



CONTRA COSTA
CLEAN WATER
P R O G R A M

***CONTRA COSTA PCBS AND MERCURY TMDL
CONTROL MEASURE PLAN AND REASONABLE
ASSURANCE ANALYSIS 2026 UPDATE***

Submitted in Compliance with Provision C.11.f.iii and C.12.h.iii

Municipal Regional Stormwater Permit

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***The Contra Costa Clean Water Program – A Municipal Stormwater Program consisting of
Contra Costa County, its 19 Incorporated Cities/Towns, and the Contra Costa County Flood &
Water Conservation District***

This report is submitted by the agencies of the



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- Contra Costa County
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LIST OF ACRONYMS

BASMAA	Bay Area Stormwater Management Agencies Association
BMP	Best Management Practices
CCCWP	Contra Costa Clean Water Program
g	gram
GSI	Green Stormwater Infrastructure
GIS	Geographic Information System
HRU	Hydrologic Response Unit
mg	milligram
mg/kg	milligram per kilogram
MPC	Monitoring and Pollutants of Concern Committee
MRP	Municipal Regional Permit
MS4	Municipal Separate Storm Sewer System
MTC	Metropolitan Transportation Commission
ng	nanogram
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
PCBs	Polychlorinated Biphenyls
PG&E	Pacific Gas and Electric
POTW	Publicly Owned Treatment Works
RAA	Reasonable Assurance Analysis
ROW	Right-of-Way
RWSM	Regional Watershed Spreadsheet Model
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SFEI	San Francisco Estuary Institute
SSID	Stressor/Source Identification
TMDL	Total Maximum Daily Load
WLA	Wasteload Allocation
WY	Water Year

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Executive Summary

The Contra Costa PCBs and Mercury TMDL Control Measure Plan and Reasonable Assurance Analysis 2026 Update was prepared by the Contra Costa Clean Water Program (CCCWP) to comply with the Municipal Regional Stormwater Permit (MRP) requirements for urban stormwater management in the San Francisco Bay Area. This update fulfills the reporting obligations under Provisions C.11.f.iii and C.12.h.iii, focusing on the implementation and effectiveness of control measures for polychlorinated biphenyls (PCBs) and mercury.

Purpose and Scope

- The report evaluates the effectiveness of all PCBs and mercury control measures, updates the TMDL Control Measure Plan and Reasonable Assurance Analysis (RAA), and provides a detailed implementation plan for the next permit term (MRP 4).
- It identifies technically and economically feasible control measures, schedules their implementation, and quantifies expected pollutant load reductions, costs, efficiency, and environmental impacts.

Regulatory Background

- Fish tissue monitoring in San Francisco Bay (Bay) has revealed bioaccumulation of PCBs and mercury, prompting California to designate the Bay as impaired and develop TMDLs for these pollutants.
- Municipal stormwater systems are a significant pathway for PCBs and mercury to enter the Bay, and local agencies are required to implement control measures to reduce these loads.

Control Measure Plans

PCBs

- **Control Measure Implementation in Old Industrial Areas:** Includes Source Property Identification and Abatement, which focuses on old industrial areas with elevated PCB concentrations, referring contaminated sites to the Regional Water Board and implementing interim enhanced operations and maintenance (O&M) measures. The Moderate Property Control Program includes onsite inspection and monitoring, and implementing actions on the property to contain or treat sources. Actions within the public right-of-way (ROW) include O&M to remove contaminated sediments within the

storm drain system and retrofit with treatment controls or green stormwater infrastructure (GSI).

- **Other Control Measures:** Includes redevelopment or retrofit projects with GSI, full trash capture devices, diversion to publicly owned treatment works (POTW), and management of PCBs in building materials, electrical utilities, and bridges and overpasses.
- **Regional Alternative Compliance System:** Introduces a market-based model for compliance credits, prioritizing high-impact GSI retrofits in disadvantaged communities, which often coincide with moderate or higher levels of PCBs.

Mercury

- **Mercury Load Avoidance and Reduction:** Implements bans and recycling programs for mercury-containing products, coordinated through regional household hazardous waste facilities.
- **Other Controls:** Relies on GSI, full trash capture devices, and enhanced O&M, which also address PCBs.

Implementation Schedule and Extent of Implementation

- Most control measures are scheduled for completion by 2060, with some ongoing indefinitely due to regulatory requirements or continued benefits.
- All likely source areas will be monitored by the end of MRP 3. MRP 4 will focus on targeted/on-site investigations in areas with elevated PCBs to identify specific source properties and moderate properties. For all moderate properties that are confirmed during MRP 4, Permittees will work with the property owner to implement controls on the property, and all source properties will be referred to the Regional Water Board or abated directly.

Cost, Efficiency, and Environmental Impacts

- Source control measures are generally more cost-efficient than structural treatment controls.
- The report provides planning-level unit cost estimates for various control measures and discusses factors influencing their selection, including cost-effectiveness, load reduction potential, safety, and implementation challenges.

- The plan is statutorily exempt from CEQA as a feasibility or planning study, with future projects subject to environmental review as required.

Reasonable Assurance Analysis (RAA) Results

- The RAA demonstrates that, while mercury goals have been met, achieving the PCBs load reduction goal will require continued implementation of scalable control measures such as GSI.
- Uncertainties remain due to modeling assumptions, funding availability, and external factors like climate change and economic shifts.

Conclusion

This update presents a comprehensive, programmatic approach to implementing effective PCBs and mercury control measures in Contra Costa County. While mercury goals are within reach, achieving PCBs TMDL compliance will likely extend to 2060 or beyond, depending on the pace of source property abatement, GSI implementation, and other scalable measures. The plan supports adaptive management and regional collaboration to meet water quality goals and regulatory requirements.

1. INTRODUCTION

1.1 Purpose

This *PCBs and Mercury TMDL Control Measure Plan and Reasonable Assurance Analysis 2026 Update* report was prepared by the Contra Costa Clean Water Program (CCCWP) as required by the Municipal Regional Permit (MRP) for urban stormwater issued by the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB; Order No. R2-2022-0018). This report fulfills the requirements of MRP Provisions C.11.f and C.12.h for updating the mercury and PCBs control measures implementation plan and corresponding reasonable assurance analysis (RAA) submitted to the SFBRWQCB in 2020 (CCCWP, 2020).

The following MRP reporting requirements are addressed within this report:

- Evaluate the effectiveness of all PCBs and mercury control measures.
- Update the TMDL Control Measure Plan and RAA as necessary. The update can focus on control measures for which new information is available and those not evaluated in the 2020 report.
- Prepare a detailed implementation plan for the control measures to be implemented in the next permit term (i.e., MRP 4).

In general, the long-term plan must:

- Identify all technically and economically feasible PCBs and mercury control measures to be implemented (including Green Stormwater Infrastructure (GSI) projects).
- Include a schedule according to which these technically and economically feasible control measures will be fully implemented.
- Provide an evaluation and quantification of the PCBs and mercury load reduction of such measures, as well as an evaluation of costs, control measure efficiency, and significant environmental impacts resulting from their implementation.

Specifically, this plan revision must:

- Identify the control measures implemented during the current permit term (i.e., MRP 3.1) and any additional control measures to be implemented in MRP 4.
- Describe the intensity or extent of control measure implementation.

- Identify accountability metrics to track during MRP 4, corresponding to the proposed implementation intensity.
- Estimate the load reductions to be achieved through the implementation of control measures during MRP 4.

This report is organized into the following sections:

1. Introduction and Background – Section 1 describes requirements for managing mercury and PCBs per the TMDLs and the MRP.
2. PCBs Control Measure Plan – Section 2 describes the technically and economically feasible PCBs control measures that are currently being implemented or will be implemented by the Permittees during MRP 4.
3. Mercury Control Measure Plan – Section 3 describes the technically and economically feasible mercury control measures that are currently being implemented or will be implemented by the Permittees during MRP 4.
4. Schedule of Implementation – The schedule of implementation for the PCBs and mercury control measures is provided in Section 4.
5. Costs, Efficiency, and Environmental Impacts – Section 5 provides an evaluation of costs, control measure efficiency, and significant environmental impacts resulting from the implementation of the PCBs and mercury control measures.
6. Reasonable Assurance Analysis (RAA) Summary – Section 6 provides a summary of the estimated PCBs and mercury loads that will be reduced through implementation of the control measures described in Sections 2 and 3 and the model uncertainties.
7. Conclusion – the final section summarizes the findings of the report.

The RAA provided in Appendix A provides details on the estimation of the PCBs and mercury loads that will be reduced through control measure implementation, including the data used, the model and model inputs, and model uncertainties.

1.2 Background

1.2.1 PCBs and Mercury Total Maximum Daily Loads

Fish tissue monitoring in San Francisco Bay (Bay) has revealed bioaccumulation of PCBs, mercury, and other pollutants. The levels found are thought to pose a health risk to people consuming fish caught in the Bay.

Consumption of PCBs-contaminated fish is considered a primary source of human exposure in locations where fish consumption (i.e. sports and subsistence fishing) and PCBs contamination are significant. A related probable exposed population is breast-fed children whose mothers consume PCBs-contaminated fish. Observed effects in humans have ranged from mild reactions to serious health consequences. However, individual PCB congeners exhibit widely varying potencies to produce a range of adverse biological effects, including hepatotoxicity, developmental toxicity, immunotoxicity, neurotoxicity, and carcinogenicity (SFBRWQCB, 2008).

Mercury is a persistent, bioaccumulative, toxic metal and does not degrade in the environment (SFBRWQCB, 2004). It exists in elemental, inorganic, and organic forms. Natural processes transform mercury between the elemental and inorganic forms, and between the inorganic and organic forms. The organic form, methylmercury, is the most toxic. Small aquatic organisms take in methylmercury, allowing it to enter the food web. As methylmercury moves through the food web, it accumulates and concentrates in organisms at the top of the food web.

