50917	-121.96423	7/13/2017		
Line 12-F below PG&E station	RMP-STLS	37.7622	-122.2143	12/15/16	1,2-WW	Mercury, PCBs
Line 12-H at Coliseum Way	RMP-STLS	37.7624	-122.2122	12/15/16	1,2-WW	Mercury, PCBs
Line 12-I at Coliseum Way	RMP-STLS	37.7600	-122.2102	12/15/16	1,2-WW	Mercury, PCBs
Line 12-J at mouth above 12-K	RMP-STLS	37.7547	-122.2014	12/15/16	1,2-WW	Mercury, PCBs
Line 12-K at Coliseum Entrance	RMP-STLS	37.7545	-122.2043	2/9/17	1,2-WW	Mercury, PCBs
Line 12-M at Coliseum Way	RMP-STLS	37.7469	-122.2007	2/9/17	1,2-WW	Mercury, PCBs
204ALA020	SPoT	37.582	-122.052	May or June	5-SB	Mercury, PCBs, Copper
204SLE030	SPoT	37.72556	-122.18361			

\*\*composited at street grade crossings of railroad.

The largest group of samples were urban right-of way sediments (type 1-SU) to support source identification of PCBs, collected in Old Industrial areas of Berkeley and Emeryville as shown in Figure 2-1. This was a continuation of earlier screening efforts as reported in ACCWP (2017a) although with more focus on composite area samples. While average PCB concentrations in all composites were below 0.5 mg/kg, two sites in west Berkeley (BER-A and BER-F, each composited from 7 points) were higher than 0.1 mg/kg, suggesting that more intensive source ID efforts should focus on these areas. An additional composite (“3<sup>rd</sup>-RR”, comprising 4 points) was restricted to railroad grade crossings in northwest Berkeley where sediment from the railroad drainage appeared transported onto the gutters and shoulders of cross streets, but the composite PCB concentration was low. Sampling efforts in Emeryville were unsuccessful due to lack of available sediment or uncertainty about the source of sediment; additional sampling in Oakland was delayed to WY 2018.

Figure 2-2 and Figure 2-3 show WY 2017 POC monitoring locations in the rest of the County, which were sampled as part of other MRP monitoring by ACCWP, or by the RMP. While most of the RMP stormwater samples from channels to San Leandro Bay showed elevated PCBs, both water concentration and particle ratio were especially high for Zone 12 Line H. This may indicate recent or ongoing discharge from the former General Electric facility at 5441 International Boulevard, which lies higher up in the drainage area where this line is culverted.

Figure 2-1. WY 2017 POC Sampling Sites by ACCWP: Berkeley and Emeryville.

