CONTRA COSTA CLEAN WATER PROGRAM

MANAGEMENT COMMITTEE MEETING AGENDA
Wednesday, March 15, 2023
1:30 PM to 3:30 PM
Join Zoom meeting:
https://us06web.zoom.us/j/87930698822?pwd=b2lRT2ptV1VRcXFYR3d0U2xCUDBuZz09

Meeting ID: 879 3069 8822 Passcode: 982003 Dial: +1 669 900 6833 US (San Jose)
One tap mobile: +16699006833,,87930698822#,,,,*982003# US (San Jose)

If you require an accommodation to participate in this meeting, please contact Duanne Hernaez by phone at 925-313-2360, by fax at 925-313-2301, or by email at Duanne.Hernaez@pw.cccounty.us.
Providing at least 72 hours notice (three business days) prior to the meeting will help to ensure availability.

VOTING MEMBERS (authorized members on file)	
City of Antioch	Phil Hoffmeister
City of Brentwood	Meghan Oliveira/ Brant Wilson/ Jigar Shah
City of Clayton	Larry Theis/ Jason Chen/ Ron Bernal
City of Concord	Bruce Davis **(Vice-Chair)**/ Carlton Thompson
Contra Costa County	Michele Mancuso/ Tim Jensen/ Allison Knapp
CCC Flood Control & Water Conservation District	Tim Jensen/ Michele Mancuso/ Allison Knapp
Town of Danville	Bob Russell/ Steve Jones/ Mark Rusch
City of El Cerrito	Stephen Prée/ Will Provost/ Yvetteh Ortiz/ Christina Leard
City of Hercules	Mike Roberts/Jeff Brown/Jose Pacheco/Nai Saelee/F. Kennedy
City of Lafayette	Matt Luttropp/ Tim Clark
City of Martinez	Khalil Yowakim/ Frank Kennedy
Town of Moraga	Shawn Knapp/ Mark Summers/ Bret Swain
City of Oakley	Billilee Saengcalern/ Frank Kennedy/ Andrew Kennedy
City of Orinda	Scott Christie/ Kevin McCourt/ Frank Kennedy
City of Pinole	Misha Kaur
City of Pittsburg	Jolan Longway/ Richard Abono
City of Pleasant Hill	Ryan Cook/Ananthan Kanagasundaram/Frank Kennedy **(Chair)**
City of Richmond	Mary Phelps
City of San Pablo	Amanda Booth/ Karineh Samkian/ Sarah Kolarik/ Jill Mercurio
City of San Ramon	Kerry Parker/ Robin Bartlett/ Maria Fierner
City of Walnut Creek	Lucile Paquette/ Neil Mock/ Steve Waymire

PROGRAM STAFF AND CONSULTANTS	
Karin Graves, Program Manager	Erin Lennon, Watershed Planner
Andrea Bullock, Administrative Analyst	Lisa Welsh, Consultant
Yvana Hrovat, Consultant	Mitch Avalon, Consultant
Liz Yin, Consultant	Nicole Wilson, Consultant
Lisa Austin, Consultant	Duanne Hernaez, Clerical

Contra Costa Clean Water Program
MANAGEMENT COMMITTEE MEETING AGENDA
Wednesday, March 15, 2023

AGENDA

Convene the Meeting /Introductions/Announcements/Changes to the Agenda: **1:30**

Public Comments: Any member of the public may address the Management Committee on a subject within their jurisdiction and not listed on the agenda. Remarks should not exceed three (3) minutes.

Regional Water Quality Control Board Staff Comments/Reports: **1:32**

Consent Calendar: **1:35**
All matters listed under the CONSENT CALENDAR are considered routine and can be acted on by one motion. There will be no separate discussion of these items unless requested by a member of the Management Committee or a member of the public prior to the time the Management Committee votes on the motion to adopt.

A. APPROVE Management Committee meeting summary (Chair)
1) February 15, 2023 Management Committee Meeting Summary

B. ACCEPT the following subcommittee meeting summaries into the Management Committee record: (Chair)
1) Administrative Committee
   - February 7, 2023
2) PIP Committee
   - February 7, 2023
3) Municipal Operations Committee
   - January 17, 2023
4) Development Committee
   - January 25, 2023

Presentations: **1:40**

A. FY 23/24 Budget (K. Graves)
   a. See staff report for background information

B. Final Trash Full Capture Device Impracticability Report (E. Yin)
   a. See staff report for background information

C. UCMR Water Year 2022 and associated submittals to the Regional Board (L. Welsh)
   a. See staff report for background information

D. Final Old Industrial Control Measure Implementation Plan (L. Welsh)
   a. See staff report for background information

E. Regional Alternative Compliance Final System Summary Report (A. Booth/K. Havens/K. Graves)
   a. See staff report for background information

Actions: **3:00**

A. APPROVE the FY 23/24 Budget
B. APPROVE the Final Trash Full Capture Device Impracticability Report
    a. See staff report for background information
C. APPROVE the UCMR Water Year 2022 and associated submittals to the Regional Board
    a. See staff report for background information
D. APPROVE the Final Old Industrial Control Measure Implementation Plan
    a. See staff report for background information
E. APPROVE the Regional Alternative Compliance System Summary Report and AUTHORIZE the submittal to the Regional Water Quality Control Board.
    a. See staff report for background information

Reports: **3:15**

A. Draft LID Monitoring Plan (L. Welsh)
    a. See staff report for background information

Updates: **3:30**

A. Personnel Update (K. Graves)
B. BAMSC Steering Committee meeting (K. Graves)
    a. Status of regional projects and working groups
    b. Workgroup meeting summaries
    c. Communication
C. Annual Report Forms (E. Yin)

Information: **3:45**

A. Final SCVURPPP Memorandum of Agreement Review Report (K. Graves)
B. SF Bay Water Board Response to State Water Board's Consideration of Own Motion Review of MRP 3.0 (K. Graves)
C. Draft PCBs Demolition Applicant Package Inspection Enhancement Recommendations (L. Welsh)
D. SUA ERU Certifications Reminder (A. Bullock)

Old/New Business: **3:55**

Adjournment: Approximately 4:00 p.m.

Next Management Committee Meeting: Wednesday, April 19, 2023, 1:30 PM

Attachments

Consent Items

1. *Management Committee Meeting Summary February 15, 2023*
2. *Administrative Committee Meeting Summary February 7, 2023*
3. *PIP Committee Meeting Summary February 7, 2023*
4. *Municipal Operations Committee Meeting Summary January 17, 2023*
5. *Development Committee Meeting Summary January 25, 2023*

Presentation and Action Items

6. *Staff Report and FY 23/24 Budget*
7. *Staff Report and Final Trash Full Capture Device Impracticability Report*
8. *Staff Report on Final UCMR and associated submittals*
9. *Staff Report and Final Old Industrial Control Measure Implementation Plan*
10. *Staff Report and Final Draft RAC System Summary Report*

Reports

11. *Staff Report on Draft LID Monitoring Plan*

Information

12. *Final SCVURPPP Memorandum of Agreement Review Report*
13. *SF Bay Water Board Response to State Water Board's Consideration of Own Motion Review of MRP*
14. *CCCWP Customizable Trash Brochure*

UPCOMING CCCWP MEETINGS All meetings **will not** be held at 255 Glacier Drive, Martinez, CA 94553, but will be held virtually	
March 21, 2023 **3rd Tuesday**	Municipal Operations Committee Meeting, **10 a.m. – 12 noon**
March 22, 2023 **4th Wednesday**	Development Committee Meeting, **1:30 p.m. – 3:30 p.m.**
April 4, 2023 **1st Tuesday**	Administrative and PIP Committee Meeting **9 a.m. – 12:00 noon**
April 10, 2023 **2nd Monday**	Monitoring Committee Meeting, **10 a.m. – 12 noon**
April 19, 2023 **3rd Wednesday**	Management Committee Meeting, **1:30 p.m. – 3:30 p.m.**
BAMSC (BASMAA) SUBCOMMITTEE/ MRP 3.0 MEETINGS Times for the BAMSC (BASMAA) Subcommittee meetings are subject to change.	
July 1, 2022	Effective date of MRP 3.0
1st Thursday	Development Committee, 1:30 – 4:00 p.m. (even months)
1st Wednesday	Monitoring/POCs Committee, 9:30 a.m. – 3:00 p.m. (odd months)
4th Wednesday	Public Information/Participation Committee, 1:30 – 4:00 p.m. (1st month each quarter)
4th Tuesday	Trash Subcommittee, 9:30 a.m.-12 noon (even month)

CONTRA COSTA CLEAN WATER PROGRAM

MANAGEMENT COMMITTEE MEETING MINUTES

2-15-2023

Attendance:

MUNICIPALITY	ATTENDED	ABSENT
City of Antioch	Phil Hoffmeister	
City of Brentwood	Brant Wilson	
City of Clayton	Larry Theis	
City of Concord	Bruce Davis **(Vice Chair)**	
Town of Danville	Bob Russell	
City of El Cerrito	Christina Leard	
City of Hercules	Jose Pacheco	
City of Lafayette	Tim Clark	
City of Martinez	Frank Kennedy	
Town of Moraga		Shawn Knapp
City of Oakley	Frank Kennedy	
City of Orinda	Frank Kennedy	
City of Pinole	Misha Kaur	
City of Pittsburg	Jolan Longway	
City of Pleasant Hill	Frank Kennedy (**Chair**)	
City of Richmond	Mary Phelps	
City of San Pablo	Amanda Booth	
City of San Ramon	Kerry Parker	
City of Walnut Creek	Lucile Paquette	
Contra Costa County	Michele Mancuso	
CCC Flood Control and Water Conservation District	Tim Jensen	

Program Staff: Erin Lennon, Andrea Bullock, Karin Graves, Duanne Hernaez, Allison Knapp

Program Consultants: Mitch Avalon (Consultant), Liz Yin (LWA/CCCWP), Hilary Pierce (LWA/CCCWP), Lisa Welsh (Geosyntec/CCCWP), Yvana Hrovat (Haley & Aldrich), Lisa Austin

Members of the Public/Others/Guests:

Introductions/Announcements/Changes to Agenda: Due to the Covid-19 pandemic, the meeting was conducted by video-conference call.

Public Comments: No members of the public called in.

Regional Water Quality Control Board Staff Comments/Reports: Regional Board staff did not call in.

Roll call was taken and the meeting was convened by the Chair at 1:34 pm

1. **Announcements:**
   There were no announcements or changes to the agenda.

2. **Consent Calendar:** B. Russell (Danville) motioned to approve the Management Committee meeting minutes as submitted, with no changes; M. Kaur (Pinole) seconded. The Chair called for a vote. There were no objections. The motion passed with no abstentions and the Management Committee meeting minutes were approved.

   A. Booth (San Pablo) motioned to accept the Subcommittee meeting minutes into the record; K. Parker (San Ramon) seconded. There were no objections or abstentions. The Subcommittee meeting minutes were accepted into the record.

3. **Presentations:**

A. IMP Calculator Update (E. Lennon/Y. Hrovat)

Yvana Hrovat (Haley & Aldrich) gave a presentation on updates being made to the IMP sizing calculator. These updates are being made in accordance to updates to the permit, specifically Provisions:

- C.3.c (LID)
- C.3.d (Numeric Sizing Criteria for Stormwater Treatment Systems)
- C.3.e.ii (Special Projects)

The updates being made:

1. IMP Sizing Calculator Updates
   a. Updates to the source code, figures, and documentation.
      i. Updates to the Help File
      ii. Update for Windows 10/11 compatibility
      iii. Treatment Options for Sizing

   b. IMP Sizing Calculator demonstration video will be provided with the final deliverable.
2. Meetings
   a. IMP Sizing Calculator updates will be presented to the Development Committee.
   b. Feedback from the Development Committee will be used to make changes to the final updated calculator.
   c. Final updates will be presented to the Management Committee for final approval.

An outline of the Budget and Schedule was presented showing a breakdown of the original estimated cost of $41,000, with $31,000 for H&A and $10,000 for Tony Dubin. The Draft IMP Calculator updates are estimated to be completed in April 2023 with the final updates estimated

to be completed in May 2023. A final version of the calculator should be available following Management Committee approval in May 2023.

M. Mancuso (Contra Costa County) asked about the timeline for the transition to the IMP calculator from BAHM. Yvana explained that BAHM will still be used for HM purposes, The IMP calculator will be available before BAHM is kicked off. The goal is to have the calculator ready in time for the annual report next year.

F. Kennedy (Chair) asked about a requirement for engineers to be able to do the calculations by hand to validate any results they are signing off on. He said this won't be a problem for the IMP calculator, but would it be a possible issue for BAHM. Yvana said that BAHM is more complicated, and it may be difficult to recreate the model in a spreadsheet. Frank asked if the calculations behind the model could be shared. Yvana said she would look into this and report back to the Committee.

B. Status report on the Alternative Compliance System (K. Graves/A. Booth/K. Havens)

A. Booth (San Pablo) gave a presentation on the current progress of the Contra Costa County Regional Alternative Compliance system.

- Last October a final draft system summary report was presented. A document covering the response to comments received will be available by the end of February.
- A Final System Report will be sent to the Management Committee and Water Board at the end of February/early March.
- Once the Final System Report is submitted, the Committee should discuss what actions will be taken in response to the information gathered in the report.
- There will be a final workshop for the Alternative Compliance System on March 28th.
- An online tracking tool will be available by Summer 2023.
- A board meeting will take place concerning potentially adopting permit language by the end of summer 2023.
- Pilot Project Exchange – working with interested parties on calculations, agreements, and payment for a pilot exchange with the Sutter Green Street Project.
- Project expected to close out summer 2023/fall 2023 due to the closing out of the grant. The next steps include transitioning to CCCWP leading Phase 2.

A. Booth (San Pablo) suggested that the Administrative Committee considers how CCCWP would like to adopt/accept/approve this system and bring a recommendation to Management Committee.

Mitch Avalon (Program Consultant) asked if the community facilities district would be part of Phase 2 of the system. Amanda confirmed that it would be.

F. Kennedy (Chair) stated that the Program should determine the approval process as soon as possible.

C. Second Draft of the FY 23/24 budget (K. Graves/A. Bullock)

Andrea Bullock shared actual spending and reported that 28% of budget has been spent so far, which is typical for mid-year.

Karin Graves presented reductions to the budget for items not required by the Permit, as recommended by the Administrative Committee:

- Misc. Office Supplies not covered by County Overhead
  - Recommend reducing this item by $3,000; from $5,640 to $2,640.
- MRP 3.0 SWRCB Review – additional legal services
  - Recommend reducing this item to $0 from $35,000.
  - Karin discussed with BAMSC Steering Committee and shared that other countywide programs are not moving forward with filing an unfunded mandate claim.

Karin pointed out other items on the budget:

- Community Facilities Districts Analysis
  - $180,000 – Funded solely by the WQIF grant
- Alternative Compliance Administrative Setup
  - Reduced from $90,000 to $45,000 as $45,000 is covered by the WQIF grant.
    - An additional $60,000 will be covered by the WQIF grant.
- Implementation of Financing Plan Strategy for MRP 4.0
  - Discussed with Administrative Committee – Could be eliminated but decided to keep. Will be tracked through a different spreadsheet as not to mix up with reserve funds.
- Asset Management Framework (C.21) – Development Committee recommends keeping the current budgeted amount. Budgeted $30,000 for this year but work won't start until next fiscal year, carrying over $20,000. The work will not exceed $20,000.
- PCBs Inspection Enhancements (C.6) – Development Committee recommends this item is reduced to $0.
- Cost Reporting Framework – added $5000 for responding to future comments.

A. Booth (San Pablo) brought up the PCB lawsuit that will affect Contra Costa County permittees and asked how the Clean Water program will be involved financially. It was decided to continue this discussion during the March Administrative Committee meeting to determine how information requests would be funded.

L. Paquette (Walnut Creek) asked about the hydromodification management mapping budget line item that will partially be funded from contingency and noted she would like the budget to reflect this. Karin explained that the Program is tracking this closely and suggested adding a note that some of the line item would come out of the contingency line item in the budget.

L. Paquette (Walnut Creek) asked if a note could be added to line items for regional projects to note the actual amount being spent. Karin noted that these comments could be added to the final budget document.

D. Draft Trash Full Capture Device Impracticability Report (E. Yin)

Elizabeth Yin gave a presentation on the Trash Impracticability Report:

- A description of the engineering constraints that prevent the installation of full trash capture devices.
- A process for evaluating and determining impracticability of full trash capture devices.
- Alternative controls or a combination of controls that may be implemented to reduce trash loads to meet the requirements and deadlines in Provision C.10.a

Schedule for review:

- Comments due to program for consolidation by Feb. 24
- Comments due to BAMSC by Feb. 27
- Management Committee Approval – Mar. 15
- Submittal to RWCB – Mar. 31

M. Mancuso (Contra Costa County) stated she was surprised by the number of high flow devices in Contra Costa County and is wondering if that's a mistake. Liz replied that it's worth investigating to see if the numbers are accurate.

L. Paquette (Walnut Creek) asked if there are any specific parts of the report that Permittees should have their engineers review. Liz replied that the description of constraints and guidance for evaluating feasibility are opportunities to provide a lot of feedback and that the description of constraints section should be reviewed to make sure that specific constraints are accurate.

E. Draft Comment Letter on Baykeeper MRP 3.0 Petition (K. Graves)

When MRP 3.0 was adopted, Baykeeper filed a petition with the State Water Board to review the permit requirements. Their petition was filed late and rejected. The State Water Board is currently considering whether to initiate their own review of certain permit requirements in response to the letter.

- The provisions that are being considered for review are C.9 – C.12, C.14, C.18, and C.19.c-f.
- The attorney does not think they will review C.3.
- Karin requested feedback and comments on the letter.
- The letter notes that the State Water Board should not take the review because the petition was filed late and that any further review to MRP 3.0 is not helpful to Permittees and will result in greater uncertainty and more time and expense.
- The letter also states that the State Water Board would be encouraged to ratchet up the requirements in response to Baykeeper and other NGOs and that the permit already imposes significant expense and burden.

Karin asked the Committee who would be the appropriate person to sign the letter, either herself or the Management Committee Chair (F. Kennedy (Chair)).

The Committee decided to do a roll call vote to approve the letter during this meeting and amended the agenda.

F. Draft Stormwater Funding Options Report Phase 2 Outline (M. Avalon)

Mitch Avalon presented an outline of the Stormwater Funding Options Report Phase 2:

- Options providing ongoing revenue.
  - Property Related Fee
    - Discussion on why this is a popular funding choice.
    - Lessons learned – 20 issues to think about moving forward.
    - Cost estimate and Projected Revenue
    - Assumptions and Recommendations
  - Litter/Trash Property Related Fee
    - Potential alternative process – adopt a fee without a vote requirement.
    - Costs of a ballot measure – analyzed cost for each task.
    - Projected Revenue
    - Assumptions and Recommendations
  - Community Facilities District
- Options Providing One-Time Revenue
  - Grants
  - State Revolving Fund
  - Regional Approach
  - California's Water Supply Strategy
  - Alternative Compliance
- Last Three Sections
  - "Do nothing" funding option – cost of doing nothing, cost reduction measures.
  - Other Considerations
  - Pathway Forward – short term approach, long term approach, decision process, concluding recommendations.
- Phase 2 Schedule
  - Legal review in February/March
  - Peer review in March/April – Will be sent to two engineering firms.
  - Briefing to City-County Engineers each month
  - Draft report to Admin/Management Committee review in May
  - Final report for Admin/Management Committee approval in June

L. Paquette (Walnut Creek) asked about the trash related fee and if there were any lessons learned that would apply to this? She also asked if information on the recent court cases would be included when the report is presented to city/county engineers. Mitch confirmed that lessons learned from the property related fee would also relate to the litter/trash-related fee. He also stated that the report is comprehensive and includes information about the court cases,

which may be difficult to explain in a short presentation. He stated that if there is additional information needed, that can be determined when there is another presentation on this report in May.

L. Paquette (Walnut Creek) asked if the litter/trash related fee is only able to be spent on litter/trash. Mitch replied yes, especially if done without voter approval through an exemption, then it will be important to the requirements and constraints very closely.

4. **Actions:**
   - **APPROVE the IMP Calculator Update at $41,000:** F. Kennedy (Chair) made a motion to amend the language in the agenda from "Conditionally approve" to "Approve" for this item. The Committee amended the action without any objections.

     Bruce Davis moved to approve the IMP Calculator Update budget item at $41,000; M. Mancuso (Contra Costa County) seconded. There were no objections or abstentions. The Committee APPROVED the IMP Calculator Update budget.

   - **APPROVE the Final Draft Annual Report Forms:** A. Booth (San Pablo) moved to approve the Final Draft Annual Report Forms; L. Paquette (Walnut Creek) seconded. There were no objections or abstentions. The Committee APPROVED the Final Draft Annual Report Forms.

   - **APPROVE the Draft Comment Letter on Baykeeper MRP 3.0 Petition (roll call vote):** The Committee decided that Karin should sign the comment letter.

     There was a roll call vote, with all present Permittees voting to APPROVE the Draft Comment Letter on Baykeeper MRP 3.0 Petition. Moraga was absent and will be contacted separately to vote.

5. **Reports:**
   - **A. Quarterly status report on grant opportunities (S. Mathews/Z. Cholico)**

     Zaida Cholico (LWA) shared a presentation on the grant tracker update:
     - How the Grant Tracker Works – the tracker includes information such as last updates, new opportunities, funding sources, cost shares, due dates, applicability, and recommendations.
     - Current Grant Opportunities – 16 grant opportunities are available.
     - On-going Grant Opportunities – listed institutions with current ongoing grant opportunities.
     - Recurring Grant Opportunities – grants with multiple rounds, spans many years. Interested parties can prepare for these applications ahead of time.
     - Opportunities for the Program and Permittees.

CONTRA COSTA CLEAN WATER PROGRAM

6. **Updates:**

A. Unfunded mandate claim and Time Schedule Order (K. Graves)

Karin stated that the unfunded mandate claim was already discussed the item could be skipped.

B. Draft UCMR and associated submittals (L. Welsh)

The Draft UCMR was developed per MRP 3.0 requirements, so the report will be slightly different than previous UCMRs. The final UCMR will be approved in the March Management Committee meeting and must be submitted to the Regional Water Board by March 31, 2023.

C. Draft Old Industrial Control Measure Implementation Plan (L. Welsh)

The Draft Old Industrial Control Measure Implementation Plan will follow a similar format to the UCMR and is a one-time report on how Permittees will meet old industrial area requirements set in the Permit. The plan is out for Permittee review and Management Committee approval will be requested in March. The plan is due March 31, 2023.

D. Personnel Update (K. Graves)

Allison Knapp shared that interviews for the program manager position were held on February 14th. She asked if the Committee wanted to discuss the candidates during a closed session. The Committee agreed and a closed session was planned for February 16th, assuming a quorum could be reached for the proposed meeting time.

E. BAMSC Steering Committee meeting (K. Graves)

- The BAMSC Steering Committee met at the end of January and talked to the Regional Board about the submittal of non-annual reports that are countywide or regional efforts to clarify how they should be submitted, and expressed that they would prefer to use the FTP site over SMARTS.
- The Regional Board has started drafting language for the Permit amendment. Permittees will have the opportunity to review that through the work groups before it goes out for public review.
- On January 30, the Regional Board met with program managers and permittee to discuss communication issues, annual reports, and inspections issues with Regional Board staff. Regular meetings to improve communication were planned.

a. Status of regional projects and working groups

- PCBs and Building Demo Workgroup
  - Draft documents available with enhancements, must be implemented by July 1st.
  - Draft documents were also shared with Development Committee.
  - Meeting in early March to discuss enhancements to the program.

- Cost Reporting Work Group
  - Next meeting is on Feb 28th to discuss submitted comments on the first draft framework and guidance manual.
- Firefighting Discharges Workgroup
  - The first meeting will be on Mar 14th.
- BAMSC Homeless Work Group
  - Meeting March 13th 1:00 pm. The BMP Report is being developed at the Countywide level through Municipal Operations Committee. Surveyed information will be gathered through the Spring.

b. Workgroup meeting summaries

- AGOL Work Group (E. Yin)
  - Now meeting quarterly.
  - Next meeting will take place in May.
  - The work group is putting together a work plan to meet mapping requirements in 2023.

7. Information:

A. SUA ERU Certifications Reminder (A. Bullock)

- The SUA is due April 3, so it needs to be shared at board meetings as soon as possible.
- If Permittees need anything else or have questions, email Andrea.

8. Old/New Business:

No Old/New Business was shared.

9. Adjournment: The Chair adjourned the meeting at approximately 4:04 pm

CONTRA COSTA CLEAN WATER PROGRAM

ADMINISTRATIVE COMMITTEE MEETING
SUMMARY
Tuesday, February 7, 2023
10:30 am – 12:00 pm
Zoom Meeting

VOTING MEMBERS	ATTENDED	ABSENT
Contra Costa County	Michele Mancuso	
CCC Flood Control and Water Conservation District	Tim Jensen	
City of Lafayette	Matt Luttropp / Tim Clark	
City of Martinez	Frank Kennedy	
City of Pittsburg	Jolan Longway **(Vice Chair)**	
City of Pleasant Hill	Frank Kennedy **(Chair)**	
City of Richmond	Mary Phelps	
NON-VOTING MEMBERS		
City of Clayton		
City of Walnut Creek	Lucille Paquette	

Program Staff: Karin Graves (Acting Program Manager), Andrea Bullock (Administrative Assistant), Duanne Hernaez (Clerical)

Program Consultants: Liz Yin (Larry Walker and Associates(LWA)), Hilary Pierce (LWA)

1. **Convene Meeting and Roll Call (Chair)** **10:30**
   The Chair convened the meeting at 10:34

2. **Announcements or Changes to the Agenda (all)** **10:32**
   There were no announcements or changes to the agenda.

3. **Approval of January 3, 2023 Meeting Minutes (Chair)** **10:35**
   There were no correction or revisions to the January 3, 2023, meeting minutes. J. Longway (City of Pittsburg) motioned to approve the Administrative Committee meeting minutes as submitted. M. Mancuso (CCC) seconded. The Chair called for a vote. There were no objections or abstentions. The motion passed unanimously and the January 3, 2023 meeting minutes were approved.

CONTRA COSTA CLEAN WATER PROGRAM

ADMINISTRATIVE COMMITTEE MEETING
SUMMARY
Tuesday, February 7, 2023
10:30 am – 12:00 pm
Zoom Meeting

4. Draft Stormwater Funding Options Report Phase 2 Outline (M. Avalon) 10:40

Mitch Avalon shared a presentation on the outline of the Draft Stormwater Funding Options Report Phase 2. He requested feedback or comments on the outline and for Permittees to describe any additional information that they would like to see included in the report. Each of the eight funding options that are included for further analysis in Phase 2 of the report and the general report structures were described.

M. Mancuso (CCC) asked if there was additional information regarding the community facilities district and how it might look like if there is overlap with the regional alternative compliance (RAC). Mitch stated that the RAC project is still under development. By the end of the fiscal year, will be a more complete analysis. Funding from WQIF will help complete the work for compliance. There might be a potential framework for the RAC in the Phase 2 report, but only if there is an available outline of the system when the report is written.

M. Mancuso (CCC) commented in response to a previous question from Mitch regarding inclusion of other cities' ballot measures as examples in the report. She stated that if there are some examples that seem relevant to Contra Costa, then it would be helpful to include a couple, but if the other ballot measures do not seem relevant, they can be excluded. Mitch stated that he could get some background information on the measures from public sources, but would need to seek additional information in order to provide analysis on what worked and did not work. He proposed waiting to do that until the draft was complete to see if Permittees desired more information on other cities' ballot measures.

L. Paquette (Walnut Creek) asked if Permittees needed to have a discussion and decide about the current $3.5 million threshold used for Program funding in the next year with regard to the "do nothing" option. Mitch suggested including that in the short-term approach and asking Management Committee to consider their options and make a choice.

L. Paquette (Walnut Creek) asked if Brentwood and Richmond having a different funding source and being included would change anything. Mitch explained that Brentwood and Richmond don't have an SUA and pay their portion of the Program fees through other sources. He stated that if a proposition-related fee is successful then everyone would have an equal fee including Brentwood and Richmond. The SUA would remain unchanged and any additional funding options should not be tied to the existing SUA to avoid potentially calling the existing SUA into question.

5. Second Draft FY23/24 Budget (K. Graves/A. Bullock) 11:20

CONTRA COSTA CLEAN WATER PROGRAM

ADMINISTRATIVE COMMITTEE MEETING
SUMMARY
Tuesday, February 7, 2023
10:30 am – 12:00 pm
Zoom Meeting

Karin Graves reviewed the staff report, which identifies budget line items from the FY23/24 budget that are not expressly required in the MRP 3.0 Permit, with the Committee. She described the approach to the second budget draft which involved Administrative Committee reviewing the general and administrative line items to make recommendations for any changes to Management Committee in February. At the February Management Committee meeting, Development and PIP Committee related line items, as well as the administrative and general items will be reviewed. Municipal Operations and Monitoring Committee items will be reviewed at the March Management Committee meeting, given the timing of the various subcommittee meetings.

Karin shared the budget document and explained that items highlighted in light orange are not explicitly required by the Permit, but are still recommended by staff. Items highlighted in dark orange are not required by the Permit and staff believe they could be reduced or removed. She also explained that column E was updated to include line items for conditional items that were approved and that the newly added column G will show the WQIF grant funds so that Permittees can see what will be funded by the grant vs. the Program. Karin also explained that items highlighted in yellow show the amounts that will be funded by the WQIF grant, for example the community facilities district analysis will be funded by the grant and the regional alternative compliance system's administrative setup will be partially funded by the grant.

The following line items that are not required by the Permit were described:

- On-Call Staff Augmentation (not required, can be reduced or eliminated) – this item, which funds on-call needs including any staff training, could be reduced by $50,000 and if more funding is needed, the contingency fund could be used.
- Misc. Office Equipment/Supplies not covered by County Overhead (not required, can be reduced or eliminated) – based on previous years' spending, staff believe this item could be reduced by $3,000.
- MRP 3.0 SWRCB Review (not required, staff recommended) – if Permittees decided not to move forward with an unfunded mandate claim, this item could be removed. Staff recommend keeping this item until a decision on filing the claim is made.
- BAMSC (not required, staff recommended) – this item funds regional grant participation and on-call regional coordination. Staff recommend keeping this to participate in regional efforts and apply for grants.
- Implementation of Financing Plan Strategy for MRP 4.0 (not required, staff recommended) – this item is related to phase 2 of the Stormwater Funding Options Report, which is still under development. Currently the budget accounts for the most expensive funding option being selected in order to conservatively estimate potential costs related to the funding options. This item could be reduced or postponed, but staff recommend keeping it until a funding option is chosen.
- Grant Tracking & Application (not required, staff recommended) – staff recommend keeping this item since tracking and applying for grants was recommended by Management Committee. This fund covers the cost of tracking grants and applying for one grant.

CONTRA COSTA CLEAN WATER PROGRAM

ADMINISTRATIVE COMMITTEE MEETING
SUMMARY
Tuesday, February 7, 2023
10:30 am – 12:00 pm
Zoom Meeting

- Brochures (not required, staff recommended) – this item is to cover any additional work or carryover on the brochure updates in FY 23/24 and staff recommend keeping it.

She requested recommendations from the Committee on the above line items to take to Management Committee.

F. Kennedy (Chair) provided his feedback on the line items. He recommended keeping the budget for on-call staff augmentation, but stated that it could be changed to a conditional item if desired by the Committee. He recommended following the staff recommendation of reducing the office supplies line item since it is based on historical spending. He asked if Permittees had decided not to move forward with the unfunded mandate claim at this time. Karin stated that she spoke with the BAMSC Steering Committee and that it does not sound like other programs are filing a claim and that since the Program's attorney suggested a regional claim would be stronger, then this may not be pursued. Frank recommended reducing this item to $0 and using a conditional item or contingency funds if needed. He also recommended keeping the BAMSC line item, grant tracking item, and brochures item at their budgeted amounts.

L. Paquette (Walnut Creek) brought up that before 2016 the Program had different reserve funds for different things, but at some point decided to combine all reserve into one fund. She asked if for the financing strategy item it would be preferable to have a separate reserve for that instead of listing it as a budget line item. The Committee had a discussion on the difference between setting aside a portion of the reserve for the financing strategy option or including it as a line item in the budget each year. Staff agreed to consider these options.

The Committee recommended reducing the office supply budget by $3,000 and the unfunded mandate claim to $0; they requested staff consider options for how the funds for the financing plan strategy will be presented.

6. Approve February 15, 2023 Management Committee Agenda (Committee) 11:23

Liz Yin (LWA) shared the draft agenda and described each item. There was no correction or revisions to the February 15, 2023, Management Committee Agenda. M. Mancuso (CCC) motioned to approve the agenda. F. Kennedy (Chair) seconded. The Chair called for a vote. There were no objections or abstentions. The motion passed unanimously, and the February 15, 2023 Management Committee agenda was approved.

7. Old/New Business (Committee) 11:24

CONTRA COSTA CLEAN WATER PROGRAM

ADMINISTRATIVE COMMITTEE MEETING
SUMMARY
Tuesday, February 7, 2023
10:30 am – 12:00 pm
Zoom Meeting

L. Paquette (Walnut Creek) asked if the budget presented to Management Committee would show only Contra Costa's portion of costs for regional projects. Karin stated that for conditional items associated with regional projects, any differing amounts that were approved will be shown. She also stated that the Program would show actuals through the end of November. She explained that most line items have a budgeted amount, and the Program spends what is needed within that and does not usually show what portion of budgeted amount will not be spent.

8. Adjournment
The Meeting adjourned at 11:40 am

Attachments

1) January 3, 2023 Administrative Committee Meeting Minutes
2) Staff Report on Draft Stormwater Funding Options Report Phase 2 Outline
3) Draft Stormwater Funding Options Report Phase 2 Outline
4) Staff Report on Second Draft FY 23/24 Budget General Administrative Items
5) FY 23/24 Second Draft Budget
6) Draft February 15, 2023 Management Committee Agenda

CONTRA COSTA CLEAN WATER PROGRAM

PUBLIC INFORMATION/PARTICIPATION COMMITTEE
MEETING SUMMARY
Tuesday, February 7, 2023, 9:00 am – 10:30 am
Zoom Meeting

PIP Committee Voting Members	**Attended**	**Absent**
City of Antioch	Julie Haas-Wajdowicz **(Vice Chair)**	
CCC Flood Control District	Michelle Giolli	
City of San Ramon	Kerry Parker **(Chair)**	
Admin Committee Members acting as PIP Voting Members	**Attended**	**Absent**
Contra Costa County	Michelle Mancuso	
CCC Flood Control and Water Conservation District	Michelle Mancuso/Jennifer Joel	
City of Lafayette	Matt Luttropp/Tim Clark	
City of Martinez	Frank Kennedy	
City of Pleasant Hill	Frank Kennedy	
City of Pittsburg	Jolan Longway	
City of Richmond	Mary Phelps	

Non-Voting Members: Bob Russell (Town of Danville), Amanda Booth (City of San Pablo), and Lucile Paquette (City of Walnut Creek)
Program Staff: Karin Graves, Andrea Bullock, and Duanne Hernaez
Consultants: Katie Gala, Michelle Dissel, and Stephen Groner (SGA); Hilary Pierce and Karen Ashby (LWA)

1) **Introductions, Announcements, and Changes to Agenda (Chair)**
Introductions began at 9:06. There were no announcements or changes to the agenda.

2) **Consent Items Approval (Chair)**
There were no corrections or revisions to the following items:
- January 3, 2023 PIP Meeting Minutes
- February 2023 Facebook and Instagram Posts

Frank Kennedy (City of Martinez) made a motion to approve the items listed above as submitted, with no changes, and accept subcommittee minutes. Tim Clark (City of Lafayette) seconded. The Chair called for a vote. The motion passed with no objections or abstentions and the items were approved.

CONTRA COSTA CLEAN WATER PROGRAM

PUBLIC INFORMATION/PARTICIPATION COMMITTEE
MEETING SUMMARY
Tuesday, February 7, 2023, 9:00 am – 10:30 am
Zoom Meeting

3) Trash Brochure (SGA)

Stephen Groner introduced the new trash brochure. SGA made edits according to comments received. There will be two versions, one for unincorporated areas and another that is editable so Permittees can input their agency's information. Stephen requested questions and comments from the Committee so that they can finalize the brochure.

Kerry Parker (Chair) showed support, stating that she appreciates the visual style and the "trash free" slogan. Amanda Booth (City of San Pablo) also stated that she supports the design choices, but pointed out that she would like an easy way to customize the phone numbers, Mobile Citizen app, and ordinances referenced that will differ for each agency. Stephen responded by asking everyone to flag sections of the brochure that they would like to make editable. Bob Russell (Town of Danville) asked if the footnote numbers could be removed or revised to be more legible. Stephen responded that they will move the footnotes numbers to the beginning of each statement to make them more obvious.

4) Cost Reporting Framework and Guidance Manual Discussion (Hilary/K. Ashby)

Hilary Pierce shared comments from the February 1 Cost Reporting meeting and reminded everyone that comments for the cost reporting framework are due February 8. Karen Ashby (LWA) who worked on developing the framework with the regional work group was also in attendance to answer questions.

Kerry Parker (Chair) commented that she appreciates the general costs tab, but still feels that inputting the more detailed information will be a challenge.

Frank Kennedy (City of Martinez) suggested that finance departments are consulted to determine if gathering detailed information is doable. He mentioned that a jurisdiction he works for would be unable to report this information.

Matt Luttropp (City of Lafayette) reiterated that it's not doable for Lafayette since they don't track things to the level of detail required to fill out the framework.
Staff time is not tracked that closely because the associated costs are too high. Matt asked if an estimate would be sufficient, stating that staff time is the main issue. Karen Ashby (LWA) responded that the information input into the spreadsheet does not need to be exact. She advised that assumptions can be used, but assumptions and estimates should be noted in the framework.

Amanda Booth (City of San Pablo) reiterated that tracking staff time is hard to track at that level. She also noted that it will be hard to break down CIP costs that are specifically related to stormwater. She recommended requesting additional guidance on how CIP costs should be estimated from the regional work group.