In humans, mercury is neurotoxic, affecting the brain and spinal cord, and interfering with nerve function (SFBRWQCB, 2004). Pregnant women and nursing mothers can pass mercury to their fetuses and infants through the placenta and breast milk. In children, particularly those under age six, mercury can decrease brain size, delay physical development, impair mental abilities, cause abnormal muscle tone, and result in coordination problems. Substantial mercury exposure is also associated with birth defects and infant mortality. Adults exposed to mercury may experience abnormal sensations in their hands and feet, tiredness, or blurred vision. Higher levels of mercury exposure can impair hearing and speech. Long-term exposure can damage the kidneys.

As a result of these findings, California issued an interim advisory on the consumption of fish from the Bay beginning in the mid-1990s. The advisory led to the Bay being designated as an impaired water body on the Clean Water Act "Section 303(d) list" in 1998 due to PCBs, mercury, and other pollutants. In response, the SFBRWQCB adopted Total Maximum Daily Load (TMDL) water quality

restoration programs targeting PCBs and mercury in the Bay in 2010 and 2008, respectively. The general goals of the TMDLs are to identify sources of PCBs and mercury to the Bay, implement actions to control the sources, and restore water quality (SFBRWQCB, 2008).

Municipal separate storm sewer systems (MS4s) are one of the PCBs and mercury source/pathways identified in the TMDL plans. Local public agencies (i.e., Permittees) subject to requirements via National Pollutant Discharge Elimination System (NPDES) permits are required to implement control measures to reduce PCBs and mercury from entering stormwater runoff and the Bay. These control measures, also referred to as best management practices (BMPs), are tools Permittees can use to help restore water quality in the Bay.

PCBs TMDL

The PCBs TMDL was developed based on a fish tissue target of 10 nanograms (ng) of PCBs per gram (g) of fish tissue. This target is based on a cancer risk of one case per an exposed population of 100,000 for the 95th percentile San Francisco Bay Area sport and subsistence fisher consumer (32 g fish per day) (SFBRWQCB, 2008). This serves as the numeric endpoint for reducing PCB exposure through fish consumption. A food web model was developed by the San Francisco Estuary Institute (SFEI) to identify the sediment target concentration that would yield the fish tissue target; this sediment target was found to be 1 microgram (μg) of PCBs per kg of sediment. This is equivalent to reducing the total mass of PCBs in the active layer of the San Francisco Bay sediment to 160 kg. The San Francisco Estuary Institute (Davis, 2003; SFEI, 2007a) developed a mass budget model that identified the total external load of PCBs to the Bay that would attain a long-term (i.e., equilibrated) PCBs mass in the bay of 160 kg within approximately 30 years. The mass budget model estimated that a reduction of the external load to 10 kg of PCBs per year would achieve this goal, assuming a starting Bay-wide PCBs concentration in surface sediment of 4.65 micrograms per kilogram ($\mu\text{g}/\text{kg}$)¹ (SFEI, 2007a). Twenty percent of the estimated allowable external load was allocated to urban stormwater runoff.

The wasteload allocation (WLA) for PCBs for urban stormwater is 2 kg/yr by 2030. This load allocation was developed by applying the required sediment concentration (1 $\mu\text{g}/\text{kg}$) to the estimated annual sediment load discharged from local tributaries. The PCBs TMDL staff report

¹ Bay-wide PCBs concentration in surface sediment estimated based on Regional Monitoring Program 2004 – 2006 data (SFEI, 2007a).

(SFBRWQCB, 2008) estimated the annual sediment load originating from stormwater to be 2,000,000 metric tons (i.e., 2,000,000,000 kg/yr) based on a range of then available estimates and differing methods. This WLA was distributed among the counties based on population in the year 2000. A summary of the allocations for each county is provided in Table 1-1.

Table 1-1: PCBs Wasteload Allocations by County

County	Population (year 2000)	Wasteload Allocations (kg/yr)
Alameda	1,440,000	0.5
Contra Costa	790,000	0.3
Marin	240,000	0.1
Napa	120,000	0.05
San Francisco	630,000	0.2
San Mateo	600,000	0.2
Santa Clara	1,600,000	0.5
Solano	290,000	0.1
Sonoma	110,000	0.05
Total		2

The PCBs TMDL Staff Report estimates a total stormwater load of 20 kg/yr based on studies conducted by SFEI (SFEI, 2006; 2007b). SFEI calculated this baseline load using three different methods to scale monitoring data (grab sample concentration data from Water Year (WY) 2005², United States Geologic Survey [USGS] continuous discharge, and suspended sediment data) from Coyote Creek and the Guadalupe River by area and land use. Subtracting the WLA for urban stormwater from this estimate resulted in a required load reduction of 18 kg/yr (i.e., a 90% reduction) by 2030. Note that the MRP area³ portion of the 2 kg/yr allocation is 1.6 kg/yr.

PCBs TMDL compliance can be demonstrated through two different approaches:

1. Meet the WLA (i.e., monitoring and/or modeling-based compliance demonstration).

² Although the PCBs TMDL Staff Report states that PCBs loads estimates for the Guadalupe River were based on data collected between 2003 and 2005; SFEI, 2006 indicates that the baseline load estimate of 20 kg/yr was based on an extrapolation of monitoring data collected in WY 2005.

³ Marin, Napa, San Francisco, and Sonoma are not within the MRP boundary.

2. Demonstrate the required load reductions can be achieved (i.e., modeling-based compliance demonstration).

Mercury TMDL

The mercury TMDL addresses two water quality objectives. The first, established to protect people who consume Bay fish, applies to fish large enough to be consumed by humans. The objective is 0.2 milligrams (mg) of mercury per kilogram (kg) of fish tissue (average wet weight concentration measured in the muscle tissue of fish large enough to be consumed by humans). The second objective, established to protect aquatic organisms and wildlife, applies to small fish (3-5 centimeters in length) commonly consumed by the California least tern, an endangered species. This objective is 0.03 mg mercury per kg fish (average wet weight concentration). To achieve the human health and wildlife fish tissue and bird egg monitoring targets and to attain water quality standards, the Bay-wide suspended sediment mercury concentration target is 0.2 mg mercury per kg dry sediment.

A roughly 50% decrease in sediment, fish tissue, and bird egg mercury concentrations is necessary for the Bay to meet water quality standards. Reductions in sediment mercury concentrations are assumed to yield a proportional decrease in the total amount of mercury in the system, thereby achieving target fish tissue and bird egg concentrations (SFBRWQCB, 2004).

The urban stormwater runoff load to the San Francisco Bay is estimated to be equivalent to 116 kg/yr, as reported in the San Francisco Bay Regional Monitoring Program for Water Quality's Sources, Pathways, and Loadings Report (McKee et al., 2015), which is less than the Mercury TMDL Staff Report reported load of 160 kg/yr⁴ (corresponding to "baseline year" of 2003). The WLA for urban stormwater is 82 kg/yr (SFBRWQCB, 2006). Based on the TMDL-reported load of 160 kg/yr, this results in an estimated total required load reduction of 78 kg/yr, required to be achieved by 2028. A summary of the WLA and load reductions required for each urban stormwater entity subject to the TMDL is provided in Table 1-2 (SFBRWQCB, 2006).

⁴ This loading assumes an annual sediment load of 410,000,000 kg/yr of sediment with a concentration of 0.38 mg/kg (ppm) (SFBRWQCB, 2006). Although the estimates were based on monitoring data collected in previous years, the TMDL states the baseline year as 2003.

Table 1-2: Mercury Wasteload Allocations by County

Entity	Wasteload Allocation (kg/yr)¹
Santa Clara Valley Urban Runoff Pollution Prevention Program	23
Alameda Countywide Clean Water Program	20
Contra Costa Clean Water Program	11
San Mateo County Stormwater Pollution Prevention Program	8.4
Vallejo Sanitation and Flood Control District	1.6
Fairfield-Suisun Urban Runoff Management Program	1.6
American Canyon	0.14
Sonoma County area	1.6
Napa County area	1.6
Marin County area	3.3
Solano County area	0.81
San Francisco County area	8.8
Total	82

¹ Listed in Table 4-w of Appendix A in the Mercury TMDL Staff Report (SFBRWQCB, 2006).

Mercury TMDL compliance can be demonstrated through the following three approaches⁵:

1. Show mercury concentrations are below 0.2 milligrams mercury per kilogram of sediment (mg/kg) on a countywide level (i.e., monitoring-based compliance demonstration).
2. Meet the WLA in Table 1-2 (i.e., monitoring and/or modeling-based compliance demonstration).⁶
3. Demonstrate the required load reductions can be achieved (i.e., modeling-based compliance demonstration).

1.2.2 Municipal Regional Permit

NPDES permit requirements associated with Phase I municipal stormwater programs and Permittees in the Bay area are included in the MRP, which was issued to 76 cities, counties, and

⁵ Detailed documentation requirements for demonstration of these approaches are summarized in the Mercury TMDL Staff Report (SFBRWQCB, 2006).

⁶ Modeling-based compliance demonstration requires monitoring-based empirical inputs to conduct the analyses.

flood control districts in 2009 and revised in 2015 (MRP 2.1), 2019 (MRP 2.1 amendment), 2022 (MRP 3.1), and 2023 (MRP 3.1 amendment).