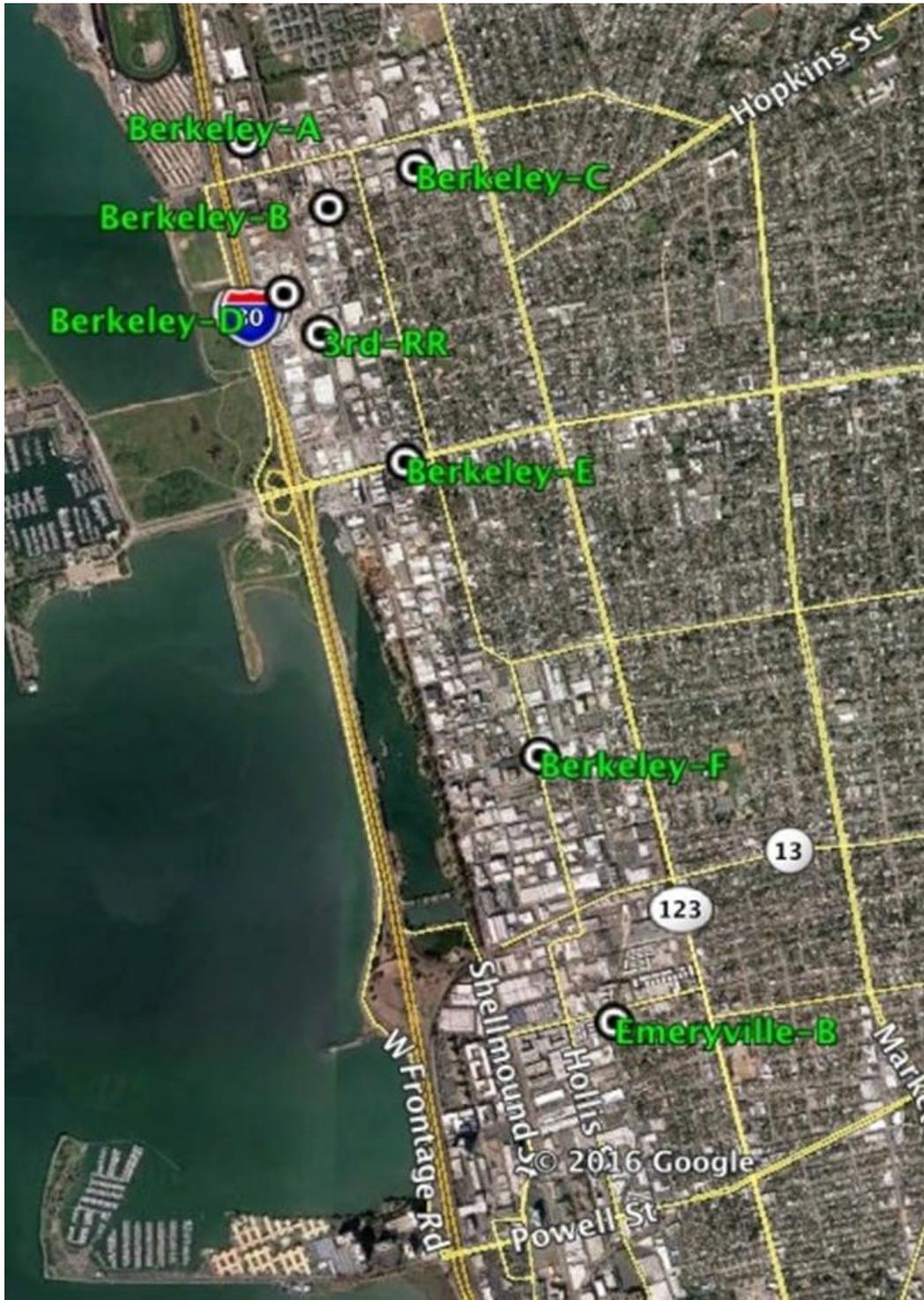
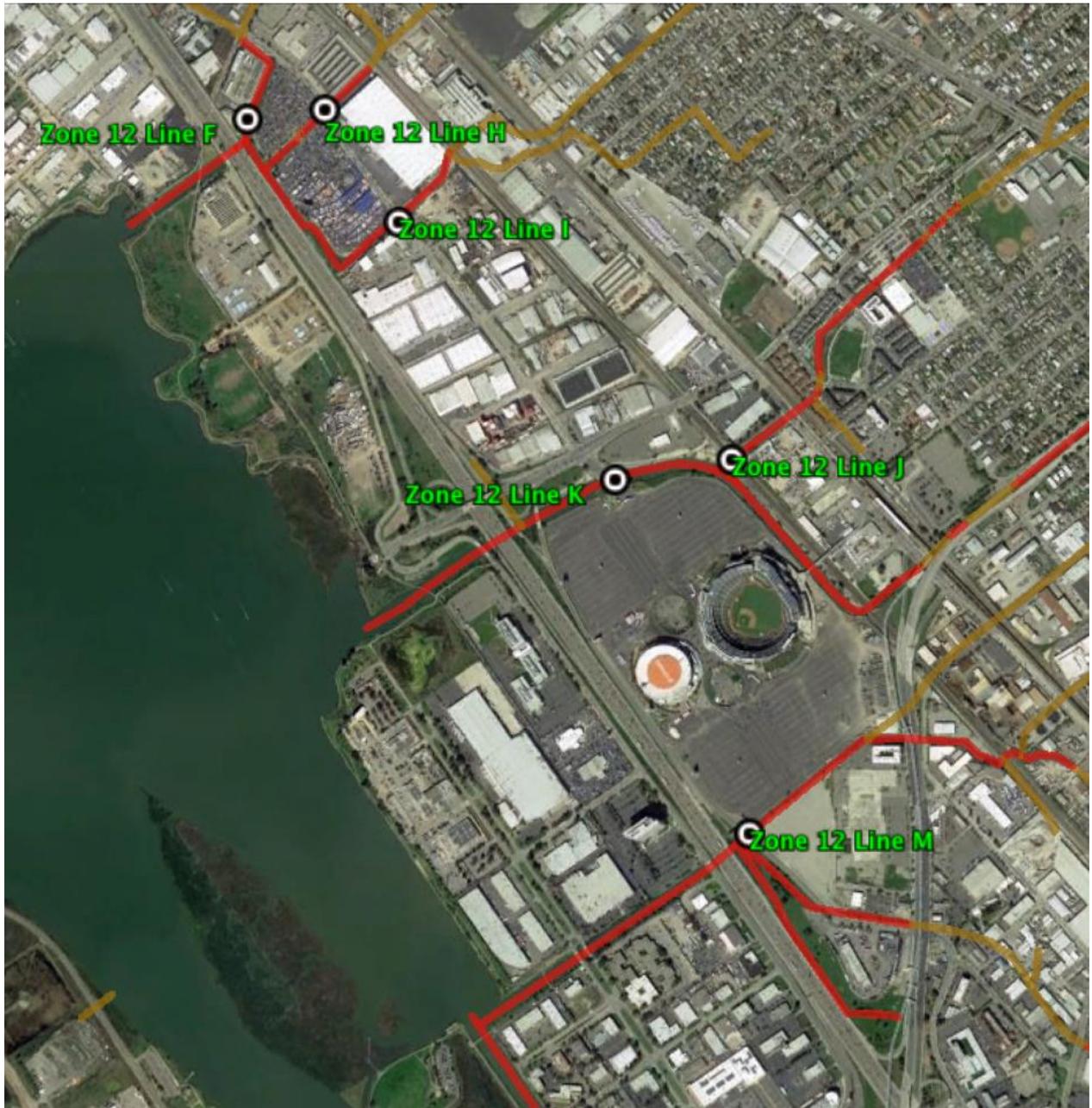