CONTRA COSTA CLEAN WATER PROGRAM

PUBLIC INFORMATION/PARTICIPATION COMMITTEE
MEETING SUMMARY
Tuesday, February 7, 2023, 9:00 am – 10:30 am
Zoom Meeting

The group discussed the state level cost reporting process and how the regional framework will tie into the State's cost reporting requirements. Matt Luttropp (City of Lafayette) asked how the Water Board will use the cost reporting and if estimates would be sufficient for their purposes. Frank Kennedy asked if it would be possible to have an alternative spreadsheet based on estimates. Karen Ashby (LWA) advised that the General – Personnel and Overhead tab is the first tab that should be filled out and that the rest of the tabs will auto-populate with that information. Additional information can be tracked on the individual provisions' tabs, but that is not required.

Additional discussion was had regarding sources of funding and the purpose of the framework. Amanda Booth (City of San Pablo) recommended that the Committee consider the legal implications of the framework and that a Program or agency level legal review may be desired. The Committee's comments and questions were summarized for submittal to the regional work group.

5) FY23-24 Budget (Hilary)

Hilary shared the staff report on the second draft of the FY23-24 budget and the second draft FY23-24 Budget. The budget was revised to highlight items that were not explicitly required by the MRP 3.0 Permit.

The following items that not required by the permit but are recommended by staff:

- Contingency funds for additional program outreach – $5000 reserved for outreach needs not covered by the current budget.
- Recommended website improvements – staff recommends keeping this line it to update the website to be more mobile device friendly and allow staff to make updates and changes.
- Cost reporting framework – staff recommend adding $5000 to this line item for the FY23-24 budget to allow for any response to comments on the framework or other Program level support to Permittees.

Kerry Parker (Chair) commented that these recommendations are important and will save money in the future. Michele Mancuso (CCC) agreed that these line items should stay in budget and are worthwhile. Julie Haas-Wajdowicz (Vice Chair) stated that the website improvements are vital and that making it more mobile friendly will be useful and important. Kerry Parker (Chair) pointed out that mobile access is important for outreach to certain demographics. Lucile Paquette (City of Walnut Creek) agreed that that these are important but stated that she wonders if funds can be spent on other budget items and if prioritization needs to happen. She also asked how rollover of funds will happen. Hilary said that the Program is working to show carryover more clearly in the budget.

The Committee agreed that this second draft of the FY23-24 budget should be shared with Management Committee, noting that the non-required items were discussed, and the Committee recommended keeping funding for them in the budget.

CONTRA COSTA CLEAN WATER PROGRAM

PUBLIC INFORMATION/PARTICIPATION COMMITTEE
MEETING SUMMARY
Tuesday, February 7, 2023, 9:00 am – 10:30 am
Zoom Meeting

6) Adjournment (Chair)

The meeting adjourned at 10:14 am.

CONTRA COSTA CLEAN WATER PROGRAM

Municipal Operations Committee (MOC)
Approved Meeting Minutes
January 17, 2023

MUNICIPALITY	ATTENDED [via Web/Phone]
VOTING	
City of Antioch	*Phil Hoffmeister, Jeff Cook*
City of Brentwood	*Melissa Barcelona*
City of Concord	*Jesse Crawford*
Contra Costa County	***Michelle Giolli (Chair)**, Beth Baldwin*
City of El Cerrito	*Stephen Prée*
City of Hercules	*ABSENT*
City of Martinez	*A.J. Kennedy*
City of Orinda	*ABSENT*
City of Pittsburg	***Jolan Longway (Vice Chair)***
City of Richmond	*ABSENT*
City of San Pablo	*Amanda Booth*
City of Walnut Creek	*Lucile Paquette*
NON-VOTING	
Town of Danville	*Bob Russell*
PROGRAM STAFF and CONSULTANTS	
Staff Augmentation	*Elizabeth Yin*
Program Staff	*Karin Graves*
Program Staff	*Andrea Bullock*
Program Staff	*Erin Lennon*
GUESTS	
Central Sanitary	*Colleen Henry, Jeremy Talarico*

CONTRA COSTA CLEAN WATER PROGRAM

MUNICIPAL OPERATIONS COMMITTEE MEETING
Tuesday, January 17, 2023, 10:00 am – noon

1. Introductions/Announcements – Michelle Giolli (County, Chair) welcomed the group to the Zoom call and asked for announcements. Erin Lennon (Program Staff) said that two representatives from Central Sanitary will be joining the meeting for item #6. Stephen Prée (El Cerrito) said that he found the Our Water Our World (OWOW) outreach fact sheets at certain hardware stores, and he noted that some of the displays were difficult to locate. Andrea Bullock (Program Staff) noted the store names and said she would follow up with our Integrated Pest Management (IPM) contractor.

2. Approval of Minutes – Committee members suggested a few clarifying edits to the draft December 20, 2022 Meeting Summary. A.J. (Martinez) moved to approve the finalized December 20, 2022 Meeting Summary with corrections. Stephen (El Cerrito) seconded. Jolan (Pittsburg) abstained. The Committee voted to approve.

3. Program Update – Attendees received updates on Clean Water Program activities related to municipal operations.

- *Staff Updates* – Erin introduced Duanne Hernaez (new Program Staff) to the MOC.
- *Other* – Andrea responded to the MOC members' questions regarding the OWOW program. Beth Baldwin (County) noted that it would be helpful to post a current, updated list of current OWOW-participating stores on the program website. Erin said that the main OWOW webpage (ourwaterourworld.org) includes a searchable map with participating store locations. Andrea will check with the Program's IMP contractor on whether the locations on their website are updated. The OWOW webpage link is included on the following CCCWP webpages:
    - cccleanwater.org/business/pesticides
    - cccleanwater.org/community/home-garden

4. Regional Workgroups Summary – Attendees received updates on BAMSC regional workgroups related to MOC.

- C.10.e. Trash Impracticability Regional WG – Liz Yin (Staff Augmentation) told the MOC that the Full Trash Capture Impracticability Report is due 3/31/23. CCCWP sent the MOC's draft outline reviews to the WG in December, and EOA is incorporating comments received from the participating stormwater programs to produce a draft report. The draft report is expected to come out at the end of January, and it will be included in the February CCCWP Management Committee agenda to discuss. A quick turnaround time is expected for reviews.
- C.17 Unsheltered BMP Report WG – The WG is planning an information-sharing meeting, and members of the Regional Board and Contra Costa County's Continuum of Care are expected to attend. The WG is open to the public, and the MOC was encouraged to attend. The information sharing meeting is planned for 1/24/23 at 8:30am-10:30am. It was noted that this WG meeting overlaps with a BAMSC Trash Subcommittee meeting, and it was expressed that the schedule conflict seemed avoidable and less than ideal. MOC members requested clarification on the MRP requirements pertaining to C.17.

5. Draft MOC Budget FY2023-24 Review – Attendees reviewed and discussed the draft MOC budget and staff report. This draft incorporated comments and feedback received during the previous MOC meeting. Andrea clarified questions pertaining to the OWOW line items earlier in the meeting during the Program Update.

6. Mobile Business Discussion – Colleen and Jeremy of Central Sanitary introduced themselves as inspectors for sanitary sewer inspections as well as stormwater business and industrial inspections. They manage the quarterly and annual inspection reports for Central Sanitary, Delta Diablo, and West County Wastewater District. Erin gave an overview of MRP 3.0 requirements regarding mobile businesses: Provisions C.4.b.ii.(3), C.4.d.ii.(1), and C.5.e. MOC members and the Central Sanitary representatives discussed SIC code requirements, possible outreach/prevention approaches (e.g., requiring the BASMAA mobile cleaner training for new businesses), and whether inspection protocol was more response-oriented or proactive. Currently, Central Sanitary's inspection protocol for mobile businesses is responsive, as mobile businesses requirements seemed more related to illicit discharge (C.5) than to routine C.4 inspections. New C.4 requirements include adding SIC/NAICS codes and business descriptions to the inspection database, and they also require inspectors to check for evidence of illicit discharges, including from mobile businesses. For C.5, if there is an illicit discharge associated with a mobile business, then the entity hiring the mobile business and the mobile business themselves are responsible for any discharge from the business or property. It was noted that Central Sanitary does not have enforcement authority for residential areas. Action items included keeping the conversation going, updating SIC codes in the database, and checking with other programs throughout the region on whether their approach for mobile businesses is response-oriented (C.5) versus proactive (C.4).

7. 90% Trash Reduction Forum – The Management Committee was invited to this portion of the MOC. Permittees discussed MRP 90% trash load reduction requirements, protocol if the 90% benchmark is not met, managing trash from Private Land Drainage Areas (case studies presented by A.J.), and other trash reduction topics. See slides with notes from the forum attached.

8. Adjournment – Michelle Giolli adjourned the meeting at 12:01pm.

Attachments:

1. January 17, 2023. 90% Trash Load Reduction Forum Slides with Notes

CONTRA COSTA CLEAN WATER PROGRAM

DEVELOPMENT COMMITTEE

Meeting Summary
Wednesday, January 25, 2023
1:30 PM-3:30 PM

Affiliation	Attended
VOTING MEMBERS	
City of Antioch	ABSENT
City of Brentwood	Aman Grewal
City of Clayton	ABSENT
City of Concord	Mitra Abkenari
Contra Costa County	John Steere
Town of Danville	Bob Russell
City of Lafayette	Tim Clark (Vice Chair)
Town of Moraga	Bret Swain
City of Oakley	Frank Kennedy
City of Pittsburg	Jolan Longway
City of Pleasant Hill	Frank Kennedy, Ryan Cook
City of San Ramon	Rod Wui
City of Walnut Creek	Joel Camacho, Lucile Paquette
PROGRAM STAFF AND CONSULTANTS	
Program Staff	Karin Graves
Program Staff	Andrea Bullock
Program Staff	Erin Lennon
Augmented Staff	Liz Yin
Program Consultant	Yvana Hrovat
Program Consultant	Rachel Kraai
GUESTS	
City of San Pablo	Amanda Booth

Development Committee Meeting
Wednesday, January 25, 2023
1:30 PM-3:30 PM

1. **Introductions, Announcements, and Changes to Agenda –** Tim Clark (Lafayette, Vice Chair) welcomed the group to the Zoom call and asked for announcements. Erin Lennon (Program Staff) noted that the roster in this meeting's agenda was not updated. It was asked whether the roster posted on Groupsite was updated, and Erin noted she would verify.

2. **Approve Previous Meeting Summary –** Frank Kennedy (Oakley) had a clarifying question regarding the previous Development Committee meeting minutes, which Yvana Hrovat (Program Consultant) answered. Frank moved to approve the draft summary of the December 7, 2022 meeting. Tim seconded. The Committee voted to approve.

3. **Program Update –** The Development Committee received a summary status of previous meeting items and discussed other Program updates:
   - *C.3.j. Project Viewer Update* – Liz Yin (Staff Augmentation) discussed two options for moving forward with meeting the C.3.j.v.(1)(b) public mapping and tracking tool requirement for Green Infrastructure (GI). First option is a Permittee-driven C.3.j. submittal to Psomas. Alternatively, in the Stormwater Resource Plan (SWRP) Project Viewer tool, Permittees may change the statuses of projects. Committee members voiced support for using the SWRP viewer tool, for ease of implementation in meeting the June 2023 MRP due date. Liz demonstrated the process of changing a GI project's status from "Opportunity" to "Built/Completed" in the tool. Rachel Kraai (Program Consultant) verified that the example change was reflected in the public facing SWRP Project Viewer tool, available here: Stormwater Resource Plan | (cccleanwater.org). It was noted that changing project statuses may be easier in some cases, and in other cases there might be base layer issues that arise. It was noted that attributes would need to have sufficient, updated information.
   - *C.3.j. Tracking Reminder* – The next C.3.j. GI Retrofit forum may need to be postponed, due to the amount of urgent, high priority regional documents that Permittees will need to review in the coming months. Rachel reviewed the goals for the next forum and shared a draft agenda. Attendees noted that the draft agenda seemed good. Attendees also noted that future conversations on this topic would be more useful if all municipalities attended and provided feedback, especially those municipalities that do not have a project in place. The Committee decided to move the next C.3.j. GI Retrofit forum to April. Erin will call Permittees individually prior to the forum to verify the project statuses and eligible acres for each municipality, and to encourage everyone to come prepared to participate.
   - *BAHM update* – The conditional budget item for updating BAHM was approved by the Management Committee at their January 18, 2023, meeting. Work will proceed according to the tasks outlined in the scope of work.

4. **BAMSC C.3 Workgroups** – Due to time constraints and lack of noteworthy updates from the workgroups, this item was not discussed at the meeting.

5. **Budget Review –** Erin presented a second draft of the Development Committee budget for FY 2023/24 (July 1, 2023 through June 30, 2024). A finalized budget is due in March. The committee discussed the budget formatting and preferences for representing the cost of each of the tasks described. It was requested that actuals be displayed. Andrea Bullock (Program Staff) said that the actuals table is a separate, annual program work product that is prepared in the fall. It was

requested that an interim actuals table be prepared for Development as well as for other committees. Committee members voted to remove the $3,000 associated with C.6 PCBs enhanced inspections training, stating that training for this can be included briefly in the main C.6 workshop.

6. **IMP Calculator Update –** Yvana presented the IMP Calculator update next steps and draft Scope of Work. The Development Committee agreed to review the draft scope of work by the end of the day 2/1/23 and send any feedback to Erin and Yvana. If no significant feedback is received, then approval of the IMP Calculator Updates would be added to the Management Committee.

7. **C.3 Guidebook –** The committee discussed the C.3 Guidebook, 8th Edition items, which were uploaded to the Program website on 12/23/22: Stormwater C.3 Guidebook |(cccleanwater.org). The committee discussed the accuracy of the following statement: "…the manufacturer will provide a warranty for two years following the activation of the facility" (8th Edition Guidebook, page 51, or PDF page 67). Possible origins of the "two years" were discussed and will be further investigated. Attendees noted that the Frequently Asked Questions (FAQs) document had inaccurate information and should be removed from the website. Due to time constraints, FAQs will be discussed at the next Development Committee meeting.

8. **Next Steps**
   The group discussed next steps and action items.
   - *General* – Erin will check to make sure that the rosters available on Groupsite are up to date.
   - *C.3.j. Project Viewer Update* – Liz will outline next steps and a timeline.
   - *IMP Calculator* – Permittees will send their reviews on the draft Scope of Work to Erin and Yvana by the 2/1/23.
   - *Budget* – Erin will incorporate the edit to the C.6 enhanced inspections training line item. Program staff will discuss a solution to the budget formatting discussion. This item will be discussed at the next Management Committee to ensure finalization by March.
   - *C.3. Guidebook, 8th Edition items* – Permittees who had comments on the FAQs will send those to Erin and Yvana. Erin will remove the FAQs from the website. Yvana will further investigate the "2 years" statement in the Guidebook.
   - The next Development Committee meeting is February 22nd, 2023.

9. **Adjournment**
   Tim Clark (Vice Chair) adjourned the meeting at 3:38pm.

CONTRA COSTA CLEAN WATER PROGRAM

Date: March 15, 2023

To: Management Committee

From: Karin Graves, Program Manager

Subject: CCCWP Final Draft Budget for FY 23/24

Recommendation:
Review the final draft of the FY 23/24 budget, and consider the Monitoring and Municipal Operations Committee line items. Also consider a line item to fund responding to information requests related to the Contra Costa countywide Monsanto polychlorinated biphenyls lawsuit. Provide any comments and direction to staff and approve the FY 23/24 budget.

Background:
In the January 18th, 2023, Management Committee meeting, staff were directed by Management Committee to identify any budget line items that are not expressly required in the MRP 3.0 Permit. In response to this request, staff decided to review the budget line items through the subcommittee process in order to thoroughly examine each line item and refine the 2nd draft budget requests to Management Committee. As a result, staff have reviewed the entire budget and are bringing recommendations for these items to each subcommittee for their review and input.

Given the timing of the subcommittee meetings and to allow time for this request, review of the second draft of the FY 23/24 budget is happening in two parts at two different Management Committee meetings:

- February 15, 2023, Management Committee – The 2nd draft of the FY 23/24 will be presented after subcommittee review of the following budget categories: General and Administrative, Development and PIP Committee. The line items for these categories were reviewed at the respective subcommittee meetings on 2/7, 1/25, and 2/7.
- March 15, 2023, Management Committee – The final draft of the FY 23/24 budget will be presented after subcommittee review of the following budget categories: Monitoring and MOC Committee. The line items for these categories were reviewed at the respective subcommittee meetings on 2/13

and 2/21. Final approval of the entire budget will also take place at this meeting.

In the second drafts of the budget going to Management Committee in February and March, staff identified any items not expressly required by the MRP 3.0 Permit that were recommended by the relevant sub-committee to be reduced or eliminated.

The Management Committee also requested that staff provide an adjusted FY 22/23 budget column, mid-year actuals, and clarification regarding carry-over items. The FY 22/23 budget column has been adjusted and mid-year actuals are included in the attached 2nd draft of the FY 23/24 budget. For budget line items where there is carryover from FY 22/23 to FY 23/24, staff have standardized notes so that it is clear that the original approved project scope (i.e. total amount to be spent on a project) will not increase.

Input from the February 15, 2023 Management Committee Meeting:

At this meeting the Management Committee meeting members discussed General and Administrative, Development Committee, and PIP Committee line items in the budget and the following reductions were approved by members:

- **Miscellaneous Office Equipment/Supplies not covered by County Overhead:** Staff and the Administrative Committee recommended, and the Management Committee agreed, to keep this line item in the FY 23/24 budget and reducing it from $5,640 to $2,640. The line item will be used to pay for office supplies and staff have not used the full amount in previous years.
- **MRP 3.0 SWRCB Review (Richards, Watson & Gershon):** Staff and the Administrative Committee recommended, and the Management Committee agreed, to reduce this line item in the FY 23/24 budget to $0. The line item is no longer needed as Permittees decided not to file an unfunded mandate claim.

At this meeting staff were also asked to add approved CCCWP cost share amounts for regional projects, and this information has been added to several line items in the note's column. In addition, staff were asked to discuss the possibility of adding a budget line item to fund information gathering for the Monsanto lawsuit. It is expected that there will be information the CCCWP will have to compile in response to Monsanto related information requests. The amount of information needed or the time it will take is unknown but staff recommend adding a $40,000 line item in the FY 23-24 budget to cover any information gathering related to the Monsanto lawsuit.

Monitoring Committee Line Items:
One line item in the FY 23/24 Monitoring Committee budget was identified as not expressly required by the permit, and after consideration the Monitoring Committee recommended to keep this item in the budget:

- **Monitoring Contingency:** The $10,000 line item will be used to cover unanticipated monitoring costs (e.g. mobilize in response to a fish kill).

The Monitoring Committee also reviewed and approved updates to line items. Updates included changes due to finalized cost estimates and the separation of line items into several new line items to improve tracking. New and updated line items are highlighted in the final draft budget for FY 23-24. Overall, the C.8 line items are $14,000 less than FY 22-23, and C.12 line items are about $300,000 less than FY 22-23 due to the WQIF Grant for Regional Alternative Compliance covering Old Industrial Area PCBs treatment work and changing permit requirements in FY 23-24.

Municipal Operations Committee Budget Items:
Staff did not identify any line items not expressly required by the permit, and the Municipal Operations Committee did not identify any line items during their meeting. Thus, Municipal Operations Committee has recommended approval of all relevant line items.

Staff Augmentation for SWMPS and WMPS Positions:
In early March the Acting Program Manager was selected to fill the Stormwater Program Manager position, leaving the Senior Watershed Management Planning Specialist (SWMPS) position vacant. To reflect this change row 6 in the FY 23-24 budget previously titled "Staff Augmentation (Watershed Resources Consulting 6 months)" was changed to "Staff Augmentation (SWMPS)". The amount of $344,000 was added to this item to cover the cost of Liz Yin and Nicole Wilson of Larry Walker and Associates continuing to provide staff augmentation for the SWMPS at a combined 27 hours/week for 52 weeks. Staff have requested to fill the SWMPS and the Watershed Management Planning Specialist positions as soon as possible. In the meantime, the FY 23-24 budget includes a salary credit for the SWMPS and the WMPS and all related line items will be adjusted as soon as the position(s) is filled.

Fiscal Impact:
Staff will prepare/modify the budget in accordance with the direction provided.

Attachments:
Final Draft Budget for FY 23/24

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Contra Costa Clean Water Program (CCCWP)
Fiscal Year 2023/24 Group Program Budget (FINAL DRAFT)

Budget Row	Work Order #	Budget Description	Adjusted FY 2022/23* (Adopted)	Projected FY 2023/24 March 7, 2023 (Final Draft)	WQIF Grant Expense	NOTES FY 23/24	5-year budget notes
4		**Administrative/Personnel** (See Admin Worksheet)	**$2,064,798**	**$2,147,767**			
5	7608	Staff Salaries and Benefits + County Overhead	$1,304,120	$1,301,675		Includes COLA of 5% (year one of four); Clerk at 20hrs/week	Fill Program Manager March 2023, and then fill SWMPS and WMPS July 2024
6	7609	Staff Augmentation (SWMPS)	$109,200	$344,000		FY 22-23 for Watershed Resources Consulting for 6 months	
7	7609	On-Call Staff Augmentation (as needed) (LWA, GC, H&A)	$138,000	$103,000			
8	7609	Staff Augmentation (LWA)	$223,000	$100,000			Continue LWA staff augmentation to match vacancies
9	7609	Staff Augmentation (Geosyntec)	$270,478	$278,592			Continue Geosyntec staff augmentation to match vacancies
10	7608	Staff Training and Conferences	$10,000	$10,000			
11	7612	Non-Program County Staff Labor	$10,000	$10,500			
12		**General Supplies & Equipment**	**$7,788**	**$4,817**			
13	7605	Misc. Office Equipment/Supplies not covered by County Overhead	$5,640	$2,640			
14	7605	Zoom Annual Fee	$960	$989			
15	7605	Groupsite Annual Fee	$1,188	$1,188			
16		**Association/Memberships/License Fees**	**$33,554**	**$34,261**			
17	7611	ESRI (AGOL Annual License Fee)	$10,000	$10,000			
18	7611	California Stormwater Quality Association (CASQA)	$23,554	$24,261			
19		**Legal Services**	**$95,000**	**$61,800**			
20	7606	County Counsel and Contract Administration	$10,000	$10,300			
21	7610	MRP 3.0 SWRCB Review (Richards, Watson & Gershon)	$35,000	$0			Unfunded mandate claim?
22	7610	On-Call Legal Services (Richards, Watson & Gershon)	$30,000	$30,900			
23	7613	Alternative Compliance Legal Review (Richards, Watson & Gershon/County Counsel)	$20,000	$20,600			
24		**Regional Projects/Regional Cooperation**	**$230,000**	**$237,949**			
25	7611	BAMSC	$30,000	$30,900		Funds regional grant participation and on-call regional coordination	
26	7618	SFEI - RMP	$180,000	$185,400		FY 21-22 CCCWP regional cost share $175,487	
27	7618	SFEI - CECs	$20,000	$21,649		FY 21-22 CCCWP regional cost share $0	
28		**General Consultant Services/Projects** (See Consultant Services/Projects Worksheet)	**$342,000**	**$620,910**	**$240,000**		
29	7616	5-Year MRP 3.0 Budget (LWA/GC)	$10,000	$0			
30	7616	Financing Plan Strategy for MRP 4.0 (LWA/GC)	$20,000	$0			
31		Community Facilities Districts Analysis (TBD)	$0	$0	$180,000	New line item funded solely by grant	
32	7609	Implementation of Financing Plan Strategy for MRP 4.0 (TBD)	$0	$200,000			Budget based on most conservative funding option assessed
33	7616	MRP 3.0 Compliance Checklist (LWA/GC)	$10,000	$0			
34		Monsanto Information Request (TBD)	$0	$40,000		NEW	
35	7616	Grant Tracking & Application (LWA/GC)	$40,000	$40,000			
36	7616	Alternative Compliance Administrative Set Up (LWA/GC)	$55,000	$45,000	$60,000	Reduced from $90k to $45k as $45k covered by grant, Expect to be 2/3 done with treatment plan in FY 23/24, $20k carryover for FY 24/25	
37	7616	Project Management, Technical Review, Regulatory Compliance, etc. (LWA/GC)	$97,000	$99,910			
38	7665	GIS/AGOL Major Upgrades (TBD)	$0	$100,000			Revise FY 23/24 once RFQ scope/estimate completed. This is for systemwide improvements; each project budgeted as a separate line item.
39	7665	GIS/AGOL Maintenance, Minor Upgrades (TBD)(GC)	$50,000	$50,000			
40	7609	GIS/AGOL Support Staff (LWA)	$35,000	$36,000			
41	7620	Brochures (SGA)	$25,000	$10,000			
42		**Municipal Operations (C.2)** - Training/Workshop (See MOC Worksheet)	**$3,100**	**$0**			Training historically performed by permittees
43		**New Development/Redevelopment (C.3)** (See Development Committee Worksheet)	**$436,000**	**$264,360**			
44	7641	Hydromodification Management Modeling Using BAHM (TBD)(Dubin)	$100,000	$75,000		$75,000 carryover. Will not exceed approved amount of $100,000	
45	7641	Hydrograph Management Compliance Options Report (H&A)	$10,000	$0			
46	7641	Hydromodification Management Maps (H&A)	$15,000	$10,000		$10,000 carryover. Will not exceed approved amount of $19,000 w/ $4,000 charged to contingency	HM Maps due 9/2023
47	7641	Hydromodification Management Calculator (TBD)	$41,000	$0			
48	7641	Green Infrastructure Design Guidelines (H&A)	$40,000	$32,000		$32,000 carryover. Will not exceed approved amount of $40,000	FY 23/24 budget depends on option chosen
49	7641	Peak Flow Control Calculator (TBD)	$52,000	$0			FY 23/24 and beyond budget depends on discussion with Flood Control
50	7645	Update Stormwater C.3 Guidebook (H&A)	$36,000	$35,000			
51	7641	BAHM Regional Update (EOA/Clear Creek)	$25,000	$0		FY 22-23 CCCWP regional cost share $23,000	
52	7645	Alternative Compliance Program Implementation (2 Pilot Projects)(LWA/GC)	$50,000	$0			
53	7645	Frequently Asked Questions	$5,000	$0			
54	7645	Annual C.3 Training/Workshop (H&A)	$12,000	$12,360			FY 25/26 and 26/27 includes any BAHM training costs
55	7645	General Technical Services Support (H&A)(LWA/GC)	$50,000	$100,000			
56	7664	**Industrial/Commercial Controls (C.4)** - Training/Workshop (See MOC Worksheet)(LWA)	**$3,100**	**$3,193**			
57	7662	**Illicit Discharge/Detection and Elimination (C.5)** (See MOC Worksheet)	**$0**	**$0**			
58		**Construction Controls (C.6)** (See Development Committee worksheet)	**$0**	**$6,000**			
59	7628	Biennial Construction Training (LWA-Training only)	$6,000	$6,000			
60		**Public Information/Participation (C.7)** (See PIP Committee Worksheet)	**$159,300**	**$235,000**			
61	7617	School-Aged Children Outreach (SGA)	$9,000	$20,000			
62	7617	Watershed Stewardship Green Business Program	$6,000	$6,000			
63	7617	Public Outreach through Bringing Back the Natives Garden Tour (Kathy Kramer-Sponsor)	$16,500	$17,000			
64	7617	Used Oil/Student Outreach /Youth Programs (Matt Bolender)	$2,000	$2,000			
65	7617	Outreach Campaign, Public Education, Citizen Involvement (SGA)(Caltrans)	$70,800	$70,000			
66	7617	Website Maintenance and Hosting (TBD)	$15,000	$15,000			RFQ to bring in new website host
67	7617	Recommended Website Improvements (TBD)	$0	$50,000			Improvements for mobile users and to increase efficiency for updates and outreach
68	7617	General Youth/Public Outreach; Media Management (SGA)	$35,000	$50,000			
69	7617	Outreach Contingency	$5,000	$5,000			
70		**Water Quality Monitoring (C.8)** (See Monitoring Committee Worksheet)	**$605,000**	**$591,000**			
71	7618	LID Monitoring Plan (KEI)(LWA/GC)	$60,000	$8,000		FY 22-23 CCCWP regional cost share $4,330 for LID QAPP only	Annual cost for revising the Plan, as-needed. TAG is accounted for with the Plan in FY22/23.

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72	7618		LID Monitoring TAG & Honorarium (LWA/GC)	$0	$9,000			Annual cost for 1 external and 3 internal TAG meeting/year @$1,500 each (cost of the TAG is
73	7618		LID Monitoring (KEI)	$0	$160,000			Estimated cost for conducting 6 samples/year (3 events, 2 locations)
74	7618		Trash Monitoring Plan (LWA/GC)(KEI)	$70,000	$8,000		FY 22-23 CCCWP regional cost share $4,330 for Trash QAPP only	Annual cost for revising the Plan, as-needed. TAG is accounted for with the Plan in FY22/23.
75	7618		Trash Monitoring TAG & Honorarium	$0	$8,000			Annual cost for 4 TAG meetings/year @$1,500 each (with Plan in the first year)
76	7618		LID Monitoring Equipment Procurement and Establishment of Four Fixed Monitoring Stations (KEI)	$0	$70,000			
77	7620		Trash Monitoring Equipment Procurement and Establishment of Fixed Stations (KEI)		$25,000			
78	7620		Trash (Outfall) Monitoring (KEI)(LWA)	$185,000	$52,000			Assumed grant award for receiving water monitoring. Estimate from Regional WQIF Grant
79	7618		Pollutants of Concern Monitoring (KEI)(LWA/GC)	$50,000	$25,000			Assume 8/year for PCBs and Hg, excludes C.12.b source properties
80	7618		Pollutants of Concern Monitoring Planning (GC)	$0	$10,000			
81	7618		Pesticides and Toxicity Monitoring (KEI)	$70,000	$30,000			Average annual budget of $35k. Once during the permit term, wet season tox is required
82	7618		Urban Creeks Monitoring Report (POC, Pesticides and Toxicity, Trash, LID) (KEI)(LWA/GC)	$90,000	$95,000			Excludes bioassessment (from FY2022) after FY22/23 and includes $30,000 for each of trash
83	7618		Creek Status Monitoring Follow-Up	$20,000	$0			FY22/23 only
84	7618		POC Receiving Water Monitoring Plan	$30,000	$0		FY 22-23 CCCWP regional cost share $12,990	Updated Plan due March 31, 2026
85	7618		POC Receiving Water Limitations Monitoring	$0	$30,000			4 wet season and 1 dry season ($40k per year from AMS)
86	7618		Bioassessment Final Report	$0	$15,000			by population
87			Regional Workgroup Participation (LWA/GC)	$0	$15,000			
88	7618		Monitoring Management Support	$20,000	$21,000			no change
89	7618		All Monitoring Contingency	$10,000	$10,000			no change
90		**Pesticide Toxicity Control (C.9)** (See MOC Worksheet)		**$81,023**	**$85,963**			
91	7636		Our Water Our World Local Outreach and Training (Plant Harmony)	$69,500	$71,510			
92	7636		Our Water Our World Outreach Materials (Paid to CASQA)	$5,080	$8,010			
93	7636		Pesticide Regulatory Coordination Program (Paid to CASQA)	$5,943	$5,943			
94	7636		Outreach to Pest Control Professionals	$500	$500			
95		**Trash Load Reduction (C.10)** (See MOC Worksheet)		**$60,000**	**$10,000**			
96	7620		Trash Load Reduction Plan (LWA)	$10,000	$10,000			Strategic assistance to submit notice of non-compliance and trash load reduction plan by 9/30/23 if can't meet 90% by 6/30/23
97	7620		Trash Reduction and Impracticability Report (LWA)	$50,000	$0		FY 22-23 CCCWP regional cost share $12,051	in 2023 AR 9/30/23
98	7618	**Mercury Controls (C.11)** (requirements addressed under C.12)		**$0**	**$0**			
99		**PCBs Controls (C.12)** (See Monitoring Committee Worksheet)		**$460,914**	**$161,500**	**$235,000**		
100	7618		Old Industrial Area PCBs Control Measure Plan (LWA/GC)	$40,000	$0	$100,000	More detailed analysis to supplement plan completed FY 22/23	Annual cost for revising the Plan, as-needed.
101	7618		Old Industrial Area PCBs Treatment Project (first project to implement the Plan) (TBD)	$200,000	$0	$125,000	Reduce CCCWP budget from $200k to $0 for FY 23/24	Requires discussion on how the regional project is funded (e.g., grant funds, pilot project)
102	7618		Annual Progress Report on Controlling PCBs (LWA/GC)	$30,000	$30,000			Annual acres treated and PCBs in Building demo summary. Initial cost is higher to set up new template. Report on total mass reduced over permit term for 9/30/2026 ($50,000)
103	7618		Source Property Investigation Planning (KEI) (LWA/GC)	$0	$15,000			
104	7618		Source Property Investigation Monitoring (KEI) (LWA/GC)	$140,000	$80,000			
105	7618		Implement Caltrans Bridge/Overpass Specification and Report Loads Reduced	$0	$5,000			Likely due is 9/30/2023 (implementation is 6 months after availability of specification)
106	7618		PCBs in Electrical Utilities (LWA/GC)	$10,000	$5,000			FY22/23 (develop program); FY23/24 (develop SOP and document PCBs loads avoided)
107	7618		Guidance for MRP 3.0 Building Demolition Requirements (LWA/GC)	$20,000	$5,000		FY 22-23 CCCWP regional cost share $7,210	FY22/23 only
108	7618		Provide Fish Risk Flyers/Signs	$5,305	$5,500	$10,000	Additional fish risk outreach covered by grant	
109	7618		Distribute Fish Risk Flyers (KEI)	$10,609	$11,000			
110	7618		Annual Fish Risk Status Report (KEI)	$5,000	$5,000			
111		**Exempted and Conditionally Exempted Discharges (C.15)**(See PIP Committee Worksheet)		**$15,000**	**$15,000**			
112	7617		Firefighting Discharges (LWA/GC)	$15,000	$15,000			Funds workgroup meetings and a portion of final report in FY 26/27
113		**Unsheltered Homeless Discharges (C.17)** (See MOC Worksheet)		**$120,000**	**$10,000**			
114	7616		Homeless Mapping (TBD)	$20,000	$10,000			Potential carryover from FY 22/23 mapping completed by Program for 9/30/2023 Annual Report
115	7616		BMP Report (TBD)	$50,000	$0		FY 22-23 CCCWP regional cost share $10,300	
116	7616		Implementation Plan (TBD)	$50,000	$0			Depends on how much work the program does for permittees
117		**East Contra Costa County Projects (C.19)** (See Monitoring Committee Worksheet)		**$105,000**	**$33,500**			
118	7618		Methylmercury Monitoring for Delta TMDL (KEI)	$20,000	$21,000			Minimum 50 samples over permit term for SSC, total mercury, methylmercury
119	7618		Marsh Creek Dissolved Oxygen (BOD) Monitoring (LWA/GC)	$30,000	$7,500			Assumes SSID can be wrapped up in FY22/23
120	7618		Annual Mercury Monitoring Plan UCMR (LWA/GC)	$25,000	$0			two plans due in FY22/23, Oct and March, and new for MRP 3
121	7618		Pyrethroid Control Program Baseline Monitoring Report (LWA/GC)	$5,000	$0			FY22/23 only
122	7618		Pyrethroid Control Program Annual Report	$0	$5,000			Report on management practices and evaluation concentrations wrt the pyrethroid triggers (set up template in FY23/24)
123	7618		Pyrethroid Control Program UCMR	$0	$0			Report monitoring results in the UCMR (IMR in Year 4)
124	7618		East County TMDL Control Measure Plan (LWA/GC)	$25,000	$0			FY22/23 only
125		**Cost Reporting (C.20)** (see PIP Committee Worksheet)		**$20,000**	**$5,000**			
126	7617		Cost Reporting Framework (LWA/GC)	$20,000	$5,000		Coordinate comments from Permittees; FY 22-23 CCCWP regional cost share $12,272	FY 24/25 is to assist permittees with fiscal analyses based on approved framework
127		**Asset Management (C.21)** (see Development Committee Worksheet)		**$30,000**	**$20,000**			
128	7645		Asset Management Framework (TBD)(H&A)(LWA)	$30,000	$20,000		$20,000 carryover. Work delayed until FY 23-24. Work will not exceed $20,000 total. Anticipate creating regional framework.	
129		**Annual Report (C.22)**		**$0**	**$43,100**			
130	7609		Program Annual Report	$0	$40,000			
131	7609		Permittee Forms		$3,100			
132			**GROUP PROGRAM BUDGET SUBTOTAL**	**$4,871,577**	**$4,591,120**	**$475,000**		
133			**2% CONTINGENCY**	**$97,432**	**$91,822**		$4,000 charged from budget line item 46	
134			**TOTAL GROUP ACTIVITIES BUDGET**	**$4,969,008**	**$4,682,942**			
135			**CONTINGENCY EXPENSE**	**$0**	**$0**			
136			**SALARY CREDIT (PM)(12 Months)**	**$0**	**$0**			
137			**SALARY SAVINGS (SWMPS 12 months)**	**($266,763)**	**($266,763)**			

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138			**SALARY SAVINGS (WMPS 12 months)**	**($213,058)**	**($213,058)**			
139			*SUBTOTAL*	*($479,821)*	*($479,821)*			
140			*NET SUBTOTAL GROUP PROGRAM BUDGET*	*$4,489,187*	*$4,203,121*			
141			**SUA FUNDING CAP**	**$3,500,000**	**$3,500,000**			
142			**NET TOTAL GROUP PROGRAM BUDGET**	**$4,489,187**	**$4,203,121**			
143			*SUA FUNDING GAP*	*($989,187)*	*($703,121)*			