The MRP 2.1 was amended on February 13, 2019, to add the cities of Antioch, Brentwood, Oakley, and the eastern portions of unincorporated Contra Costa County and the Contra Costa County Flood Control & Water Conservation District (the East County Permittees), which are located within the jurisdiction of the Central Valley Water Board (Region 5) and were previously covered under a separate Joint Municipal NPDES Permit titled “East Contra Costa County Municipal NPDES Permit”. The East County Permittees are not subject to the PCBs and mercury TMDLs, although they have been implementing some PCBs and mercury control measures as part of Contra Costa’s Clean Water Program. The MRP 3.1 specifically exempts the East County Permittees from MRP Provisions C.11 and C.12, but does incorporate requirements for the Sacramento-San Joaquin Delta Estuary Methylmercury TMDL. Therefore, this report does not address planned PCBs and mercury control measures, their implementation, or RAA results for the East County Permittees. For unincorporated Contra Costa County, this report summarizes the control measures implemented and the PCBs and mercury loads reduced within the SFBWQCB Region 2 boundary.

MRP 2.1 Provision C.3.j required the Permittees to develop a Green Infrastructure Plan for inclusion in the 2019 Annual Report. The Green Infrastructure Plans were developed using a mechanism to prioritize and map areas for potential and planned green infrastructure projects, both public and private, on a drainage-area-specific basis, for implementation by 2020, 2030, and 2040.

MRP 2.1 Provisions C.11.c and C.12.c required the Permittees to prepare an RAA for inclusion in the 2020 Annual Report. The 2020 RAA did the following:

1. Quantified the relationship between the areal extent of green infrastructure implementation and mercury and PCBs load reductions. This quantification accounted for the scale of contamination in the treated area and the pollutant-removal effectiveness of the green infrastructure strategies expected to be implemented.
2. Estimated the amount and characteristics of land area that would be treated by green infrastructure by 2020, 2030, and 2040.
3. Estimated the amount of mercury and PCBs load reductions that would result from green infrastructure implementation by 2020, 2030, and 2040.

4. Quantitatively demonstrated that mercury load reductions of at least 10 kg/yr and PCBs load reductions of at least 3 kg/yr would be realized by 2040 through implementation of green infrastructure projects.
5. Ensured that the calculation methods, models, model inputs, and modeling assumptions used had been validated through a peer review process.

Additionally, MRP 2.1 Provisions C.11.d. and C.12.d. required the Permittees to prepare plans and schedules for mercury and PCBs control measure implementation and an RAA demonstrating that sufficient control measures will be implemented to attain the mercury TMDL wasteload allocations by 2028 and the PCBs TMDL wasteload allocations by 2030. The implementation plans were required to:

1. Identify all technically and economically feasible mercury or PCBs control measures (including green infrastructure projects, but also other control measures such as source property identification and abatement, managing PCBs in building materials during demolition, enhanced operations and maintenance, and other source controls) to be implemented.
2. Include a schedule according to which technically and economically feasible control measures will be fully implemented.
3. Provide an evaluation and quantification of the mercury and PCBs load reduction of such measures, as well as an evaluation of costs, control measure efficiency, and significant environmental impacts resulting from their implementation.

This TMDL Control Measure Plan and RAA update, required by MRP 3.1, focuses on new control measures or new information on the previously identified control measures and includes a prediction of loads reduced during the MRP 4 permit term.

1.2.3 Bay Area RAA Guidance

From a regulatory perspective, reasonable assurance is defined as the demonstration that the implementation of control measures will, in combination with operation of existing or proposed storm drain system infrastructure and management programs, result in sufficient pollutant reductions over time to meet total maximum daily load (TMDL) wasteload allocations (WLAs), water quality-based effluent limits (WQBELs), or other water quality targets specified in a municipal separate storm sewer system (MS4) permit (USEPA, 2017). From the perspective of a stakeholder in the watershed who is focused on the improvement of water quality or restoration

of a beneficial use of a waterbody, reasonable assurance is the demonstration and a commitment that specific management practices are identified with sufficient detail (and with a schedule for implementation) to establish that necessary improvements in the receiving water quality will occur. From the perspective of an MS4 Permittee, reasonable assurance is a detailed analysis of TMDL WLAs, associated permit limitations, and the extent of stormwater management actions needed to achieve TMDL WLAs and address receiving water limitations. RAAs may also assist in evaluating the financial resources needed to meet pollutant reductions based on schedules identified in the permit, TMDL, or stormwater management plan, and in preparing associated capital improvement plans.

The RAA presented in this report is consistent with the guidance provided in the *Bay Area RAA Guidance Document* (BASMAA, 2017).

2. PCBs CONTROL MEASURE PLAN

This section describes the control measures that are currently being implemented to control PCBs in urban runoff and will continue to be implemented during MRP 4. Because PCBs control measures also help achieve stormwater mercury WLAs, mercury and PCBs are discussed together throughout this section as applicable.

2.1 Control Measure Implementation in Old Industrial Areas

In response to MRP Provisions C.11.c and C.12.c, the CCCWP developed and is implementing the *Contra Costa County Old Industrial Area Control Measure Plan (CMP)* (CCCWP, 2024a). The plan includes schedules for implementing control measures in old industrial areas to address mercury and PCBs load reduction requirements included in MRP Provisions C.11.c and C.12.c, and includes maps of the areas where control measures will be implemented, the size of the treated catchments, and a description of design and sizing features for the selected control measures.

In choosing locations for control measures, implementation focuses on catchments containing known or suspected source areas or evidence of moderate to high mercury or PCBs soil concentrations (generally soil/sediment concentrations greater than 0.3 mg/kg mercury or 0.2 mg/kg PCBs).

The sections below outline the implementation actions described in the Old Industrial Area CMP. This program is targeting the treatment of 664 acres of old industrial area, which is equivalent to 121 g/yr PCBs and 28 g/yr mercury, during the MRP 3.1 permit term. The program will continue through the MRP 4 permit term until all high and moderate areas that have been identified through source property investigation monitoring have been addressed.

For the 2024 Old Industrial Area CMP, the CCCWP analyzed existing monitoring data to identify known or suspected areas with moderate or high concentrations of mercury or PCBs. These areas are located in the cities of Pittsburg, Richmond, and San Pablo and in Unincorporated Contra Costa County. The Lauritzen Channel and Parr Channel watersheds are known areas of concern and also targeted for investigation. Additional focus areas will be assessed when identified by ongoing old industrial area monitoring.

The process described below is used to select and implement specific control measures for each focus area. These steps will be conducted throughout the remainder of the MRP 3.1 permit term and the MRP 4 permit term as needed:

1. The CCCWP will continue to monitor mercury and PCBs in old industrial areas to look for the presence of moderate or elevated levels of mercury or PCBs.
2. Confirmed source properties (i.e., PCBs $\geq$ 1 mg/kg), will either be referred to the Water Board or the permittees will abate or cause the property to be abated directly. New source properties will be referred to the Water Board as they are identified unless the property is abated directly (e.g., through redevelopment).
3. For target areas where moderately elevated levels of PCBs are confirmed in the right-of-way (ROW), the CCCWP or permittee will conduct site visits to determine if there is a readily identifiable source.
4. If no specific property is identified as a source of moderate contamination, the CCCWP and permittee will select and implement controls for the moderate area in the ROW (i.e., treatment or storm drain operation and maintenance (O&M) activities) based on site constraints, local infrastructure, and drainage patterns.

Further details on the control measure programs to be implemented in old industrial areas during MRP 4 are provided below.

2.1.1 Source Property Investigation and Abatement

The CCCWP is investigating land areas that are likely to contribute mercury and PCBs to MS4s. These investigations focus on land areas where industrial activities occurred prior to 1980 and continue today (i.e., old industrial land use areas). The CCCWP identifies significantly elevated PCBs concentrations through surface soil/sediment sampling in the public ROW or through water sampling. The Permittees are required to investigate at least 1,700 acres of likely source properties during MRP 3.1. The CCCWP estimated that a total of 9,582 acres of old industrial parcel area remained to be investigated at the beginning of the permit term (FY 2022/23). With the aid of a 4.5-year EPA-funded PCBs TMDL Special Studies and Implementation Project grant that began on July 1, 2025, the CCCWP plans to complete ROW monitoring of the remaining old industrial area within the MRP 3.1 permit term. Follow-up onsite inspections and monitoring to confirm source properties, and the submittal of source property referrals, will be completed by the end of MRP 4.

For those properties or land areas where high mercury or PCBs concentrations are found (generally areas with mercury concentrations greater than 0.5 mg/kg or PCBs concentrations greater than 1.0 mg/kg in sediment), Permittees will take actions to abate the mercury or PCBs

source property or refer the property to the SFBRWQCB to facilitate further investigation and remediation of the subject property. For each source property referred to the SFBRWQCB, Permittees will implement interim enhanced operations and maintenance (O&M) measures in the street or storm drain infrastructure adjacent to the referred source property or implement a stormwater treatment system downstream of the property, if feasible, to address the portion of flow that discharges into the public right of way. These enhanced O&M measures intercept historically deposited contaminated sediment in the vicinity of the source property and prevent further contaminated sediment from being discharged to the storm drain system.

If implementation of enhanced O&M is not feasible (e.g., for properties that discharge directly to the Bay), the source property may still be referred to the SFBRWQCB, although PCBs load reduction credit would be received after the property is abated or after 10 years, whichever occurs first. When a referred industrial facility is considered to be abated by the Permittee and the SFBRWQCB, the enhanced O&M measures may be discontinued. The properties within Contra Costa County that have been referred to the SFBRWQCB or self-abated through 2025 are listed in Table 2-1 below.