Figure 2-2. WY 2016 POC Sampling Sites by ACCWP: Central and Southern Alameda County.



Figure 2-3. WY 2017 POC Sampling Sites by the RMP in Oakland



### 3 Planned POC Monitoring in WY2018

- 
- Figure 3-3 shows potential additional interest areas for sampling in the Alameda Point redevelopment area being converted from the former Naval Air Station.

As noted in Section 1.2, the CW4CB originally prepared a monitoring design for the Ettie Street Pump Station media filters, which specifies a minimum of 5 storm events with three points in the system sampled per event. During initial planning in WY 2017 for a follow-up BASMAA regional project, the project team modified the information priorities for media filters and proposed minor changes to the design to facilitate comparison of several media mixes enhanced with biochar; the final combination of mixes to be used will be based on results of initial laboratory column testing conducted by the BASMAA regional BMP effectiveness project during WY 2018. The testing at Ettie St. Pump Station is likely to be deferred to WY2019.

Table 3-1 shows the estimated allocations of sampling effort for the forthcoming water year. ACCWP source identification sampling will be based on two complementary approaches:

- Compositing surface sediments from broader “interest areas” that surround groups of High or Medium Likelihood parcels and are delineated as much as possible by drainage area boundaries and land use types.
- Localized source tracking where previous sampling of either sediment or water points to the presence of an active source.

The Program is working with city staff to follow up with source tracking in the following areas:

- Figure 3-1 shows the interest areas for sediment sampling in Berkeley and Emeryville, which were sampled or attempted in WY 2017. Based on WY 2017 sediment composite results, source tracking will focus on the two composite areas shaded deep orange:
  - a WY2016 STLS stormwater sample at the Gilman Street outfall contained a relatively high PCB particle ratio although WY 2016 ROW sampling was unable to identify possible sources. Alternative sampling methods for storm drain lines are being evaluated, especially for the smaller priority sub-catchment close to the Bay. RMP resampling at the outfall is also a priority for WY2018.
  - In southwest Berkeley, composite results may support a possible site referral in relation to known groundwater contamination sites near Heinz and Grayson Streets; past city records not available in state databases will be reviewed to inform WY 2018 follow-up monitoring,
- Figure 3-2 shows planned interest areas for sediment compositing in East Oakland. Follow-up in the Zone 12 Line H watershed will focus on the area around the General

Electric facility highlighted with magenta color; RMP resampling at this site is also a priority for WY2018.