*Includes August 17, 2022 and conditional item adjustments

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5	Staff Salaries and Benefits + County Overhead	$1,304,120	$1,301,675		Includes COLA of 5% (year one of four); Clerk at 20hrs/week	Fill Program Manager March 2023, and then fill SWMPS and WMPS July 2024
6	Staff Augmentation (SWMPS)	$109,200	$344,000		FY 22-23 for Watershed Resources Consulting for 6 months	
7	On-Call Staff Augmentation (as needed) (LWA, GC, H&A)	$138,000	$103,000			
8	Staff Augmentation (LWA)	$223,000	$100,000			Continue LWA staff augmentation to match vacancies
9	Staff Augmentation (Geosyntec)	$270,478	$278,592			Continue Geosyntec staff augmentation to match vacancies
10	Staff Training and Conferences	$10,000	$10,000			
11	Non-Program County Staff Labor	$10,000	$10,500			
12	**General Supplies & Equipment**	**$7,788**	**$4,817**			
13	Misc. Office Equipment/Supplies not covered by County Overhead	$5,640	$2,640			
14	Zoom Annual Fee	$960	$989			
15	Groupsite Annual Fee	$1,188	$1,188			
16	**Association/Memberships/License Fees**	**$33,554**	**$34,261**			
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19	**Legal Services**	**$95,000**	**$61,800**			
20	County Counsel and Contract Administration	$10,000	$10,300			
21	MRP 3.0 SWRCB Review (Richards, Watson & Gershon)	$35,000	$0			Unfunded mandate claim?
22	On-Call Legal Services (Richards, Watson & Gershon)	$30,000	$30,900			
23	Alternative Compliance Legal Review (Richards, Watson & Gershon/County Counsel)	$20,000	$20,600			
24	**Regional Projects/Regional Cooperation**	**$230,000**	**$237,949**			
25	BAMSC	$30,000	$30,900		Funds regional grant participation and on-call regional coordination	
26	SFEI - RMP	$180,000	$185,400		FY 21-22 CCCWP regional cost share $175,487	
27	SFEI - CECs	$20,000	$21,649	$1,649	FY 21-22 CCCWP regional cost share $0	
28	**General Consultant Services/Projects** (See Consultant Services/Projects Worksheet)	**$342,000**	**$620,910**	**$240,000**		
29	5-Year MRP 3.0 Budget (LWA/GC)	$10,000	$0			
30	Financing Plan Strategy for MRP 4.0 (LWA/GC)	$20,000	$0			
31	Community Facilities Districts Analysis (TBD)	$0	$0	$180,000	New line item funded solely by grant	
32	Implementation of Financing Plan Strategy for MRP 4.0 (TBD)	$0	$200,000			Budget based on most conservative funding option assessed
33	MRP 3.0 Compliance Checklist (LWA/GC)	$10,000	$0			
34	Monsanto Information Request (TBD)	$0	$40,000			
35	Grant Tracking & Application (LWA/GC)	$40,000	$40,000			
36	Alternative Compliance Administrative Set Up (LWA/GC)	$55,000	$45,000	$60,000	Reduced from $90k to $45K as $45k covered by grant, Expect to be 2/3 done with treatment plan in FY 23/24, $20k carryover for FY 24/25	
37	Project Management, Technical Review, Regulatory Compliance, etc. (LWA/GC)	$97,000	$99,910			
38	GIS/AGOL Major Upgrades (TBD)	$0	$100,000			Revise FY 23/24 once RFQ scope/estimate completed. This is for systemwide improvements; each project budgeted as a separate line item.
39	GIS/AGOL Maintenance, Minor Upgrades (TBD)(GC)	$50,000	$50,000			
40	GIS/AGOL Support Staff (LWA)	$35,000	$36,000			
41	Brochures (SGA)	$25,000	$10,000			
42	**Municipal Operations (C.2) -** Training/Workshop (See MOC Worksheet)	**$3,100**	**$0**			Training historically performed by permittees
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46	Hydromodification Management Maps (H&A)	$15,000	$10,000		$10,000 carryover. Will not exceed approved amount of $19,000 w/ $4,000 charged to contingency	HM Maps due 9/2023
47	Hydromodification Management Calculator (TBD)	$41,000	$0			
48	Green Infrastructure Design Guidelines (H&A)	$40,000	$32,000		$32,000 carryover. Will not exceed approved amount of $40,000	FY 23/24 budget depends on option chosen
49	Peak Flow Control Calculator (TBD)	$52,000	$0			FY 23/24 and beyond budget depends on discussion with Flood Control
50	Update Stormwater C.3 Guidebook (H&A)	$36,000	$35,000			
51	BAHM Regional Update (EOA/Clear Creek)	$25,000	$0		FY 22-23 CCCWP regional cost share $23,000	
52	Alternative Compliance Program Implementation (2 Pilot Projects)(LWA/GC)	$50,000	$0			
53	Frequently Asked Questions	$5,000	$0			
54	Annual C.3 Training/Workshop (H&A)	$12,000	$12,360			FY 25/26 and 26/27 includes any BAHM training costs
55	General Technical Services Support (H&A)(LWA/GC)	$50,000	$100,000			
56	**Industrial/Commercial Controls (C.4) -** Training/Workshop (See MOC Worksheet)(LWA)	**$3,100**	**$3,193**			
57	**Illicit Discharge/Detection and Elimination (C.5)** (See MOC Worksheet)	**$0**	**$0**			
58	**Construction Controls (C.6)** (See Development Committee worksheet)	**$0**	**$6,000**			
59	Biennial Construction Training (LWA-Training only)	$6,000	$6,000			
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Fiscal Year 2023/24 Group Program Budget (FINAL DRAFT)

Budget Row		Budget Description	Adjusted FY 2022/23* (Adopted)	Projected FY 2023/24 March 7, 2023 (Final Draft)	WQIF Grant Expense	NOTES FY 23/24	5-year budget notes
68		General Youth/Public Outreach; Media Management (SGA)	$35,000	$50,000			
69		Outreach Contingency	$5,000	$5,000			
70	**Water Quality Monitoring (C.8)** (See Monitoring Committee Worksheet)		**$605,000**	**$591,000**			
71		LID Monitoring Plan (KEI)(LWA/GC)	$60,000	$8,000		FY 22-23 CCCWP regional cost share $4,330 for LID QAPP only	Annual cost for revising the Plan, as-needed. TAG is accounted for with the Plan in FY22/23.
72		LID Monitoring TAG & Honorarium (LWA/GC)	$0	$9,000			with the Plan in the first year) + $1000 for the TAG member
73		LID Monitoring (KEI)	$0	$160,000			Estimated cost for conducting 6 samples/year (3 events, 2 locations)
74		Trash Monitoring Plan (LWA/GC)(KEI)	$70,000	$8,000		FY 22-23 CCCWP regional cost share $4,330 for Trash QAPP only	Annual cost for revising the Plan, as-needed. TAG is accounted for with the Plan in FY22/23.
75		Trash Monitoring TAG & Honorarium	$0	$8,000			Annual cost for 4 TAG meetings/year @$1,500 each (with Plan in the first year)
76		LID Monitoring Equipment Procurement and Establishment of Four Fixed Monitoring Stations (KEI)	$0	$70,000		NEW	
77		Trash Monitoring Equipment Procurement and Establishment of Fixed Stations (KEI)	$0	$25,000		NEW	
78		Trash (Outfall) Monitoring (KEI)(LWA)	$185,000	$52,000			application for outfall monitoring, CCCWP match cost total of $563,000 distributed over 4 years
79		Pollutants of Concern Monitoring (KEI)(LWA/GC)	$50,000	$25,000			Assume 8/year for PCBs and Hg, excludes C.12.b source properties
80		Pollutants of Concern Monitoring Planning (GC)	$0	$10,000			
81		Pesticides and Toxicity Monitoring (KEI)	$70,000	$30,000			(assumed for FY22/23). This adds a one-time cost of up to $35k.
82		Urban Creeks Monitoring Report (POC, Pesticides and Toxicity, Trash, LID) (KEI)(LWA/GC)	$90,000	$95,000			and LID monitoring status reports starting in FY24/25. IMR in FY25/26
83		Creek Status Monitoring Follow-Up	$20,000	$0			FY22/23 only
84		POC Receiving Water Monitoring Plan	$30,000	$0		FY 22-23 CCCWP regional cost share $12,990	Updated Plan due March 31, 2026
85		POC Receiving Water Limitations Monitoring	$0	$30,000			4 wet season and 1 dry season ($40k per year from AMS)
86		Bioassessment Final Report	$0	$15,000			by population
87		Regional Workgroup Participation (LWA/GC)	$0	$15,000		NEW	
88		Monitoring Management Support	$20,000	$21,000			no change
89		All Monitoring Contingency	$10,000	$10,000			no change
90	**Pesticide Toxicity Control (C.9)** (See MOC Worksheet)		**$81,023**	**$85,963**			
91		Our Water Our World Local Outreach and Training (Plant Harmony)	$69,500	$71,510			
92		Our Water Our World Outreach Materials (Paid to CASQA)	$5,080	$8,010			
93		Pesticide Regulatory Coordination Program (Paid to CASQA)	$5,943	$5,943			
94		Outreach to Pest Control Professionals	$500	$500			
95	**Trash Load Reduction (C.10)** (See MOC Worksheet)		**$60,000**	**$10,000**			
96		Trash Load Reduction Plan (LWA)	$10,000	$10,000			Strategic assistance to submit notice of non-compliance and trash load reduction plan by 9/30/23 if can't meet 90% by 6/30/23
97		Trash Reduction and Impracticability Report (LWA)	$50,000	$0		FY 22-23 CCCWP regional cost share $12,051	in 2023 AR 9/30/23
98	**Mercury Controls (C.11)** (requirements addressed under C.12)		**$0**	**$0**			
99	**PCBs Controls (C.12)** (See Monitoring Committee Worksheet)		**$460,914**	**$161,500**	**$235,000**		
100		Old Industrial Area PCBs Control Measure Plan (LWA/GC)	$40,000	$0	$100,000	More detailed analysis to supplement plan completed FY 22/23	Annual cost for revising the Plan, as-needed.
101		Old Industrial Area PCBs Treatment Project (first project to implement the Plan) (TBD)	$200,000	$0	$125,000	Reduce CCCWP budget from $200k to $0 for FY 23/24	Requires discussion on how the regional project is funded (e.g., grant funds, pilot project)
102		Annual Progress Report on Controlling PCBs (LWA/GC)	$30,000	$30,000			Annual acres treated and PCBs in Building demo summary. Initial cost is higher to set up new template. Report on total mass reduced over permit term for 9/30/2026 ($50,000)
103		Source Property Investigation Planning (KEI) (LWA/GC)	$0	$15,000			
104		Source Property Investigation Monitoring (KEI) (LWA/GC)	$140,000	$80,000			
105		Implement Caltrans Bridge/Overpass Specification and Report Loads Reduced	$0	$5,000			Likely due is 9/30/2023 (implementation is 6 months after availability of specification)
106		PCBs in Electrical Utilities (LWA/GC)	$10,000	$5,000			FY22/23 (develop program); FY23/24 (develop SOP and document PCBs loads avoided)
107		Guidance for MRP 3.0 Building Demolition Requirements (LWA/GC)	$20,000	$5,000		FY 22-23 CCCWP regional cost share $7,210	FY22/23 only
108		Provide Fish Risk Flyers/Signs	$5,305	$5,500	$10,000	Additional fish risk outreach covered by grant	
109		Distribute Fish Risk Flyers (KEI)	$10,609	$11,000			
110		Annual Fish Risk Status Report (KEI)	$5,000	$5,000			
111	**Exempted and Conditionally Exempted Discharges (C.15)**(See PIP Committee Worksheet)		**$15,000**	**$15,000**			
112		Firefighting Discharges (LWA/GC)	$15,000	$15,000			Funds workgroup meetings and a portion of final report in FY 26/27
113	**Unsheltered Homeless Discharges (C.17)** (See MOC Worksheet)		**$120,000**	**$10,000**			
114		Homeless Mapping (TBD)	$20,000	$10,000			Potential carryover from FY 22/23 mapping completed by Program for 9/30/2023 Annual Report
115		BMP Report (TBD)	$50,000	$0		FY 22-23 CCCWP regional cost share $10,300	
116		Implementation Plan (TBD)	$50,000	$0			Depends on how much work the program does for permittees
117	**East Contra Costa County Projects (C.19)** (See Monitoring Committee Worksheet)		**$105,000**	**$33,500**			
118		Methylmercury Monitoring for Delta TMDL (KEI)	$20,000	$21,000			Minimum 50 samples over permit term for SSC, total mercury, methylmercury
119		Marsh Creek Dissolved Oxygen (BOD) Monitoring (LWA/GC)	$30,000	$7,500			Assumes SSID can be wrapped up in FY22/23
120		Annual Mercury Monitoring Plan UCMR (LWA/GC)	$25,000	$0			two plans due in FY22/23, Oct and March, and new for MRP 3
121		Pyrethroid Control Program Baseline Monitoring Report (LWA/GC)	$5,000	$0			FY22/23 only
122		Pyrethroid Control Program Annual Report	$0	$5,000			Report on management practices and evaluation concentrations wrt the pyrethroid triggers (set up template in FY23/24)
123		Pyrethroid Control Program UCMR	$0	$0			Report monitoring results in the UCMR (IMR in Year 4)
124		East County TMDL Control Measure Plan (LWA/GC)	$25,000	$0			FY22/23 only
125	**Cost Reporting (C.20)** (see PIP Committee Worksheet)		**$20,000**	**$5,000**			
126		Cost Reporting Framework (LWA/GC)	$20,000	$5,000		Coordinate comments from Permittees; FY 22-23 CCCWP regional cost share $12,272	FY 24/25 is to assist permittees with fiscal analyses based on approved framework
127	**Asset Management (C.21)** (see Development Committee Worksheet)		**$30,000**	**$20,000**			
128		Asset Management Framework (TBD)(H&A)(LWA)	$30,000	$20,000		$20,000 carryover. Work delayed until FY 23-24. Work will not exceed $20,000 total. Anticipate creating regional framework.	
129	**Annual Report (C.22)**		**$0**	**$43,100**			
130		Program Annual Report	$0	$40,000			

Contra Costa Clean Water Program (CCCWP)
Fiscal Year 2023/24 Group Program Budget (FINAL DRAFT)

Budget Row		Budget Description	Adjusted FY 2022/23* (Adopted)	Projected FY 2023/24 March 7, 2023 (Final Draft)	WQIF Grant Expense	NOTES FY 23/24	5-year budget notes
131		Permittee Forms		$3,100			
132		**GROUP PROGRAM BUDGET SUBTOTAL**	**$4,871,577**	**$4,591,120**	**$475,000**		
133		**2% CONTINGENCY**	**$97,432**	**$91,822**		$4,000 charged for budget line item 46	
134		**TOTAL GROUP ACTIVITIES BUDGET**	**$4,969,008**	**$4,682,942**			
135		**CONTINGENCY EXPENSE**	**$0**	**$0**			
136		**SALARY CREDIT (PM)(12 Months)**	**$0**	**$0**			
137		**SALARY SAVINGS (SWMPS 12 months)**	**($266,763)**	**($266,763)**			
138		**SALARY SAVINGS (WMPS 12 months)**	**($213,058)**	**($213,058)**			
139		***SUBTOTAL***	***($479,821)***	***($479,821)***			
140		***NET SUBTOTAL GROUP PROGRAM BUDGET***	***$4,489,187***	***$4,203,121***			
141		**SUA FUNDING CAP**	**$3,500,000**	**$3,500,000**			
142		**NET TOTAL GROUP PROGRAM BUDGET**	**$4,489,187**	**$4,203,121**			
143		***SUA FUNDING GAP***	***($989,187)***	***($703,121)***			

*Includes August 17, 2022 and conditional item adjustments

Item updated or changed since 2nd draft budget

CONTRA COSTA CLEAN WATER PROGRAM

Date: March 15, 2023

To: Management Committee

From: Elizabeth Yin, Program Consultant

Subject: APPROVE the Final Draft Trash Full Capture Device Impracticability Report and AUTHORIZE the Program Manager to sign and certify the submittal on behalf of each Permittee's duly authorized representative and submit them to the San Francisco Bay Regional Water Quality Control Board

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Recommendation:

Program Staff recommend each Permittee's duly authorized representative approve the Final Draft Full Capture Device Impracticability Report and authorize the Program Manager to sign and certify the associated transmittal letter on their behalf.

Program Staff further recommends that the Management Committee direct the Program Manager to submit the Final Draft Full Capture Device Impracticability Report to the SFRWQCB by the required deadline of March 31, 2023.

Background:

MRP 3.0 provides the opportunity for Permittees to collectively submit a programmatic report that describes conditions under which it is impracticable to control trash via full trash capture devices. The report must be approved by the Water Board Executive Officer and conclusions included in the report can be used by Permittees when developing updated Long-term Trash Reduction Plans. As described in provision C.10.e, the impracticability report shall include, but not be limited to, the following:

- A description of the engineering constraints that prevent the installation of full trash capture devices;
- A process for evaluating and determining impracticability of full trash capture devices; and
- Alternative controls or a combination of controls that may be implemented to reduce trash loads to meet the requirements and deadlines in Provision

C.10.a (Trash Reduction Requirements). Examples of alternative controls include, but are not limited to, requiring businesses or property owners to pick up litter, successful implementation of excess trash receptacles and collection services, increased code enforcement or parking enforcement/ticketing/towing, additional trash pick-ups, street sweeping, assessment and execution of cooperative implementation opportunities with Caltrans or neighboring Permittees, curb inlet screens, and long term measures such as pump station or storm drain retrofits, implementation of green stormwater infrastructure that controls trash, or changes to the catchment to allow effective implementation of full trash capture measures.

A BAMSC Regional Working Group was formed to develop the Trash Impracticability Report, and to this date, the Working Group has developed a survey to identify engineering constraints, as well as conducted interviews to identify greater details of those engineering constraints. The BAMSC Regional Working Group has summarized those findings and produced a Final Draft Trash Full Capture Device Impracticability Report for submittal.

Schedule:

The Regional Working Group will produced a Final Draft Trash Full Capture Device Impracticability Report by March 8, 2023 for approval by Management Committee on March 15, 2023, and submittal to the Regional Water Quality Control Board by March 31, 2023.

Fiscal Impact:

None at this time.

Attachments:

- Final Draft Trash Full Capture Device Impracticability Report
  also available on Groupsite
  https://cccleanwater.groupsite.com/folders/293822

BAY AREA MUNICIPAL
STORMWATER (BAMS) COLLABORATIVE

FULL TRASH CAPTURE SYSTEM IMPRACTICABILITY REPORT

Submitted in compliance with the San Francisco Bay Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit, Order No. R2-2022-0018, Provision C.10.e.

Prepared on behalf of:

Alameda Countywide Clean Water Program
Contra Costa Clean Water Program
San Mateo Countywide Water Pollution Prevention Program
Santa Clara Valley Urban Runoff Pollution Prevention Program
Solano Stormwater Alliance

March 2023

Preface

The Bay Area Municipal Stormwater (BAMS) Collaborative represents 103 stormwater management agencies in the San Francisco Bay Area, including 88 cities and towns, 8 counties, and 7 special districts. The BAMS Collaborative is focused on regional challenges and opportunities to improve the quality of stormwater flowing to our local creeks, the Delta, San Francisco Bay, and the Pacific Ocean. The BAMS Collaborative was organized in 2021 by the Board of Directors for the Bay Area Stormwater Management Agencies Association (BASMAA) to continue the information sharing and permittee advocacy functions of BASMAA in an informal manner after BASMAA's dissolution. The BAMS Collaborative continues BASMAA's mission to encourage information sharing and cooperation, and to develop products and programs that are more cost-effectively completed regionally than locally.

This Trash Full Capture System Impracticability Report (Report) provides information to improve the successful planning and implementation of control measures to address trash in stormwater. The information included in this report is based on a current understanding of the feasibility of siting, designing, installing, and maintaining the types of full trash capture systems certified by the State Water Resources Control Board at the time this report was completed. The information included in this report was gained through a survey of BAMS Collaborative members and engineers that design and construct/install these types of systems. This report was funded by BAMS Collaborative member agencies and developed on behalf of the BAMS Collaborative by EOA, Inc. under the oversight of the BAMS Collaborative's Trash Impracticability Work Group.

Disclaimer

Neither the BAMS Collaborative, its member agencies, contributors, nor the authors make any warranty, expressed or implied, nor assume any legal liability or responsibility for any third party's use of this report or the consequences of use of any information, product, or process described in this report. Mention of trade names or commercial products, organizations, or suppliers does not constitute an actual or implied endorsement or recommendation for or against use, or warranty of products.

TABLE OF CONTENTS

List of Abbreviations

ACCWP	Alameda Countywide Clean Water Program
ARS	Auto-retractable Screens
BAMS	Bay Area Municipal Stormwater
BASMAA	Bay Area Stormwater Management Agencies
BMPs	Best Management Practices
CALTRANS	California Department of Transportation
CASQA	California Stormwater Quality Association
CCCWP	Contra Costa Clean Water Program
CDS	Continuous Deflective Separator
CEQA	California Environmental Water Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
COA	Condition of Approval
CPS	Connector Pipe Screen
CWA	Federal Clean Water Act
FEMA	Federal Emergency Management Agency
FTC	Full Trash Capture
FY	Fiscal Year
GIB	Grate Inlet Basket
GIS	Geographical Information System
GSRD	Gross Solids Removal Device
HDS	Hydrodynamic Separator
LSA	Lake and Streambed Alteration
MCSTOPPP	Marin Countywide Pollution Prevention Program
MEP	Maximum Extent Practicable
MRP	Municipal Regional NPDES Permit for Stormwater
MS4	Municipal Separate Storm Sewer System
NFIP	National Flood Insurance Program
NPDES	National Pollutant Discharge Elimination System
NSBB/DSBB	Nutrient/Debris Separating Baffle Boxes
O&M	Operation and Maintenance
OSHA	Occupational Safety and Health Administration
OVTAs	On-Land Visual Assessments
PCBs	Polychlorinated biphenyls
PLDAs	Private Land Drainage Areas
ROW	Right-of-Way
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SMCFCD	San Mateo County Flood Control District
SMCWPPP	San Mateo Countywide Water Pollution Prevention Program
SSA	Solano Stormwater Alliance
TMA	Trash Management Area
WVCWA	West Valley Clean Water Program Authority

EXECUTIVE SUMMARY

Trash control programs are implemented by cities, counties, and other public agencies in the San Francisco Bay Area to significantly reduce the levels of trash and litter discharged from municipal separate storm sewer systems (MS4s) and protect local creeks and the Bay. The recently reissued National Pollutant Discharge Elimination System (NPDES) municipal stormwater regional permit (a.k.a., MRP) requires that applicable public agencies achieve challenging trash load reduction benchmarks (i.e., 90% and 100%) over aggressive timeframes (i.e., 2023 and 2025). Reductions can be achieved either through the implementation of full trash capture (FTC) systems/devices certified by the State Water Resources Control Board (State Water Board) or through other trash management actions that reduce/intercept trash to an equivalent level as FTC systems/devices (i.e., to a low trash generation level). There are three main categories of certified FTC systems/devices: high-flow capacity systems; catch basin insert devices; and multi-benefit stormwater treatment systems.

The MRP acknowledges that engineering constraints may make it impracticable to fully address the trash reduction benchmarks solely through the implementation of FTC systems/devices. Provision C.10.e of the MRP provides public agencies the opportunity to collectively submit a programmatic report that describes conditions under which it is infeasible to control trash via FTC systems/devices. This report documents conditions under which FTC installation (and O&M) may be infeasible, based on the siting/design, installation/construction, and operation and maintenance of over 16,000 FTC systems/devices in the SF Bay Area over the past decade. Additionally, guidance is provided in this report on how to best identify and consider these conditions and evaluate whether it may be feasible (or infeasible) to install (or operate/maintain) a catch basin insert or high-flow capacity FTC device/system at a proposed location. Information on the types of alternative trash controls that may reduce trash to levels equivalent to FTC devices/systems is also provided.

Based on the results of a survey and follow-up interviews with public agency staff and consulting engineers that have extensive experience in siting, designing, installing/constructing, and operating/maintaining FTC systems/devices, the following key constraints were identified that make it infeasible to install a FTC system/device at a specific location:

- Existing MS4 conveyance deficiencies exacerbated by a FTC system/device;
- Significant hydraulic impacts, leading to increased flooding hazards;
- Configurations, compromised conditions, irregular dimensions, or lack of traditional grey MS4 infrastructure;
- Lack of public land area for system siting/placement;
- Conflicts with the locations of existing utilities;
- High water table, backwater conditions, or excessive water intrusion impacting the FTC system/device performance;
- Manufacturer limitations (i.e., lack of systems/device that are feasible for location); and
- Complex topology or significant geologic features that impact the constructability of the system/device.

Additionally, a number of other non-engineering constraints were identified that may impact the construction, operation/maintenance, or trash interception performance of a FTC system/device:

- Environmental permitting/approval by regulatory agencies;
- Lack of adequate maintenance and operation equipment, training and resources;
- Performance impacts due to organic debris loading;
- Inability to control inflows into the system during maintenance;
- Damage, vandalism or theft of systems/devices; and
- Lack of the fiscal resources needed to install/construct and effectively operate/maintain FTC systems/devices over time.

A stepwise approach to evaluating the feasibility of both high-flow capacity and catch basin insert types of FTC systems/devices is presented in the report. Based on a review of the potential conditions/constraints to constructing/installing and operating/maintaining a FTC system/device it is recommended that the stepwise approach is applied on a site-by-site basis to evaluate infeasibility. Most constraints are site-specific and therefore may not apply to all situations/locations.

SF Bay Area public agencies have also implemented other types of trash controls and as a result have successfully achieved trash reductions equivalent to those achieved by FTC systems/devices. On-land Visual Trash Assessments (OVTAs) conducted by SF Bay Area public agencies are used to identify improvements in the levels of trash and litter on land areas draining to MS4s. Control measures implemented by Bay Area public agencies in land areas where trash reductions equivalent to FTC systems/devices have been observed via over 15,000 OVTAs include: frequent street sweeping/cleaning, reoccurring on-land trash cleanups, anti-littering and illegal dumping prevention/enforcement actions, improved trash bin management, trash inspections on private properties, and source control ordinances. Although trash reduction successes associated with these control measures are site specific, these and other types of control measures may be implemented by public agencies to a greater extent in the future to address the MRP 3.0 trash reduction benchmark.

1. INTRODUCTION

1.1 Background

In 2010, the San Francisco Bay Regional Water Quality Control Board (SF Bay Water Board) determined that trash levels observed in urban creeks in the San Francisco Bay Area (Bay Area) and on SF Bay shorelines are adversely impacting surface water quality and designated beneficial uses of these receiving waters. Additionally, the SF Bay Water Board determined that discharges from municipal separate storm sewer systems (MS4s) are significant contributors of trash observed in these receiving waters (Figure 1.1). These conclusions spawned the inclusion of new trash reduction requirements in the regional National Pollutant Discharge Elimination System (NPDES) permit for MS4s in the Bay Area (a.k.a., Municipal Regional Permit or MRP) that was first issued in 2009. Since that time, the development and implementation of stormwater trash control programs has become one of the highest priority components of the MRP. Requirements subsequent to those included in the first iteration of the MRP have significantly increased and the reduction of trash levels in stormwater discharges continues to be one of the highest priority control measure programs included in the recently reissued MRP (Order R2-2022-0018), referred to as MRP 3.0.

Trash control programs implemented by Bay Area cities, counties, and other public agencies (collectively referred to as Permittees) are designed to significantly reduce the levels of trash and litter[1] discharged from municipal separate storm sewer systems (MS4s) and to protect local creeks and the San Francisco Bay from these discharges. Under the MRP 3.0, Permittees are required to achieve challenging trash reduction benchmarks (i.e., 90% and 100%) over aggressive timeframes (i.e., 2023 and 2025). Reductions can be achieved either through the implementation of full trash capture (FTC) systems/devices certified by the State Water Resources Control Board (State Water Board) or through the implementation of other trash management actions that reduce/intercept trash to an equivalent level as FTC systems/devices (i.e., to a low trash generation level). There are three main categories of certified FTC systems/devices:

Figure 1.1. Trash accumulating on a storm drain inlet (Photo courtesy of the Santa Clara Valley Urban Runoff Pollution Prevention Program)

- High-flow Capacity Systems;
- Catch Basin Inserts; and
- Multi-benefit Stormwater Treatment Systems.

High-flow capacity systems and catch basin insert devices are the focus of this report. Although multi-benefit stormwater treatment systems (e.g., bioretention, capture and use, detention basins, and media filters) have been constructed throughout the Bay Area, high-flow capacity and catch basin inserts are the primary types of FTC systems/devices installed to specifically intercept trash. Additionally, constraints associated with the construction and maintenance of multi-benefit stormwater treatment systems are discussed in many other reports and

[1] Trash consists of litter and particles of litter. The California Government Code Section 68055.1 (g) defines litter as all improperly discarded waste material, including, but not limited to, convenience food, beverage, and other product packages or containers constructed of steel, aluminum, glass, paper, plastic, and other natural and synthetic materials, thrown or deposited on the lands and waters of the State, but not including the properly discarded waste of the primary processing of agriculture, mining, logging, sawmilling, or manufacturing.

guidance documents (USEPA 2023). For these reasons, the feasibility/infeasibility of installing and maintaining multi-benefit stormwater treatment systems is not discussed in this report.

Since the adoption of the initial trash load reduction requirement in the MRP in 2009, MRP Permittees have sited, installed, and maintained (or required the installation and maintenance) of over 16,000 FTC systems/devices. This significant level of investment over the past decade has provided Permittees with invaluable experience in identifying conditions under which FTC system/device installation is feasible and constraints that may make it infeasible to install and/or maintain different types of systems/devices. Additionally, Permittees have gained invaluable experience in implementing other types of trash control measures over the past decade. This experience has resulted in significant trash reduction/interception in specific trash management areas (TMAs) in the Bay Area, as documented by On-land Visual Trash Assessment (OVTA) programs implemented by Permittees.

1.2 Project Purpose

MRP 3.0 acknowledges that engineering constraints may make it impracticable to fully address the trash reduction benchmarks solely through the implementation of certified systems/devices. Provision C.10.e provides the opportunity for Permittees to collectively submit a programmatic report that describes conditions under which it is infeasible to control trash via FTC systems/devices. At the request of MRP Permittees, the Bay Area Municipal Stormwater (BAMS) Collaborative[2] led a project of regional benefit to develop a report that documents the conditions under which the installation and/or the operation and maintenance (O&M) of FTC systems/devices may be infeasible. The main purpose of the project is for MRP Permittees to address Provision C.10.e. by collectively developing and submitting a *Full Trash Capture System Impracticability Report* by March 31, 2023, for approval by the SF Bay Water Board Executive Officer. The project included the following tasks:

1. Survey Permittee staff, consulting engineers, and FTC vendors to document their experiences with siting, designing, installing and operating/maintaining FTC systems/devices;
2. Document conditions under which FTC installation and O&M may be infeasible based on input provided by survey respondents;
3. Identify and document alternative trash control measures or combinations of trash control measures that have been shown to achieve trash reduction/interception at a level equivalent to FTC systems/devices (i.e., low trash generation as defined by MRP 3.0); and
4. Develop guidance that can be used for evaluating and determining the feasibility of installing and operating/maintaining FTC systems/devices, in consideration of engineering and non-engineering constraints that may be present at locations where FTC system/device installation is most beneficial.

The main outcome of this project is this *Full Trash Capture System Impracticability Report*. A regional project workgroup comprised of MRP Permittees and stormwater program staff helped guide the project and the development of this report.

It is important to note that the project workgroup discussed and requested that the terms “impracticability” and “engineering infeasibility” be differentiated in the report because the term “practicable” has relevance to NDPES stormwater permitting and the Federal Clean Water Act (CWA). Specifically, the term “maximum extent practicable or MEP” is used in CWA section 402(p)(3)(B). It states that NPDES stormwater permits “…shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods." The State Water Board has

[2] The BAMS Collaborative is an informal group of San Francisco Bay Area stormwater programs representing cities, counties, and flood control districts subject to NPDES municipal stormwater permits. The BAMS Collaborative replaced the Bay Area Stormwater Management Agencies Association (BASMAA) in 2021 and continues to focus on regional challenges related to stormwater runoff and finding effective pollution prevention strategies.

determined that MEP requires permittees to choose effective Best Management Practices (BMPs), and to reject applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive" (Order No. WQ 2000-11). Further, the State Water Board has determined that MEP is the result of the cumulative effect of implementing, continuously evaluating, and making corresponding changes to a variety of technically and economically feasible BMPs that ensures the most appropriate controls are implemented in the most effective manner. Because "economic feasibility" is not the focus of the Trash Impracticability Project, the term "engineering feasibility" was used during the project to align with project goals more closely. Engineering feasibility is therefore the term used throughout this report instead of the term impracticability.

1.3 Trash Impracticability Survey

When scoping the project, the workgroup discussed the best process to request and receive information from Permittee staff, consulting engineers, and FTC vendors that have significant experience with siting, designing, installing, constructing, and operating/maintaining FTC systems/devices. The workgroup agreed to develop and distribute a survey and then conduct follow-up interviews with key respondents to document their perspectives on conditions and constraints that may affect the feasibility of FTC systems/devices.

A 20-question survey was developed and distributed to over 100 Permittee staff, consulting engineers, and FTC vendors. The survey was intended to gather information on conditions and engineering constraints that prevent the installation or proper functioning of FTC systems/devices and collect any available data to identify alternative controls (or a combination of controls) that may be implemented to reduce trash loads to meet MRP 3.0 trash reduction benchmarks. The survey was developed by the BAMS Collaborative with oversight and input from the project workgroup.

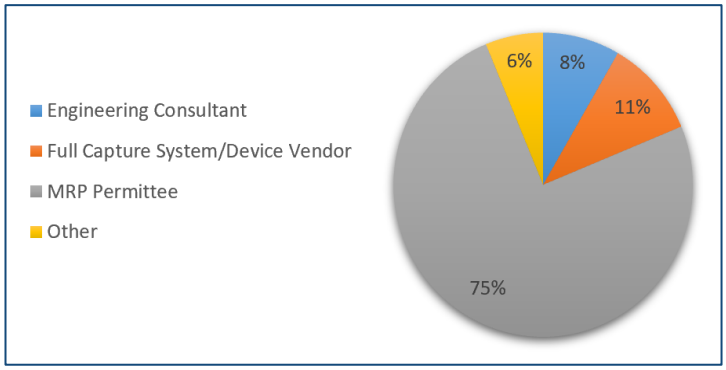


Figure 1.2. Types of stormwater management and engineering professionals that responded to the trash impracticability survey.

A total of 48 individuals from 35 entities, including MRP Permittee public engineers and staff, engineering consultants, and FTC system/device vendors, responded to the survey (Figure 1.2). About 70% of the respondents have more than 5 years of experience with FTC systems/devices, and about 25% have over 10 years of experience. Therefore, the survey respondents collectively have over 300 years of experience in FTC systems/devices. Roughly 73% of the survey respondents have sited, designed, installed, or maintained more than 50 FTC systems/devices and 60% have sited more than 100 systems/devices. Follow-up individual interviews with key professionals that responded to the survey and had the most experience and expertise in siting, designing, and installing different types of FTC systems/devices (i.e., major categories of systems/devices certified by the State Water Board) were also conducted and provided additional information on the types of conditions and constraints most frequently encountered.

The responses to the survey and information gained from the follow-up interviews heavily informed the contents of this report and the guidance provided on conducting feasibility evaluations. The findings of the survey are incorporated into this main body of the report, but a more comprehensive summary of the survey responses is included as Appendix A. Although survey responses helped guide the information in this report, it is important to point out that the survey responses should not be extrapolated to locations where FTC systems/devices are proposed. The importance of site-specific issues/conditions that may impact feasibility considerations cannot be

understated. The guidance included in this report is based on the experiences to date and therefore may need to be updated over time if additional/different perspectives are gained through additional installations in the future.

1.4 Organization of Report

The subsequent sections of this report are organized into the manner:

1. SF Bay Area Trash Control Measure Planning Framework & Implementation Status;
2. High-Flow Capacity FTC Systems;
3. Catch-Basin Insert Types of FTC Devices;
4. Guidance for Evaluating FTC System/Device Feasibility; and
5. Other Types of Trash Control Measures Possibly Equivalent to FTC Systems/Devices.

References for all documents cited in this report are included in Section 7. A summary of the responses received on the survey are included in Appendix A. Example FTC system/device evaluations/reports and hydrologic/hydraulic modeling reports/analyses are included in Appendix B.

2. SF Bay Area Trash Control Measure Planning Framework & Implementation Status

To achieve the MRP 3.0 provision C.10 trash load reduction compliance benchmarks (i.e., 90% by June 30, 2023, and 100% by June 30, 2025), Permittees are required to identify, evaluate, select, and implement stormwater trash control measures. Evaluating, selecting, and implementing these measures requires a comprehensive planning process to ensure that the benchmarks will be achieved, cost efficiencies are realized, and unforeseen consequences are minimized. The *Generalized Trash Control Measure Planning Framework* implemented by MRP Permittees over the past decade is summarized in Section 2.1. This framework was used by Permittees not only to achieve the MRP trash load reduction benchmarks to date by the required deadlines, but also to ensure that required trash reductions are sustained over time. Section 2.2 provides a summary of the FTC systems/devices implemented by MRP Permittees to date to achieve trash load reduction benchmarks. The number, types and areas addressed by these systems/devices were reported by Permittees in their FY 2021-22 annual compliance reports. Section 2.2 includes FTC systems/devices that Permittees have implemented (or caused to be implemented) through June 2022.

2.1 Generalized Trash Control Measure Planning Framework

This section presents the generalized framework that many MRP Permittees have conducted over the last decade to evaluate and implement stormwater trash control measures. The generalized framework is presented in Figure 2.1 and consists of a phased approach, including steps for planning, implementation, and adaptive management of stormwater trash control measure programs. It should be noted that while each MRP Permittee's process may vary, the phases and activities included in the generalized framework below are a good example of the overall process for planning, evaluating, and implementing stormwater trash control measures.

Phase 1. Develop Baseline Trash Generation Information

The first step in the stormwater trash control measure planning process is to identify the baseline trash generation levels on land areas that produce runoff that enters an MS4. Baseline trash generation levels in the SF Bay Area were identified in 2012 by conducting trash monitoring and modeling studies, followed by On-land Visual Trash Assessments (OVTAs) conducted on or adjacent to land areas to verify modeling results. Scoring categories for OVTAs include low (A), moderate (B), high (C) and very high (D).[3] As described in the MRP, land areas with low trash generation (i.e., consistent OVTA "A" scores) have achieved the 100% trash reduction goal and therefore additional or enhanced trash control measures are not needed to address trash generated on these land areas. Land areas with moderate, high, or very high trash generation levels (i.e., significant trash generating areas) are locations where additional or enhanced control measures are needed.

Baseline trash generation levels illustrated on MRP Permittee baseline maps serve as a starting point for Permittees to demonstrate that MRP-required trash load reduction goals have been achieved. To effectively assess and track control measure implementation and improvements in trash generation over time, Permittees have geographically grouped land areas into trash management areas (TMAs). Trash control measure implementation and trash load reductions are assessed, tracked, and reported at the TMA level by Permittees.

[3] EOA, Inc. 2017; EOA, Inc., 2018; and EOA and Keish Environmental, 2018.