Table 2-1: CCCWP Contaminated Sites Referred to the SFBRWQCB and Self-Abated Properties

SITE NAME	LOCATION/APN	PROPERTY SIZE (ACRES)	YEAR REFERRED	Abatement Status
Sims Metal Management Richmond Facility	600 South 4th Street, Richmond / 560-240-040, 560-250-027, 560-250-025	19.3	FY 2017/18	Site is fully abated (per Regional Water Board letter dated July 18, 2023)
World Corp	1014 Chesley Ave., Richmond	10.44	FY 2017/18	Abated/ Remediated
Port of Richmond	Point Potrero Marine Terminal, Richmond	0.72	FY 2017/18	Self-Abated
San Diego St. Transformer Spill	R.O.W. San Diego St., Richmond	0.08	FY 2017/18	Self-Abated
Larkey Pool Renovation Project	2771 Buena Vista Ave., Walnut Creek /171-110-021	<0.01	FY 2017/18	Self-Abated
Radiant Avenue	Radiant Avenue, North Richmond; 408-082-030	19.5	FY 2016/17	Self-Abated

SITE NAME	LOCATION/APN	PROPERTY SIZE (ACRES)	YEAR REFERRED	Abatement Status
Former Molino Enterprises. Inc.	1215 Willow Pass Rd., Pittsburg; 096-091-003-2	6.0	FY 2015/16	Referred
Rumrill Sports Complex (Former BNSF Railyard Site)	1509 Rumrill Blvd, San Pablo / 409-313-009; 409-313-009; 410-012-007; 410-012-008	4.45	FY 2015/16	Self-Abated
Fass Metals	818 W. Gertrude Avenue, Richmond, CA 94801 / 408-160-011	0.2	FY 2017/18	Referred w/out Enhanced O&M
Zeneca/Former Stauffer Chemical Company	1415 South 47th St, Richmond, CA 94804 / 560-050-022	9.2	FY 2019/20	Referred w/out Enhanced O&M
UC Richmond Field Station	1301 South 46 th Street, Richmond, CA 94804 / 560-060-008	14.0	FY 2019/20	Referred w/out Enhanced O&M
SE 8 th & Ohio	NE Corner of S 8th St & Ohio Ave, Richmond, CA 94804	0.17	FY 2025/26	Referred
H&H Recycling	901 Sanford Ave, Richmond, CA 94801	0.75	FY 2025/26	Referred

2.1.2 Moderate Property Control Program

If a property is identified as a source of moderate contamination (i.e., PCBs $\geq$ 0.2 mg/kg) through onsite inspection and monitoring, the permittee will assess whether the property owner can implement actions on the property to contain or treat the source. The permittee will then take action to cause the containment or treatment to be implemented by the property owner at or around the site.

2.1.3 Operations and Maintenance

MS4 O&M activities conducted by Permittees include street sweeping and drain inlet cleaning. In addition, storm drains, culverts, and channels are maintained as needed (i.e., desilted when necessary to remove excessive sediment that may be causing localized flooding). Infrequent capital improvement projects may also remove accumulated sediment from the MS4, such as

storm drain repairs or channel stabilization projects. Each of these O&M activities removes PCBs and mercury that are present in the sediment that is removed.

The Permittees may conduct targeted O&M in old industrial areas where no specific property is identified as a source of moderate contamination.

2.1.4 Retrofit with Treatment Controls or Green Stormwater Infrastructure

Retrofit projects provide treatment control for existing developed areas without redeveloping the tributary area. Treatment controls may include GSI or non-GSI treatment. The Permittees may install treatment controls in old industrial areas where no specific property is identified as a source of moderate contamination.

Retrofit treatment control measures will be designed and sized consistent with MRP Provision C.3.d (Numeric Sizing Criteria for Stormwater Treatment Systems). Non-regulated retrofit projects with significantly constrained areas or other substantial constraints will size treatment control measures using the Guidance for Sizing Green Infrastructure Facilities in Streets Projects (BASMAA 2019) with companion analysis Green Infrastructure Facility Sizing for Non-Regulated Street Projects (BASMAA 2017). These projects will comply with SFBRWQCB's conditional approval of that sizing method, providing qualifiers and conditions under which alternative sizing criteria may be used for Non-Regulated green streets projects (SFBRWQCB, 2019). Retrofit projects that use the conditionally approved sizing criteria in MRP Provision C.3.j(3)(b) will provide an analysis to the SFBRWQCB that determines the reduced effectiveness of the facility sized according to these alternative criteria.

Contra Costa Regional Alternative Compliance System

The Contra Costa County Regional Alternative Compliance (RAC) System is a stormwater funding and compliance framework that reimagines how municipalities and developers meet post-construction stormwater treatment requirements. The RAC System introduces a market-based model that enables public agencies and private developers to purchase compliance credits—called “Equivalent Acres Greened”—generated by strategically implemented off-site GSI projects.

This approach departs from traditional, parcel-by-parcel compliance by pooling capital and maintenance funding across jurisdictions to finance large-scale, high-impact GSI retrofits. These projects may be prioritized in older urban and industrial areas with elevated pollutant loads, including trash, PCBs, and mercury, and often overlap with disadvantaged communities. By

concentrating resources in these areas, the RAC System will deliver greater environmental returns, support environmental justice, and achieve compliance at a lower cost through economies of scale.

The RAC System’s innovation lies not only in its regional scope but also in its financial architecture. It introduces a dedicated, recurring funding stream through the sale of compliance units and associated O&M fees. These fees will be administered through a proposed Community Facilities District, ensuring the long-term sustainability of the infrastructure. The system also incorporates advanced hydrologic modeling and performance-based contracting and allows for Public-Private Partnership (P3) models—tools rarely used in stormwater programs—to optimize project delivery and accountability.

Implementation is structured in phases, beginning with pilot exchanges to validate administrative and financial mechanisms. A full-scale rollout is anticipated in 2026, with adaptive management built into the framework to ensure responsiveness to regulatory, environmental, and community needs.

The RAC System was developed through a collaboration led by the Cities of San Pablo and Walnut Creek, unincorporated Contra Costa County, and the CCCWP. Funding was provided by two EPA San Francisco Bay Water Quality Improvement Fund grants and CCCWP member contributions.

2.2 Redevelopment with Green Stormwater Infrastructure

GSI is a treatment control that uses vegetation, engineered soils, and natural processes to manage stormwater and create healthier urban environments. GSI is used to reduce runoff volumes, disperse runoff to vegetated areas, harvest and use of runoff where feasible, promote infiltration and evapotranspiration, and use bioretention and other natural treatment control systems to detain and treat runoff before it reaches tributary creeks and, ultimately, San Francisco Bay. GSI treatment control measures include, for example, pervious pavement, infiltration basins, bioretention facilities, green roofs, and rainwater harvesting systems. Infiltration-based GSI treatment control measures are generally not recommended in areas with contaminated soils, contaminated groundwater, or high groundwater.

MRP Provision C.3 requires regulated redevelopment projects to implement GSI. Redevelopment projects reduce mercury and PCBs loads both through the redevelopment activity (e.g., soil removal, capping, and addition or replacement of impervious surfaces) and the implementation

of GSI treatment. Permittees are also required to retrofit developed areas with GSI per MRP Provision C.3.j.

MRP Provision C.3.d includes numeric sizing criteria for GSI treatment measures for regulated redevelopment projects. The current 9th Edition of the *Stormwater C.3 Guidebook*, revised in July 2024, provides guidance on the selection, sizing, and design of GSI treatment measures for redevelopment projects in Contra Costa County (CCCWP, 2024b). CCCWP has updated the *Stormwater C.3 Guidebook* to incorporate these changes. Redevelopment projects in old industrial and moderate areas are sized and designed in accordance with this guidance. Ancillary support documents, such as example projects, design details, and reporting templates, are continually being developed by the CCCWP to assist the Permittees in C.3 implementation. All of these documents are available on the CCCWP website.⁷

Permittees track C.3 project implementation in an ArcGIS Online (AGOL) database. The CCCWP developed the countywide GIS database to assist with maintaining, analyzing, interpreting, displaying, and reporting relevant municipal stormwater program data and information related to MRP Provision C.3, Provision C.10 (i.e., trash load reduction activities), and Provisions C.11/C.12 (i.e., mercury and PCBs TMDL implementation activities).

2.3 Full Trash Capture Treatment Control Measures

MRP Provision C.10 requires Permittees to implement trash prevention and control actions, including full trash capture systems, to reduce trash generation. Full trash capture systems capture sediment that may be contaminated with PCBs and mercury along with trash. Permittees have installed both large and inlet-based full trash capture devices in response to Provision C.10. Large full trash capture devices, including hydrodynamic separators (HDS), gross solids removal devices (GSRDs), and debris separating baffle boxes (DSBBs), capture and treat urban runoff from large drainage areas, ranging from 10's to 100's of acres. Inlet-based devices in roadways enhance the capture of sediments that may be contaminated with PCBs and mercury from smaller, localized drainage areas. In addition, these inlets are typically cleaned more frequently due to the installation of the full trash capture device. Trash capture device implementation is

⁷ See: <https://www.cccleanwater.org/development-infrastructure/>

described in each Permittee's Trash Load Reduction Plan and annual reports. Permittees track installed trash capture devices in the AGOL database.

2.4 Diversion to POTW

This control measure consists of diverting dry weather and/or first-flush events from MS4s to publicly owned treatment works (POTWs) as a method to reduce loads of PCBs and mercury in urban runoff. A pilot diversion project conducted at the North Richmond Pump Station (CCCWP, 2016) showed limited benefit from diverting wet- or dry-weather urban runoff to sanitary sewers for treatment; thus, no diversion is ongoing. Permittees do not anticipate stormwater diversion to the sanitary sewer will be an implementation action in the foreseeable future.

2.5 Controlling PCBs From Electrical Utilities

The management of PCBs from the Electrical Utilities program manages PCBs in oil-filled electrical equipment (OFEE⁸) as part of municipally owned electrical utilities' ongoing maintenance practices. The Program includes: (1) standard operating procedures (SOPs) to respond to, clean up, and report spills and releases from municipally owned OFEE; (2) a plan to maintain and upgrade municipal owned OFEE; and (3) documentation of PCBs loads avoided through existing and ongoing OFEE removal and replacement programs.