- Figure 3-3 shows potential additional interest areas for sampling in the Alameda Point redevelopment area being converted from the former Naval Air Station.

As noted in Section 1.2, the CW4CB originally prepared a monitoring design for the Ettie Street Pump Station media filters, which specifies a minimum of 5 storm events with three points in the system sampled per event<sup>4</sup>. During initial planning in WY 2017 for a follow-up BASMAA regional project, the project team modified the information priorities for media filters and proposed minor changes to the design to facilitate comparison of several media mixes enhanced with biochar; the final combination of mixes to be used will be based on results of initial laboratory column testing conducted by the BASMAA regional BMP effectiveness project during WY 2018. The testing at Ettie St. Pump Station is likely to be deferred to WY2019.

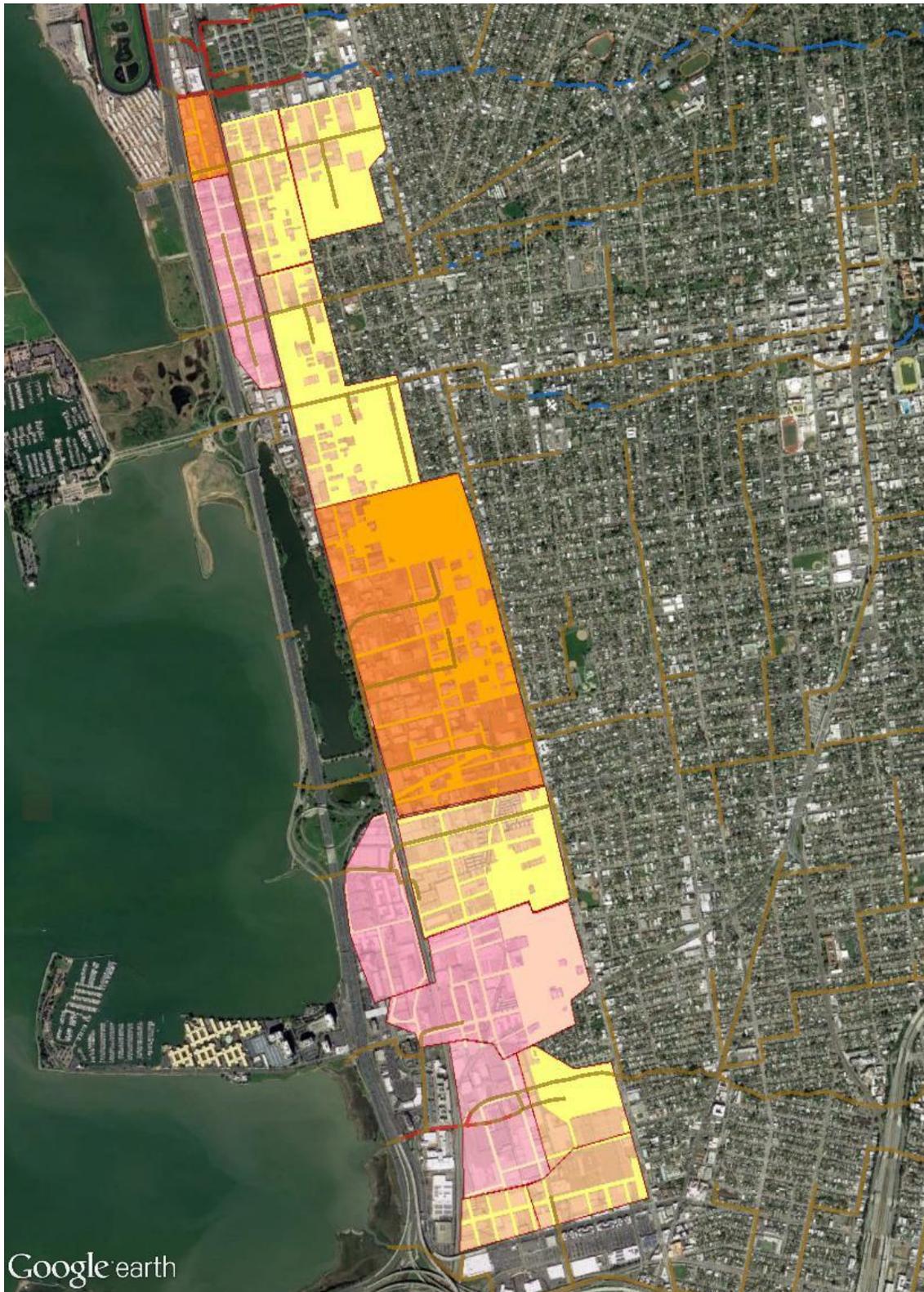
**Table 3-1. Planned number and type of WY2018 POC Monitoring samples by ACCWP and third parties.**