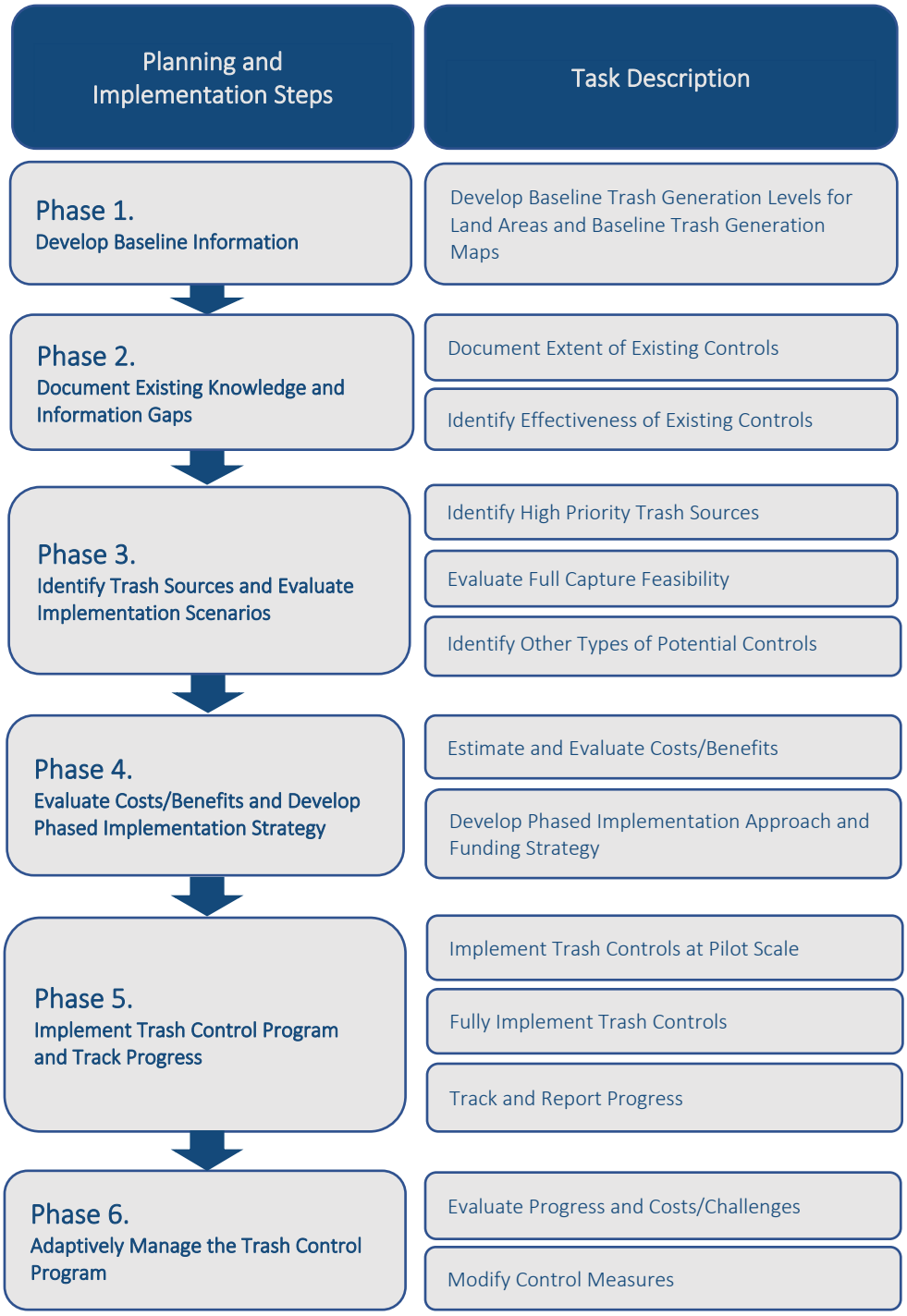


Figure 2.1 Bay Area Trash Control Measure Planning, Implementation and Evaluation Framework.

Phase 2. Document Existing Knowledge and Information Gaps

Documenting the type and location of existing trash control measures, as well as the estimated area that they address and their effectiveness is fundamental to Permittees determining whether existing controls can be enhanced, or whether new trash control measures need to be implemented to achieve MRP load reduction benchmarks. If significant trash generating areas are addressed by certified FTC systems/devices, then these land areas have achieved the MRP 100% trash load reduction benchmark. If land areas generating significant levels of trash are not addressed by FTC systems/devices, then enhanced or additional trash control measures will need to be implemented and Permittees will need to demonstrate (via OVTAs) that low trash generation has been achieved in this area.

Phase 3. Identify Trash Sources and Evaluate Control Measure Implementation Scenarios

The identification of high priority trash sources for land areas generating significant levels of trash can help Permittees identify the most appropriate types of control measures. For example, field surveys of high priority trash sources have resulted in the identification of inadequate trash bin management at multi-family residential and commercial properties in specific areas. These findings have resulted in the successful implementation of trash inspection programs focused on multi-family residential and commercial properties and trash reductions on those land areas. During inspections conducted on private properties, OVTAs were used by Permittees to document trash reductions and the achievement of the low trash generation goal.

As described in Phase 4, potential implementation scenarios for FTC systems/devices, both high-flow capacity and catch basin insert types, and/or alternative control measures are typically evaluated by Permittees to identify the most cost-effective control measures for specific TMAs and subareas. Sources of trash can help guide this implementation planning process.

Phase 4. Evaluate Costs/Benefits and Develop Phased Implementation Strategy

Given that there is a general lack of funding for stormwater management programs and there are always competing interests for available public resources, Permittees usually attempt to identify and implement the most cost-effective control measures that achieve the desired goal/benchmark. With regards to trash control measures, cost-effectiveness is a function of both the costs and the trash reduction benefits anticipated via the implementation of a control measure.

Cost estimating for trash control measure design/development and implementation should include all types of costs (e.g., capital/initial and on-going), both internal (e.g., personnel) and external (e.g., contractor or vendor) costs, and should be based on the most recent information readily available. Additionally, costs should be estimated over longer timeframes (e.g., 50 years), given that Permittees will need to sustain the trash reduction benchmark in perpetuity. For estimating trash reduction benefits, the most readily available quantitative or qualitative information should be used. Local experience in implementing controls should be considered when estimating anticipated benefits. Based on the cost benefit analysis, a cost-effective control measure implementation strategy can then be selected by a Permittee and further defined in a trash control measures implementation plan, which should also include a funding strategy (e.g., amounts required to cover capital and on-going costs, estimated time periods of when disbursements will be required vs. an estimation on when, and how much it is expected to receive per source of funds). It is recommended that the implementation plan outlines control measure implementation in phases that allow enough flexibility to adapt to required modifications as lessons are learned over the implementation schedule. An example of a recent cost-benefit evaluation for FTC systems/devices and alternative controls can be found in Appendix B.

Phase 5. Implement Trash Control Program and Track Progress

Trash control measures can be implemented at different geographical scales, as a pilot or a full-scale implementation, and over different timeframes. A phased implementation approach could provide valuable

feedback to improve future efforts and avoid identified challenges (CASQA 2021) and should be considered when developing a trash control measures plan. The design and construction of high-flow capacity FTC systems for example, can take over 2 years depending on the complexity of the capital improvement project and whether environmental permits and approvals are needed. Experience gained by Bay Area Permittees over a decade of implementation indicates that trash control programs will adapt based on lessons learned through pilot implementation, so expect that implementation plans and cost benefit estimates may also need to be updated over the implementation timeframe required by NPDES permits. The tracking methods used by Permittees to document both control measure implementation and trash load reductions should be based on what the Regional Water Board requires (e.g., annual report) and any information required by the Permittee to adequately track and adapt control measure implementation over time and ensure that trash load reduction benchmarks are achieved. Tracking of FTC systems/devices should be aligned with Permittee asset management programs as needed.

Phase 6. Adaptively Manage the Trash Control Program

Trash control measure programs will adapt over time based on lessons learned, both successes and challenges. To assist this adaptation and continued efforts to optimize trash controls, implementation costs, benefits, and challenges should be tracked by Permittees over the implementation timeline. These tracked data should be evaluated periodically to support adaptation where needed. Examples of data and information that can be used to help Permittees effectively adapt their trash control programs include:

- Baseline Trash Generation, Full Capture, and Private Land Drainage Area Maps – Mapping is a key tool used to track trash generation, control measure implementation, and expended knowledge of stormwater drainage, specifically related to privately-owned drainage systems. Revisions, refinements, and updates to maps can also assist Permittees over time in calculating trash load reductions.
- Control Measure Effectiveness Studies – Effectiveness evaluation studies focused on specific controls of combinations of controls can produce results to help modify (or not modify) trash control measure implementation over time. For example, SCVURPPP and the City of Oakland (2021) conducted a study that evaluated the ability of curb-inlet screens (partial capture devices) and street sweeping programs to achieve the MRP 3.0 100% trash load reduction goal. Although there are some remaining questions regarding the outcomes of the study, these control measures, if implemented in tandem and at the level outlined in the evaluation report, can significantly reduce trash in stormwater. Results such as those derived from the SCVURPPP and City of Oakland study can further inform Permittee decisions on control measure implementation and further define the costs and benefits of implementing specific types of trash control measures.
- On-land Visual Trash Assessments (OVTAs) and Trash Source Evaluations - OVTAs are used to document changes in trash generation over time in specific TMAs and whether a TMA has achieved the trash load reduction goal via the implementation of alternative trash controls. Importantly, OVTAs also document land areas where trash generation has not significantly improved and therefore control measure implementation will likely need to be expanded or modified in these land areas to achieve the reduction goal. In some cases, the lack of improvements in trash generation observed via OVTAs over time suggests that a FTC system/device approach may be more appropriate and cost-effective than expanding the implementation of alternative trash control measures in these areas. Also, OVTAs and source evaluation assessments can help identify trash sources in specific areas that may inform control measure implementation. For example, if overflowing trash bins/containers from private properties is identified as an important trash source, enhancing Permittee inspection programs designed to work with private property owners to improve bin/container management could be a viable control measure option that would address the levels of trash generation observed in a specific TMA or sub-TMA. Knowledge of trash sources, therefore, can be helpful in adapting a trash control measure program over time.

- Tracking Implementation Costs – Tracking the costs of implementing a trash control measure program can assist Permittees in identifying which controls are the most cost effective and which are not. Those that are the least cost effective should be evaluated over time and alternative controls should be considered, as long as the trash reduction benefits are equal to or greater than the control measure currently implemented by the Permittee. A good example of control measure costs being tracked and used by Permittees to adapt their implementation plans is the planned movement away from catch basin insert types of FTC devices installed in the upper Colma Creek watershed over the last decade to one high-flow capacity FTC system downstream of these devices. Although the project is still in the early planning stages, the ongoing maintenance costs of the one high-flow capacity device are anticipated to be lower than the costs of maintaining the catch-basin inserts installed within the catchment. Additionally, the high-flow capacity FTC system provides increased trash load reduction benefits because more trash generating areas (including those owned/operated by Caltrans) are addressed by this planned system.
- Change in the Types of Control Measure Allowed for Compliance - MRP 3.0 includes changes in the control measures that can be used to demonstrate attainment of trash load reduction benchmarks and the trash reduction benchmark. These changes include the elimination of credits for trash source control ordinances, offsets for creek/shoreline cleanups, and offsets for direct discharge control programs. If the list of acceptable types of control measures that can be used to demonstrate compliance are modified by the Regional Water Board, Permittee trash implementation plans and control measures will need to be updated.

2.2 Trash Control Measure Implementation Progress by MRP Permittees

MRP Permittees have implemented numerous enhanced and new trash control measures over the course of the past decade. These actions have substantially reduced the levels of trash in stormwater. As part of these efforts, Permittees have installed both catch basin type and high-flow capacity FTC systems/devices and implemented other (alternative) types of trash control measures that prevent or intercept trash in stormwater before entering receiving waters. Table 2.1 summarizes the progress made by Permittees in implementing FTC systems/devices (as reported in FY 2021-22 annual reports). Additional information on the implementation of alternative trash controls is included in Section 6.

Through FY 2021-22, Permittees have successfully installed (or required others to install) 16,419 FTC systems/devices (Table 2.1). The installation and ongoing O&M of these systems/devices is responsible for roughly a 60% stormwater trash load reduction at the regional level. As described in Section 6, additional trash reduction progress has also been achieved by Permittees through the implementation of alternative types of trash control measures (e.g., street sweeping[4] and on-land cleanups). Based on reporting by Permittees in FY 2021-22, an additional 20% stormwater trash load reduction has been achieved through the implementation these alternative control measures.

[4] Additional information can be found in the BASMAA Tracking California's Trash Project – Evaluation of Street Sweeping and Curb Inlet Screen Measures to Control Trash in Stormwater (BASMAA, 2016).

Table 2.1. Summary of Full Trash Capture (FTC) system/device implementation by county, as reported by MRP Permittees in FY 2021-22 annual compliance reports.

Permittee County	Catch Basin Inserts		High-Flow Capacity Systems		Multi-Benefit Treatment Systems[a]		Total	
	#	Area Addressed (Acres)	#	Area Addressed (Acres)	#	Area Addressed (Acres)	#	Area Addressed (Acres)
Alameda	7,661	19,652	169	7,603	27	284	7,859	27,547
Contra Costa	2,818	7,793	127	5,014	295	1,986	3,245	14,840
Santa Clara	1,963	3,209	63	17,502	201	998	2,226	22,437
San Mateo	2,946	7,115	60	2,922	4	99	3,010	10,135
Solano	26	23	12	7,954	0	0	79	8,026
Totals	**15,414**	**37,792**	**431**	**40,995**	**490**	**2,907**	**16,419**	**82,984**

[a] Includes other types of full capture systems reported by Permittees in annual reports.

3. HIGH-FLOW CAPACITY FULL TRASH CAPTURE SYSTEMS

3.1 Overview of Large Systems

High-flow capacity FTC systems are proprietary stormwater treatment systems that generally require engineering/hydraulic design and construction to install. These types of systems can address trash from an entire stormwater catchment, including land areas with private storm drains that connect to MS4s (i.e., Private Land Drainage Areas or PLDAs). Also known as "large" FTC systems, these systems provide a single location for maintenance and should be inspected at regular intervals and maintained when necessary (consistent with manufacturer specifications) to ensure the desired performance is sustained. Some disadvantages of high-flow capacity FTC systems are the relatively high capital and construction costs, which require a large initial funding source, and the higher instance of subsurface utility conflicts at desired locations within highly urbanized areas. Additionally, large systems installed in open channels may be infeasible due to potential impacts to wildlife habitat or at a minimum require environmental permitting that may require mitigation (Port of Oakland, 2021).
There are three primary types of large systems/devices currently certified by the State Water Board:

- Hydrodynamic separators;
- Gross solids removal devices; and
- Netting systems.

All three types of large FTC systems have been installed in the SF Bay Area. Additional information on each of these types of systems is provided in this section. At the time this report was developed, 18 high-flow capacity FTC systems had been certified by the State Water Board.[5]

Hydrodynamic Separators

Vortex Separators

Vortex separator (or swirl concentrator) types of HDS units are the most common types of large FTC systems installed within the Bay Area (Figure 3.1). These systems are produced by several manufacturers, each with their own designs, but all contain large cylindrical separation chambers in which stormwater enters, creating a vortex to separate trash, debris, oil, and other pollutants from stormwater. The velocity is highest at the outer edge of the vortex, keeping trash and debris from clogging outflow holes and allowing the stormwater to leave the cylinder. Heavier material settles to the bottom of the storage sump, and floatables (e.g., trash) remain on the surface of the water within the separator cylinder.

For relatively small drainage areas (i.e., < 50 acres), vortex separators have the advantage of having relatively small footprint and offer additional flexibility in their installation locations when compared to other types of large FTC systems. HDS units come in a large variety of types and sizes and may be scaled up to handle peak flows of several hundred cubic feet per second. Trash, debris, and sediment are usually removed from the vortex separator with a vacuum-assisted truck, however, alternative systems may be fitted with a large basket to collect settled material, which is subsequently removed via a boom truck and emptied into a container for disposal. Unit configurations are available for in-line or off-line installation. Studies have shown that vortex separators can be highly effective at trapping trash and provide removal benefits for other pollutants (e.g., PCBs and mercury).

[5] https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/trash_implementation/2022/fullcptre-availabletopublic10-11.pdf (updated October 13, 2022).

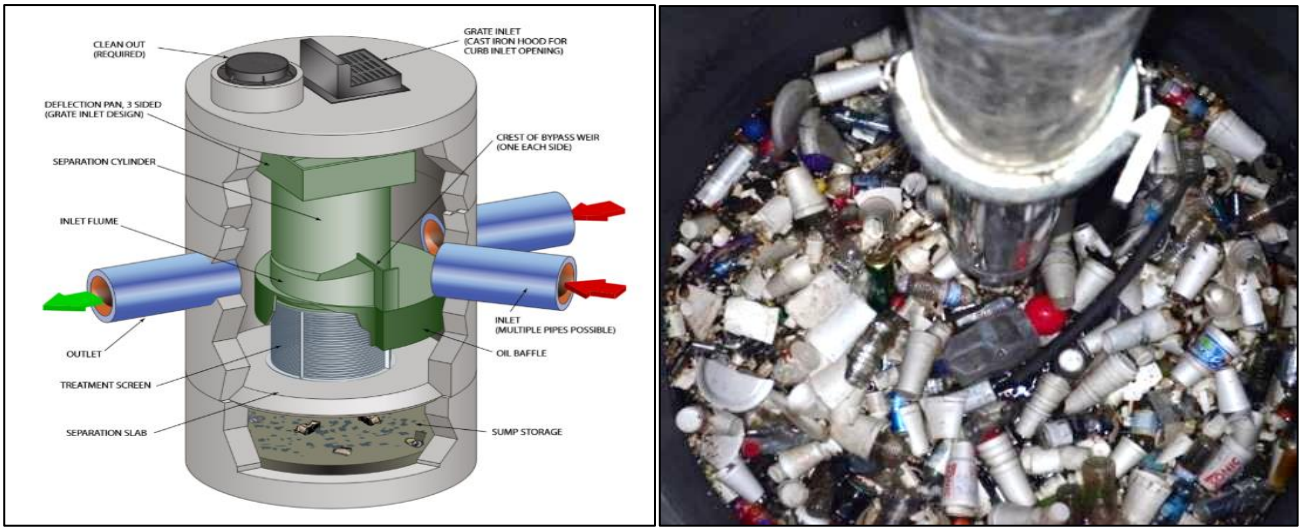


Figure 3.1. (Left) Diagram of a Contech CDS® hydrodynamic separator (Source: www.conteches.com/products/stormwater-management/treatment). (Right) Separator Cylinder of Contech CDS®

Figure 3.2. Contech CDS® hydrodynamic separator installation in City of Hayward (Image courtesy of EOA, Inc.).

Although there are many advantages to vortex separators for trash control, they also have their disadvantages. Compared to other types of large systems, vortex separators can have high capital costs. Additionally, for large drainage areas (e.g., >300 acres), the sump depths for vortex separators may need to be 25 feet or greater, which may pose a maintenance challenge given that typical atmospheric pressure limits vertical suction lift of pumps (i.e., vacuum-assisted trucks). Additional booster pumps are therefore needed to clean vortex separator sumps at these depths.

Nutrient/Debris Separating Baffle Boxes

Nutrient Separating Baffle Boxes (NSBB) and Debris Separating Baffle Boxes (DSBB) are both types of HDS units designed with a shallower depth than a vortex separator (Figure 3.3). Treatment flow rates vary by size and configuration of the unit. Stormwater enters a rectangular chamber with a screening system suspended above sedimentation chambers to separate trash, debris, oil, and other pollutants from stormwater.
The NSBB/DSBB screening system stores trash and debris in a dry state which minimizes nutrient leaching, bacterial growth, and odors. All collected material within the screening system and sump is removed with a vacuum-assisted truck. NSBB/DSBB units are shallower than vortex separators, reducing the need for shoring during construction. NSBB and DSBB unit configurations are available for in-line or off-line installation.
The disadvantages to NSBB/DSBB units for trash control include the need for a larger footprint for siting the system to address relatively smaller drainage areas (i.e., <50 acres), and the limited information on O&M, due to the more recent implementation of these types of systems. Similar to vortex separators, utility and ROW conflicts may also pose a challenge to installation and maintenance. Studies have shown, however, that NSBB/DSBB systems can be highly effective at trapping trash and also provide removal benefits for other pollutants (e.g., PCBs and mercury).

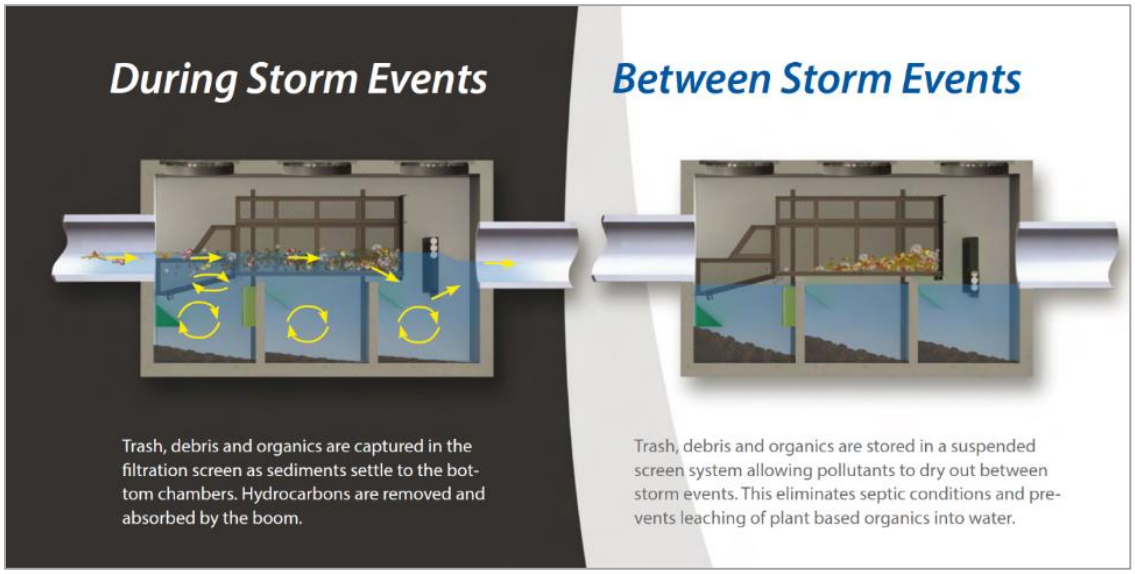


Figure 3.3. Bio Clean Debris Separating Baffle Box (Source: https://biocleanenvironmental.com/debris-separating-baffle-box/).

Gross Solids Removal Systems (GSRDs)

Gross solids removal devices (GSRDs) have also been installed in the Bay Area. A GSRD may be installed as a series of screens in-line (Figure 3.4), within a channel, at the end of a pipe, or within the forebay or outlet of a stormwater pump station. As stormwater enters the GSRD, trash and debris are captured inside or by the screens and water exits through 5 mm wide gaps (i.e., screen louvers). GSRDs may be installed in a linear-radial configuration to treat flows from pipes that are 12 to 72 inches in diameter to the desired capacity or within a channel of the forebay of a stormwater pump station as a flat-panel configuration. A GSRD may require a large horizontal footprint compared to the other types of high-flow capacity systems but may be the best option if space is not a consideration.

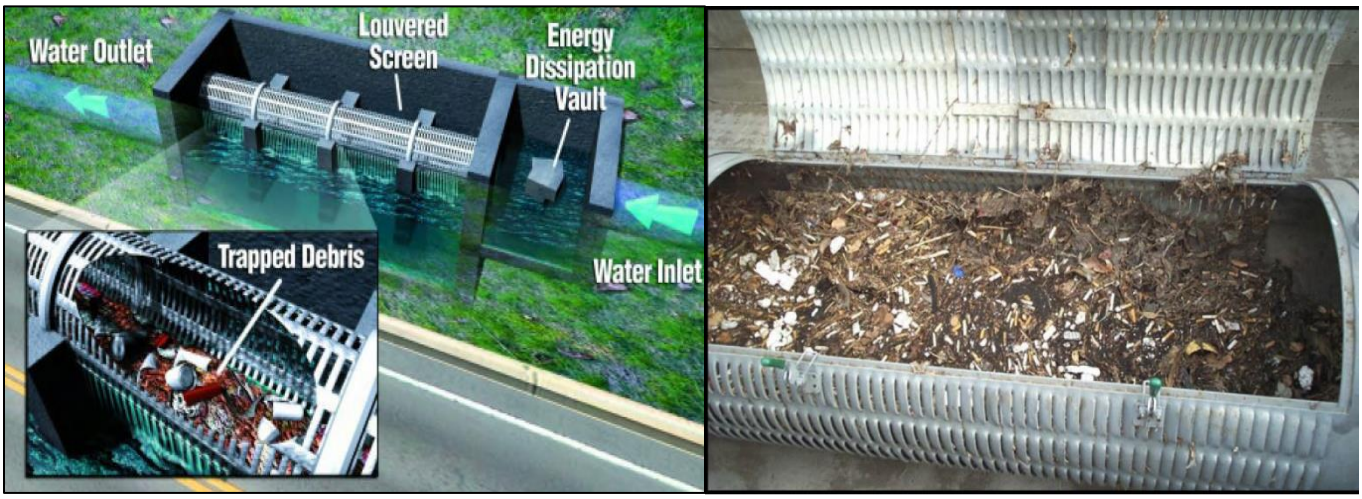


Figure 3.4. (Left) Cut away view of linear radial configuration (courtesy of the American Society of Civil Engineers Publications) and (Right) GSRD linear radial configuration (Courtesy of Caltrans and Roscoe Moss [Caltrans, 2003]).

The linear-radial configuration is maintained by opening the length of the system and vacuuming the trash and debris stored within the system. The flat-panel configuration is maintained by removing trash and debris adhering to the panels. Figure 3.5 shows the GSRD installed in a flat-panel configuration at a pumpstation in the City of East Palo Alto.

Disadvantages to the GSRD include siting and maintenance challenges. Siting can be difficult in certain situations due to the extent of the footprint needed to construct and maintain the device. Additionally, maintenance challenges with extruding the material captured by the GSRD are common with these types of devices.

Figure 3.5. Roscoe Moss Gross Solids Removal Device (GSRD) inclined screen configuration installed in the City of East Palo Alto at the outlet of a pump station (Image courtesy of Schaaf and Wheeler Consulting Engineers).

Netting Systems

These types of high-flow capacity systems rely on the force of flowing water to trap trash and debris in disposable nylon mesh bags/nets of varying mesh sizes and storage volumes. The typical configuration is a large net installed at the end of a stormwater outfall (i.e., end-of-pipe), however, the manufacturers indicate that these nets can also be placed in-line. Netting systems may be designed and installed to treat any size of catchment but are most commonly used to address flows from relatively large catchments.

Figure 3.6. NetTech FTC netting system installed in the City of Livermore (Image courtesy of Schaaf and Wheeler Consulting Engineers).

Two types of netting systems are currently available. The first is the NetTech manufactured by Oldcastle Stormwater Solutions (formerly KriStar Enterprises, Inc.), which can be placed in-line (Figure 3.6 shows the devices attached to a built in-line weir in an open storm drain system), as well as at an outfall, which in this case may require retrofitting. This system can be installed with a relatively small initial cost relative to the other types of large systems and is placed over the entire outfall and attached with a tether. It is designed to detach with a certain amount of force, usually when the net is full. Once full, the net closes and detaches, and the tether prevents the net from moving downstream. The net requires a minimum footprint of typically 10-feet between the outfall and the receiving water body and must be placed on a concrete pad.

The second type of netting system is the TrashTrap manufactured by StormTrap Technologies Inc. (formerly Fresh Creek Technologies Inc.). It requires a structure to house the netting system (Figure 3.7). The nets are designed not to detach automatically. An overflow screen is located above the nets so that any excess flows can easily bypass. Once full, nets are removed with a boom truck and disposed. New nets may be installed to eliminate the cleaning of existing nets. This netting system can be easily scaled up and may be installed under water or within tidal areas, allowing it to be installed in more types of locations than the other systems. This flexibility is particularly important in cities where stormwater outfalls have significant tidal influence or are partially submerged. StormTrap also manufactures in-line versions, which are not installed at outfalls and function more similarly to the DSBB/NSBB devices.

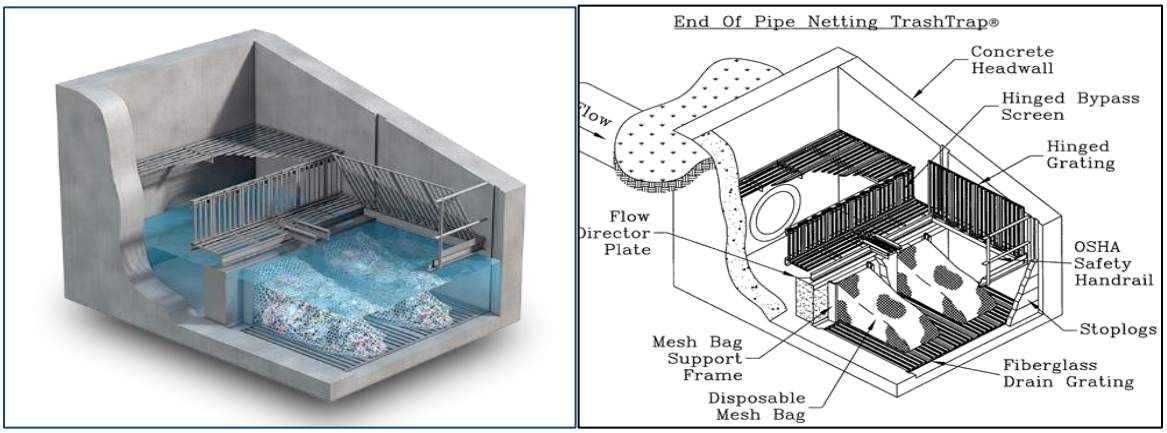


Figure 3.7. StormTrap Technologies End-of-Pipe Netting TrashTrap® (Images courtesy of StormTrap Technologies, Inc.).

3.2 Engineering Constraints

The selection of a high-flow capacity FTC system to address trash generated in a catchment will depend on a number of factors. Ideally, a high-flow capacity system should be located downstream of all land areas in a catchment that generate significant levels of trash, but prior to the location where the stormwater pipe discharges into a receiving water body (i.e., outfall). This location generally provides the greatest load reduction benefit, while minimizing encroachment onto the receiving water. That said, there are nearly always site-specific constraints at locations proposed for high-flow capacity systems, including the land available to construct the device, depth of the water table, conflicts with major utilities (e.g., gas, water, electricity), and stormwater pipe depths and conditions. These (and other) constraints can have a major barring on whether a high-flow capacity FTC is feasible to construct and maintain at a specific site/location. If feasible from an engineering perspective, considerations of the environmental permitting needed to construct and maintain the device, as well as the resulting trash load reduction benefit should also be considered prior to selecting a site.

Descriptions of different types of engineering constraints that must be considered and may prevent the installation of a high-flow capacity FTC system at a selected location are presented in this section. Information on constraints was compiled from survey respondents, who were asked to identify the engineering constraints that they have encountered during the siting and installation/construction of high-flow capacity FTC systems, and from follow-up discussions with engineers that have significant experience in siting, designing, and constructing these systems. The following list of engineering constraints was developed based on this input.

Conveyance deficiencies and flat grades of existing storm drainage systems. Municipal stormwater drainage systems in the Bay Area were generally constructed over the course of the last century, as urbanization occurred and the need for stormwater infrastructure to reduce flooding in neighboring communities increased. Some portions of the stormwater drainage system that were constructed nearly a 100 years ago are still present and functioning as designed. That said, design standards have evolved significantly since that time and some portions of the systems do not meet current standards.

Although some portions of the stormwater infrastructure in the Bay Area have undergone upgrades through redevelopment and capital improvement programs, many areas continue to be impacted by flooding due to conveyance deficiencies. Depending on the severity of the deficiencies, siting a high-flow capacity FTC system in a portion of a stormwater drainage system that experiences flooding is not advisable. Additionally, locations where drainage pipes have flat grades can pose significant challenges to siting FTC systems. Scenarios where pipes with flat grades are typically observed in the Bay Area include the following:

- Locations in close proximity to the coast or SF Bay. As stormwater drainage systems approach their outfall locations at the Pacific Ocean or the SF Bay, pipe grades are significantly reduced due to the lack of elevation and topology. Low gradient systems located near to the coast or SF Bay where velocities are reduced and high tail waters are found, should be excluded from high-flow capacity FTC system consideration, given that they likely increase flooding risks.
- Flat pipe grades in other locations. In low lying areas (e.g., valleys) and areas with high groundwater depths, pipes may have limited grades to avoid groundwater intrusion or the need for pump stations to move stormwater to high elevations. Should these situations be encountered, the feasibility of installing and maintaining a high-flow capacity system should be evaluated. In some cases, it may be infeasible to install a device due to the inability to direct flow through the FTC system at a velocity that is needed to avoid (or not exacerbate) flooding potential in the area.

Existing storm drainage systems with shallow or deep pipe depths. As described above, there are situations where existing storm drainage systems were constructed at shallow depths, which can make the installation of FTC systems challenging. Generally speaking, pipe invert depths that are less than 3 to 5 feet provide significant constraints to constructing high-flow capacity FTC systems. For locations with pipes with deep inverts, feasibility

will depend on the type of system and the maintenance requirements. Confined space entry should be avoided, to the extent possible, and may make a site infeasible to maintain. A 25 feet maximum invert depth is a good estimation for when maintenance can be conducted by a standard vacuum-assisted truck. Anything deeper requires special types of maintenance equipment.

Compromised condition of existing storm drainage infrastructure. In addition to the constraints described above, survey respondents indicated that they have encountered situations where storm drainage infrastructure was in compromised condition at the location where a FTC system is proposed. General guidance on how best to consider the current condition (or age) of stormwater piping/structures is that the existing infrastructure should have a remaining life expectancy that is equal to or greater than the estimated life expectancy of the FTC system. If the expectancy of the existing infrastructure is less than the estimated life expectancy of the proposed FTC system, then upgrades to the existing infrastructure should be considered prior to installation. Depending on the extent of upgrades needed, installation of an FTC system at the proposed location may need to be delayed or considered infeasible due to the compromised condition of the existing infrastructure.

Lack of public land area for the system. High-flow capacity FTC systems are typically installed on land owned by a Permittee, including streets/roadways, pump station lands, and municipal parking lots. Channels owned and maintained by public agencies may also be used as locations for FTC systems, assuming the approval of the appropriate environmental permits. In many situations, the availability and location of public lands do not align well with ideal locations for High-flow capacity FTC systems. These systems, generally, have large footprints and require significant land to integrate into stormwater drainage systems. In many instances, public lands are not large enough to support the construction and maintenance of these types of systems. This is evident in the survey results, where a large percentage of respondents indicated that they have encountered this constraint for high-flow capacity FTC systems, the highest percentage of all potential constraints. The lack of public lands to construct and maintain these types of FTC systems may make installation (or maintenance) infeasible.

Utility conflicts. Most stormwater drainage pipes are located below public streets/roadways. Utilities, including electricity, natural gas, water, sewer, and telecom in many cases are also located below streets/roadways, and run parallel or perpendicular to stormwater drainage pipes. An abundance of utilities located underneath streets/roadways can pose challenges with siting high-flow capacity FTC systems (Figure 3.8), especially if utilities are within the footprint of the system and would need to be moved to accommodate the placement of the system. More than half of the respondents to the survey indicated that they had encountered utility conflicts siting a high-flow capacity FTC system, making it one of the most frequently encountered constraints identified by survey respondents. While relocation of utilities may be an option in some cases, relocation can significantly increase project costs and delay FTC projects. For these reasons, relocation may not be a viable solution for siting a FTC system and therefore it may be infeasible to install a system at a proposed location due to utility conflicts.

Figure 3.8. Types of underground utilities that may be encountered when siting high-flow capacity FTC systems public streets/roadways (Image courtesy of Global Designing Cities Initiative Global Street Design Guide).

Creating or increasing flood hazards or hydraulic impacts. Survey respondents indicated that they have encountered flood hazards and/or significant hydraulic impacts to the storm drainage system when siting/designing a large FTC system. There are generally three potential scenarios where this constraint is realized:

(1) Proposed site is classified as a floodway. In this scenario, installation of a large FTC system is infeasible.

(2) Proposed site is classified as a floodplain. Based on a case-specific analysis it may be determined that engineering considerations may be taken (not applicable in all cases) or may be determined as infeasible for installation. If mitigation projects are required, additional costs are likely. Classification of a sites' flood hazard can be found on the Federal Emergency Management Agency's (FEMA) Map Service Center or other National Flood Insurance Program (NFIP) products data.

(3) Hydrologic/Hydraulic analysis for the site and proposed type of FTC system results determine that the proposed project may cause flooding. Hydrologic/Hydraulic analysis may determine that a proposed FTC system is infeasible for installation in a specific location or that engineering considerations should be taken. If mitigation projects are needed, additional costs are likely. An important note regarding the hydraulic impacts to the storm drainage system that are caused by high-flow capacity FTC systems installed either underground or within a channel. There is a common misconception about design and construction of "*In-line*" and *"Off-line"* systems. Sometimes during the design process, the hydraulic analysis determines that the hydraulic losses calculated for a proposed "In-line" FTC system will likely cause flooding or compromise the proper functioning of the system. In these cases, engineering consultants are sometimes asked to explore an "Off-line" option under the assumption that off-line system would generate less hydraulic losses and will mitigate for hydraulic impacts caused by the in-line system. This is a misconception. Although hydraulic impacts may be reduced by moving the system to an off-line design, off-line configurations can still generate significant hydraulic losses, in some cases even more than

in in-line systems. In general, an off-line system diverts flows up to the one-year, one-hour storm flows into the system, but higher flows are diverted around the FTC system. Diversion typically occurs by constructing a weir wall upstream of the FTC system. The weir wall itself, however, may cause significant upstream hydraulic impacts. Therefore, assuming that the hydraulic impacts caused by a high-flow capacity FTC system can simply be addressed by designing the system off-line is a misconception. The type, size, and configuration of the FTC system should be determined by analyzing several engineering variables calculated by iteratively running a hydraulic model based on site-specific conditions (Mendocino 2021; Schaaf and Wheeler 2017 and 2018). An example of an "off-line" vortex separator is illustrated in Figure 3.9.