For this control measure program, municipally owned electrical utilities document the removal of PCBs-containing electrical equipment since the start of the TMDL and into the future until all PCBs-containing OFEE have been removed from active service and provide data to support calculations of the associated stormwater load reductions due to these efforts.⁹ The Pittsburg

⁸ Oil-filled electrical equipment (OFEE) includes electrical equipment that has an oil storage container (or multiple containers) in which the oil is present solely to support the function of the apparatus or the device. Examples include transformers, circuit breakers, and electrical switches.

⁹ BASMAA conducted a regional Stressor/Source Identification (SSID) project in 2018 that developed and implemented a regional SSID workplan to further understand the magnitude and extent of PCBs released by electrical utility equipment spills, and to identify controls that could be implemented to reduce the water quality impacts of this source. The private electrical utility operating in the Bay Region (PG&E) has not provided technical information that is needed to support further investigation of electrical utility equipment and properties as potential sources of PCBs to MS4s in the Bay Region.

Power Company is the only municipally owned electrical utility in Contra Costa County; the remainder of the county is served by the Pacific Gas and Electric Company (PG&E).

Electrical utility equipment and facilities in both the transmission and distribution systems are distributed across the MRP region. In the past, PCBs were routinely used in electrical utility equipment that contained dielectric fluid as an insulator. This is because prior to the 1979 PCBs ban, dielectric fluid was typically formulated with PCBs due to a number of desirable properties they have (e.g., high dielectric strength, thermal stability, chemical inertness, and non-flammability). Electrical equipment containing dielectric fluid is typically identified as Oil-Filled Electrical Equipment (OFEE). Any OFEE that contained PCBs in the past could still potentially contain PCBs today. The most common types of OFEE that may contain PCBs are transformers, capacitors, circuit breakers, reclosers, switches in vaults, substation insulators, voltage regulators, load tap changers, and synchronous condensers (PG&E, 2000).

There are hundreds of thousands of pieces of OFEE in public rights-of-way and at hundreds of electrical sub-station facilities across the MRP region. Some portion of these OFEE that are older and/or refurbished may contain (or contained in the past) dielectric fluids with PCBs at concentrations that are of concern if released to MS4s. Due to their large quantity, dispersed nature, and the difficulty in tracking and monitoring discharges, Permittees are limited in their ability to implement and/or enforce consistent and appropriate control measures to reduce releases of PCBs from this source category. This creates a potential missed opportunity to account for past and ongoing removal of PCBs-containing OFEE, which has been and continues to reduce loads of PCBs from MS4s to the Bay.

2.6 Managing PCBs-Containing Materials and Wastes During Building Demolition Activities

The Permittees have developed and are implementing a protocol for managing materials with PCBs concentrations of 50 ppm or greater in applicable structures at the time such structures undergo demolition (BASMAA, 2019). PCBs from these structures can enter storm drains during and/or after demolition through vehicle track-out, airborne releases, soil erosion, stormwater runoff, or improper waste disposal. Applicable structures include, at a minimum, commercial, public, institutional and industrial structures constructed between 1950 and 1980 and with building materials with PCBs concentrations of 50 ppm or greater. Single-family residential and wood frame structures are exempt. A Permittee is exempt from this requirement if the only

structures that existed pre-1980 within its jurisdiction were single-family residential and/or wood-frame structures.¹⁰

Permittees have implemented the following process for this control measure:

- Municipalities inform applicable demolition permit applicants that their projects are subject to the program for managing materials with PCBs, necessitating, at a minimum, an initial screening for priority PCBs-containing materials.
- For every applicable demolition project, applicants implement the BASMAA protocol for identifying building materials with PCBs concentrations of 50 ppm and then complete and submit a version of BASMAA's model "PCBs Screening Assessment Form" (Screening Form) or equivalent to the municipality.
- The municipality reviews the Screening Form to make sure it is filled out correctly and is complete and works with the applicant to ensure compliance with the protocol.
- The municipality then issues the demolition permit or equivalent, according to its procedures.
- The municipality sends each completed Screening Form for applicable structures and any supporting documents to its countywide program. The countywide program compiles the forms, manages and evaluates the data, and assists the Permittees with associated MRP reporting requirements.

During MRP 3.1, Permittees enhanced their construction site control program to minimize migration of PCBs into the MS4 from applicable structures containing building materials with PCBs concentrations of 50 ppm or greater during demolition activities. Permittees ensure demolition sites install and maintain stormwater BMPs, are inspected during demolition during the rainy season, and obtain verification that materials from demolished buildings are appropriately disposed of.

The CCCWP is participating in regional projects in FY 2025/26 to evaluate various aspects of the Manage PCBs-Containing Materials and Wastes during Building Demolition Activities Program and its effectiveness.

¹⁰ The City of Clayton has been approved for this exemption.

2.7 Controlling PCBs from Bridges and Overpasses

The BASMAA study, *Evaluation of PCBs in Caulk and Sealants in Public Roadway and Storm Drain Infrastructure* (BASMAA, 2018), sampled caulk and sealant materials from public roadway and storm drain infrastructure around the Bay Area. The sampling program was designed to specifically target roadway and storm drain structures constructed during the most recent period when PCBs were potentially used in caulk and sealant materials (i.e., prior to 1980, with a focus on the 1960's and 1970's). A total of 54 caulk and sealant samples were collected from ten different types of roadway and storm drain structures in the ROW, including concrete bridges/overpasses, sidewalks, curbs and gutters, roadway surfaces, above and below ground storm drain structures (i.e., flood control channels and storm drains accessed from manholes), and electrical utility boxes or poles attached to concrete sidewalks. The individual samples were grouped by structure type and sample appearance (color and texture), and the groups were combined into 20 composites; 10 of these groups were collected from concrete bridges, overpasses, or roadways.

Total PCBs concentrations across the 20 composite samples ranged from non-detect to greater than 4,000 mg/kg. The majority of the composites had PCBs concentrations that were below 0.2 mg/kg. PCBs were not detected in ten of the composite samples, representing nearly 60% of the individual samples collected during this program. PCBs in twenty-five percent (5 of 20) of the composites were above 1 mg/kg. Of these, two composites had very high PCBs concentrations (greater than 1,000 ppm) that indicate PCBs were likely part of the original caulk or sealant formulations. Both of these composites were comprised of black, pliable joint filler materials that were collected from concrete bridges/overpasses. This control measure was developed based on the outcome of this study.

For this control measure, Permittees are implementing the following actions:

1. Maintain a list of applicable bridges that are scheduled for replacement or joint maintenance.
2. Implement or cause to be implemented the Caltrans specifications during applicable bridge projects that are under the direction of the Permittee after the specification is adopted.
3. Track and report on the use of the specifications for all applicable bridge projects within the Permittee's jurisdiction.

3. MERCURY CONTROL MEASURE PLAN

The Mercury TMDL and subsequent MRP permit provisions implementing the TMDL assume that urban stormwater is closer to achieving the mercury TMDL WLAs than PCBs. For this reason, the mercury control plan first names specific, well-defined measures to control the release of mercury from consumer products and then notes that PCBs control measures will also help achieve stormwater mercury WLAs. The RAA Report (Appendix A) explains how PCB control measures translate to mercury loads reduced.

3.1 Mercury Load Avoidance and Reduction

Mercury load avoidance and reduction includes a number of source control measures listed in the California Mercury Reduction Act adopted by the State of California in 2001. These source controls include material bans, reductions of the amount of mercury allowable for use in products, and mercury device recycling. The following source controls bans are included:

- Sale of cars that have light switches containing mercury
- Sale or distribution of fever thermometers containing mercury without a prescription
- Sale of mercury thermostats
- Manufacturing, sale, or distribution of mercury-added novelty items

In addition, fluorescent lamp manufacturers continue to reduce the amount of mercury in lamps sold in the U.S. They have significantly reduced the mercury content in fluorescent linear tube lamps, and many agencies are replacing old fluorescent lights with LEDs to improve energy efficiency.

Mercury device recycling programs resulting in mercury load reduction generally include three types of programs that promote and facilitate the collection and recycling of mercury-containing devices and products:

- Permittee-managed household hazardous waste (HHW) drop-off facilities and curbside or door-to-door pickup
- Private business take-back and recycling programs (e.g., Home Depot)
- Private waste management services for small and large businesses

The CCCWP coordinates with Permittees and local household hazardous waste collection facilities to implement mercury collection and recycling in accordance with MRP Provisions C.11.a.i and C.11.a.ii.

CCCWP Permittees collect household hazardous waste at three regional facilities in the County:

- Central Contra Costa Sanitary District (CCCSD);
- Delta Diablo Sanitation District (DDSD); and,
- West Contra Costa Integrated Waste Management District (WCCIWMA).

CCCSD serves the communities of Concord, Clayton, Martinez, Pleasant Hill, Orinda, Lafayette, Moraga, Walnut Creek, Danville, San Ramon, and unincorporated Contra Costa County. DDSD serves Pittsburg, Antioch, Oakley, and Bay Point. WCCIWMA serves Richmond, Pinole, El Sobrante, El Cerrito, San Pablo, and unincorporated areas of Contra Costa County.

The types of data collected at each facility are slightly different, as is the level of differentiation between types of mercury-containing devices and the level of specificity in reporting the data.

3.2 Other Mercury Control Measures

Other control measures that address PCBs in stormwater will also lead to a reduction in mercury concentrations. These treatment control measures, described in Section 2 above, include control measure implementation in old industrial areas, redevelopment or retrofit with GSI, full trash capture devices, and diversion to POTW.

Because of the widespread nature of mercury in the urban environment, further progress on reducing mercury loads will most likely occur in tandem with stormwater control measures addressing PCBs (e.g., GSI implementation). The RAA, summarized in Section 6 and provided in Appendix A of this report, estimates the mercury load reductions that will be achieved through implementation of the control measures addressing PCBs.