POCs	Sampling program	Type-Method	Planned Number of Samples in WY2018	Comments
PCBs, mercury	ACCWP	1-SU	1-5	Confirmation samples at sites with elevated PCBs, recycling, dumping or other potential sources
PCBs, mercury	ACCWP	1,2-SU	20-30	Composites from PCB interest areas and railroad crossings in Emeryville and Oakland; potentially also Alameda
PCBs	ACCWP/ BASMAA	1,3-caulk	5	Proportionate share of 20 samples analyzed through regional monitoring project
PCBs, mercury	RMP STLS	1,2-WW	2-3	SFEI will select from among 4 candidate sites in Berkeley, Emeryville and Oakland
PCBs, mercury	ACCWP/ BASMAA	3-WW	TBD, assume minimum 5-7	Proportionate share of samples collected through regional monitoring project
PCBs, mercury	ACCWP	3-WW	TBD	Ettie St. Pump Station pilot media filter monitoring

<sup>4</sup> A sediment sample would also be collected from the settling tank at the end of the wet season.

Copper, Nutrients	ACCWP	3-WW	TBD	Ettie St. Pump Station pilot media filter monitoring
Copper	ACCWP	4-5 WD	2	To be selected from 4 recent pesticide-toxicity monitoring sites
		4-5 WW	3	
		4-5 S-B	2	
Nutrients	ACCWP	4-5 WW	3	To be selected from 4 recent pesticide-toxicity monitoring sites
		4-5 WW	3	
Mercury, PCBs, Copper	SPoT	5-SB	2	Subject to continuing funding

**Figure 3-1. WY 2017 Sampling Interest Areas in Berkeley and Emeryville.**  
(shading within compositing polygons indicates Old Industrial parcels)



**Figure 3-2. WY 2018 Sampling Interest Areas in East Oakland.**  
(shading within compositing polygons indicates Old Industrial parcels)