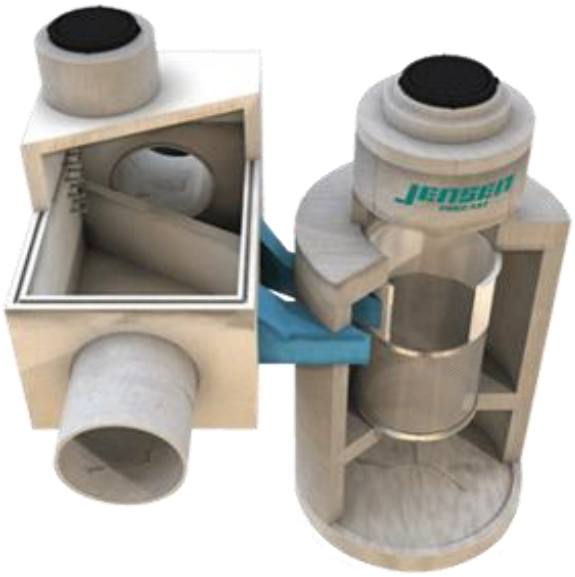


Figure 3.9. Jensen off-line HDS full trash capture system (Image courtesy of Jensen Precast).

Potential impacts to stormwater pump stations. Because stormwater pump stations are generally located at the bottom of catchments, these types of infrastructure are natural locations to consider when siting high-flow capacity FTC systems. As described below, there are many constraints that need to be considered under two potential design scenarios associated with pump stations:

(1) Installation upstream a pump station. In general, pump stations are located at the lowest elevation points of a stormwater drainage system, so all flows congregate at these points. The pumps in the pumpstation, however, are designed to receive consistent and as close as possible laminar flow. Installing a FTC without changing the original capacity of the pump and the pump's set points, in most conditions, would essentially stop the pumps working in the station, as the flow would be obstructed by the FTC system. Therefore, the pump would cycle on-and-off in shorter periods than those allowed by original design, or constantly, which would inevitably burn out the pump(s). Adding more capacity to the pumps are typically projects that require resources in the millions of dollars range and therefore in many cases siting the FTC system upstream of a pump station is not advised and likely should be considered infeasible.

(2) Installation downstream a pump station. Installation of a high-flow capacity FTC system downstream of the oufall(s) of a pump station will create increased hydraulic head, possibly at greater levels than the pumps were designed to address. In other words, the pump station would need to force more water through a force main, due to the FTC system blocking the flow. This scenario would place more strain on the pump(s), where they will operate at a lower flow rate which could cause upstream flooding or potentially cause the pump station to fail.

In summary, high-flow capacity FTC systems installed upstream or downstream of pump stations may cause damage to a pump(s) in most design scenarios and may create significant flooding within and upstream of the pump station (City of San Rafael 2021a and 2021b). It may be feasible from an engineering standpoint to install a FTC at a pump station if the FTC system installation is part of a capacity improvement project (e.g., trash capture/pump station improvement projects in the Cities of East Palo Alto and San Mateo), but this scenario likely becomes cost prohibitive. Design alternatives need to be evaluated on a case-specific basis when considering installation of the FTC system near a pump station.

High water tables/backwater conditions/excessive water intrusion. High water tables, backwater conditions, and excessive water intrusion into FTC systems were identified by survey respondents as factors that constrain the implementation of high-flow capacity FTC systems. Should any of these factors significantly affect the proper functioning of the system and its ability to consistently achieve the FTC design standard throughout the year, this constraint may make the construction of the system at the desired location infeasible. Tidal and groundwater intrusion into the device can create hydraulic impacts and require the system, if feasible, to be designed to address these impacts. That said, in many situations the impacts caused by tidal/groundwater intrusion are too great to effectively mitigate through alternative engineering designs. Additionally, maintenance and operation impacts associated with these constraints should also be evaluated prior determining whether a design is feasible. Just because a system can be designed and constructed to address these constraints doesn't mean that the maintenance and operation of the system is feasible (see Section 3.2).

Manufacturer limitations. Although there are many types, models and manufacturers of high-flow capacity FTC systems, there are situations where a system that will meet the constraints of a proposed location is not currently manufactured by a vendor or certified by the State Water Board. A total of 25% of survey respondents indicated that they have encountered this engineering constraint while siting or designing a high-flow capacity FTC system. These situations are mostly associated with the specific size or depth of an inlet pipe or the lack of a system design that allows for bypass of larger flows (Schaaf & Wheeler and EOA, Inc. 2021). If a certified FTC system is not available to address constraints at a proposed location, it is likely infeasible to install a high-flow capacity system site.

Complex topology or significant geologic features. The presence of outcroppings or near-surface bedrock at a proposed site are examples of this constraint. A total of 9% of survey respondents indicated that they have encountered this engineering constraint. Similarly, the presence of steep slopes at the proposed site could also create challenges for installing and maintaining high-flow capacity FTC systems. A total of 19% of survey respondents indicated that this is an engineering constraint that they have encountered. While, from an engineering standpoint, there may be options available to overcome these constraints, these alternatives may increase the costs of a project to a degree that makes it far less cost-effective and possibly infeasible.

Damage, vandalism or theft. This constraint for high-flow capacity FTC systems is mostly associated with end-of-pipe netting systems since most large systems are constructed underground. That said, theft and vandalism can occur during the construction of a FTC system, which increases project costs. Additional information on this constraint is provided in Section 3.2 (Operation and Maintenance Constraints).

3.3 Operation and Maintenance (O&M) Constraints

In addition to the engineering constraints described in Section 3.2, there may be constraints associated with the effective operation and maintenance (O&M) of a high-flow capacity FTC system that affect the feasibility of constructing a system at a proposed site. High-flow capacity FTC systems must be operated and maintained effectively to ensure that trash interception occurs as designed and to prevent hydraulic issues and flooding. To evaluate the importance of different types of O&M constraints, survey respondents were asked to identify from a list, *which engineering constraints have you encountered when operating and maintaining high-flow capacity full trash capture systems?* Survey responses led to the development of the following list of O&M constraints that may make the construction/installation or effective O&M of the FTC system infeasible. Additional information on the responses to the survey can be found in Appendix A.

Lack of accessibility to maintain system. Maintenance entry points (e.g., manholes, access hatches, outfalls) must be accessible to effectively operate, inspect, and maintain high-flow capacity FTC systems. More than half of survey respondents indicated that they have encountered situations where system access points were blocked by automobiles parked on/near the access point, construction operations within the area blocked the access point, or there was damage to the access point that required specialized equipment or repair to address the damage. If an

access point is not accessible on a consistent basis to allow for adequate inspection and maintenance, then the maintenance of a device at that location may be infeasible at a frequency necessary to ensure that the system is properly functioning throughout the year.

Lack of proper maintenance equipment. Survey respondents indicated that they have encountered this engineering constraint when operating and maintaining high-flow capacity FTC systems. While this constraint may include the lack of several types of equipment, including equipment required for confined space entry (see below), it essentially refers to the lack of vacuum-assisted trucks or the unavailability of these trucks to perform maintenance. Many Permittees do not own vacuum-assisted trucks or if they do, they are in high demand because they are used for multiple purposes by Permittee Public Works departments. Additionally, these types of equipment are known to need frequent repairs, which can reduce their availability for FTC system maintenance.

Confined space entry requirements. Confined spaces are defined as work areas that meet all three of the following criteria: 1) Limited openings for entry and exit making it difficult to enter/exit and perform repair work or general maintenance; 2) The space is not intended for continuous human occupancy, rather it was designed to hold something other than people; and 3) The space must be large enough for you to enter and conduct work[6]. If a high-flow capacity FTC system must be entered to perform an inspection or maintenance, then OSHA's standard and requirements for entry into those confined spaces (outlined in 29 CFR 1910.146) must be followed to protect employees from the hazards of entering confined spaces. Entry into a confined space requires specialized training and equipment to ensure employees are protected. Should the maintenance of a FTC system require entry into a confined space and the Permittee does not have staff (or contractors) that are trained in confined space entry or own the equipment required for confined space entry (see Figure 3.10), then the Permittee should reconsider the location, design and/or type of FTC proposed for the site to avoid the need for confined space entry. If there are no alternative locations, designs or types of FTCs that avoid confined space entry and the Permittee cannot address the confined space entry requirement for maintenance, then the site should be considered infeasible for the installation/construction of a high-flow capacity FTC system.

Figure 3.10. Very large HDS unit in San Jose that requires confined space entry to maintain (Image courtesy of City of San Jose staff).

Inability to control inflows. To effectively size a high-flow capacity FTC system to address the FTC design standard (i.e., 1-yr, 1-hr peak flow), the drainage area upstream of the FTC system location must be identified as well as the hydrology and runoff characteristics. The delineation of the drainage area is based on the most readily available information, which at times may be incomplete. For example, there are circumstances where Caltrans ties into a city/county stormwater drainage system and contributes clean groundwater pumped from a Caltrans stormwater pump station that has been installed to avoid flooding on Caltrans highways/freeways. There have been situations in the Bay Area (i.e., survey respondents indicated that they've encountered unexpected inflows into a FTC system) where these types of contributions are discovered after the construction of a high-flow capacity FTC system. These contributions can provide ongoing inflows into a high-flow capacity system, which makes maintenance challenging, especially when removing material from the sump areas of these FTC systems. Maintenance of high-flow capacity

[6] University of South Carolina. Environment, Health and Safety Training, Confined Space Definition. https://www.sc.edu/ehs/training/Confined%20Space/08_definitions.htm. Retrieved in January 2023.

systems, depending on the type and configuration, is most effective when minimal or no flow is entering the system. A sluice or a valve to block inflows may be feasible to include in the design of a FTC system, but ongoing inflow to the system can make maintenance infeasible.

Damage, vandalism, or theft of systems. This constraint for high-flow capacity FTC systems is mostly associated with end-of-pipe netting systems, since most large systems are constructed underground. That said, 24% of survey respondents indicated that they have encountered damage, vandalism, or theft of high-flow capacity FTC system components (e.g., nets). Damages/vandalism to these systems not only impacts routine maintenance activities and the performance of the system, but also reduce the device's functionality and could increase the potential for localized flooding. If damage, vandalism, or theft of FTC system components consistently occurs at a FTC system site, then the ongoing need to repair or replace a system or its components may cause the location for the system to be deemed as infeasible.

Other O&M Constraints. Survey respondents identified a number of other types of constraints to operating and maintaining FTC systems (e.g., lack of location for dewater disposal). Generally, these constraints were less commons than those discussed above. Additional information on these constraints can be found in Appendix A.

3.4 Other Types of Constraints

Other non-engineering and O&M related constraints were also identified for high-flow capacity FTC systems. To identify the most important and frequently encountered constraints, survey respondents were provided a list of potential constraints and had the opportunity to add other types of constraints not listed. After receiving the survey results, follow-up communications were held with engineers with extensive experience/expertise in siting, designing, and installing/constructing high-flow capacity FTC systems. The combination of survey results and information gained from the follow-up conversations led to the following list of constraints included in this section that can impact the feasibility of installing/constructing high-flow capacity FTC systems. Additional information on each constraint identified by survey respondents can be found in Appendix A.

Environmental permitting. Survey respondents indicated that they have had to address environmental permitting requirements during the design and installation/construction of one or more high-flow capacity FTC systems. When a proposed site is associated with an environmentally sensitive area (e.g., stormwater outfall discharging into a surface water) there may be several types of requirements that can be applied to the project by regulatory agencies that have jurisdiction over the protection of these areas/resources. Regulatory requirements/permits and the associated regulatory agencies that may need to be involved in the approval of a FTC project may include, but are not limited to, the following:

- California Environmental Quality Act (CEQA);
- 401 Water Quality Certifications (Regional Water Board);
- 404 Permit (Army Corp of Engineers);
- California Endangered Species Act (CESA) Permits (California Department of Fish and Wildlife);
- Federal Endangered Species Act (FESA) Permits (United States Fish and Wildlife Service/National Marine Fisheries Service)
- Lake and Streambed Alteration (LSA) Agreements (California Department of Fish and Wildlife); and
- Major or Administrative (Minor) Permit (Bay Conservation and Planning Commission).

Review of the project may yield a decision or condition by one or more regulatory agencies that makes the project infeasible. Additionally, the requirements imposed by one or more regulatory agencies can significantly increase the complexity and costs of the project to a point that it is essentially infeasible to implement.

Limited benefits at high costs. Several survey respondents highlighted the need for this constraint to be included. This scenario constitutes a current constraint for several SF Bay Area Permittees. As expressed, there are two

situations where the benefits of installing and maintaining a high-flow capacity system does not outweigh the costs:

(1) Relatively large catchment, but limited land area with significant trash generation. Not all land areas generate significant levels of trash. Much of the land in the Bay Area is comprised single-family residential or open space/park land uses. Typically, these land areas do not generate significant levels of trash (BASMAA 2014) and therefore the MRP does not require trash load reductions from these areas. When siting high-flow capacity FTC systems, efforts are usually made to reduce or eliminate these types of areas from FTC system catchments by siting the system at a location that optimizes trash load reduction and minimizes the extent of these low trash generating areas in the upstream catchment. That said, optimization is not always possible and therefore decisions have to be made by Permittees about whether the construction of a high-flow capacity FTC system is the best approach to addressing trash in this area. Although no infeasibility criteria have been established for making these types of decisions, examples of cost-benefit evaluations that have been conducted by Permittees to inform the implementation of FTC systems and alternative types of trash controls are provided in Appendix B.

(2) Significant trash generating areas, but relatively small catchment area. – Stormwater catchments vary in size. Some catchments are more than 1,000 acres in size, while others are less than 10 acres. Catchment size is largely a function of topography, the extent and location of surface waters, and the extent and patterns of urban development. In a great number of cases in the Bay Area, some stormwater catchments with significant trash generating areas are relatively small (i.e., less than 30 acres). For this size of catchments, high-flow capacity FTC systems are typically the least cost-effective trash control measures that a Permittee can implement, based on lifecycle costs (see Appendix B). Therefore, although the installation/maintenance of a FTC system may not be technically infeasible from an engineering or O&M standpoint, high-flow capacity systems are generally not cost-effective options for addressing trash in relatively small stormwater catchments and Permittees may choose alternative types of controls for these sized of catchments.

Proposed location not owned by Permittee. This constraint was identified by a number of survey respondents and could entail two different scenarios:

(1) Proposed location is on a private property. In this scenario, the high-flow capacity FTC system would need to be sited on a private property that a Permittee may or may not have an easement to address. If no easement is present, then a new agreement would need to be established to construct and maintain the system or the land would need to be acquired by the Permittee. Regardless, project costs and timelines would likely be significantly increased due to siting the device on a private property. Although these constraints may not technically make the project infeasible from an engineering or O&M standpoint, constructing a high-flow capacity system on private property is generally not a cost-effective option for addressing trash in a catchment, unless the trash load reduction benefit is substantial.

(2) Proposed location is in adjacent jurisdiction. Stormwater drainage systems do not always conform to political jurisdictions. In some cases, stormwater drainage systems owned and operated by two or more adjacent jurisdictions are connected. In these situations, siting a high-flow capacity FTC system in the portion of the connected drainage system that is located in an adjacent jurisdiction, may be the most cost-effective trash control option. A number of survey respondents cited that they have encountered this situation when siting high-flow capacity FTC systems. One common example is where a proposed FTC system site is located on the right-of-way (ROW) owned and operated by Caltrans. In this example, an encroachment permit and traffic control would be required (Emeryville 2019 and Hayward 2022) to allow the Permittee to construct and maintain the system. Another example is when a proposed location would address trash from multiple jurisdictions (e.g., Permittee, Caltrans, and adjacent Permittee). In this example, agreements would need to be executed between two or more jurisdictions to address this issue, but all applicable jurisdictions would need to enter the agreement to make this a viable option. If all

parties are not willing to enter into an agreement, this constraint could make the installation (or O&M) of the FTC system infeasible.

Permittee fiscal constraints. Bay Area Permittees are faced with a lack of fiscal resources needed to effectively implement all aspects of their stormwater management programs. There are simply not enough resources available and limited avenues for Permittees to expand their resources to address all stormwater management drivers/needs. To help document how the lack of fiscal resources has impacted Permittee decisions on the feasibility of installing and maintaining high-flow capacity FTC systems, survey respondents were asked to describe and give examples of how the lack of fiscal resources available has impacted their evaluation of whether a FTC system project should be considered infeasible, at least within the regulatory timelines established through the MRP. A total of 26 responses were obtained. Summaries of the responses and additional feedback received from Permittees through the development and revision of this report are presented here.

(1) Lack of dedicated sources of funding. As expressed by several survey respondents, most Permittees lack a dedicated source of funding for stormwater management programs. Resources needed for the design, construction, and maintenance of FTC systems compete with other public works that may be a higher priority due to other regulatory or health/safety drivers. According to the information provided, many stormwater programs are primarily funded through a City's General Fund (others may funded through vehicle license fees or other regulatory fees), which is competitive. For expanding programs like trash capture (i.e., adding more FTC systems/devices) resources are not only needed for the design/construction of systems, but also on-going costs for O&M. Moreover, within the stormwater drainage system, there are also competing priorities such as maintaining, repairing, and replacing existing/old infrastructure, which may take precedent due to immediate health and safety concerns.

(2) Limitations with Funding via Grants and Agreements with other partner agencies. Generally, grant funding and agreements with partner agencies (e.g., Caltrans) only covers the costs for the acquisition and construction of a high-flow capacity FTC system and does not include funding for design, permitting, mitigation, and ongoing O&M. Additionally, in the case of applicable Caltrans funding programs for FTC systems, Caltrans will only fund projects that address trash from their ROW, which constrains projects to locations where there are benefits to both the Permittee and Caltrans. Additionally, there are time constraints for the use of funds provided through grants and agreement with partner agencies that add an additional level of challenge to completing projects within regulatory timelines.

Other types of constraints. Survey respondents identified a number of other types of non-engineering or O&M constraints (e.g., presence of archeological resources). Generally, these constraints were less common than those discussed above. Additional information on these constraints can be found in Appendix A.

4. CATCH-BASIN INSERT TYPES OF FULL TRASH CAPTURE DEVICES

4.1 Overview of Catch Basin Types Systems/Devices

Screening systems that are installed in stormwater catch basins (or inlets) are commonly known as catch basin inserts. These devices are placed inside a catch basin to prevent trash, organic material (e.g., leaves and twigs) and sediment from entering the outflow pipe from the catch basin. There are two general designs of catch basin inserts – outflow screens and surface inlet baskets and screens (CASQA 2021). Each type of catch basin insert is described below.

Outflow Screens

Outflow screens are placed in the front of the outlet pipe in the catch basin. A wide variety of catch basin insert designs exist, mostly in the form of outlet screens (e.g., connector pipe screens) that are placed in front of the outlet pipe. Figure 4.1 shows examples of outflow pipe screens installed in the Bay Area.

Figure 4.1. Outflow screens installed in catch basins within the Bay Area (Image courtesy of EOA, Inc.).

Surface Inlet Baskets and Screens

Surface inlet baskets and screens are placed inside the catch basin where stormwater flows enter the basin, either through a grate or curb inlet (Figure 4.2). Catch basin inserts that use filtering walls or filter media are not applicable for trapping trash and do not meet the full trash capture standard. As a result, the term "insert" does not refer to configurations that use filter media for removing other stormwater pollutants. Figure 4.2 illustrates two examples of surface inlet baskets and screens.

Maintenance on catch basin inserts is performed with a vacuum-assisted truck or manually with a shovel (Figure 4.3). At a minimum, maintenance is performed at least once per year to ensure that the system consistently achieves the FTC standard (EOA 2016). Consistent with MRP requirements, if the catch basin insert is observed to have a plugged or blinded screen or is greater than 50 percent full during a maintenance event, the maintenance frequency is increased so that the system is neither plugged nor more than half full at the next maintenance event. At the time of this report, there were 29 catch basin insert types of FTC devices certified by the State Water Board.[7]

[7] https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/trash_implementation/2022/fullcptre-availabletopublic10-11.pdf (updated October 13, 2022).

Figure 4.2. (Left) Catch basin insert manufactured by Revel Environmental Manufacturing, Inc. (Right) FloGard® Grate Inlet Basket manufactured by OldCastle (FloGard® GIB) (Images from CASQA https://www.casqa.org/resources/trash/certified-full-capture-system-trash-treatment-control-devices).

Figure 4.3. Small-scale FTC device maintenance, (Top) manual cleaning and (Bottom) cleaning process by using a vacuum-assisted truck (Photos courtesy of SCVURPPP and SMCWPPP (Image courtesy of EOA, Inc).

4.2 Engineering Constraints

This section presents descriptions of different types of engineering constraints that should be considered and may prevent the installation of catch basin insert types of FTC devices. Information on the constraints was developed via the responses to the survey and follow up conversations with consulting engineers with significant experience in siting and installing different types of catch basin insert types of FTC devices. This information was supplemented by the extensive experience the authors of this report have gained in siting catch basin inserts in the Bay Area and other locations in Northern California over the last decade. The constraints presented here are not necessarily comprehensive or mutually exclusive. Multiple constraints may be present in some circumstances.

Flood Hazards and Hydraulic Impacts. Catch basins, including outflow pipes, are typically sized to adequately address the stormwater runoff draining into the basin from the adjacent land areas. That said, many outflow pipes in older catch basins are undersized and do not conform with current stormwater infrastructure design standards established by cities/counties over the past 50 years. Localized flooding, even without a FTC device may be a risk in these situations. The installation of the FTC screen or basket in a catch basin with an undersized outflow pipe will likely further constrict and hydraulicly impact the velocity of the stormwater flowing through the basin and into the outfall pipe. If this hydraulic impact is significant, then the FTC screen or basket will likely further increase the risk of localized flooding. If a catch basin is known to frequently flood and/or if the outflow pipe from the catch basin is undersized and cannot adequately address storm flows from the adjacent land area (even without a catch basin insert FTC installed), then the installation of a catch basin type of FTC device may be infeasible in the catch basin.

Tidal Influence or High-Water Table. Many municipal stormwater conveyance systems in the Bay Area are impacted by Bay/ocean tides and/or high ground water. A total of 25% of survey respondents indicated that they have encountered one of these engineering constraints while siting, designing, or installing catch basin insert types of FTC devices. Tidal and groundwater influences can adversely impact the performance of these devices, including the re-entrainment of trash temporarily intercepted by these devices. In other words, trash that is intercepted can overflow the device if rising groundwater or tides are high enough and be transported downstream to receiving water. Should high groundwater or tides be present in catch basins, the installation of a catch basin insert type of device may be infeasible under these conditions.

Irregular Catch Basin/Inlet Size or Shape. as Municipal stormwater drainage system design standards have evolved significantly over the last century. Although some portions of the stormwater infrastructure in the Bay Area have undergone upgrades through redevelopment and capital improvement programs, many areas continue to be served by older, irregular catch basins. A few examples of irregular catch basins are illustrated in Figure 4.4. Because many types of catch basin insert FTC devices require that the basins be of standard sizes and shapes to properly install a device, irregular sized/shaped catch basins may make FTC device installation infeasible. Additional constraints include unusual inlet designs, insufficient catch basin depths, the locations of inlet/outlet pipes, and the locations of ladders used for maintenance access. A total of 78% of survey respondents indicated that they have encountered this engineering constraint while siting, designing, or installing these FTC devices, making it one of the most common constraints identified for catch basin inserts.

Catch Basin/Invert Depths. A total of 75% of survey respondents indicated that they have encountered this engineering constraint while siting, designing, or installing catch basin FTC devices. As described above, catch basins have been historically constructed in all shapes and sizes, and may have irregular shapes or dimensions. Additionally, some catch basins were constructed at very shallow depths (e.g., < 3 feet) or are very deep (e.g., > 6-8 feet). Due to the shallow depths of some catch basins, some types of FTC devices may not properly fit into the catch basin. Additionally, catch basins with very shallow depths may not provide the storage capacity necessary to operate the devices at practical (and required) maintenance frequencies. Additionally, catch basins that are deep may be challenging or infeasible to maintain in a practical manner due to confined space entry requirements or other factors.

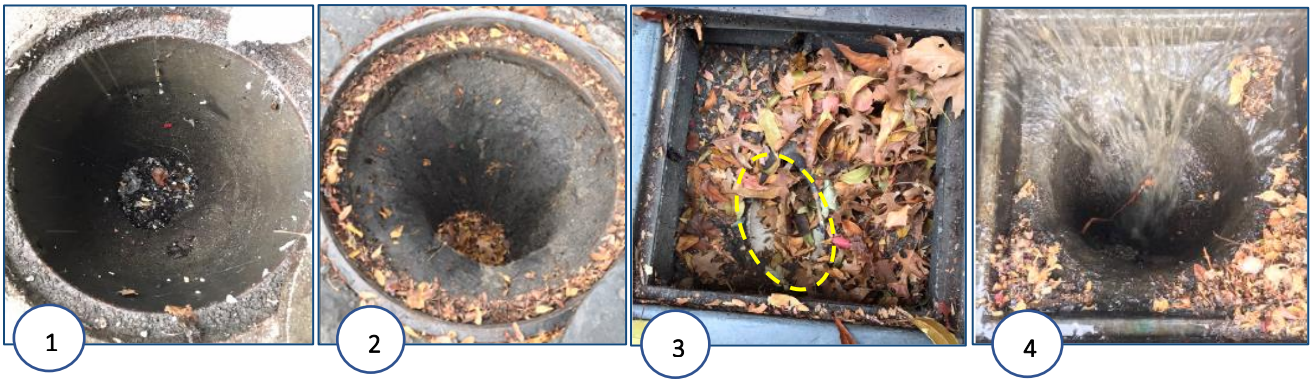


Figure 4.4. (1) Catch basin not wide enough (~15"); (2) Catch basin sump narrows to the outflow pipe; (3) Position of the outflow pipe would block any small FTC device installed (yellow dotted lines have been added to improve visualization of where the pipe is located); and (4) Catch basin sump not suitable for a device (e.g., square and then rounded or vice versa) (Images courtesy of City of Dublin and SWIMS).

Lack of Traditional Grey Infrastructure. Stormwater drainage infrastructure design and types vary significantly throughout the Bay Area. Much of the urbanized Bay Area is served by traditional grey infrastructure, consisting of curb and gutters that direct stormwater flow into catch basins or inlets. Some urbanized areas, however, are not served by this type of traditional urban stormwater infrastructure and the types of certified catch basin insert FTC devices may not be easily installed and maintained in these situations. For example, some urban areas have stormwater drainage infrastructure that resembles the types of infrastructure found in more rural land areas, including earthen or concrete roadside ditches and areas where ponding is encouraged to support infiltration or evaporation. Of the individuals responding to the survey, 50% indicated that they have encountered this engineering constraint while siting, designing, or installing catch basin types of FTC systems. Although site-specific, in many situations where significant trash generating land areas are served by more rural infrastructure (Figure 4.5), no types of certified FTC devices are available or can be installed in these types of systems. Should existing infrastructure be designed in a manner that does not allow for the installation of a certified FTC device, the installation of the FTC device at the proposed location should be consider infeasible.

Figure 4.5. Storm drainage infrastructure within the urban limit line in Contra Costa County where installation of Catch-basin types of full trash capture devices is infeasible (Images courtesy of Contra Costa Clean Water Program).

4.3 Operation and Maintenance (O&M) Constraints

In addition to the engineering constraints described in Section 4.2, there may be constraints associated with the effective O&M of a catch basin insert FTC device that affect the feasibility of constructing the FTC at a proposed site. Catch basin insert FTC devices must be operated and maintained effectively to ensure that trash interception occurs as designed and prevent hydraulic issues and flooding from occurring. To evaluate the importance of different types of O&M constraints, survey respondents were asked to identify from a list, *which engineering constraints have you encountered when operating and maintaining catch basin insert full trash capture devices?* Survey responses led to the development of the following list of O&M constraints that may make either the construction/installation or effective O&M of a FTC system infeasible. Additional information on the responses to the survey can be found in Appendix A.

Figure 4.6. Overflowing outflow screen FTC device due to a clogged/occluded screen. Courtesy of SCVURPPP and SMCWPPP (EOA 2016).

Significant Organic Debris Loading. Catch basin insert types of FTC devices generally perform as designed until the surfaces of the 5mm screens/meshes become significantly occluded/clogged with trash or debris. Once a screen becomes clogged, the device may overflow during peak flow a runoff event that is at or below the full capture design standard (i.e., 1-yr, 1-hr storm event). Overflows that occur below the design standard compromise the trash capture performance of the device and are inconsistent with the designation of the device as FTC.

Based on previous studies in the SF Bay Area (BASMAA 2012), roughly 85% of the material captured by outflow screens and baskets is organic material, largely comprised of leaf litter and sediment. In many cases where there are large street trees or trees in the adjacent properties, the leaf litter generated by these trees can provide a heavy load of organic material to the drainage area for the FTC device. This leaf litter can lead to occluded/clogged FTC screens/meshes. A catch basin FTC outflow screen that is occluded by leaf litter and overflowing is illustrated in Figure 4.6. Survey respondents indicated that they have encountered flooding hazards and significant hydraulic impacts associated with leaf litter and other organic materials occluding screen/meshes of small FTC devices. If leaf litter and other organic material loading rates to these types of devices is at a high enough level to create consistent occluding/clogging, catch basin insert types of FTC devices may be infeasible to maintain at a frequency necessary to ensure that the device properly functions throughout the year.

***Lack of Accessibility to Maintain Device*.** Catch basins must be accessible for maintenance professionals to adequately clean/maintain the FTC devices installed within them. Impediments to accessing catch basins may include automobiles parked on/near the basin, construction operations within the area, or damage to the surface grates or manholes that require specialized equipment. Over half of the survey respondents indicated they had experienced a lack of access to the device during routine maintenance, issues with maintenance staffing, or other maintenance issues due to design of the device that had impeded the proper maintenance (and functioning/performance) of a catch basin insert FTC device. If a catch basin is not accessible on a consistent basis to allow for adequate maintenance, then the maintenance of a device at that location may be infeasible at a frequency necessary to ensure that the device properly functions throughout the year.

Confine Space Entry Requirements. Confined spaces are defined as work areas that meet all three of the following criteria: 1) Limited openings for entry and exit making it difficult to enter/exit and perform repair work or general maintenance; 2) The space is not intended for continuous human occupancy, rather it was designed to hold something other than people; and 3) The space must be large enough for you to enter and conduct work. If a catch basin (Figure 4.7) must be entered to adequately maintain the FTC device in the catch basin, then OSHA's standard and requirements for entry into those confined spaces (outlined in 29 CFR 1910.146) must be followed to protect employees from the hazards of entering confined spaces. Entry into a confined space requires specialized training and equipment to ensure an employee is protected. Should the maintenance of a FTC device require entry into a confined space and the staff that are trained in confined space entry or equipment required are not available, the installation of a device in this scenario should be considered infeasible.

Figure 4.7. Outflow screen installed in a catch basin that requires confined space entry to maintain (http://unitedstormwater.com /cps.php).

Damage, vandalism, or theft of devices. Catch basin insert FTC devices can be damaged by storm flows or debris, vandalized, or stolen. Survey respondents have encountered damage to, or vandalization of catch basin FTC devices. Damages/vandalism to the device not only impact routine maintenance activities and the performance of the device, but also reduce the device's functionality and could increase the potential for localized flooding (see Figure 4.8). Survey respondents also indicated that they have encountered FTC devices stolen from catch basins after installation. Many devices are constructed from stainless steel, which may have a high scrap metal resale value. If damage, vandalism, or theft of FTC devices consistently occurs in a specific catch basin(s), then the ongoing need to repair or replace a device may cause the location for the device to be deemed as infeasible.

Figure 4.8. Damaged (collapsed) outflow screen type of FTC device (Image courtesy of SCVURPPP and SMCWPPP as included in EOA 2016).

Lack of proper maintenance equipment. Survey respondents indicated that they have encountered this engineering constraint when operating and maintaining catch basin insert types of FTC devices. This constraint includes the lack of several types of equipment or tools (e.g., personal protection equipment, grate tool, sledge hammer, digging tools, pressure washer, portable vacuum system, equipment required for confined space entry), vacuum-assisted trucks, or the unavailability of these trucks to perform maintenance. Many Permittees do not own vacuum-assisted trucks or if they do, they are in high demand because they are used for multiple purposes by Permittee public works departments. Additionally, these types of equipment are known to need frequent repairs, which can reduce their availability for FTC system maintenance.

4.4 Other Types of Constraints

Other (not engineering feasibility-related) constraints were also identified by survey respondents for the installation of catch basin insert FTC devices. In the survey, respondents were asked: *Please briefly describe any fiscal constraints that your agency has encountered that would render a full trash capture system/device siting/design/installation or maintenance/operation impracticable*. Summaries of their responses are provided below. These constraints may cause a FTC project to be deemed as infeasible, even though from an engineering standpoint the project may be feasible. These types of constraints are typically identified on a case-by-case basis.

Land areas drain to catch basins in adjacent jurisdictions. Surface runoff flow patterns do not always conform to political jurisdictions. In some cases, trash generated on land areas in one jurisdiction may be transported via stormwater to a catch basin located in an adjacent jurisdiction. In these situations, a FTC would need to be installed in a catch basin owned and operated by a jurisdiction that is not responsible for the trash generated in a neighboring jurisdiction. Survey responses cited that they have encountered this issue when siting, designing, or installing small FTC systems. Agreements may be executed between two or more jurisdictions to address this issue, but all applicable jurisdictions would need to enter the agreement to make this a viable solution to addressing this issue. If all parties are not willing to enter into an agreement, this constraint could make the installation (or maintenance) of the FTC device infeasible.

Permittee fiscal constraints. Similar to the responses given by survey respondents to questions on the fiscal constraints for funding high-flow capacity FTC systems, several respondents also expressed concerns about the lack of dedicated funding sources to adequately implement their agencies' stormwater management program, including the funds necessary to install and maintain catch basin insert types of FTC systems. As described in Section 3.3, public stormwater infrastructure projects compete with other Permittee priorities such as maintaining, repairing, and replacing infrastructure, which may take priority due to immediate health and safety concerns. Additionally, even though there are an increasing number of FTC systems or devices installed into the stormwater system to meet MRP requirements, the stormwater drainage system is not considered a utility because of the lack of designation in the State constitution and recent propositions (e.g., Proposition 218). These constraints create challenges for Permittees to obtain the funding necessary to site, design, install, and maintain FTC devices. Although not engineering-related, these fiscal constraints can make the installation and O&M of FTC devices infeasible. The following are a few specific examples of the hardships that Permittees face with the on-going maintenance of recently installed (and expanding) FTC devices:

(1) Increased Staffing. Some survey respondents indicated that their agencies have major issues with hiring new staff, due to a lack of required resources that include, but are not limited to, the following: increased responsibilities and limitations on the capacities of support/oversight staff (i.e., additional work for human resources, manager/supervisor), a lack of qualified applicants and competitive compensation packages, and increased needs for training. Additionally, Permittees have difficulties contracting personnel for O&M of FTC devices due stipulations in public employee Union agreements.

(2) New/Expanded Equipment. With the installation of new devices, there are increased demands for equipment needed to conduct O&M, consistent with MRP requirements. Needs for vacuum-assisted trucks and expenditures for insurance, preventive and corrective maintenance, and fuel increase with the installation of new FTC devices.

Financial hardships associated with FTC devices on private properties. MRP 3.0 requires properties with private inlets and not achieving the 100% trash load reduction goal to install FTC systems/devices or implement alternative equivalent controls. The installation of FTC devices in catch basins on these private land drainage areas (PLDAs) not only places the financial burden upon private land owners/operators, which could create a financial hardship on the property owner/operator, but also requires Permittees to expend additional resources to identify the connectivity of these PLDAs to the public stormwater drainage system, potentially adopt and enforce an ordinance

that requires the property owners/operator to address trash on their properties, and implement an ongoing inspection program to ensure that trash on the properties is effectively managed in perpetuity.

5. GUIDANCE FOR EVALUATING FTC SYSTEM/DEVICE FEASIBILITY

This section provides guidance to Permittees on evaluating whether a FTC system/device is feasible to construct/install and maintain at a particular site/location. The guidance includes a recommended feasibility evaluation process for all types of FTC systems/devices, including the consideration of costs and benefits. The guidance incorporates considerations of FTC system/device constraints (engineering and otherwise) described in Sections 3 and 4 and is informed by FTC system feasibility evaluations conducted by numerous Permittees over the course of the last decade (see Appendix B). The guidance is presented in a stepwise process, which can be easily incorporated into Permittee broader stormwater trash control measure planning processes.

5.1 Full Trash Capture System/Device Engineering Feasibility Evaluation Criteria

In order to evaluate whether a FTC system/device is feasible (or infeasible) to install/construct, recommended engineering feasibility criteria were developed based on the constraints described in Sections 3 and 4. Recommended engineering feasibility criteria for high-flow capacity systems are included in Table 5.1 and criteria for catch basin insert types of FTC devices are included in Table 5.2. Recommended criteria to evaluate O&M constraints are discussed later in this section.

Table 5.1. Recommended engineering infeasibility criteria for high-flow capacity FTC systems.

Element subject to evaluation	Likely Infeasible if…	Comments/Notes
Conveyance deficiencies and flat grades in existing storm drainage systems	⊗ Existing deficiencies or grades create water stagnation, overflows, or flooding.	
Existing storm drainage systems with shallow or deep pipe depths	⊗ Proposed FTC system would be installed in a pipe that has an invert depth of less than 3 feet. ⊗ Proposed FTC systems would be installed in a pipe with a very deep invert, which would eliminate the use of all types of available FTC systems or would require confined space entry to maintain.	
Compromised condition of existing storm drainage infrastructure	⊗ Proposed FTC system would be installed within stormwater piping/structures with a life expectancy less than the life expectancy of a FTC system.	
Lack of public land area for the system	⊗ Construction of FTC system would require the purchasing of private lands.	
Utility conflicts	⊗ The movement of utilities at the project site is not possible. ⊗ Construction of FTC system would require the movement of utilities and cause significant increases in costs to the project or significant project delays.	
Creating or increasing flood hazards or hydraulic impacts	⊗ Proposed FTC system location is in a floodway	• Could increase flooding risk within the floodway if constructed
Impacts to stormwater pump station	⊗ Proposed FTC system location is directly upstream or downstream of an existing	• May be feasible (from engineering standpoint) if part of an upgrade to

Element subject to evaluation	Likely Infeasible if…	Comments/Notes
	pump station that would be significantly impacted by the FTC system	the pump station, but this scenario is usually cost prohibitive
High water table, backwater conditions, or excessive water intrusion	⊗ Proposed FTC system would be installed in a location with a high-water table, backwater conditions, or excessive water intrusion	
Manufacturer limitations	⊗ No FTC type or model is manufactured that addresses the constraints at the proposed location	
Complex topology or significant geologic features	⊗ Significant topology or geologic feature constraints cannot be addressed	• Constraints may be addressed via engineering alternatives but may significantly increase costs.
Damage, vandalism, or theft	⊗ Proposed FTC system is in a location where there is a high risk for damage, vandalism, or theft	• Constraint is generally applicable to netting systems and the risk may be mitigated by security measures which will increase costs

Table 5.2. Recommended engineering infeasibility criteria for catch basin insert FTC devices.