4. SCHEDULE OF IMPLEMENTATION

4.1 Schedule of Implementation

Table 4-1 below presents the implementation schedule for each control measure described in the PCBs Control Measure Plan (Section 2) and the Mercury Control Measure Plan (Section 3). The schedule in Table 4-1 shows when implementation of each control measure began and will be complete with respect to TMDL implementation.

The RAA results in Appendix A predict that the PCBs TMDL WLA will be achieved in Contra Costa County by 2060, although several control measures would continue to be implemented for other reasons. For example, GSI, as implemented, provides multiple benefits, addresses other urban pollutants, and is required for new development and redevelopment projects, so it would continue to be implemented as long as that requirement remains in place. In addition, the Management of PCBs in Building Materials, Management of PCBs in Electrical Utilities, and Management of PCBs in Infrastructure programs will be implemented until these sources have been abated. As PCBs have been banned in the United States since 1979, it is likely that these programs will no longer be needed by 2079, 100 years later. The Control Measures Implementation in Old Industrial Areas Program is assumed to be completed by the end of MRP 4 (2032), although load reductions will be fully credited 10 years later (by 2042). Full trash capture device implementation is assumed to be complete by the end of MRP 3 (2027), although some additional devices may be installed after that date, and maintenance is ongoing. The source control measure Mercury Load Avoidance and Reduction, which began during MRP 1, is assumed to continue indefinitely.

Table 4-1: PCBs and Mercury Control Measure Plan Schedule of Implementation

Control Measure	Begin Implementation	Implementation Completed
Source Property Identification and Abatement	2015	2032
Moderate Property Control Program	2024	2032
Operations and Maintenance	2003	Ongoing
Moderate Area Treatment Retrofit	2024	2032
Redevelopment or Retrofit with GSI	2003	Ongoing
Full Trash Capture Treatment Control	2009	2027 ¹
Controlling PCBs in Electrical Utilities	2019	Ongoing ²
Managing PCBs-Containing Building Materials	2019	Ongoing ²
Controlling PCBs in Infrastructure	2021	Ongoing ²

Control Measure	Begin Implementation	Implementation Completed
Mercury Load Avoidance and Reduction	2005	Ongoing

¹ Full trash capture device maintenance is ongoing.

² Ongoing until the sources have been fully abated.

4.2 Extent of Implementation

Table 4-2 describes the extent of control measure implementation and identifies accountability metrics to track during MRP 4.

Table 4-2: PCBs and Mercury Control Measure Plan Extent of Implementation During MRP 4

Control Measure	Intensity of Implementation and Accountability Metric
Source Property Identification and Abatement	All likely source areas will be monitored by the end of MRP 3.1. MRP 4 will focus on targeted/on-site investigations in areas with elevated PCBs to identify specific source properties. All source properties that are not self-abated will be referred to the SFRWQCB during the permit term. Documentation will include identification of the source property, description of associated enhanced O&M, and an estimate of the mercury/PCBs loads reduced.
Moderate Property Control Program	MRP 4 will focus on on-site inspections and monitoring of properties adjacent to moderate ROW samples to confirm moderate source properties. For all moderate properties that are confirmed during the permit term, Permittees will work with the property owner to implement controls on the property. Documentation will include identification of moderate areas and properties, a summary of controls implemented during the permit term, and an estimate of the mercury/PCBs loads reduced.
Operations and Maintenance	O&M measure implementation will be targeted in moderate old industrial areas. Documentation will include description of the control measure and an estimate of the mercury/PCBs loads reduced.
Moderate Area Treatment Retrofit	Moderate ROW areas may be retrofitted with treatment control measures or GSI when O&M measures are ineffective. Documentation will include description of the control measure and an estimate of the mercury/PCBs loads reduced.

Control Measure	Intensity of Implementation and Accountability Metric
Redevelopment or Retrofit with GSI	Permittees will comply with MRP Provision C.3
Full Trash Capture Treatment Control	Installation of new full trash capture devices is assumed to be completed during MRP 3.1. Maintenance is ongoing.
Diversion to POTW	No diversions are planned.
Controlling PCBs in Municipal Electrical Utilities	Continue implementation and documentation as during MRP 3.1.
Managing PCBs-Containing Building Materials	Continue implementation and documentation as during MRP 3.1.
Controlling PCBs from Bridges and Overpasses	Continue implementation and documentation as during MRP 3.1.
Mercury Load Avoidance and Reduction	Continue implementation and documentation as during MRP 3.1.

5. EVALUATION OF COSTS, CONTROL MEASURE EFFICIENCY, AND SIGNIFICANT ENVIRONMENTAL IMPACTS

5.1 Cost Analysis

5.1.1 Green Stormwater Infrastructure Costs

GSI project cost data were gathered from several sources within the Bay Area and Southern California to develop relationships between project size (tributary drainage area) and total capital cost (construction and design). Likewise, O&M cost data were gathered from these sources and through a literature review. A technical memorandum prepared by the Contra Costa Clean Water Program summarizing this cost analysis (in 2023 dollars) is provided in Appendix B (CCCWP, 2023). Project costs were escalated to 2025 values by applying inflation factors based on the cost year. Inflation factors were determined using the “CPI Inflation Calculator” from the U.S. Bureau of Labor Statistics (U.S. Bureau of Labor Statistics, 2025) to be 1.08. The results of this analysis for project capital costs, in 2025 dollars, are presented in Table 5-1 below. Actual GSI project implementation costs will vary and may exceed those listed in Table 5-1.

Table 5-1: Statistical Summary of Unit Capital Cost for Green Street, Parcel-Based, and Regional GSI Project Types (in 2025 Dollars¹)

Project Category	No. of Projects (n)	Median Per Total Treatment Area (acre)	Mean Per Total Treatment Area (acre)	Median Per Impervious Treatment Area (acre)	Mean Per Impervious Treatment Area (acre)
Green Street with Infiltration	23	\$54,000	\$95,000	\$84,000	\$148,000
Green Street without Infiltration	34	\$348,000	\$603,000	\$453,000	\$908,000
Parcel-Based GSI	14	\$289,000	\$372,000	\$497,000	\$661,000
Regional with Infiltration	48	\$41,000	\$56,000	\$80,000	\$99,000
Regional without Infiltration	21	\$66,000	\$80,000	\$121,000	\$149,000

¹ Units have been rounded to the nearest \$1,000.

Annual O&M costs are intended to cover activities necessary to maintain the effectiveness of a project that recurs regularly, such as annual routine maintenance or repairs following a large storm event. For this cost analysis, annual O&M costs do not include replacement (of portions) or rehabilitation of GSI facilities, which occurs approximately every 20 to 30 years. For planning purposes, annual O&M costs are often assumed to be a percentage of the capital (design and construction) costs. Annual O&M costs range from approximately 1% to 6% of the capital costs,

with an average of 4% of capital cost for the data sources reviewed. A technical memorandum prepared by the Contra Costa Clean Water Program summarizing a bioretention O&M cost analysis (in 2025 dollars) is provided in Appendix C (CCCWP, 2025), and the results of this analysis are summarized in Table 5-2 below.

Table 5-2: Statistical Summary of Unit O&M Cost for Green Street and Parcel-Based GSI Project Types (in 2025 Dollars)

Project Category	Median Per Total Treatment Area (sf)	Mean Per Total Treatment Area (sf)	Median Per Impervious Treatment Area (sf)	Mean Per Impervious Treatment Area (sf)
Green Street with Infiltration	\$0.20	\$0.21	\$0.23	\$0.22
Green Street without Infiltration	\$0.16	\$0.14	\$0.015 ¹	\$0.015 ¹

¹ Based on data from a single project.

Public project implementation will depend on funding availability. Funding for the implementation of projects included in the Permittees' Green Infrastructure Plans would be obtained by the municipal agency, partnerships of agencies, or other stakeholder project sponsors working to implement the identified projects. Economic or socio-economic impacts and political shifts may affect future implementation, leading to increases or decreases in the amount of private investment and public funds available for development and control measure implementation, and/or changes in the ability to provide services needed for implementation.

5.1.2 Source Control Measure Cost Analysis

A regionally consistent approach to estimating source control program implementation costs developed through collaboration with the other Bay Area stormwater programs is summarized in Table 5-3 below. These cost values represent average values based on a representative sample of implemented measures.

Table 5-3: Planning Level Cost Estimate Values for Source Control Measures

Control Measure Category	Control Measure	Unit of Implementation	Estimated Initial ² Unit Costs ¹ - Cost	Estimated Initial ² Unit Costs ¹ - Unit	Estimated Ongoing ³ Unit Costs ¹ - Cost	Estimated Ongoing ³ Unit Costs ¹ - Unit
Source Area Identification and Referral	Identify and Refer Source Properties	Acres of old industrial land use area investigated	\$400-\$800	\$/acre	NA	NA
Moderate Property Control Program	Identify Moderate Pollutant Contributing Properties	Acres of old industrial land use area investigated	\$400-\$800	\$/acre	NA	NA
Full Trash Capture (FTC)	FTC Implementation - Large Devices	Acres treated	\$2,000-\$7,000	\$/acre	\$6,000	\$ per year
Full Trash Capture (FTC)	FTC Implementation - Small Devices	Acres treated	\$1,500	\$/acre	\$1,000	\$ per year
Municipal Operation and Maintenance (O&M)	Enhanced Street Sweeping - mechanical broom	Acres addressed	\$48 / curb-mile swept (lifecycle cost)	\$48 / curb-mile swept (lifecycle cost)	\$48 / curb-mile swept (lifecycle cost)	\$48 / curb-mile swept (lifecycle cost)
Municipal Operation and Maintenance (O&M)	Enhanced Street Sweeping - Regenerative Air or Vacuum Assisted	Acres addressed	\$80 / curb-mile swept (lifecycle cost) ⁴	\$80 / curb-mile swept (lifecycle cost) ⁴	\$80 / curb-mile swept (lifecycle cost) ⁴	\$80 / curb-mile swept (lifecycle cost) ⁴
Municipal Operation and Maintenance (O&M)	Street Flushing	Linear mile of street flushed	\$193,139	\$ / linear mile of street flushed	NA	NA
Municipal Operation and Maintenance (O&M)	Enhanced Inlet Cleanout	Number of inlets cleaned out	\$300 ⁵	\$ / cleanout	\$100	\$ per cleanout
Municipal Operation and Maintenance (O&M)	Enhanced Pump Station Cleanout	Additional annual cleanouts	\$82,200	\$/cleanout	\$500	\$ per pump station
Municipal Operation and Maintenance (O&M)	Storm Drain Pipe Cleanout	Linear foot of line cleaned	\$1.58 - \$5.53	\$/linear foot of line cleaned	NA	NA