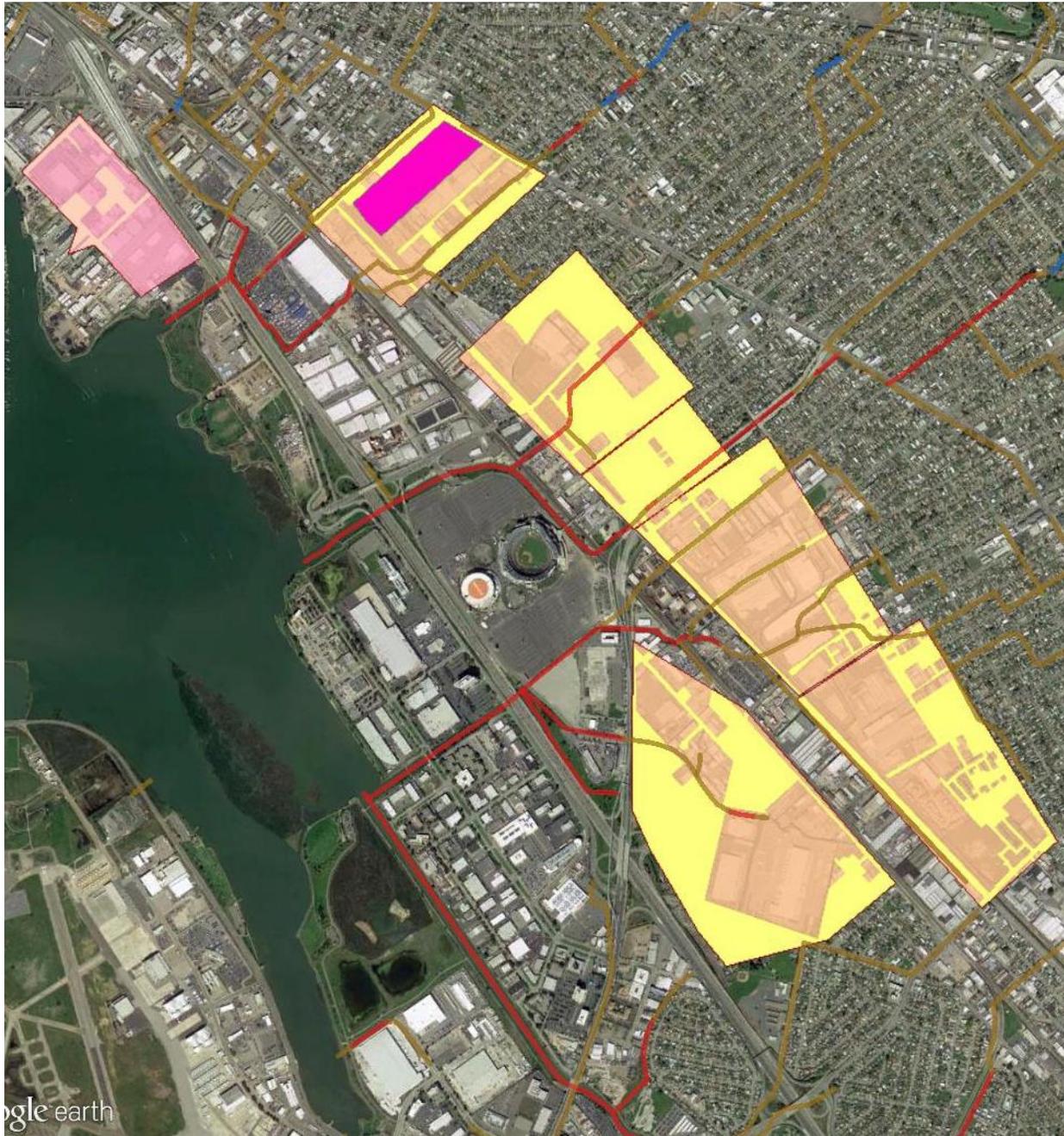


Figure 3-3. Potential WY 2018 Sampling Interest Areas in Alameda



## 4 References

Alameda Countywide Clean Water Program (ACCWP), 2014. Integrated Monitoring Report Part C: PCB and Mercury Load Reduction Planning. March 14, 2014.

ACCWP, 2016. Mercury and PCBs Control Measures Implementation Status Report. March 31, 2016.

ACCWP, 2017a. Pollutants of Concern Monitoring 2016 Sediment Sampling Report: Appendix A.3A to the Urban Creeks Monitoring Report for October 2015 through September 2016. March 31, 2017.

ACCWP, 2017b. Mercury and PCBs Watershed/Management Areas, Control Measures, and Load Reductions – Update 2017. September 29, 2017.

BASMAA, 2017. Interim Accounting Methodology for TMDL Loads Reduced. Prepared by Geosyntec Consultants and EOA, Inc. Version 1.1, 23 March 2017.

Phillips, B.M., Anderson, B.S., Siegler, K., Voorhees, J., Tadesse, D., Webber, L. and R. Breuer, 2014. Trends in Chemical Contamination, Toxicity and Land Use in California Watersheds: Stream Pollution Trends (SPoT) Monitoring Program. Third Report - Five-Year Trends 2008-2012. California State Water Resources Control Board, Sacramento, CA. Available at [www.waterboards.ca.gov/water\\_issues/programs/swamp/spot/](http://www.waterboards.ca.gov/water_issues/programs/swamp/spot/)

Phillips, B.M., Anderson, B.S., Siegler, K., Voorhees, J.P., Tadesse, D., Weber, L., Breuer, R. 2016. Spatial and Temporal Trends in Toxicity and Chemical Contamination Relative to Land Use in California Watersheds: Stream Pollution Trends (SPoT) Monitoring Program. Fourth Report-Seven-Year Trends 2008-2014. California State Water Resources Control Board, Sacramento, CA. Available at [www.waterboards.ca.gov/water\\_issues/programs/swamp/spot/](http://www.waterboards.ca.gov/water_issues/programs/swamp/spot/)