Element Subject to Evaluation	Likely Infeasible if…	Comments/Notes
Flood Hazards and Hydraulic Impacts	⊗ High flooding potential without FTC device ⊗ Significant increase in hydraulic impacts and risk of flooding if FTC device is installed	
Tidal Influence and High-water Table	⊗ Proposed FTC device would be installed in a catch basin that is tidally influenced or subject to intrusion due to a high-water table	
Irregular Catch Basin/Inlet Size or Shape	⊗ No available types/models of FTC devices can be installed in catch basin due to irregular shape, size, or obstructions (e.g., ladders)	
Catch Basin/Invert Depths	⊗ Catch basin dimensions are too small/shallow to install a FTC device ⊗ Catch basin depths are too deep to maintain without confined space entry	
Land Areas Drain to Catch Basins in Adjacent Jurisdictions	⊗ Adjacent jurisdiction unwilling to install FTC device in their catch basin	• Agreements between adjacent agencies may make this scenario feasible
Lack of Traditional Grey Infrastructure	⊗ No available types/models of FTC devices can be installed at desired location	

5.2 Stepwise Approach to Evaluating FTC System/Device Feasibility

This section outlines a stepwise approach to evaluating the feasibility of installing/constructing FTC systems/devices. This guidance is based on numerous feasibility evaluations conducted over the past decade by Permittees throughout the Bay Area (see Appendix B) and is broken into two main sections: 1) High-flow capacity systems; and 2) Catch basin insert devices. These sections are organized by the three main steps taken during a feasibility evaluation: desktop analysis, field assessment, and design (Figures 5.1 and 5.2). Tasks that should be included in each step of the evaluation process are also described. The FTC system/device constraints described in Sections 3 and 4, and the feasibility criteria listed in Tables 5.1 and 5.2 are incorporated into the stepwise approach and serve as recommended decision points for determining whether a proposed site is a feasible location to install/construct a FTC system/device. Site characteristics that may make the installation of specific types of systems/devices feasible for installation are also identified.

High-Flow Capacity Full Trash Capture Systems

Guidance on conducting feasibility evaluations for high-flow capacity FTC systems is provided in this section. The main steps included in the guidance are illustrated in Figure 5.1 and more specific tasks that should be completed during each step in the evaluation are described. Tables are included that list the potential constraints that should be considered during each step and the criteria that should be applied to assess the feasibility of constructing a high-flow capacity FTC system.

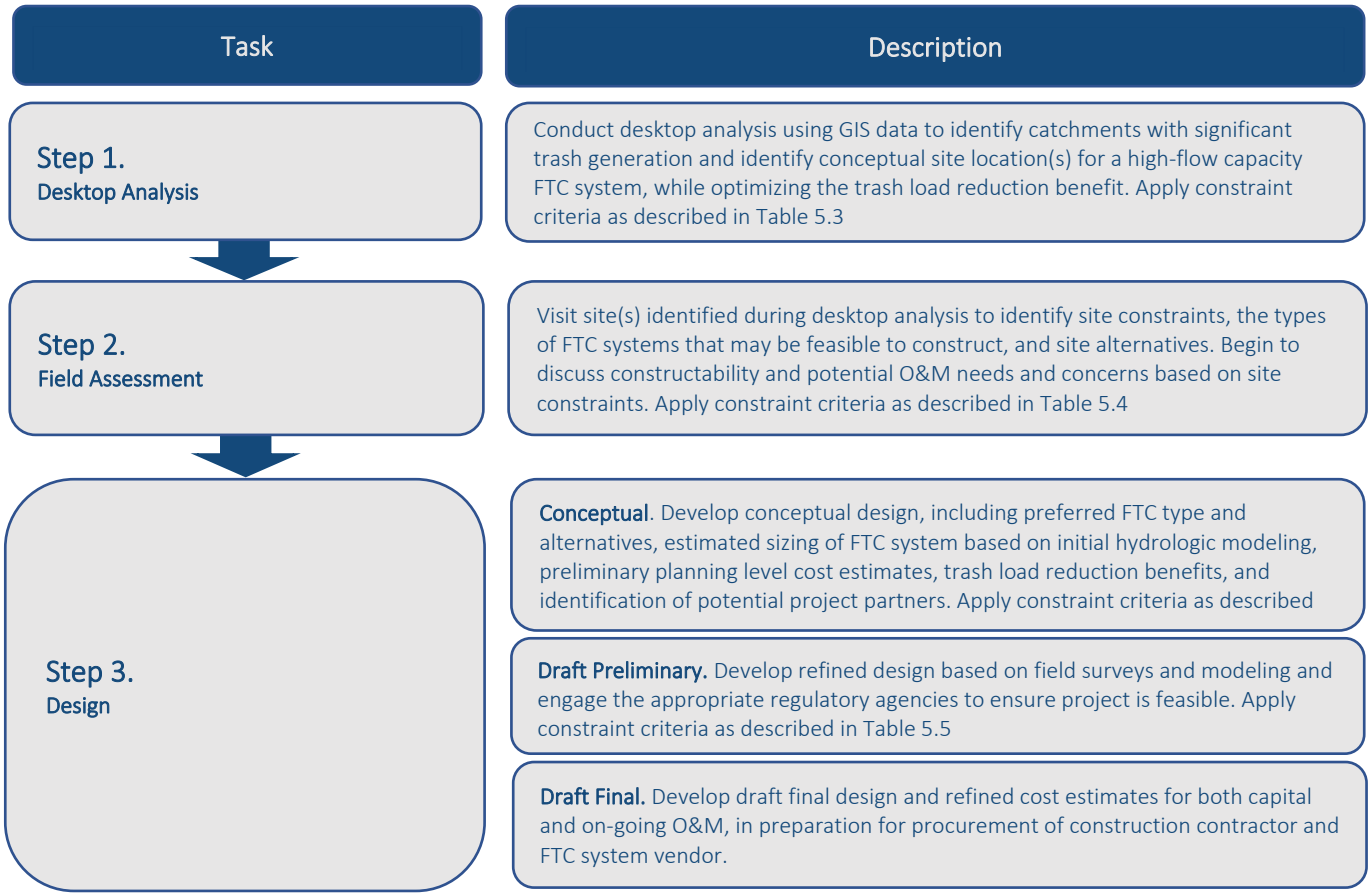


Figure 5.1. Stepwise approach to evaluating the feasibility of constructing a high-flow capacity FTC system at a proposed site.

Please note that each potential site/location being evaluated for a high-flow capacity FTC system will likely have site specific constraints that may not be included in this section. This guidance only incorporates those constraints that are the most frequently encountered by Bay Area Permittees, as described in the results from the *Trash Full Capture System Impracticality Survey* and summarized in Section 3. For example, "insufficient GIS data" may be a constraint encountered while performing desktop analysis tasks, but this constraint will likely be site-specific and may be resolved by performing field surveys.

(1) Desktop Analysis (see constraints in Table 5.3)

A. Compile data/information. The list of GIS features/datasets and other information that need to be compiled to analyze and create a first approach of large-scale FTC systems site alternatives should be defined in a case-by-case analysis. The following list is an example of types of data/information typically used to conduct a desktop analysis:

- Geographical Information System (GIS) Data
  - Storm drainage system (inlets, outfalls, storm drain pipes, engineered [concrete] channels).
  - Hydrography dataset (catchments, rivers, streams, natural channels; natural, artificial, and seasonal water bodies, etc.).
  - Elevation (topographic contours) data. This is especially important if direction of flow data for the storm drain system is not available.
  - Baseline trash generation map (e.g., trash generation categories, TMA boundaries).
  - Locations and associated drainage area delineations for FTC systems installed to date (public and private).
  - Water system and sanitary sewer system pipes.
  - Other utilities.
  - Others. Examples of additional attributes that can be used in the analysis are transit, parcels, land use, planning (land use/zoning), easements, median household income, and disadvantaged communities.
- Available On-land Visual Assessment (OVTA) data for the catchment.
- Flood hazard information (e.g., data from FEMA's Map Service Center or other NFIP products).

B. Potential Field Check. If there is relevant information that was not accurately determined through the desktop analysis a field check would be required. Some examples where a field check is required are when catchments sharing boundaries have gaps or overlaps that couldn't be resolved through GIS data processing, when there is uncertainty on whether a private storm drain network connects with the MS4, or where these points of connection are located.

- Mapping Proposed Locations. Map potential (primary and alternative) locations for FTC system(s). Determine associated drainage area per site/alternative, and associated jurisdictions within the drainage area. Maps should include information that will assist with field assessment. Include all type of data that may help inform feasibility, including those types listed in step #1.A.

Table 5.3. Application of recommended infeasibility criteria for high-flow capacity FTC systems during feasibility analysis Step #1 – Desktop Analysis.

Element subject to evaluation	Likely Infeasible if…	Considerations
Risk of flooding	⊗ Proposed location for high-flow capacity system/device is classified as a floodway.	• No considerations. Proposed large-scale FTC systems alternatives located at sites classified as floodway should be considered infeasible.
Risk of flooding	⊗ Proposed location for high-flow capacity system/device is classified as a floodplain.	• Proposed large-scale FTC systems alternatives located at sites classified as floodplains could continue to the next phase of the planning process but may be considered infeasible at future step.
Size of drainage area	⊗ Proposed location for high-flow capacity system/device would address a land area that is less than 30 acres in size.	• In a great majority of cases, installing a high-flow capacity system at a location that receives drainage from a relatively small land area (usually less than 30 acres) is not a cost-effective trash management approach. Therefore, it is recommended that locations with drainage areas less than this size are eliminated from further consideration for high-flow capacity systems. • Projects for installation of a large-scale FTC system that are part of a multi-benefit project should be approved only when demonstrating positive costs/benefits evaluation results.

(2) Field Assessment (see constraints in Table 5.4)

A. Conduct one or more field visits to the proposed site(s) and area with Permittee staff (e.g., public work engineers and maintenance supervisors) and applicable contractors/consultants. Identify and document the following:

- **Conveyance Deficiencies.** Condition of existing stormwater infrastructure, documenting the constructed material and any compromised portions of the infrastructure. Conditions indicating that restoration, upgrade, or retrofitting work would be required.
- **Depth and size of pipe.** Measure invert depth and diameter of pipe.
- **Physical condition of Infrastructure.** Document any visual observations of the condition of infrastructure that would be affected by the FTC system.
- **Extent of Public Land Area.** Identify the conceptual footprint of the proposed type of FTC system. Compare to the extent of public land area to identify whether encroachment on private property may occur, either for construction or O&M.
- **Utility Conflicts.** Identify/confirm the location of utilities with the project area, including within the footprint of the proposed FTC system and overhead. Document any potential utility conflicts.
- **Indications of recent flooding or water intrusion.** Document any indications of recent flooding within the project area and whether there is water flowing in the pipe of interest.
- **Extent of public access.** For netting-based FTC systems that are proposed for sites at outfalls or within channels, document whether the site is accessible by the public and may be at risk for vandalism.

B. Document identified opportunities to integrate trash treatment components into potential multi-benefit projects. Identify whether redevelopment is planned for adjacent parcels or in the drainage area.

Table 5.4. Application of recommended infeasibility criteria for high-flow capacity FTC systems during feasibility analysis Step #2 – Field Assessment.

Element subject to evaluation	Likely Infeasible if…	Considerations
Significant geologic features	⊗ Presence of outcrops or near surface bedrock.	• Mitigation project may be required, implying additional costs. Feasibility should be determined in a case-specific analysis.
Complex topography	⊗ Presence of steep slopes.	• Mitigation project may be required, implying additional costs. Feasibility should be determined in a case-specific analysis.
Invert depth	⊗ Too shallow or too deep invert depths.	• Minimum recommended invert depth for large-scale FTC systems is 3.5 ft. The maximum depth varies from depending on the type of system.
Presence of utility assets on site	⊗ Utility conflicts.	• Utilities may need to be relocated, implying additional costs. Feasibility should be determined in a case-specific analysis.
Site access	⊗ Limited access to the area.	• Land easement may be required, implying additional costs. Feasibility should be determined in a case-specific analysis. All potential required maintenance conditions should be analyzed to avoid issues in the future.
Available Public Land Area	⊗ Limited/lack of public ROW.	• Property or easement acquisition required, implying additional costs. Feasibility should be determined in a case-specific analysis. • For sites with limited available public land area for the system, all potential required O&M conditions should be analyzed to avoid issues in the future.
Safety concerns	⊗ Latent risk for maintenance staff of being hit by a vehicle, assault, or robbery. ⊗ System/device is prone to vandalism/theft (e.g., end-of pipe netting systems). ⊗ Proximity to hazard specifically identified in field assessment (e.g., area prone to landslides).	• Mitigation measures and feasibility should be determined in a case-specific analysis.

(3) Design (see constraints in Table 5.5)

A. Develop conceptual design. The following should be performed for each FTC system proposed/alternative location during this stage:

- **Compile and interpret information collected during the site assessment**.
- **Perform hydraulic/hydrological analysis**. Based on the peak flow from the 1-year, 1-hour storm event for the catchment associated with the proposed site, determine the flow rate that would need to be treated, which determines the size of the FTC system. Calculate the "design storm" size that the system will need to bypass.
- **Based on the hydraulic/hydrological analysis:**
  - Identify applicable types of FTCs that may work for the site.
  - Identify the configurations/designs of systems, including any retrofits or upgrades needed.
  - Identify maintenance requirements.
  - Develop preliminary cost estimates (capital, permitting, design, and annual O&M).
  - Document site specific considerations and assumptions.
- **Verify that there appear to be no utility conflicts (site or access).**

B. Develop Draft Preliminary Design, including:

- **Further investigate of site-specific conditions via discussions with Permittee staff as needed.**
  - If there's a history of overflows/flooding (undersized system), water intrusion (due to excessive irrigation flows), etc.
  - Document existence of backwater condition.
- **Perform site survey and document property lines.** To confirm space requirements, map utility locations and confirm property ownership.
- **Conduct geotechnical surveys.** Identify any issues that could make the project infeasible.
- **Perform utility potholing.** To confirm utility locations and conflicts, especially non-gravity utilities.
- **Further investigate permitting requirements.** (For information on some of the required permits, see Appendix B-11 - MCSTOPPP Stormwater Trash Capture Feasibility Report, Attachment 4 "Permitting Matrix", courtesy of MCSTOPPP).
- **Revise design, as necessary, and consider alternatives if needed.**

C. Develop Draft Final Design, including:

- **Develop draft final design and refined cost estimates**. Include costs for both capital and on-going O&M.
- **Identify/secure funding**. Consider partnerships (as available) with adjacent jurisdictions.
- **Receive approval from regulatory agencies (as needed).**
- **Prepare construction procurement documents**.
- **Select and execute agreement with contractor**.

Table 5.5. Application of recommended infeasibility criteria for high-flow capacity FTC systems during feasibility analysis Step #3 – Design.

Element subject to evaluation	Likely Infeasible if…	Considerations
Existing conveyance deficiencies	⊗ Water stagnation, overflows, presence of tailwater.	• Any project would require overcoming not only the existing issues but also the additional head losses due to the installation of the system/device, thus the location may be infeasible.
Hydraulic Analysis	⊗ Hydraulic analysis results indicate that the proposed high-flow capacity system will generate hydraulic issues in the drainage system if installed under standard conditions (i.e., no mitigation projects considered).	• Feasibility should be determined in a case-specific analysis. Note that mitigation project alternative(s) could be feasible from an engineering standpoint but may result as cost prohibitive. • Note: Installing a high-flow capacity FTC system "Off-Line" may not be an alternative to mitigate hydraulic impacts estimated for an "In-line" system. For the same location, both alternatives generate hydraulic losses.
Pump station	⊗ Hydraulic impacts to pump station.	• Installation of large-scale FTC systems upstream or downstream a pump station will likely cause damages to the pumps in almost all scenarios. There are multi-benefit opportunities that can be cost prohibitive, so this type of projects needs to be evaluated in a case-specific basis. An example, not applicable in all cases, is the installation of a large-scale FTC systems while also executing a planned pump station capacity improvement.
Pipe grade	⊗ Flat pipe grade.	• Proposed locations with flat pipe grades and almost no velocity head and high tail waters may be infeasible. Locations should be evaluated on a case-specific basis.
Longevity of the system	⊗ Stormwater piping/structures life expectancy is less than proposed FTC system estimated life cycle.	• Feasibility evaluation should be done by using the specific device/system life expectancy information provided by the manufacturer.
Backwater condition	⊗ Sea level, tidal influence.	• Proposed FTC systems located at sites with backwater condition should be considered infeasible unless mitigated.
Water intrusion	⊗ Excessive water intrusion due to irrigation flows.	• Proposed FTC systems located at sites with excessive water intrusion due to irrigation flows may be considered infeasible, however, feasibility should be determined on a case-specific basis.
Groundwater depth	⊗ High water table.	• Mitigation options for proposed FTC systems located at sites with high water tables should be considered and modifications to the devices may be possible to avoid O&M challenges (e.g., sluice gate installations), but the site may be infeasible if mitigation is not possible.
Non-traditional stormwater infrastructure	⊗ Installation of device require device/system modification(s).	• If certified FTC system design must be significantly modified, then recertification by the State Water Board may be needed. Thus, feasibility evaluation should be done on a case-specific basis.
Manufacturer limitations	⊗ There are no FTC systems options available for the incoming pipe size. ⊗ There are no FTC systems options available that satisfy required bypass conditions (from hydrological analysis).	• Certified systems that cannot be practically engineered/configured to address site issues should be considered infeasible. Feasibility should be determined on a case-specific basis.

Catch Basin Insert Full Trash Capture Devices

Guidance on conducting feasibility evaluations for catch basin insert FTC systems is provided in this section. The main steps included in the guidance are illustrated in Figure 5.2 and more specific tasks that should be completed during each step in the evaluation are described in the section. Tables are included that list the potential constraints that should be considered during each step and the criteria that should be applied to assess the feasibility of installing a catch basin insert type of FTC device at a proposed location.

An important note: Each potential site/location being evaluated for a catch basin insert FTC device will likely have site specific constraints that may not be included in this section. This guidance only incorporates those constraints that are the most frequently encountered by Bay Area Permittees, as described in the results from the *Trash Full Capture System Impracticality Survey* and summarized in Section 4. For example, "insufficient GIS data" may be a constraint encountered while performing desktop analysis tasks, but this constraint will likely be site-specific and may be resolved by performing field surveys.

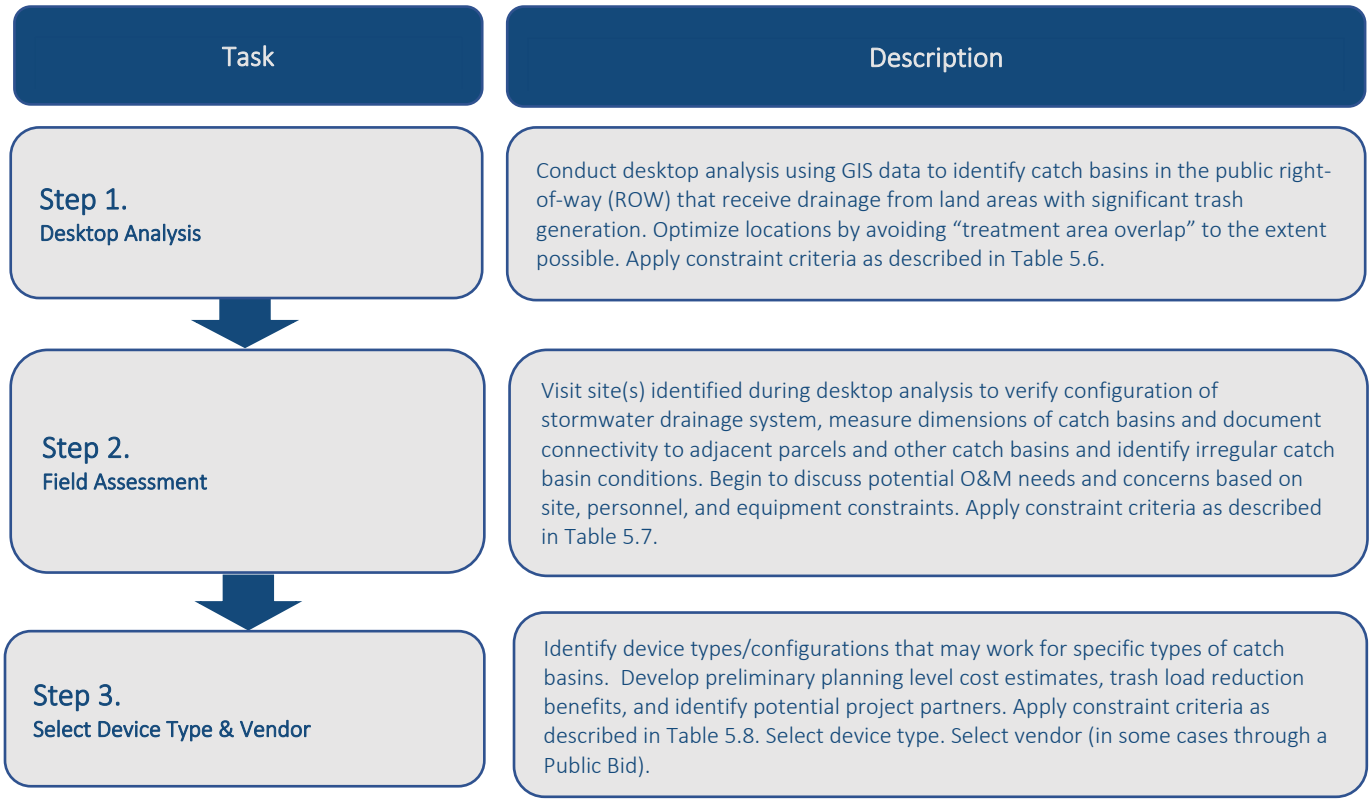


Figure 5.2. Stepwise approach to evaluating the feasibility of installing a catch basin insert FTC device at a proposed site.

(1) Desktop Analysis (see constraints in Table 5.6)

First, the storm drain catch basin upstream catchment area should be delineated to get information on the size of the catchment and the extent to which significant trash generating land areas can be addressed by the device (Milpitas, 2018). To identify optimal locations of catch basins for FTC devices, the following process should be conducted:

A. Compile data/information. The list of GIS features/datasets and other information that need to be compiled to identify optimal catch basins should be defined in a case-by-case analysis. The following list is an example of types of data/information typically used to conduct a desktop analysis:
   - Geographical Information System (GIS) Data
     - **Storm drainage system** (inlets, outfalls, storm drain pipes).
     - **Hydrography dataset** (catchments, rivers, streams, natural channels; natural, artificial, and seasonal water bodies, etc.).
     - **Elevation (topographic contours) data**. This is especially important if direction of flow data for the storm drain system is not available.
     - **Baseline trash generation map** (e.g., trash generation categories, TMA boundaries).
     - **Private Land Development Areas (PLDAs) and private inlets.** Areas known to drain to inlets on private properties.
     - **Locations and associated drainage area delineations for FTC systems installed to date** (public and private).
     - **Locations for small-scale FTC devices installed to date.**
   - On-land Visual Assessment (OVTA) data.

B. ID Catch Basins. Identify all catch basins located in the public ROW that may drain a significant trash generating area.

C. Refine list of Catch Basins. Remove catch basins from consideration that satisfy any of the following criteria:
   - Overlaps with a low trash generation area.
   - Within a drainage area of an existing or planned FTC system/device.
   - Associated with a non-jurisdictional land area.
   - Located on private property (unless the project is intended to address a PLDA).
   - Connected directly to another downstream catch basin where a catch basin insert type of FTC device could be installed (i.e., "daisy-chained").
   - Catch basin dimensions are too small to adequately install a FTC device (inner diameter known).

D. Further refine list. From the catch basins that remain, identify the those that are located within significant trash generating areas, and select them as potential locations for FTC devices.

E. Drainage area. Estimate the drainage area for each catch basin selected.

F. Identify likely type of device. If catch basin is too shallow, has an irregular shape, or the outflow pipe is through the bottom of the catch basin, a CPS device cannot be installed. Consider a basket type of device. Note: If basket type of device is selected, then installations must occur in all upstream catch basins as well.

G. Identify site specific constraints. Through discussions with Permittee staff, identify site specific constraints to the extent possible:
   - Whether there's an adequate space in the public ROW for required routine maintenance (access conditions).
   - Whether there are conditions that may lead to consistent overflows (undersized system), etc.
   - Existence of backwater conditions (i.e., sea level, tidal influence).

- Known flooding concerns.
- Groundwater data (i.e., high water table).

An important note: Ideally, the delineation of land areas draining to catch basins where FTC devices are proposed should be conducted through a combination of desktop analysis and field work. Relatively accurate and comprehensive GIS information illustrating the configuration of the stormwater drainage system and land elevations is incredibly important to this effort, but field assessments (although possibly cost prohibitive) is critical to clearly delineating the areas addressed by these devices. One option is to delineate the simpler areas via desktop analysis and then conduct field assessments to address those with incomplete information or may be more complex (e.g., those potentially connected to a PLDA).

Table 5.6. Application of recommended infeasibility criteria for catch basin insert FTC devices during feasibility analysis Step #1 – Desktop Analysis.

Element subject to evaluation	Likely Infeasible if…	Considerations
Risk of flooding	⊗ Proposed location for catch-basin type of device is prone to overflows (e.g., undersized system, water stagnation or tailwater).	• No considerations. Proposed FTC device located at sites prone to overflows should be considered infeasible.
Size of drainage area	⊗ Proposed location for catch-basin type of device would address a land area greater than ~2 acres.	• Installation may be feasible, but is not recommended. Size of upstream drainage area may increase required O&M frequency to a point that is not feasible.
Drainage area	⊗ Land area of interest does not drain to catch basin.	• Not recommended. Limited to no trash reduction benefit.
Backwater condition	⊗ Sea level, tidal influence.	• Proposed location with backwater condition should be considered infeasible because of likely reduced performance.
Groundwater data	⊗ High water table.	• Proposed location with high water table should be considered infeasible because of likely reduced performance.

(2) Field Assessment (see constraints in Table 5.7)

A. Assess the catch basin/inlet size and configuration.
- Confirm catch basin dimensions and conditions.
- Identify presence of inflow and outflow pipes in catch basin to help determine extent of drainage area (e.g., laterals from across the street, pipes draining from adjacent land areas).
- Document catch basin configuration/condition via photo.
- Identify likely type of FTC device that can be installed based on condition and configuration.

B. Identify/confirm drainage area for catch basin.
- Using information gained through the catch basin assessment and maps created during the desktop step, delineate the drainage area for the catch basin.
- Assess the drainage of the roadway and the drainage of the adjacent parcel to draw boundary lines on the map, including flow direction from adjacent land areas. Exclude PLDAs that are not directly connected to the catch basin (see Figure 5.3).

C. Identify site specific conditions:

- Whether there's an adequate space in the public ROW for required routine maintenance (access conditions).
- Whether there are conditions leading to overflows (undersized system), etc.
- Existence of backwater condition (i.e., sea level, tidal influence).

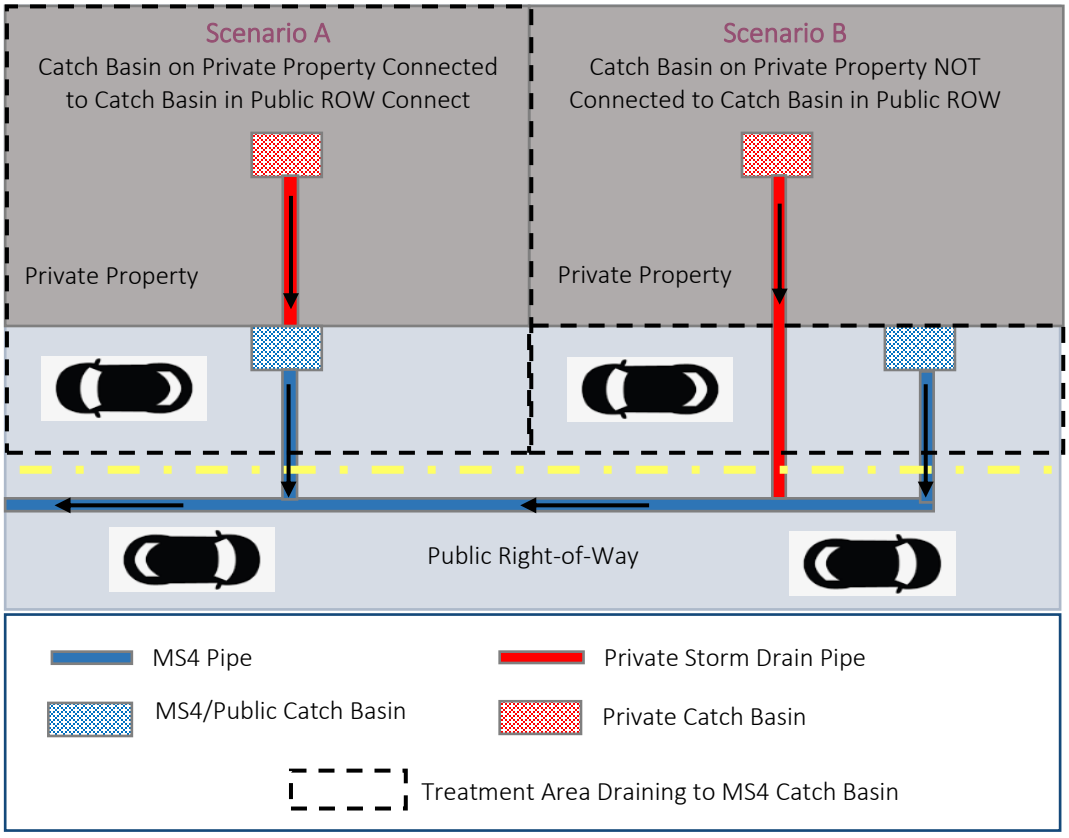


Figure 5.3. Example scenarios of private property and MS4 connectivity that determines the extent of the area addressed by a catch basin insert FTC device installed in the public ROW. (Image courtesy of EOA, Inc.)

Table 5.7. Application of recommended infeasibility criteria for catch basin insert FTC devices during feasibility analysis Step #2 – Field Assessment.

Element subject to evaluation	Likely Infeasible if…	Considerations
Catch basin/Inlet dimensions	⊗ Catch basin/inlet dimensions are irregular.	• If there are not commercially available options, installation is infeasible.
Risk of flooding	⊗ Proposed location for catch-basin type of device is prone to overflows.	• No considerations. Proposed FTC device located at sites prone to overflows should be considered infeasible.
Size of drainage area	⊗ Proposed location for catch-basin type of system/device would address a land area greater than ~2 acres.	• Installation may be feasible, but is not recommended. Size of upstream drainage area may increase required O&M frequency to a point that is not feasible.

6. Other Types of Trash Control Measures That May Be Equivalent To FTC Systems/Devices

6.1 Alternative Trash Control Measures

MRP 3.0 allows Permittees to demonstrate the achievement of the 100% trash load reduction goal through the implementation of trash controls other than FTC systems/devices (i.e., alternative controls) so long as Permittees can demonstrate that the corresponding land area has achieved consistent low trash generation. Permittees have implemented many types of alternative controls over the past decade to address the MRP trash load reduction goal. The following types of alternative controls are examples of those implemented by Bay Area Permittees to reduce trash generation levels on-land and trash in stormwater discharges:

- Street Sweeping
- On-land Cleanups
- Anti-Littering and Illegal Dumping Enforcement
- Improved Trash Bin Management
- Storm Drain Catch Basin Inspection/Cleaning
- Prevention of Uncovered Loads
- Public Outreach and Education
- Partial Capture Devices
- Trash Inspections on Private Properties
- Other Types of Action

It is important to note that this list is not comprehensive and that different types of alternative controls may be implemented in the future to achieve the MRP 100% trash load reduction goal.

6.2 Summary of Alternative Control Measures in Areas Achieving Low Trash Generation

The most recent Permittee annual reports (FY 2021-22) were compiled to identify trash control measures other than FTC systems/devices that have been implemented in land areas achieving a low level of trash generation. As listed in Table 6.1, there are 658 Trash Management Areas (TMAs) in Permittee jurisdictional areas. Of these TMAs, Permittees reported that 520 (79%) continue to generate significant levels of trash after accounting for FTC systems/devices installed to date. Of these TMAs, 66 have reached a low trash generation level solely or partially as a result of one or more alternative controls. These 66 TMAs are within the jurisdictional areas of 28 Permittees.

Table 6.1. Status of trash reduction progress in MRP Permittee Trash Management Areas (TMAs), as reported in the FY 21-22 Permittee Annual Reports.

County	# of Permittee TMAs in Each Category				
	# of TMAs with Baseline Low Trash Generation	Achieving Low Trash Generation Solely through Full Trash Capture (FTC) Systems/Devices	Achieving Low Trash Generation Partially or Solely through Alternative Controls	Not Yet Achieving Low Trash Generation	Total # of TMAs
Alameda	28	1	**3**	117	149
Contra Costa	25	21	**10**	139	195
San Mateo	11	10	**20**	87	130
Santa Clara	23	8	**33**	98	162
Solano	6	5	**0**	11	22
Totals	**93**	**45**	**66**	**452**	**658**

Information on the type and extent of alternative controls implemented by Permittees in the 68 TMAs that have achieved low trash generation as a result of alternative controls (see shaded column in Table 6.1) was also compiled. The most frequently described control measures for these TMAs are listed in Table 6.2 and Figure 6.1. Street sweeping and on-land cleanups are the most frequently implemented alternative control measures in TMAs achieving low trash generation. Responses to the Trash Impracticability Survey (Appendix A) also indicate that these controls are important for stormwater trash management. Although trash inspections on private properties ranked the lowest of all alternative controls identified, this control measure is a relatively recent addition to the trash control measure portfolio for many Permittees.

An important note: Table 6.2 and Figure 6.1 are only intended to summarize/illustrate the types of alternative controls reported by Permittees for TMAs achieving low trash generation. The comparison presented in Table 6.2 and Figure 6.1 should not be construed as evidence establishing a cause-and-effect relationship between a control measure and trash generation level. The ability of an alternative control to achieve low trash generation is highly dependent upon many factors, including the baseline level of trash generation, the extent and magnitude of control measure implementation, and other site-specific conditions. Alternative controls may be implemented in similar ways at different locations and due to these factors, will result in different trash generation outcomes. Additionally, due to implementation constraints (some of which are similar to those described for FTC systems/devices), alternative trash control measures may not result in low trash generation outcomes and therefore the information presented in this section should not be construed as evidence that low trash generation is feasible/practicable in all situations.

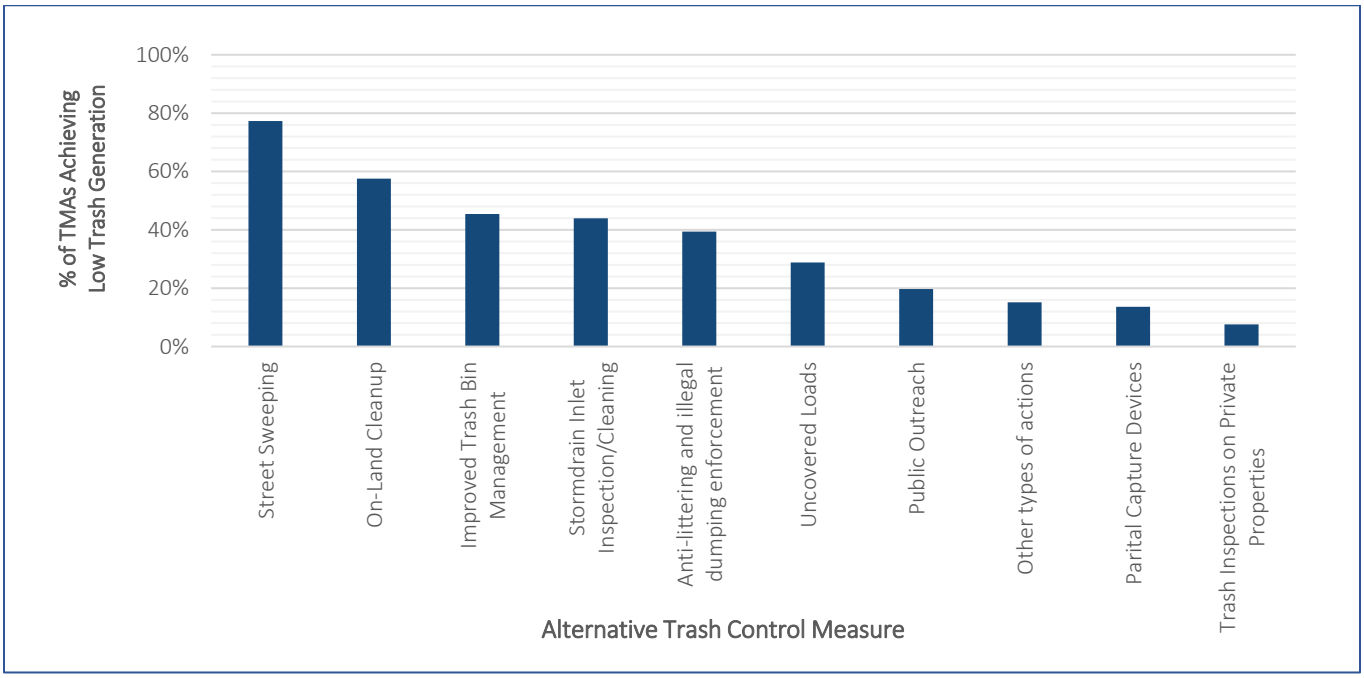


Figure 6.1. Extent of alternative trash control measures implemented in 66 TMAs achieving low trash generation as a result of these controls, as reported in FY 2021-22 Permittees annual reports.

Table 6.2: Summary of alternative trash control measures implemented in TMAs achieving low trash generation in the four primary counties subject to the MRP, as reported in the FY 21-22 Permittee annual reports.