Control Measure Category	Control Measure	Unit of Implementation	Estimated Initial ² Unit Costs ¹ - Cost	Estimated Initial ² Unit Costs ¹ - Unit	Estimated Ongoing ³ Unit Costs ¹ - Cost	Estimated Ongoing ³ Unit Costs ¹ - Unit
Managing PCBs-containing Materials during Building Demolition	Managing PCBs-containing Materials during Building Demolition	Annual cost	NA	NA	\$400	\$ per application
Controlling PCBs from Bridges and Overpasses	Controlling PCBs from Bridges and Overpasses	Annual cost	Minor municipal cost - just tracking and reporting. Some ongoing Program costs but also small.	Minor municipal cost - just tracking and reporting. Some ongoing Program costs but also small.	Minor municipal cost - just tracking and reporting. Some ongoing Program costs but also small.	Minor municipal cost - just tracking and reporting. Some ongoing Program costs but also small.
Controlling PCBs in Electrical Utility Equipment	Controlling PCBs in Electrical Utility Equipment	Annual cost	Minor municipal cost - just tracking and reporting. Some ongoing Program costs but also small.	Minor municipal cost - just tracking and reporting. Some ongoing Program costs but also small.	Minor municipal cost - just tracking and reporting. Some ongoing Program costs but also small.	Minor municipal cost - just tracking and reporting. Some ongoing Program costs but also small.

1. The unit costs are rough planning level estimates that do not consider net present worth cost adjustments or other complexities.
2. Initial costs generally include planning, design, capital, and other initial one-time costs.
3. Ongoing costs include operation & maintenance and other ongoing costs.
4. This cost estimate is low if the street sweeper needs to be decontaminated before use on non-affected streets.
5. This cost estimate excludes CCTV; if CCTV is required cost estimate is an additional \$1,000.

5.2 Control Measure Efficiency

In general, as shown in Table 5-1 and Table 5-3 above, source control measures are much more cost-efficient to implement than structural treatment control measures.

Several factors are considered when selecting control measures to address PCBs and mercury in a specific area. Cost effectiveness (i.e., the cost per mass of pollutant reduced), while an important factor, is not a sufficient stand-alone criteria when considering the appropriate control measure to implement at the management area or site scale. Different types of control measures may be more appropriate in some situations than others. Additionally, the potential load reduction available for each type of control measure varies; some control measures may be effective but offer little opportunity for implementation (such as source property identification and abatement), while others may be less effective but offer much more opportunity (such as full trash capture devices).

Factors that help identify optimal implementation for a given location are listed below; site- or catchment-specific characteristics may increase or decrease the importance of any of these factors at a given location:

- *Costs*: includes all life cycle (i.e., including maintenance) costs associated with planning, permitting, environmental assessments, and implementing a given control measure.
- *Load Reduction Potential*: includes the load reduction potential at the site, catchment, or municipal scale.
- *Opportunity*: includes the current and future opportunities and feasibility to implement a given control measure successfully.
- *Safety*: includes consideration of the potential to cause a safety hazard and the need for any additional measures to avoid creating a safety hazard. Safety hazards may include slip, trip, or fall hazards; drowning hazards; visual impairments (i.e., overgrowth into a roadway); vector concerns; chemical hazards; or flooding concerns.
- *Implementation Challenges*: includes consideration of potential implementation challenges due to local ordinances or regulations, resistance from the local community, major utility conflicts, or the ability to obtain adequate funding.

5.3 Significant Environmental Impacts

The California Environmental Quality Act (CEQA) establishes requirements and procedures for state and local agencies to review the environmental effects of projects proposed within their jurisdictions. It further requires that agencies, when feasible, avoid or reduce the significant environmental impacts of their decisions. The applicable statutes are contained in California Public Resources Code, Sections 21000 - 21189, and Title 14 CCR, Division 6, Chapter 3, Sections 15000 – 15387.

CEQA applies to all California public agencies that carry out or approve projects. CEQA compliance is only required if a lead agency is considering approval of a proposed “project.” The distinction between the normal and the specific CEQA meaning of “project” is very important, as it can determine whether an action is subject to CEQA compliance or not. Section 15378 of the State CEQA Guidelines provides the following definition of a project:

1. “Project” means the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and that is any of the following:

- a. An activity directly undertaken by a public agency including but not limited to public works construction and related activities clearing or grading of land, improvement to existing public structures, enactment and amendment of zoning ordinances, and the adoption and amendment of local General Plans or elements thereof pursuant to Government Code Sections 65100-65700.
- b. An activity undertaken by a person which is supported in whole or in part through public agency contacts, grants subsidies, or other forms of assistance from one or more public agencies.
- c. An activity involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies.

CEQA requires the preparation of an Initial Study to determine if a project may result in significant effects on the environment. If there is substantial evidence in the record that supports a fair argument that significant effects may occur, an Environmental Impact Report will be prepared. A Negative Declaration or Mitigated Negative Declaration must be prepared if there is no substantial evidence that the project may have a significant effect on the environment, or if revisions to the project would avoid or mitigate the effects that would result in no significant effects.

The CEQA Guidelines stipulate that a public agency shall prepare or have prepared a proposed Negative Declaration or Mitigated Negative Declaration for a project subject to CEQA when:

- The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or
- The initial study identifies potentially significant effects, but:
 - Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur; and
 - There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

CEQA requires that reasonable alternatives to implement a proposed project should be considered during the planning process and potential environmental effects should be included in the evaluation of the project. CEQA also requires state and local agencies to disclose and consider the environmental impacts of their actions. It further requires that agencies, when feasible, avoid or reduce the significant environmental impacts of the implementation of their action.

This TMDL Control Measure Plan is statutorily exempted under Public Resources Code (California Administrative Code Sec. 15262 et seq.) because it involves feasibility or planning studies for possible future actions that the Permittees have not approved or adopted. Any future projects that are to be constructed as recommended by this Plan will either be determined to be exempt from CEQA or an initial study to determine potential environmental impacts will be prepared. In general, this TMDL Control Measure Plan has been determined to have no potential to generate significant adverse impacts to the environment but instead will lessen adverse water quality impacts through reducing loads of PCBs and mercury into the Bay.

6. REASONABLE ASSURANCE ANALYSIS SUMMARY

This section provides a summary of the results of the reasonable assurance analysis. Further detail on the RAA modeling is provided in Appendix A.

6.1 RAA Results

6.1.1 Loads Reduced – PCBs

The total estimated annual PCBs loads reduced through implementation of the control measures outlined in the PCBs Control Measure Plan by June 30, 2027 (i.e., the end of MRP 3.1), June 30, 2032 (i.e., the end of MRP 4), and 2060 are provided in Table 6-1 below.

Table 6-1: Summary of PCBs Load Reductions Achieved through Control Measure Implementation

Control Measure	PCBs Load Reduction (kg/yr) by: 2003-2027	PCBs Load Reduction (kg/yr) by: 2027-2032	PCBs Load Reduction (kg/yr) by: Total by 2060
1. Source Property Identification and Abatement	0.31	0.14	0.48
2. Moderate Property Control Program	0.00	0.01	0.01
3. Operations and Maintenance	0.03	0.03	0.06
4. Redevelopment or Retrofit with GSI	0.12	0.04	0.30
5. Full Trash Capture Treatment Control	0.06	-	0.06
6. Controlling PCBs in Electrical Utilities	0.13	0.03	0.21
7. Managing PCBs-Containing Building Materials	0.37	-	0.37
8. Controlling PCBs in Infrastructure	0.00	0.00	0.02
Total Load Reduced	1.02	0.25	1.51
Load Reduction Goal	1.51	1.51	1.51
Remaining Load to be Reduced	0.49	0.24	0

TMDL Wasteload Allocation

As shown in Table 6-1, the required load reduction to achieve the TMDL (1.51 kg/yr) is not met by the TMDL compliance date of 2030, but is achieved by 2060. The RAA estimate of achieving the PCBs TMDL wasteload allocation by 2060 is based on many assumptions, and while the RAA demonstrates that Contra Costa will not meet the PCBs load-reduction goal before 2060, this goal may not be achieved until well after 2060.

The RAA results shown in Table 6-1 demonstrate that the majority of loads (90%) are reduced through four control measures: Source Property Identification and Abatement, Redevelopment or Retrofit with GSI, Controlling PCBs in Electrical Utilities, and Managing PCBs-Containing Building Materials during Demolition.

Public project implementation will depend on funding availability. Funding for implementation of public GSI retrofit projects will be obtained by the municipal agency, partnerships of agencies,

or other stakeholder project sponsors working to implement the identified projects. Economic or socio-economic impacts and political shifts may cause increases or decreases in the amount of private investment and public funds available for development and control measure implementation, and/or changes in the ability to provide services that are needed for implementation.