County	# of TMAs Achieving Low Trash Generation through Alternative Controls	Significant Trash Generating Area (acres) within TMAs Achieving the Low Trash Generation via Alternative Controls	% of Significant Trash Generating Areas Reported as Achieving Low Trash Generation via an Alternative Control Measure									
			On-Land Cleanup	Street Sweeping	Improved Trash Bin Management	Storm Drain Inlet Inspection/Cleaning	Anti-littering and illegal dumping enforcement	Public Outreach	Uncovered Loads	Partial Capture Devices	Trash Inspections on Private Properties	Other types of actions
ACCWP	3	165	--	--	--	--	3%	--	--	--	--	--
CCCWP	10	384	8%	11%	5%	--	8%	2%	2%	--	--	0%
SCVURPPP	33	1,927	30%	47%	29%	27%	23%	6%	20%	12%	5%	8%
SMCWPPP	20	794	20%	20%	12%	17%	6%	12%	8%	2%	3%	8%
Totals	**66**	**3,270**	**58%**	**78%**	**46%**	**44%**	**40%**	**20%**	**30%**	**14%**	**8%**	**16%**
# of TMAs where the Alternative Control is Implemented			**22**	**21**	**14**	**12**	**10**	**9**	**8**	**5**	**4**	**6**

Street Sweeping

Of the 28 Permittees that have achieved low trash generation in one or more TMAs, 21 reported the use of street sweeping (Figure 6.2) as a trash control measure in those TMAs. A common aspect of the street sweeping programs in the TMAs that achieved the goal is the sweeping of commercial and retail areas at a frequency of at least once a week. Additionally, many of these Permittees reported that they reevaluate their street sweeping programs annually to add new sweeping locations, increase sweeping frequencies, and include newly constructed public streets. Some Permittees also reported enhancing parking enforcement efforts to ensure that sweepers can intercept trash along the curb and gutter.

Figure 6.2. Street sweeping (Image courtesy of the City of San Jose).

A few street sweeping programs of note are the Unincorporated Santa Clara County and the City of San Bruno. Santa Clara County achieved low trash generation in 11 TMAs, the most of any MRP Permittee. Santa Clara County's street sweeping program within the TMAs achieving low trash generation entails the sweeping of expressways, including medians and the inside and outside curb and gutter, and all expressway on- and off-ramps. The City of San Bruno reported that they use a webpage to display and update street sweeping frequencies in

residential areas and that moving sweeping times in these areas to later in the day has resulted in better curb access due to more people at work during this time. This change in timing has led to more effective sweeping since sweepers are now more likely to reach the curb/gutter where trash accumulates.

On-land Trash Cleanups

A majority of the 28 Permittees that achieved low trash generation using alternative trash control measure(s) in at least one TMA also implemented on-land trash cleanups as a trash control measure. Permittees reported removing trash from medians, sidewalks, roads, trails, creeks, and parks. These cleanups are performed manually by staff contractors or volunteers. Many Permittees utilized annual "CleanUp Days" in which volunteers come together to clean a neighborhood, creek or beach. Some Permittees implemented Adopt-a-Highway or Adopt-a-Storm Drain programs where community members are provided cleaning equipment to remove trash from and near storm drains or roadways. For example, the City of San Bruno created a "trash patrol" program, where two employees perform clean ups five days a week. Some Permittees like the City of Orinda reported that the volume of trash collected during on-land cleanups was tracked so that adjustments to the frequency of cleanups could be made if necessary to improve consistent levels of low trash generation in TMAs. Since 2012, Unincorporated Contra Costa County has hired private contractors to perform on-land cleanups in the public right of way. The contractors pick up the "blow and flow" litter along more than 70 curb miles in 15 locations throughout the County. The volume of material picked up is tracked and OVTAs are conducted to measure the effectiveness of the cleanups.

Anti-Littering and Illegal Dumping Enforcement

The 10 Permittees that used anti-littering/illegal dumping enforcement in TMAs achieving low trash generation reported using telephone hotlines or websites for receiving illegal dumping complaints from residents. All complaints are addressed usually within the same day or within one business day. Some Permittees implemented physical barriers to prevent illegal dumping. In addition to these common measures, the City of Cupertino required the installation of "No Dumping Drains to Bay" medallions on inlets of redeveloped commercial properties as a condition of approval (COA) and included in their municipal code a provision that requires private commercial property owners to maintain a litter-free site. The City of San Bruno reported that their Public Works staff investigates refuse collected from illegal dumpsites to identify offenders and support the City's Code Enforcement division in issuing citations. The City of South San Francisco and the San Mateo County Flood Control District (SMCFCD) entered into an agreement to, among other things, abate illegal dumping and illegal encampments and collect and dispose of trash and debris deposited on land and in channels/creeks. Problem litter and encampment areas were cleaned by South San Francisco on an as-needed basis, with resource or cost reimbursement from SMCFCD as applicable. The City of Burlingame began an outreach campaign to inform residents and property owners about proper bulky waste disposal and how to report illegal dumping incidents.

Improved Trash Bin Management

The 14 Permittees that successfully reduced trash in TMAs through improved trash bin management commonly used the following methods:

- Coordinating with waste haulers to ensure that all businesses and households have adequate trash service;
- Developing prohibitions of waste accumulation on properties through municipal codes;
- Enforcing requirements for keeping waste bins/containers covered; and
- Collaborating with haulers to require residents or businesses to change their service levels or container types to avoid overfilling.

Many cities also reported that through their C.4 Industrial and Commercial Site Control Program, inspectors confirm that trash and recycle receptacles are provided for customers, dumpsters are not overflowing, dumpster areas are clean, and dumpster lids are closed. Some Permittees installed new receptacles in the public ROW, bus stops, or parks to improve trash management and reduce overflowing bins.

In addition to these common trash bin management efforts, the following are examples of controls reported by Permittees:

- City of Mountain View increased inspection frequencies and park trash bin services during Spring and Summer seasons to improve trash management.
- City of Cupertino requires commercial and multi-family residential redevelopment project owners to install and maintain outdoor trio receptacles with cigarette filter urns.
- City of Sunnyvale uses a "Right Size/Right Service" Program (Figure 6.3) in which litter is addressed from overflowing trash and recycling containers in situations where containers are shared by businesses or tenants in multi-family housing. Sunnyvale works with their waste hauler to develop campaign materials and operational procedures. The program led to successful increases in container collection frequency at several downtown businesses. The program also issues violation notices for overflowing bins, which has led to an increase in collection service.
- City of Colma reported their waste hauler drivers are trained in returning containers with the lids shut and picking up any items that may have fallen out.
- City of Walnut Creek increased the number of in-ground trash cans that could hold up to 300 gallons per bag.
- City of Burlingame requires specialized bins at major public events and requires event sponsors to provide staffing to oversee management of bins and enforce clean-up activities.

Figure 6.3. Outreach material distributed to commercial and industrial properties on trash control measures. (Courtesy of City of Sunnyvale)

Prevention of Uncovered Loads

Of the 28 Permittees that achieved low trash generation in TMAs via alternative trash control measures, 8 reported that they have an ordinance (in addition to State law) that requires trash loads to be covered when transporting material/debris through their municipality. These requirements prohibit waste haulers, landscape contractors, and/or hauler trucks from carrying uncovered loads and provide enforcement authority to the Permittee. The police department helps to enforce these requirements. In addition to the municipal codes, the City of Sunnyvale prevents uncovered loads by providing a tarp distribution program conducted at its SMaRT station recycling center. The City of Belmont has installed signs advising motorists "Uncovered Loads are Subject to Fines" on the road that is heavily used by garage trucks and other vehicles traveling to their recycling center. The City of Brentwood recently constructed a new City - owned and operated solid waste transfer station. This fully enclosed facility allows trash to be dropped within an indoor facility by trucks. The pre-existing outdoor facility was exposed to wind and water elements with a high susceptibility to carry trash off-site.

Public Outreach

Public Outreach was reported as a control measure by 9 Permittees that achieved 100% trash reduction in select TMAs via alternative trash control measures. Generally, these Permittees created public education material, promoted these material and anti-littering messages through social media and other communication outlets, and hosted volunteer events or programs to prevent trash from entering waterways. SCVURPPP Permittees such as the Cities of Campbell, Los Gatos, and Saratoga worked with the West Valley Clean Water Authority (Authority) to launch a social media Litter Prevention/Reusables campaign using Stormy, an animated storm drain. The Authority also hosted Coastal Clean-up Day events in which volunteers would remove trash from creeks. Additionally, The West Valley Collection & Recycling company published articles written by the Authority in their Fall 2021 residential and commercial newsletters, focusing on reusable products for lunches and reusable products for the workplace. In the City of Belmont, a roadway banner for cigarette butt litter prevention was displayed multiple times over Ralston Avenue to bring public awareness to cigarette butt litter. The City of Burlingame produced an illegal dumping fact sheet that described how to dispose of unwanted furniture, developed a new webpage resource for reporting illegal dumping, and promoted anti-littering messages on the City's social media platforms. The Town of Colma improved and distributed outreach material about stormwater pollutant best management practices to businesses via the Town's C.4 Industrial and Commercial Site Control Program.

Partial Capture Devices

In the FY 21-22 Annual Reports, the Cities of Cupertino, Los Gatos, Burlingame, Campbell, and Saratoga reported the implementation of auto-retractable screens (ARS), which are considered partial capture systems. The City of Burlingame reported inspecting and maintaining these devices before and after rainy seasons, as well as documenting inspection and maintenance using the City's asset management software. The City of Cupertino reported that each year it considers the installation of new ARSs as funding becomes available and additional prospects arise within development projects.

Trash Inspections on Private Property

In the FY21-22 Annual Reports, the Cities of Mountain View, Sunnyvale, Colma, and Palo Alto reported using business inspections as a control measure in their TMAs that achieved 100% reduction. These business inspections provide an opportunity for city staff to improve bin management at commercial facilities and educate business owners about stormwater trash regulations and BMPs. The City of Mountain View reportedly increased the frequency of inspections at commercial and food service facilities compared to previous FYs. The Town of Colma reported that C.4 Industrial and Commercial Site Control Program inspections are used as an opportunity to confirm that trash and recycle receptacles are provided for customers, dumpsters are not overflowing, dumpster areas are clean, and dumpster lids are closed. The City of Sunnyvale's Enhanced Business Education and Inspection Program conducted six inspections during one fiscal year in the TMA that achieved 100% trash reduction. The City of Palo Alto requires trash enclosures for major development projects and identifies maintenance issues through

their commercial business inspection program. Unincorporated Contra Costa County has recently completed conducting trash assessments on private drainage areas that exceeded 10,000 square feet. County staff has completed assessments on more than 500 parcels and is continuing to evaluate parcels.

Other Types of Actions

Of the Permittees that achieved low trash generation in TMAs via alternative control measures, six reported the use of additional types of control measures outside of those described above. Many of these actions were implemented through municipal ordinances, including the following:

- Disposable Food Service Ware Ordinance
- Smoking Ordinance
- Single-Use Carryout Bag Ban
- Expanded Polystyrene (EPS) Foam Foodware Ban
- Sustainable Food Packaging
- Plastic Bag Regulation
- Rubbish Removal and Disposal

In addition to Programs implemented through municipal ordinances, a few other control measures that are notable were also reported:

- City of Cupertino implemented an Environmental Programs Division that reviews residential and non-residential development projects at the time of permit submittal. Through this process Cupertino requires FTC devices on properties that connect to the City's storm drains and have commercial or multifamily land uses.
- The City of Menlo Park requires that property owners of large business parks submit an annual report to the City demonstrating that FTC devices on its property are well maintained and operated.
- San Mateo County provides a nonprofit organization, Sea Hugger, with a grant to conduct monthly beach cleanups using a Nurdle Trommel, which collects microplastics. The grant also allowed Sea Hugger to install a Seabin that collects trash in the harbor.

7. CITATIONS

Bay Area Stormwater Management Agencies (BASMAA). 2016. Tracking California's Trash Project – Evaluation of Street Sweeping and Curb Inlet Screens as Measures to Control Trash in Stormwater. Prepared by EOA, Inc. December.

California Stormwater Quality Association (CASQA). 2021. Trash Control Measure Implementation Guidance. March.

California Regional Water Quality Control Board, San Francisco Bay Region. 2022. Municipal Regional Stormwater NPDES Permit, Order No. R2-2022-0018, NPDES Permit No. CAS612008. May. https://www.waterboards.ca.gov/sanfranciscobay/board_decisions/adopted_orders/2022/R2-2022-0018.pdf

City of Dublin. 2016. Trash Implementation Study: Evaluation of Designating School District Properties as Non-Jurisdictional. Prepared by CSG Consultants. March.

City of Dublin. 2022. Catch Basin Type of FTC Devices Feasibility Study on 7844 Dublin Blvd. Prepared by Storm Water Inspection & Maintenance Services (SWIMS).

City of Emeryville. 2019. Trash Capture Preliminary Technical Memorandum (Draft). Prepared by Schaaf and Wheeler. June.

City of Hayward. 2022. Arf and Tennyson Trash Capture Technical Memorandum (Draft). Prepared by Schaaf and Wheeler. June.

City of Milpitas. 2018. Recommendations for the Installation of Inlet-based Trash Full Capture Devices and Actions to Address Future Trash Load Reduction Goals Technical Memorandum. Prepared by EOA, Inc. February.

City of Mountain View. 2015. Citywide Trash Capture Feasibility Study. Prepared by Schaaf and Wheeler and EOA, Inc. September.

City of Oakland. 2019. Trash Full Capture System Feasibility Evaluation. Prepared by EOA, Inc. and North Gate Environmental Management, Inc. January.

City of San Mateo. 2021. Biological Resources Technical Report for Poplar at Golf Course Trash Capture Project. Prepared by WRA, Environmental Consultants. October.

City of San Rafael. 2021. City of San Rafael / MCSTOPPP Full Trash Capture Feasibility Analysis Technical Memorandum. Prepared by Schaaf and Wheeler and NCE. February.

City of San Rafael. 2021. City of San Rafael / MCSTOPPP Full Trash Capture Hydraulics and Aquatic Resources Summary Technical Memorandum. Prepared by Schaaf and Wheeler and NCE. July.

City of Redding. 2022. Stormwater Trash Control Measures Cost-Benefit Evaluation. Prepared by EOA, Inc. January.

County of San Mateo. 2018. Unincorporated County Trash Capture Feasibility Study. Prepared by Schaaf and Wheeler. November.

EOA, Inc. 2017. On-land Visual Assessment Protocol for Stormwater. Protocol A – Street & Sidewalk Survey, Establishing Baseline Levels of Trash Generation and Assessing Changes in Trash Levels. Version 2.0. September.

http://eoainc.com/wp-content/uploads/2018/03/OVTA_Protocol_A-Street_and_Sidewalk_Surveys_v-2.0-Sept_2017v2.pdf

EOA, Inc. 2018. On-land Visual Assessment Protocol for Stormwater. Protocol B – Driving Survey, Establishing Baseline Levels of Trash Generation and Assessing Changes in Trash Levels. Version 2.0. March.

http://eoainc.com/wp-content/uploads/2018/03/OVTA_Protocol_B-Driving_Survey_v.2.1_Mar_2018.pdf

EOA, Inc. and Keish Environmental. 2018. On-land Visual Assessment Protocol for Stormwater. Protocol C – Area-based Survey, Establishing Baseline Levels of Trash Generation and Assessing Changes in Trash Levels. Version 1.0. March.

http://eoainc.com/wp-content/uploads/2018/03/OVTA_Protocol_C-Area_Based_Survey_v.1.0-March_2018_v3_Final.pdf

Marin Countywide Pollution Prevention Program. 2022. Large Scale Stormwater Trash Capture Feasibility Report. Prepared by Schaaf and Wheeler, EOA Inc., and NCE. June.

Mendocino County. 2021. Stormwater Trash Capture Feasibility Report. Prepared by Schaaf and Wheeler and EOA, Inc. May.

Port of Oakland. 2021. Trash Capture Program: Feasibility Evaluation and Preliminary Implementation Strategy. Prepared by EOA, Inc. December.

San Francisco Bay Area Municipal Regional Stormwater Permit Order No. R2-2015-0049 Permittees. 2022. FY 2021-2022 Municipal Regional Stormwater NPDES Permit Annual Reports. September.

Santa Clara Urban Runoff Pollution Prevention Program and San Mateo Countywide Water Pollution Prevention Program. 2016. Small Full Capture Device Operation and Maintenance: Standard Operating Procedures. Prepared by EOA, Inc. June.

https://www.cleancreeks.org/DocumentCenter/View/224/Small-Full-Capture-Device-Operation-and-Maintenance-

Schaaf and Wheeler. 2018. Trash Capture Device Hydraulic Loss and Flooding [PowerPoint Slides]. Floodplain Management Association Conference. Reno, California. September.

Schaaf and Wheeler and City of Livermore. 2017. Trash Capture Hydraulics: Overcoming Hydraulic Head Issues [PowerPoint Slides]. APWA Conference. Richmond, California. November.

http://northernca.apwa.net/Content/Chapters/northernca.apwa.net/Documents/Large%20Scale%20Trash%20Capture%20Device%20Design%20-%20Lessons%20Learned.pdf

Schaaf and Wheeler, and EOA, Inc. 2021. Out of the Cities, Into the Towns - Siting Small and Large Full Capture Systems in Semi-Rural Areas [PowerPoint Slides]. CASQA Conference. October.

State of California, Department of Transportation (Caltrans). 2003. Gross Solids Removal Devices: Pilot Study 2000-2002. CTSW-RT-03-072. October.

State Water Board. 2022. Certified Full Capture System List of Trash Treatment Control Devices. Updated October 13, 2022. https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/trash_implementation/2022/fullcptre-availabletopublic10-11.pdf

State Water Board. 2022. Certified Multi-Benefit Trash Treatment Systems. Updated September 22, 2022. https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/trash_implementation/2022/list-multi-benefit-09092022.pdf

USEPA. 2023. Green Infrastructure Design and Implementation. https://www.epa.gov/green-infrastructure/green-infrastructure-design-and-implementation

Vallejo Flood and Wastewater District. 2018. Trash Capture Feasibility Study. Prepared by EOA, Inc. March.

APPENDIX A
MRP TRASH IMPRACTICABILITY SURVEY SUMMARY REPORT

APPENDIX A

MRP TRASH IMPRACTICABILITY SURVEY SUMMARY REPORT

Background

The development and implementation of stormwater trash control programs is one of the highest priority components in the reissued San Francisco Bay Municipal Regional Stormwater NPDES Permit, Order R2-2022-0018 (i.e., MRP 3.0). Trash control programs are designed to significantly reduce the levels of trash and litter discharged from municipal separate storm sewer systems (MS4s) and protect local creeks and the San Francisco Bay.

Under the MRP 3.0, the Permittees are required to achieve challenging trash reduction benchmarks (i.e., 90% and 100%) over aggressive timeframes (i.e., 2023 and 2025) either by implementation of full trash capture systems or other trash management actions, or combinations of actions. In this context, the permit states that there are some areas within the Permittees' jurisdiction where engineering constraints may make it impracticable to control trash to a Low generation rate via a full trash capture device. Therefore, MRP 3.0, Provision C.10.e provides the opportunity for Permittees to collectively submit a programmatic report that describes conditions under which it is impracticable to control trash via full trash capture devices.

As part of the Regional Trash Impracticability Report Project led by the Bay Area Municipal Stormwater (BAMS) Collaborative, an online survey was developed and released in October 2022 to compile information on the feasibility of siting, designing, installing/constructing, and operating full trash capture systems/devices. The survey also requests information on other types of trash control measures that have been demonstrated to achieve the trash reduction goal included in the Municipal Regional Permit (MRP) for stormwater discharges in the SF Bay Area.

Target population

The survey was addressed to professionals with expertise and/or experience related to trash full capture systems/devices siting, design, installation/construction, maintenance, permitting, and/or manufacture.

Objectives

The survey is intended to inform the development of the Regional Trash Impracticability Report by fulfilling the following objectives:

- Gather information related to engineering constraints that prevent the installation or proper functioning of full trash capture devices.
- Receive input to determine the process for evaluating impracticability of full trash capture devices.
- Collect data to determine alternative controls or a combination of controls that may be implemented to reduce trash loads to meet the requirements and deadlines in Provision C.10.a.

Survey Results

Overview of Respondents

A total of 48 individuals representing municipal separate storm sewer system (MS4) public agencies, engineering consultants, and full capture system/device vendors responded to the survey (Figure A-1). From them, about 70% have more than 5 years of experience with full trash capture devices (Figure A-2). Their areas of expertise on full capture devices are presented in Figure A-3 and the entities they represent are listed in Table A-1. The data collected indicates that 73% of the respondents have sited, designed, installed, and/or maintained more than 50 full capture devices (52% of them have sited 100-500 devices and 8% more than 500 devices).

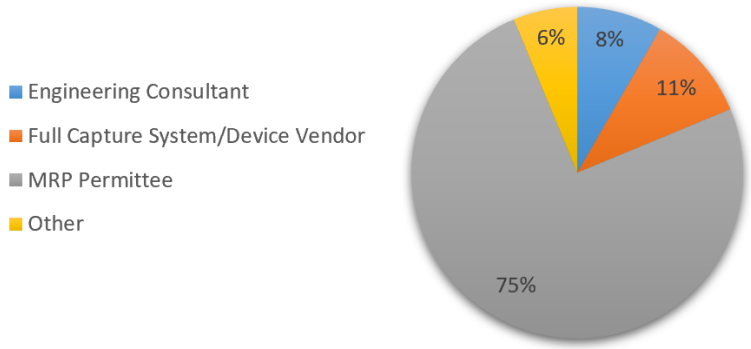


Figure A-1. Survey respondents by affiliation type.

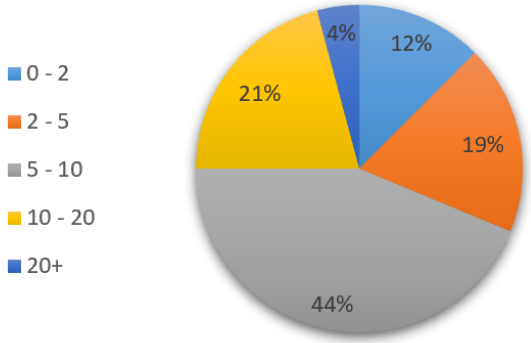
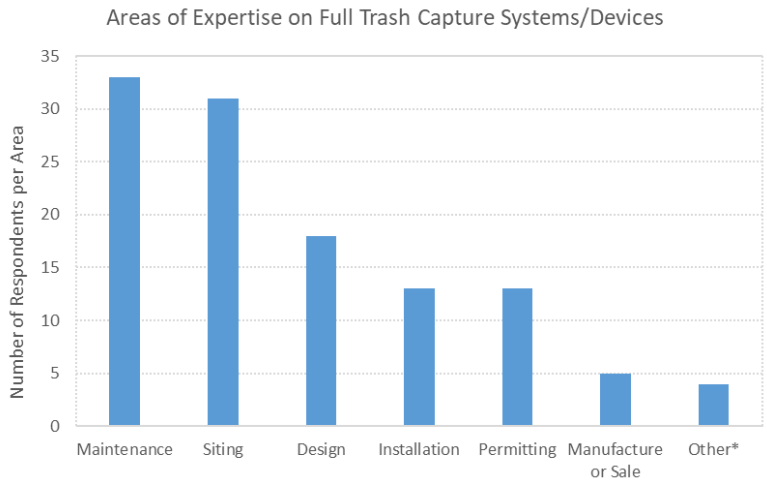


Figure A-2. Survey respondents' years of experience with full trash capture devices.



* Example of responses included in "Other": project oversight.

Figure A-3. Survey respondents' areas of expertise on full trash capture devices.

Table A-1. List of MRP Permittees, Vendors and Engineering Firms the survey participants represent.

No.	Entity	Type
1	City of Antioch	MRP Permittee
2	City of Belmont	MRP Permittee
3	City of Brisbane	MRP Permittee
4	City of Campbell	MRP Permittee
5	City of Cupertino	MRP Permittee
6	City of Dublin	MRP Permittee
7	City of El Cerrito	MRP Permittee
8	City of Emeryville	MRP Permittee
9	City of Fremont	MRP Permittee
10	City of Hayward	MRP Permittee
11	City of Lafayette	MRP Permittee
12	City of Oakland	MRP Permittee
13	City of Pittsburg	MRP Permittee
14	City of Pleasanton	MRP Permittee
15	City of Redwood City	MRP Permittee
16	City of Richmond	MRP Permittee
17	City of San Bruno	MRP Permittee
18	City of San Jose	MRP Permittee
19	City of San Mateo	MRP Permittee
20	City of San Pablo	MRP Permittee
21	City Of Sunnyvale	MRP Permittee
22	City of Walnut Creek	MRP Permittee
23	Contra Costa County	MRP Permittee
24	County of San Mateo	MRP Permittee
25	Town of Danville	MRP Permittee

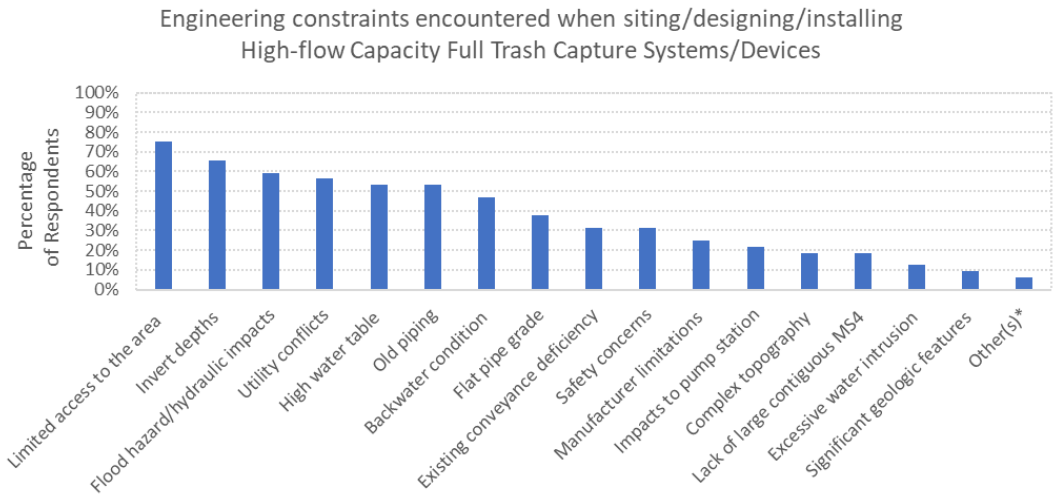
No.	Entity	Type
26	MCSTOPPP	Phase II Permittee
27	AquaShield, Inc.	Full Capture System/Device Vendor
28	ERM-West	Full Capture System/Device Vendor
29	Revel Environmental Manufacturing, Inc. (REM)	Full Capture System/Device Vendor
30	Roscoe Moss Company	Full Capture System/Device Vendor
31	StormTrap	Full Capture System/Device Vendor
32	United Storm Water, Inc.	Full Capture System/Device Vendor
33	CSG Consultants, Inc.	Engineering Consultant
34	Kennedy and Associates	Engineering Consultant
35	Schaaf & Wheeler	Engineering Consultant

Engineering Constraints

1. Engineering constraints for siting/designing/installing full trash capture devices

Respondents were asked: *"Roughly how many full trash capture systems/devices have you sited, designed, installed, or maintained?", "Which of these engineering constraints have you encountered when siting/designing/installing High-flow Capacity Full Trash Capture Systems/Devices?"* and *"Which of these engineering constraints have you encountered when siting/designing/installing Catch Basin Insert types of Full Trash Capture Systems/Devices"* Respondents were provided with a list of engineering constraints and included the possibility of adding other constraints.

Figures A-4 and A-5 provide a summary of the engineering constraints encountered when siting/designing/installing high-flow capacity full capture systems and catch basin insert types, respectively.

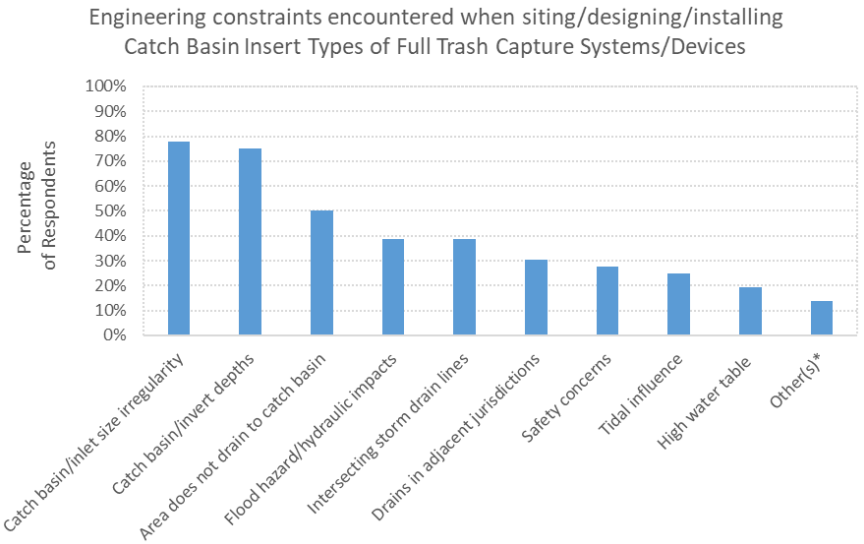


* Responses included in "Other(s)": Devices located in Right of Way (ROW) of other agencies (e.g., Caltrans).

Figure A-4. Percentage of survey responses for engineering constraints encountered when siting/designing /installing high-flow capacity full capture systems.[1]

[1] In the horizontal axis of Figure 4, some names of constraints have been shortened. In the survey, they were presented as follows: "Backwater condition (i.e., sea level, tidal influence)", "Significant geologic features (e.g., outcrops, near-surface bedrock)", "Complex topography (e.g., steep slopes)", "Invert depths (i.e., too shallow or too deep)", "Excessive water intrusion (e.g., due to irrigation flows)", and "Manufacturer limitations (e.g., incoming pipe size, bypass limitations)."

The engineering constraints for siting/designing/installing high-flow capacity full trash capture devices with most responses were *limited access to the area, invert depths,* and *flood hazard/hydraulic impacts*.



* Examples of responses included in "Other(s)": devices located in Right of Way (ROW) of other agencies (e.g., Caltrans), drainage from private parcels that are plumbed directly into the City's storm drain without a structure.

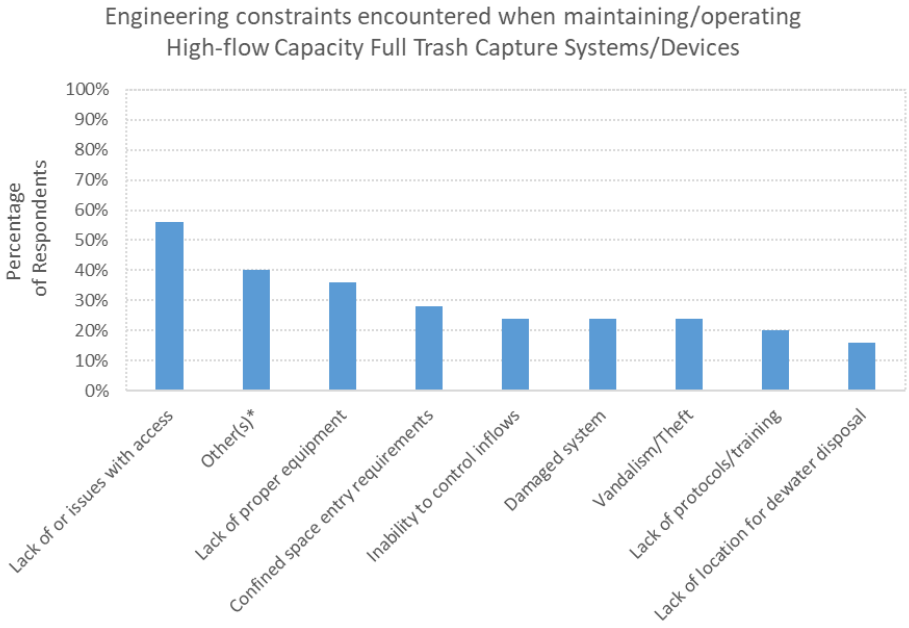
Figure A-5. Percentage of survey responses for engineering constraints encountered when siting/designing /installing catch basin insert types of full capture systems.

The engineering constraints for siting/designing/installing catch basin insert types of full trash capture devices with most responses were *catch basin/inlet size irregularity, catch basin/invert depths,* and *area does not drain to catch basin*.

2. Engineering constraints for maintaining/operating full trash capture devices

Respondents were asked: *"Which or the following maintenance/operation constraints/issues have prevented your agency/company from properly operating and maintaining of High-flow Capacity Full Trash Capture Systems/Devices"* and *"Which of these engineering constraints have you encountered when siting/designing/installing High-flow Capacity Full Trash Capture Systems/Devices?"* and *"Which or the following maintenance/operation constraints/issues have prevented your agency/company from properly operating and maintaining of Catch Basin Insert types of Full Trash Capture Systems/Devices".* Respondents were provided with a list of engineering constraints and included the possibility of adding other constraints.

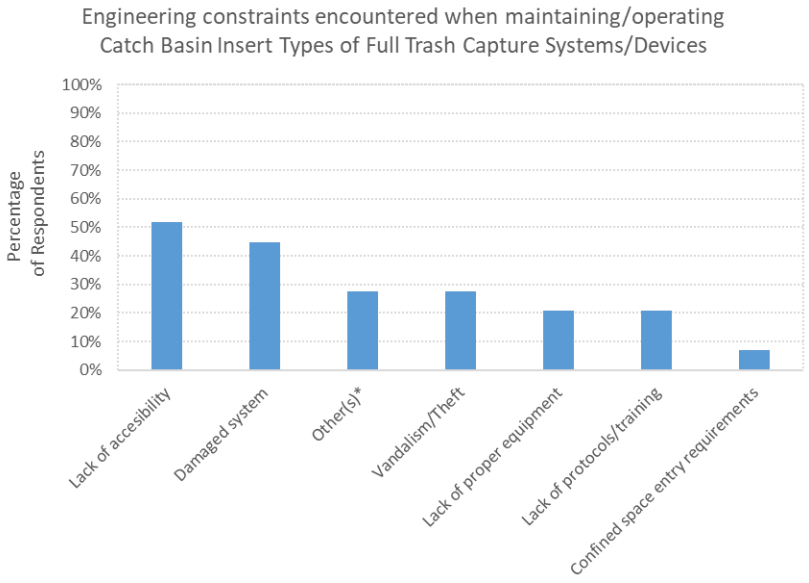
Figures A-6 and A-7 provide a summary of the engineering constraints encountered when maintaining/operating high-flow capacity full capture systems and catch basin insert types, respectively.



* Examples of responses included in "Other(s)": issues with access, cost of devices.

Figure A-6. Percentage of survey responses for engineering constraints encountered when maintaining /operating high-flow capacity full capture systems.

The engineering constraints for maintaining/operating high-flow capacity full trash capture devices with most responses were *lack of or issues with access [related responses were also found in "Other(s)], lack of proper equipment,* and *confined spaced entry*.



* Examples of responses included in "Other(s)": lack of staff, maintenance issues due to device design, issues with access.

Figure A-7. Number of survey responses for engineering constraints encountered when maintaining/operating catch basin insert types of full capture systems.

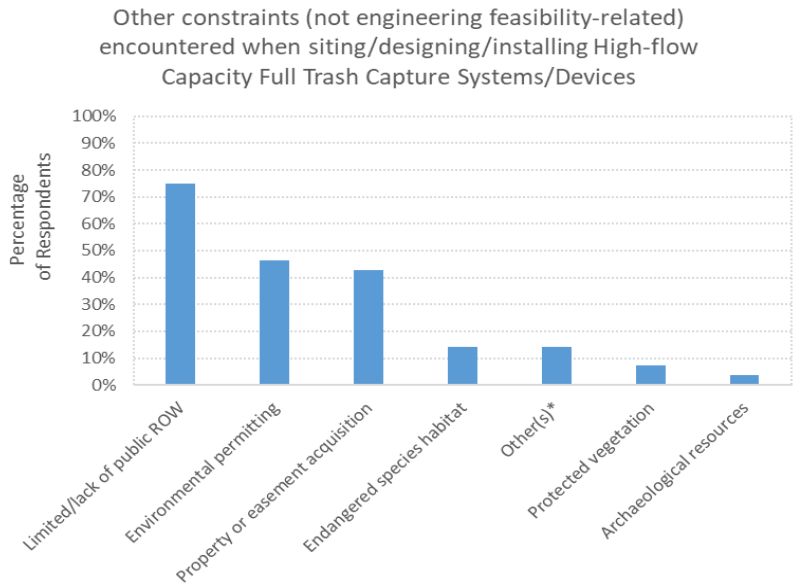
The engineering constraints for maintaining/operating catch basin insert types of full trash capture devices with most responses were *lack of accessibility [related responses were also found in "Other(s)], damaged systems,* and *vandalism/theft*.

Other Constraints

1. Other constraints, not engineering feasibility-related

Respondents were asked: *"What other constraints (not engineering feasibility-related) have you encountered during the siting/design/installation of High-flow Capacity Full Trash Capture Systems/Devices?"* Respondents were provided with a list of other constraints (*not engineering feasibility-related*) and included the possibility of adding other constraints not listed.

Figure A-8 provides a summary of other constraints (not engineering feasibility-related) respondents encountered during the siting/design/installation of high-flow capacity full capture systems/devices.



* Examples of responses included in "Other(s)": device location encompasses multiple jurisdictions (e.g., Permittee, Caltrans, and private owner), issues with access.

Figure A-8. Number of survey responses for other constraints (not engineering feasibility-related) encountered during siting/designing/installing of high-flow capacity full capture systems/devices.

The other constraints encountered during siting/designing /installing of high-flow capacity full capture systems/devices with most responses were *limited/lack of public right of way (ROW) [related response was also found in "Other(s)], environmental permitting,* and *required property or easement acquisition*.