6.1.2 Loads Reduced – Mercury

Mercury loads reduced are estimated by applying the loads accounting methodology for mercury to the treatment control measures of GSI, full trash capture, and O&M. Table 6-2 shows that the current implementation level provides about 0.33 kg/yr mercury reduction, anticipated to increase to about 0.61 kg/yr by 2060. Refer to Appendix A for further details on the RAA modeling for mercury. The majority of this predicted load reduction is achieved through Redevelopment or Retrofit with GSI (57%).

Note that these estimated load reductions do not account for loads reduced by the Mercury Load Avoidance and Reduction source control measure. The CCCWP will continue to annually compile and report the number of mercury-containing products collected at household hazardous waste facilities. Translation of that collection information to loads reduced from urban stormwater discharges is challenging and may not be necessary to show attainment of the mercury TMDL

Table 6-2: Summary of Mercury Load Reductions Achieved through Control Measure Implementation

Control Measure	Hg Load Reduction (kg/yr) by: 2003 - 2027	Hg Load Reduction (kg/yr) by: 2027 - 2032	Hg Load Reduction (kg/yr) by: Total by 2060
1. Operations and Maintenance	0.06	0.04	0.12
2. Redevelopment or Retrofit with GSI	0.13	0.05	0.35
3. Full Trash Capture Treatment Control	0.14	-	0.14
Total	0.33	0.09	0.61

TMDL Wasteload Allocation

In contrast to PCBs, the mercury load reduction goal can't be calculated because the RAA indicates that the WLA for mercury in Contra Costa County stormwater has already been

achieved. This results from recalculating the baseline load compared to the original mercury TMDL. The mercury WLA for Contra Costa County is 11 kg/yr, while the new recalculated mercury baseline load for the entire county below dams is only 6.25 kg/yr.

The finding that the TMDL allocation has been “achieved” by recalculating the baseline does not lead CCCWP to conclude that mercury control measures are unnecessary, and, in fact, control measure implementation is ongoing. The main factor that drives the change on recalculation is eliminating areas above dams and areas subject to other permits. CCCWP assumes that the recalculated current load would need to be compared to a TMDL allocation developed based on similar assumptions. This recalculation of baseline for mercury is a nuance with no substantive effect on implementation, because of the assumption that achieving the PCBs WLA will lead to achieving the mercury WLA.

6.2 Uncertainty Analysis

There are two types of uncertainty in this analysis: modeling uncertainty and planning uncertainty. The RAA (Appendix A) discusses modeling uncertainty, whereas planning uncertainties are summarized in this section.

The estimate of achieving the PCBs TMDL wasteload allocation by 2060 is based on several assumptions that introduce planning uncertainties. The RAA result that Contra Costa will not achieve the PCBs load reduction goal before 2060 is reasonably certain (i.e., not likely to change as a result of changed assumptions). But it is possible, due to planning uncertainties, that this goal may not be achieved until well after 2060. A discussion of planning uncertainties that lead to uncertainty in the RAA results is provided below.

The load reduction benefit of source property investigations is based on specific assumptions about the expected number of future source property referrals or abatements. Discovering and referring more properties, leading to more source property abatements than assumed, would increase the benefit over the loads reduced presented in Table 6-1. Conversely, identifying fewer properties (or less area) than assumed would lead to lower load reduction benefits. This uncertainty will be resolved as the source property investigation program is implemented.

The RAA assumes that the building demolition program achieves a PCBs load reduction benefit equivalent to 0.37 kg/yr (Table 6-1, row 7). An effectiveness assessment of the building demolition program may show a lower PCBs load reduction benefit as a result of either lower PCBs mass per building or lower numbers of applicable buildings being demolished than

assumed. If so, the time to achieve the wasteload allocation would extend beyond 2060 unless other control measures could be scaled up.

The behavior of parties other than CCCWP Permittees cannot be committed by CCCWP. This introduces substantive planning uncertainties. For example, implementation of a control program for PCBs in electrical equipment can be committed by City of Pittsburg as a Permittee owner of a power company. The commitment of larger utilities, e.g., PG&E, to implement a control program is unknown to CCCWP. Similarly, CCCWP can commit to referring potential PCBs source properties to the Water Board as they are identified, but has no control over the prioritization, level of effort, or schedule for enforcement of cleanup actions by the Water Board.

Other sources of uncertainty that cannot be addressed by the methods summarized in this document include pollutant degradation and changes in larger-scale processes that are difficult to predict. Degradation is the process of natural reduction in pollutant concentration, which is anticipated to occur over time as a result of numerous factors present in the watershed. A component of degradation that lends itself to uncertainty is the reduction of PCBs as a source. PCBs are a legacy pollutant in the environment, as they have not been in production for almost 40 years, and the allowable uses have been mostly phased out and should be further reduced over time until they are eliminated. Therefore, the load of PCBs that is currently available for transport and conveyance in the MS4 can only be degraded and removed, not added to.

It is anticipated that PCBs as a source will diminish over time as a result of source control activities, as well as natural dispersion and degradation processes. The RAA model does not include PCBs degradation, which does occur (albeit very slowly). Little information is known about PCBs degradation in upland areas; thus, insufficient information is available to develop a methodology to account for source reduction by degradation in the watershed. On its own, not accounting for degradation in the watershed, exemplifies a planning uncertainty that could lead to the achievement of TMDL WLAs somewhat sooner than 2060.

Additional uncertainty arises from changes in large-scale processes. These include physical phenomena, such as effects of climate change, long-term meteorological patterns, and large seismic events. These can also include economic, socio-economic, and political shifts that may result from physical phenomena or other factors, such as those experienced in 2020 with the COVID-19 pandemic.

Major changes in large-scale processes can impact the actuality of some of the assumptions in the pollutant loading model as well as the future implementation scenarios. These may include changes to total area contributing to loading, for example as a result of sea level rise; changes to annual loading due to increases or decreases in average annual stormwater runoff volume, as a result of precipitation or flooding changes caused by long-term meteorological patterns and/or climate change; or changes to loading and/or redevelopment rates as a result of a seismic event. Economic or socio-economic impacts and political shifts can also affect future implementation and cause increases or decreases in the amount of private investment and public funds for development and control measure implementation and/or changes in the ability to provide services that are needed for implementation. The examples provided represent just a small fraction of the range of possibilities; many of these large-scale phenomena are very challenging to predict. As such, they are even more difficult to model and, in many cases, represent scenarios that may not happen and/or the timeframe for when they happen cannot be estimated.

In general, these large-scale processes primarily drive uncertainty in the actual versus assumed rate of GSI implementation. However, sea level rise also introduces a substantial source property uncertainty. At some point, the Bay Margin sites become partly or fully submerged, moving the source area from the domain of stormwater control measures to the domain of in-bay remediation.

7. CONCLUSIONS

This report fulfills the requirements of MRP Provisions C.11.f and C.12.h for updating the mercury and PCBs control measures implementation plan and corresponding RAA submitted to the SFBRWQB in 2020 (CCCWP, 2020), focusing on control measures for which new information is available and those not evaluated in the 2020 report.

This report identifies the control measures implemented during the MRP 3.1 and those control measures to be implemented in MRP 4, and estimates the loads reduced during the MRP 4 permit term.

The foreseeable time frame for achieving PCBs load reductions is no sooner than the year 2060, and possibly much later than 2060. Present-day mercury loads from urban stormwater are closer to load-reduction goals than PCBs; therefore, control measures to achieve PCB load reductions will also achieve the required mercury load reductions over time.

Dividing load-reduction control measures into “scalable” and “fixed” categories helps evaluate compliance alternatives. Control measures with fixed benefits cannot practically be expanded in scope to achieve load reductions sooner or to a greater extent. After the last building containing PCBs in caulk has been demolished, there will be no further opportunities to intervene and prevent PCBs in construction debris from entering the MS4. Scalable control measures (e.g., GSI or enhanced O&M) increase load reduction in proportion to implementation – more acres treated leads to more loads reduced.

This RAA report introduces the “adjusted baseline” concept to reconcile logical inconsistencies in the PCBs and mercury TMDLs. The load reduction requirements assigned to the “urban stormwater” category include mercury and PCB loads from sources beyond the control of Contra Costa Permittees, such as individually permitted industrial properties and Phase 2 permittees. The San Francisco Bay TMDLs do not apply to East County jurisdictions. Control measures applied upstream of reservoirs do not affect PCBs or mercury loads to the Bay, because reservoirs act as sediment traps; thus, these areas were not included in the TMDL. To address these inconsistencies, baseline loads were adjusted to develop TMDL load reduction goals applicable to the Contra Costa Permittees’ MRP jurisdictions, where control measures are expected to reduce pollutant loads to the Bay. The adjusted TMDL goals preserve the intent of urban stormwater load allocations proposed in the original TMDLs (i.e., about 90% PCBs load reductions and about 50% mercury load reductions from the recalculated baseline).

The baseline adjustment focuses effort on areas where Permittees can implement control measures. Caltrans facilities are included in Permittee MRP areas for computing adjusted baseline; Caltrans facilities are interwoven within Permittee jurisdictions. Including Caltrans loads with the MRP jurisdiction loads creates opportunities for cooperative implementation of control measures where Caltrans and municipal jurisdictions overlap.

In summary, this TMDL Implementation Report presents a programmatic approach to implement known and effective PCBs and mercury control measures. The programmatic approach will lead to achieving TMDL goals for PCBs loads discharged by urban stormwater no sooner than 2060, and possibly not until 2080 or after, depending on the rate of GSI implementation achieved. This quantitative analysis showing the linkage between schedule and feasibility supports an implementation time frame of 2060 - 2080, or later, to achieve the PCBs and TMDLs' wasteload allocations assigned to Contra Costa County.

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APPENDIX A

Contra Costa Clean Water Program Reasonable Assurance Analysis Report

APPENDIX B

CCCWP Green Infrastructure Cost Estimation Memo

APPENDIX C

CCCWP GSI Operations and Maintenance Cost Study for the Regional Alternative Compliance System