2. Fiscal constraints

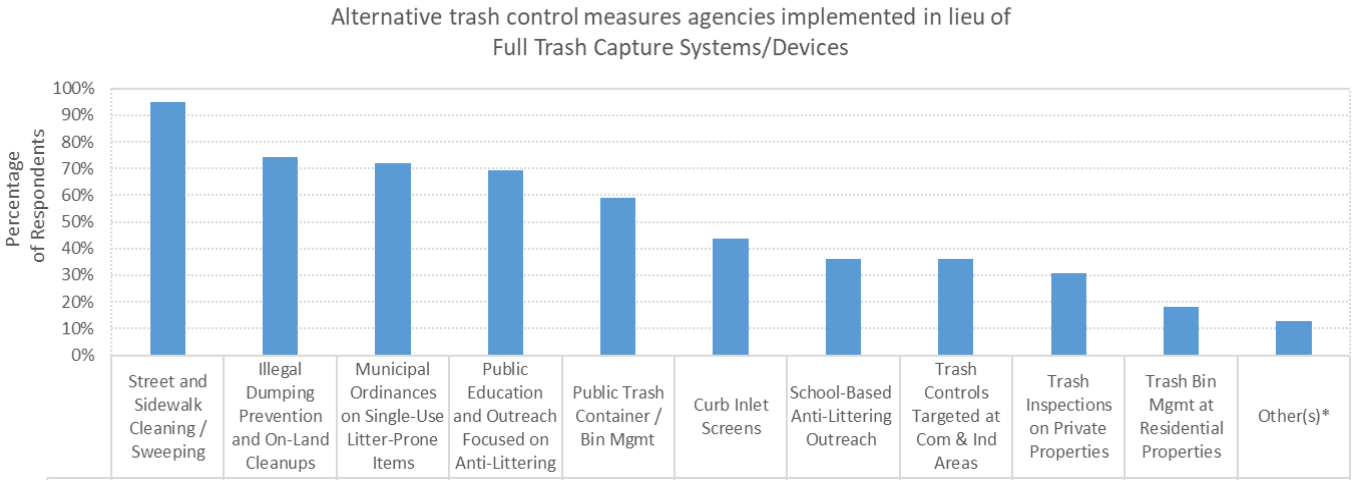
Respondents were asked: "*Please briefly describe any fiscal constraints that your agency has encountered that would render a full trash capture system/device siting/design/installation or maintenance/operation impracticable*". A total of 26 responses were obtained. The summary of the main ideas received is shown below:

- Device construction/installation: In some cases, installing high-flow capacity devices can only be afforded via grants; grant funding often only covers the cost of the unit, not design, installation, construction, or utility conflict relocation.
- On-going maintenance: lack of funds; insufficient budget.
- In general: Increasing requirements but no additional funding source; not a lot of public support for alternate funding strategies; for some jurisdictions, the stormwater projects are funded through City's General Fund where they have a lot of competitive priorities; most agencies lack a dedicated source of funding for stormwater programs; even though increasing controls are installed into the storm sewer collection system to meet MRP requirements, the system is not considered a utility because of California Proposition 218, which makes it difficult to raise rates to cover the increasing costs of maintaining these installed systems.

Alternative Controls or a Combination of Controls

Respondents were asked*: "Which alternative trash control measures have your agency implemented in lieu of the full trash capture systems/devices?" (*respondents were provided with a list of alternative control measures and included the possibility of adding other alternatives not listed*)* and *"Please indicate which of the alternative trash control measures or combinations of control measures, you listed in the previous question have achieved the low trash generation goal described in the MRP?"*

Figure A-9 provides a summary of alternative trash control measures that, according to respondents, municipalities have implemented in lieu of full trash capture systems/devices, and Table A-2 provides a summary of the responses received regarding alternative trash control measures or a combination of measures that have achieved the low trash generation goal described in MRP.



* Examples of responses included in "Other(s)": Addressing private properties in Medium and High Trash Management Areas (TMAs) to install full trash capture systems on properties where a building permit is being issued; employed homeless for beach/ trail cleanups; homeless encampments inspection/cleanup; use of solar compactors and deep well-type trash cans.

Figure A-9. Number of survey responses for alternative trash control measures implemented in lieu of full trash capture systems/devices and measures.

Table A-2. Alternative trash control measures (green) or combinations of alternative control measures (blue) reported by respondents as achieving the low trash generation goal described in the MRP.

Response #	Street and Sidewalk Cleaning / Sweeping	Illegal Dumping Prevention and On-Land Cleanups	Municipal Ordinances on Single-Use Litter-Prone Items	Public Trash Container / Bin Mgmt.	Curb Inlet Screens	Trash Controls Targeted at Com & Ind Areas	Public Education and Outreach Focused on Anti-Littering	School-Based Anti-Littering Outreach	Trash Inspections on Private Properties	Trash Bin Mgmt. at Residential Properties	Other	Total # of Measures per Response
1	✓[2]											1
2		✓[3]										1
3				✓[4]								1
4											✓[5]	1
5	✓						✓					2
6	✓	✓										2
7	✓				✓							2
8			✓						✓			2
9		✓		✓								2
10	✓				✓	✓						3
11	✓	✓	✓									3
12	✓	✓		✓[6]								3
13	✓				✓						✓[7]	3
14	✓		✓	✓								3
15		✓				✓		✓				3
16	✓	✓	✓		✓							4
17	✓	✓	✓		✓							4
18	✓	✓	✓	✓								4
19	✓	✓	✓		✓	✓	✓					6
20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10
Total of Responses per Type of Measure	14	13	8	7	7	4	3	2	2	1	2	
% of Respondents who Implemented the Measure	67%	62%	38%	33%	33%	19%	14%	10%	10%	5%	10%	

[2] Reported once as single alternative measure achieving low trash generation goal.

[3] Reported three times as single alternative measure achieving low trash generation goal.

[4] Reported twice as single alternative measure achieving low trash generation goal.

[5] Implementing Bioretention.

[6] Solar compactors and deep well-type trash cans.

[7] Surveillance cameras and efforts performed by City with merchants.

Process for Evaluating Impracticability of Full Trash Capture Devices

Respondents were asked: "*Please list/describe any suggested criteria that should be used when determining whether the siting/design/installation/operation/maintenance of a full trash capture system/device or the implementation of alternative trash controls that consistently achieve the low trash generation MRP goal is impracticable*". A total of 18 responses were obtained. The summary of the main ideas received is shown below:

- Determination of reasonable cost to municipality for full trash capture devices/system installation project. This should include the corresponding Operation and Maintenance (O&M) fully loaded costs.
- Cost and funding mechanisms evaluated through:
    - Cost-Benefit Analysis (CBA): additional staff hours required; additional equipment to be leased/purchased; long-term maintenance, repair, and replacement costs (including equipment repair and replacements).
    - Return of Investment (ROI): Engineering, design, and siting constraints and feasibility.
- Suggested criteria:
    - Outfall is located on private property.
    - Area has no defined drainage system (sheet flow runoff to creek).
    - The area being treated has a minimal (e.g., 1% or less) contribution to the agency's base trash generation and in combination with other constraints listed above installation of full trash capture measures is not cost effective - very high cost for amount of trash reduction.
- Parcels flowing directly into a waterway or vegetated area without entering a storm drain system.
- Unusual inlet design (e.g., insufficient depth, location of inlet/outlet pipes, location of ladders or other nonstandard designs).
- The lack of conveyance infrastructure.
- Proposed device location drains to another jurisdiction.
- Costs vs. trash load reduction achievement, when it is a small percentage (e.g., <1%).
- Device mobility and scalability without significant fiscal impact.
- Hydraulic impact.

APPENDIX B
TRASH FULL CAPTURE FEASIBILITY EVALUATIONS/REPORTS AND HYDRAULIC/HYDROLOGIC MODELING REPORTS/ANALYSES

AVAILABLE FOR DOWNLOAD AT
HTTPS://EOAINC.COM/TRASH_IMPRACTICABILITY/

B-1. City of Dublin Catch Basin Type of FTC Devices Feasibility Study on 7844 Dublin Blvd, 2022.

B-2. City of Dublin Trash Implementation Study: Evaluation of Designing School District Properties as Non-Jurisdictional. March 2016.

B-3. City of Hayward Arf and Tennyson Trash Capture Technical Memorandum (Draft). 2022.

B-4. City of Milpitas Full Capture Installation & Next Steps Memo. 2018.

B-5. City of Mountain View Citywide Trash Capture Feasibility Study. 2015.

B-6. City of Oakland Trash Full Capture System Feasibility Evaluation. 2019.

B-7. City of San Jose Large Trash Capture – Phase VII Feasibility Report. August 2021.

B-8. City of San Mateo Trash Control Measures Cost-Benefit Evaluation. 2019.

B-9. City of San Rafael / MCSTOPPP Full Trash Capture Feasibility Analysis Technical Memorandum. February 2021.

B-10. City of San Rafael / MCSTOPPP Full Trash Capture Hydraulics and Aquatic Resources Summary Technical Memorandum. July 2021.

B-11. County of San Mateo Unincorporated County Trash Capture Feasibility Study. 2018.

B-12. Marin Countywide Pollution Prevention Program Stormwater Trash Capture Feasibility Report. June 2022.

B-13. Mendocino County Stormwater Trash Capture Feasibility Report. 2021.

CONTRA COSTA CLEAN WATER PROGRAM

Date: March 15, 2023

To: Management Committee

From: Lisa Welsh (Geosyntec), Augmented Staff for Monitoring Committee

Subject: APPROVE the Urban Creeks Monitoring Report: Water Year 2022 (October 1, 2021 – September 30, 2022) and associated transmittal letter, and a letter documenting electronic data submission and AUTHORIZE the Program Manager to sign and certify the submittals on behalf of each Permittee's duly authorized representative and submit them to the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) and to the Central Valley Regional Water Quality Control Board (CVRWQCB).

Recommendations:

The Monitoring Committee recommends each Permittee's duly authorized representative approve the UCMR Water Year 2022 and authorize the Program Manager to sign and certify the associated transmittal letters on their behalf:

- Transmittal letter documenting submittal of the Urban Creeks Monitoring Report: Water Year 2021-22 by March 31, 2023.
- Transmittal letter documenting electronic submittal of monitoring data by March 31, 2023.

The Monitoring Committee further recommends that the Management Committee direct the Program Manager to submit the UCMR, electronic data, and transmittal letters to the SFBRWQCB and the CVRWQCB.

Background:

The Contra Costa Clean Water Program (CCCWP) gathers and reports monitoring data to help Permittees comply with the Municipal Regional Stormwater NPDES Permit (MRP). The data provides valuable information that can help make water quality management and prioritization decisions. MRP 3.0 Provision C.8.h requires reporting of monitoring data collected each Water Year (WY, the period October 1 - September 30), including the following elements:

- C.8.h.ii – Electronic reporting

- C.8.h.iii – Urban Creeks Monitoring Report

The WY2022 UCMR complies with MRP 3.0 Provision C.8.h.iii for reporting of data collected in WY2022 (Oct. 1, 2021-Sept. 30, 2022). As MRP 3.0 became effective July 1, 2022 – at the start of the fourth quarter of WY 2022 - data were collected pursuant to Provision C.8 of MRP 2.0 and MRP 3.0.

Approving the UCMR, UCMR transmittal letter, and electronic data transmittal letter and directing the Program Manager to direct contractors to electronically transmit monitoring data for upload to the California Environmental Data Exchange Network will comply with the above reporting requirements.

Report Outline:

The WY2022 UCMR includes the Umbrella Report and the following Appendices:

- Appendix 1 – LID Monitoring Status Report
- Appendix 2 – Trash Monitoring Progress Report
- Appendix 3 - Regional/Probabilistic Creek Status Monitoring Report
- Appendix 4 - Local/Targeted Creek Status Monitoring Report
- Appendix 5 – Pollutants of Concern Monitoring Report
- Appendix 6 – East County Mercury Monitoring Plan
- Appendix 7 – Pollutants of Concern Receiving Water Limitations Assessment Report
- Appendix 8 – Stormwater Monitoring Strategy for Emerging Contaminants

Table 1 lists the Appendix and distinguishes between MRP 2 and MRP 3 requirements. Requirements from MRP 2 are shown in grey text.

Table 1. UCMR Appendix and Applicable MRP Permit.

Appendix	**Notes**
1. LID Monitoring Status Report	MRP 3: New monitoring requirement; summarizes planning efforts from July 1 to September 30, 2022
2. Trash Monitoring Progress Report	
3. Regional/Probabilistic Creek Status Monitoring Report – Pesticides and Toxicity	Creek Status Monitoring is MRP 2 requirement only P&T, Continuation from MRP 2 to 3
4. Local/Targeted Creek Status Monitoring Report	
5. Pollutants of Concern Monitoring Report	Continuation from MRP 2 to 3
6. East County Mercury Monitoring Plan	MRP 3: New subareas to be monitored

Appendix	Notes
7. POCs Receiving Water Limitations Assessment Report	MRP 3: New monitoring plan and requirement
8. Stormwater Monitoring Strategy for Emerging Contaminants	MRP 3 *(financial contribution to the RMP)*

Summary of UCMR Findings:

Figure 1 maps the locations of CCCWP monitoring stations associated with MRP 2.0 Provision C.8 compliance in Water Wear 2022, including creek status, pesticides and toxicity, and pollutants of concern (POC) monitoring studies. A summary of the UCMR key findings applicable to MRP 3 is below.

LID Monitoring Status Report

In WY 2022, Permittees have been identifying LID monitoring locations, convening a LID technical advisory group (TAG), and developing a LID Monitoring Plan which, per Provision C.8.d.vi, must be submitted for Executive Officer approval by May 1, 2023. Permittees will begin implementation of the LID Monitoring Plan by Oct. 1, 2023. A summary of actions Permittees have taken on LID monitoring in WY 2022 is provided in Appendix 1.

Trash Monitoring Progress Report

In WY 2022, Permittees have been identifying trash outfall monitoring locations, convening a Trash TAG, and developing a Trash Monitoring Plan which, per Provision C.8.e.v, must be submitted by July 31, 2023 and is subject to Executive Officer approval. Permittees will begin trash outfall monitoring starting October 1, 2023 and in-stream monitoring on October 1, 2024 (Provision C.8.e.iii). A summary of actions Permittees have taken on trash monitoring in WY 2022 is provided in Appendix 2.

POCs Monitoring Report

In WY 2022, CCCWP conducted source area assessments to investigate high-interest parcels and areas for consideration of property referrals for PCBs and mercury controls. Street dirt and drop inlet sediments were sampled for POCs at ten locations including Pittsburg, Bay Point, Martinez, and Richmond, as shown in Figure 1. These sediment monitoring activities addressed Monitoring Types 1, 2, and 5 (source identification, contributions to Bay impairment, and trends). POCs Monitoring Report is presented in Appendix 5.

East County Mercury Monitoring Plan

MRP 3.0 Provision C.19.d.iii.(1) requires East County Permittees to submit a mercury monitoring plan annually on March 31 with the Urban Creeks Monitoring Report. The monitoring plan describes the annual monitoring design and specifies the proposed

sampling locations for methylmercury sampling required under MRP 3.0 Provision C.19.d.ii.(2). The WY 2024 East County Annual Mercury Monitoring Plan is presented in Appendix 6.

POCs Receiving Water Limitations Assessment Report

MRP 3.0 Provision C.8.f.ii, Table 8.2, specifies that for POCs receiving water limitations (RWLs) monitoring Permittees must collect, over the permit term, four wet season samples and one dry season sample for copper, zinc, and fecal indicator bacteria and additional analytes determined under Provision C.8.h.iv. Provision C.8.h.iv requires Permittees submit an RWLs Assessment Report by March 31, 2023, for Executive Officer approval. The RWLs Assessment Report is presented in Appendix 7.

Stormwater Monitoring Strategy for Emerging Contaminants

Provision C.8.f.ii requires participation by Permittees in the regional stormwater monitoring strategy for emerging contaminants. Permittees must conduct or cause to be conducted ECs stormwater monitoring to execute the ECs stormwater monitoring strategy at a level of effort indicated in Table 8.2. This level of effort can be satisfied either through sampling and analysis of the number of samples indicated in this table or through augmentation of the San Francisco Bay Regional Monitoring Program Emerging Contaminants Monitoring Strategy in the amount of $100,000 per year for all Permittees combined. Permittees have agreed to satisfy this MRP 3.0 requirement by annually contributing their share of $100,000 to augment the San Francisco Bay Regional Monitoring Program (RMP) Emerging Contaminant Monitoring Strategy. For Permittees in Contra Costa County, annual contributions of $21,649 will be made through CCCWP.

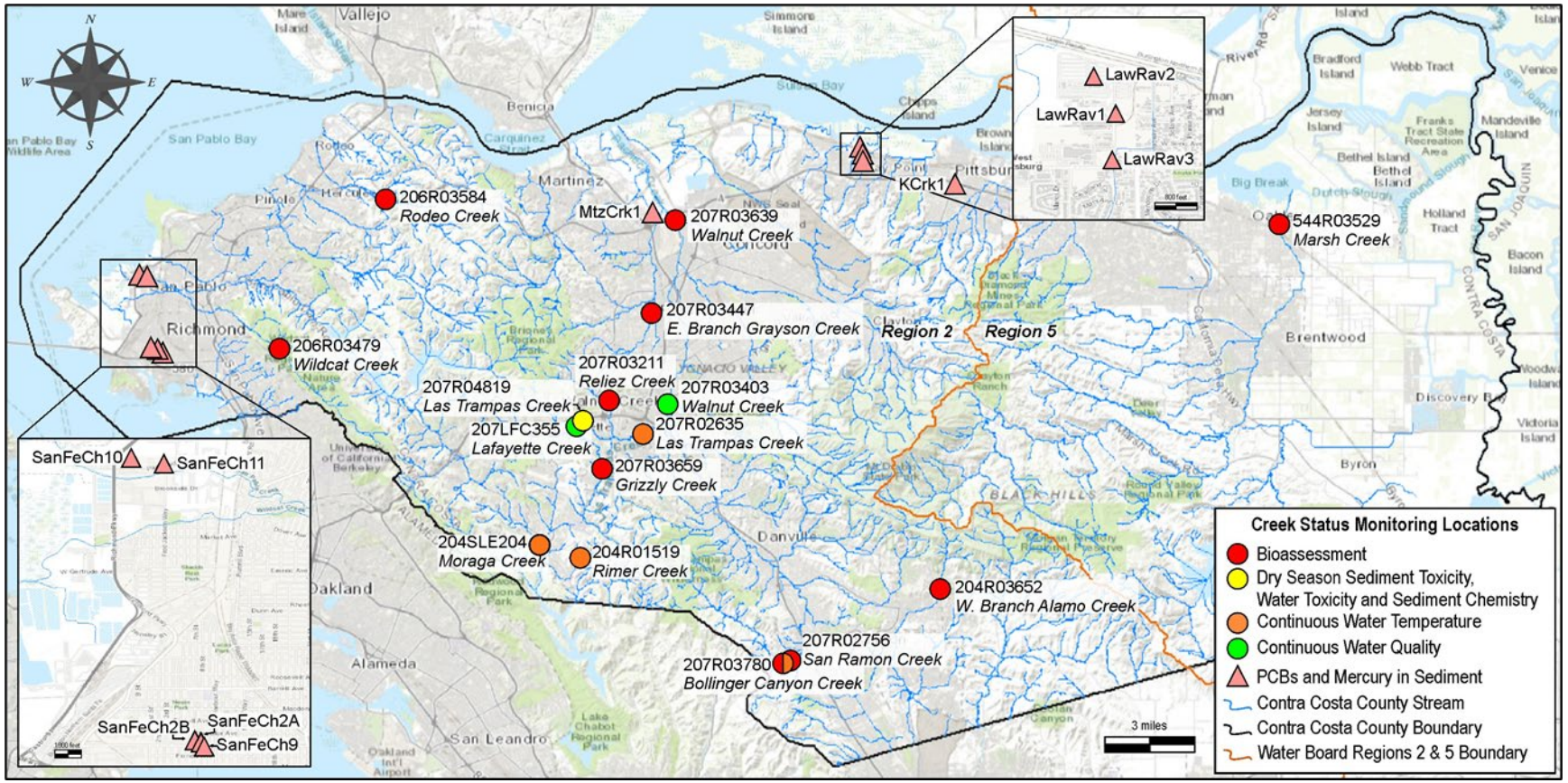
Fiscal Impact:

None.

Attachments:

1. Map of monitoring stations (Figure 1)
2. Groupsite folder for final draft WY2022 Urban Creeks Monitoring Report and Appendices: https://cccleanwater.groupsite.com/folders/293799
3. WY 2021 - 2022 Urban Creeks Monitoring Report Transmittal Letter
4. WY 2021 – 2022 Electronic Data Transmittal Letter

Figure 1: Creek Status and Pollutants of Concern Monitoring Stations in WY2022



CONTRA COSTA
CLEAN WATER
PROGRAM

March 31, 2023

Eileen White, Executive Officer
California Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Patrick Pulupa, Esq., Executive Officer
California Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

SUBJECT: Submittal of the WY2022 Urban Creeks Monitoring Report in Accordance with MRP 3.0 Provisions C.8.h.iii, C.8.h.iv, and C.19.d.iii

Dear Ms. White and Mr. Pulupa,

Attached please find the Water Year 2022 Urban Creeks Monitoring Report (UCMR) submitted on behalf of all Contra Costa Permittees per the Municipal Regional Permit (MRP) for urban stormwater issued by the San Francisco Bay Regional Water Quality Control Board (Order No. R2-2022-0018). We are submitting this report concurrently to the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) and the Central Valley Regional Water Quality Control Board (CVRWQCB). Contra Costa Clean Water Program (CCCWP) copies the CVRWQCB on monitoring reports as stipulated in MRP Provision C.19.d.iii.

With approval and direction from duly authorized representatives of each Permittee, I am authorized to submit and certify under penalty of law that this document and all attachments were prepared under my direction of 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 manage 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.

Regards,

Karin Graves
Program Manager
Contra Costa Clean Water Program

cc: Zach Rokeach, SFBRWQCB
Elizabeth Lee, CVRWQCB
Contra Costa County Permittees

CONTRA COSTA
CLEAN WATER
PROGRAM

March 31, 2023

Eileen White, Executive Officer
California Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Patrick Pulupa, Esq., Executive Officer
California Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

SUBJECT: Submittal of Electronic Status Monitoring Data Report in Accordance with MRP 3.0 Permit Provision C.8.h.ii and C.8.h.iv

Dear Ms. White and Mr. Pulupa:

Provision C.8.h.ii of the Municipal Regional Permit (MRP) for urban stormwater issued by the San Francisco Bay Regional Water Quality Control Board (Order No. R2-2022-0018) requires submittal of monitoring data collected during the previous water to the California Environmental Data Exchange Network (CEDEN). Data that CEDEN cannot accept are exempt from this requirement. Enclosed please find documentation that applicable monitoring data were uploaded to CEDEN in a Surface Water Ambient Monitoring Program (SWAMP) compatible format on behalf of all Contra Costa County Permittees. Provision C.8.h.iv stipulates that pollutants of concern monitoring data, not reportable to CEDEN, be included with the Urban Creeks Monitoring Report (UCMR). Per historic practice, the Contra Costa Clean Water Program (CCCWP) has also transmitted monitoring data to Mr. Zach Rokeach (SFBRWQCB) and CVRWQCB staff (Ms. Elizabeth Lee) electronically by share site.

With the approval and direction from each duly authorized representative of each Permittee, I have been authorized to submit and certify under penalty of law that this document 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 manage 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 a fine and imprisonment for knowing violations.

Regards,

Karin Graves
Program Manager
Contra Costa Clean Water Program

Cc: Zach Rokeach, SFBRWQCB
Elizabeth Lee, CVRWQCB

CONTRA COSTA CLEAN WATER PROGRAM

Date: March 15, 2023

To: Management Committee

From: Lisa Welsh (Geosyntec), Augmented Staff for Monitoring Committee

Subject: APPROVE the Contra Costa County Old Industrial Area Control Measure Plan and associated transmittal letter and AUTHORIZE the Program Manager to sign and certify the submittal on behalf of each Permittee's duly authorized representative and submit them to the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB).

Recommendation:

The Monitoring Committee recommends each Permittee's duly authorized representative approve the Contra Costa County Old Industrial Area Control Measure Plan and authorize the Program Manager to sign and certify the associated transmittal letter on their behalf.

The Monitoring Committee further recommends that the Management Committee direct the Program Manager to submit the Old Industrial Area Control Measure Plan and transmittal letter to the SFBRWQCB by the required deadline of March 31, 2023.

Background:

This report presents the old industrial area implementation plan for the CCCWP Permittees to meet mercury and polychlorinated biphenyls (PCBs) load reduction requirements. The plan is required by the SFBRWQCB through Provisions C.11.c.iii.(1) and C.12.c.iii.(1). It shall include a report providing plans and schedules for implementing control measures in old industrial areas to address mercury and PCBs load reduction requirements included in Provisions C.11.c and C.12.c.

MRP Provisions C.11.c and C.12.c require the Permittees, within the permit term, to implement or cause to be implemented control measures (i.e., treatment controls, diversion to wastewater treatment plants, green stormwater infrastructure (GSI) implemented in compliance with Provision C.3.b, enhanced operation and maintenance controls, or other controls) to achieve mercury and PCBs load reductions. The Contra Costa County Permittees must implement control measures on 664 acres of old industrial

land use areas that have not been redeveloped or treated with GSI or other treatment controls by June 30, 2027. This implementation plan 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.

Approving the Old Industrial Area Control Measure Plan and associated transmittal letter and directing the Program Manager to direct contractors to electronically submit the Plan to the SFBRWQCB will comply with the above reporting requirements.

Summary of Findings:

Potential treatment control measures include redevelopment with GSI, retrofit with GSI or non-GSI treatment control, full trash capture devices, enhanced operation and maintenance (O&M) practices, and diversion to POTW. The Permittees will also continue to implement the source property investigation and abatement control measure, including looking for new source properties in compliance with MRP Provisions C.11.b and C.12.b, and pursuing abatement of the source properties that were referred during the previous permit term.

Table 1 summarizes the planned old industrial treatment control measures – for redevelopment/retrofit by GSI and full trash capture devices - the area treated, the effective area treated (i.e., reflecting the treatment effectiveness in comparison to treatment retrofit), and the loads of mercury and PCBs reduced. Retrofit treatment control measures (i.e., treatment without redevelopment of the tributary area) is assumed to have a 70 percent efficiency. Implementation of control measures with efficiency lower than 70 percent (e.g., full trash capture devices) results in reduced area credited toward fulfillment of the treatment area requirement.

Table 1 includes projects that were completed in Fiscal Year (FY) 2020-21 and FY 2021-22 and projects projected to be implemented during this permit term (i.e., by June 30, 2027).

Table 1: Summary of Old Industrial Treatment Control Measures, Area Treated, and Loads Reduced

Treatment Control Measure	Total Area Treated (acres)	Total Effective Area Treated (acres)	Total Mercury Load Reduced (g/yr)	Total PCBs Load Reduced (g/yr)
Redevelopment with GSI	719[1]	1,025	35	186
Retrofit	31	31	1.2	5.7
Large Full Trash Capture	55	16	0.6	2.7
Inlet-Based Full Trash Capture	12	3.1	0.1	0.6
Total	817	1,075	37.1	195
MRP 3 Target		*664*	*28*	*121*

The planned treated area and loads reduced exceed the MRP 3.0 permit requirement to treat 664 acres of old industrial or moderate area or reduce mercury loads by 28 g/yr and PCBs loads by 121 g/yr within this permit term. Within Contra Costa County, 697 acres of old industrial area is predicted to redevelop during this permit term. Given the combination of control measures shown in Table 1, 438.5 acres (63%) of this area would achieve the acreage and load reduction required by the permit.

Fiscal Impact:

None.

Attachments:

1. Groupsite folder for Draft and Final Draft Old Industrial Area Control Measure Plan: https://cccleanwater.groupsite.com/folders/293800
2. Old Industrial Area Control Measure Plan Transmittal Letter

CONTRA COSTA
CLEAN WATER
PROGRAM

March 31, 2023

Eileen White, Executive Officer
California Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

SUBJECT: Submittal of the Old Industrial Area Control Measure Plan in accordance with MRP Provision C.11.c.iii.(1) and C.12.c.iii.(1)

Dear Ms. White,

Please find attached, the Old Industrial Area Control Measure Plan submitted on behalf of all Contra Costa Permittees per the Municipal Regional Permit (MRP) NPDES permit (Order No. R2-2022-0018). The plan is required by the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) through the MRP Provisions C.11.c.iii.(1) and C.12.c.iii.(1). These provisions require a report providing plans and 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.

With approval and direction from duly authorized representatives of each Permittee, I am authorized to submit and certify under penalty of law that this document and all attachments were prepared under my direction of 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 manage 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.

Regards,

Karin Graves
Program Manager
Contra Costa Clean Water Program

cc: Richard Looker, SFBRWQCB
Contra Costa County Permittees

Commented [LW1]: Or Tom Mumley?

255 Glacier Drive, Martinez, CA 94553-4825 • Tel: (925) 313-2360 Fax: (925) 313-2301 • Website: www.cccleanwater.org

CONTRA COSTA CLEAN WATER PROGRAM

Date: March 15, 2022

To: Management Committee

From: Karin Graves, Program Manager and Amanda Booth, City of San Pablo

Subject: Contra Costa Regional Alternative Compliance Submittal to Regional Water Board

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Recommendation:

Review and consider the Final Contra Costa County Regional Alternative Compliance (RAC) System Summary Report and cover letter for submittal to the San Francisco Regional Water Quality Control Board (SFRWQCB) and provide any comments and direction to staff.

Background:

The Cities of San Pablo, Walnut Creek, and Richmond, and Contra Costa County received a United States Environmental Protection Agency (EPA) Region 9 Water Quality Improvement Fund (WQIF) grant to develop a regional alternative compliance system in Contra Costa County (RAC).

WQIF grant funds have been used to develop a CCC RAC System to achieve the water quality objectives of the San Francisco Bay Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (MRP; Order No. R2-2022-0018 and future orders). The MRP incorporates green stormwater infrastructure (GSI) performance standards for new development and redevelopment, public GSI retrofit impervious area requirements, as well as requiring treatment control measures on 664 acres of Old Industrial area to implement the San Francisco Bay Total Maximum Daily Loads (TMDLs) for polychlorinated biphenyls (PCBs) and mercury. The RAC System is intended to provide a flexible, cost-effective, and scientifically defensible compliance option for addressing the GSI and mercury/PCBs treatment control requirements outlined in the MRP (Provisions C.3, C.11, and C.12, respectively). The proposed RAC System will combine elements from in-lieu fee with the potential for pay-for-performance or Community-Based Public Private Partnership (CBP3) programs to address these

requirements. On October 17, 2022, the Draft Final RAC System Summary Report was distributed to all Contra Costa Clean Water Program (CCCWP) permittees for review and comment. The Final RAC System Summary Report was finalized on March 3, 2023, and incorporates comments from CCCWP permittees and other stakeholders.

At the November 16, 2022, Management Committee meeting, the Committee approved moving forward with two conditionally approved budget items (see table below) for Geosyntec Consultants to begin to implement the RAC System in FY 22-23.

FY 2022-23 RAC System Task Budget Detail

Task	FY 22-23 Budget
Task 1: RAC System and Old Industrial Treatment Cost Study	$30,000
Task 2: RAC System Operational Document (Part 1)[1]	$20,000
Task 3: Pilot Projects	$20,000
Task 4: RAC System/C.12.c Funding and Delivery Roadmap (Part 1)[1,2]	$35,000
Total	**$105,000**

[1] Tasks that are indicated "Part 1" are anticipated to be completed following "Part 2" in FY 23-24.

[2] Only completed if EPA WQIF Grant not awarded.

CCC RAC Submittal:

On February 2, 2023, CCCWP staff, Amanda Booth (City of San Pablo) and Kelly Havens (Geosyntec Consultants) met with SFRWQCB staff to discuss next steps to implement the RAC and whether a permit language amendment was needed. SFRWQCB staff agreed to consult with their legal counsel regarding amending the permit to include language specific to the Contra Costa County RAC and report back to meeting attendees. On March 6, 2023, SFRWQCB staff stated in an email that the MRP's current language is sufficient to support implementation of the Contra Costa County RAC system without a permit amendment. They noted they will consider giving their Board an update, in August or via a separate Executive Officer's Report item.

Since the CCCWP will be the administrator of the RAC, it was recommended that the CCCWP submit the Final Contra Costa County RAC System Summary Report to the Water Board as part of a formal process seeking approval of the Contra Costa County RAC System as another alternative compliance option under San Francisco Bay Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (MRP; Order No. R2-2022-0018 and future related orders) Provision C.3.e. Following acceptance of the RAC report by CCCWP, SFRWQCB will

consider an exchange of correspondence stating that the RAC is consistent with the options provided in the MRP's alternative compliance provision.

Attachment A to the MRP (the Fact Sheet) indicates:

"During the Permit term, the Permittees may submit new information for an alternative compliance program for exchanges of impervious surface treatment credits at the regional, county, and/or municipal level...

Any such program should include at least the following: a clear organizational framework; demonstration of the treatment of an equivalent quantity of both stormwater runoff and pollutant loading (e.g., through the equivalent or net increase in impervious surface treated, and the equivalent or net reduction in flow and/or pollutant load, but not necessarily in the same watershed) and the achievement of net environmental benefit; an accounting and reporting system; a process for collection and timely use of funds; compliance with Provisions C.3.c-d and C.3.f-h; program oversight by an entity or entities; and expectations for timing and location…"

A summary table identifying the sections in the attached RAC System Summary Report that meet the elements required for the alternative compliance program submittal are provided in the following table.

MRP 3 Fact Sheet Requirement for Proposed Program Submittal	Location(s) in System Summary Report
A clear organizational framework	• Section 3.1, Proposed Contra Costa County RAC System • Section 3.3, Contra Costa County RAC System Components
Demonstration of the treatment of an equivalent quantity of both stormwater runoff and pollutant loading (e.g., through the equivalent or net increase in impervious surface treated, and the equivalent or net reduction in flow and/or pollutant load, but not necessarily in the same watershed) and the achievement of net environmental benefit	• Section 4, Contra Costa County RAC System Compliance Unit Definition and Control Measures
An accounting and reporting system	• Section 5.6, Certification Requirements • Section 5.7, Verification Requirements • Section 9, Overview of Tracking Tool
A process for collection and timely use of funds	• Section 5.4, Exchanges • Section 6.4, Cost Setting • Section 6.5, System Fund Management
Compliance with Provisions C.3.c-d and C.3.f-h	• Section 3.2.4, Hydromodification Management • Section 4.2, Equivalent Acres Greened • Section 5.6, Certification Requirements • Section 5.7, Verification Requirements
Program oversight by an entity or entities	• Section 3.4, Summary of Preliminary Administrative Structure • Section 8.2, Ongoing System Decision Points • Section 8.3, Procedures for System Changes
Expectations for timing and location	• Section 3.5, RAC System Next Steps • Section 11, Contra Costa County RAC System Next Steps

Next Steps:

If approved, the Final Contra Costa County RAC System Summary Report will be submitted to SFRWQCB staff for formal Board acceptance. After the SFRWQCB has approved the System:

- Pilot project purchases will be allowed to move forward in 2023;
- RAC System Operational Documents currently being developed will be shared with CCCWP permittees at informational trainings in 2023; and
- Each City will need to formally accept the system and in order to allow its use for compliance purchases.

A complete overview of the process and next steps is provided in the Final RAC System Summary Report in Section 11 and on Table 9.

Fiscal Impact:

There is no fiscal impact at this time. The work needed to submit the Final RAC Report to the SFRWQC will be done using the previously approved scope of work and FY 22/23 budget of $105,000. CCCWP was awarded an EPA Water Quality Improvement Fund Bipartisan Infrastructure Law (BIL) grant for the CCCWP Clean Watersheds for All project. This grant will cover Task 4 included in the CCCWP FY 22-23 RAC conditional line items, and result in a $80,000 savings in CCCWP RAC budget line items in FY 22-23 and FY 23-24.

Attachments:

1) *Regional Alternative Compliance System Summary Report* Submittal
2) Regional Alternative Compliance System Cover Letter

CONTRA COSTA CLEAN WATER PROGRAM

Karin Graves
Program Manager

March 16, 2023

Mr. Keith Lichten
Division Manager
Watershed Management Division
San Francisco Bay Regional Water Quality Control Board
Delivered via e-mail: keith.lichten@waterboards.ca.gov

Subject: Contra Costa County Regional Alternative Compliance System Submittal for Approval under San Francisco Bay Municipal Regional Stormwater Permit

Dear Mr. Lichten:

Please find attached the Final Contra Costa County Regional Alternative Compliance (RAC) System Summary Report. This RAC System Summary Report is submitted to the Water Board as part of a formal process seeking approval of the Contra Costa County RAC System as another alternative compliance option under San Francisco Bay Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (MRP; Order No. R2-2022-0018 and future related orders) Provision C.3.e.

Attachment A to the MRP (the Fact Sheet) indicates:

"During the Permit term, the Permittees may submit new information for an alternative compliance program for exchanges of impervious surface treatment credits at the regional, county, and/or municipal level...

Any such program should include at least the following: a clear organizational framework; demonstration of the treatment of an equivalent quantity of both stormwater runoff and pollutant loading (e.g., through the equivalent or net increase in impervious surface treated, and the equivalent or net reduction in flow and/or pollutant load, but not necessarily in the same watershed) and the achievement of net environmental benefit; an accounting and reporting system; a process for collection and timely use of funds; compliance with Provisions C.3.c-d and C.3.f-h; program oversight by an entity or entities; and expectations for timing and location…"

A summary table identifying the sections in the attached RAC System Summary Report that meet the elements required for the alternative compliance program submittal are provided in the following table. We look forward to the Water Board's response to our submittal.

MRP 3 Fact Sheet Requirement for Proposed Program Submittal	Location(s) in System Summary Report
A clear organizational framework	• Section 3.1, Proposed Contra Costa County RAC System • Section 3.3, Contra Costa County RAC System Components
Demonstration of the treatment of an equivalent quantity of both stormwater runoff and pollutant loading (e.g., through the equivalent or net increase in impervious surface treated, and the equivalent or net reduction in flow and/or pollutant load, but not necessarily in the same watershed) and the achievement of net environmental benefit	• Section 4, Contra Costa County RAC System Compliance Unit Definition and Control Measures
An accounting and reporting system	• Section 5.6, Certification Requirements • Section 5.7, Verification Requirements • Section 9, Overview of Tracking Tool
A process for collection and timely use of funds	• Section 5.4, Exchanges • Section 6.4, Cost Setting • Section 6.5, System Fund Management
Compliance with Provisions C.3.c-d and C.3.f-h	• Section 3.2.4, Hydromodification Management • Section 4.2, Equivalent Acres Greened • Section 5.6, Certification Requirements • Section 5.7, Verification Requirements
Program oversight by an entity or entities	• Section 3.4, Summary of Preliminary Administrative Structure • Section 8.2, Ongoing System Decision Points • Section 8.3, Procedures for System Changes
Expectations for timing and location	• Section 3.5, RAC System Next Steps • Section 11, Contra Costa County RAC System Next Steps

Sincerely,

Karin Graves
Program Manager, CCCWP

Enclosure: Final Contra Costa County RAC System Summary Report

REGIONAL ALTERNATIVE COMPLIANCE SYSTEM SUMMARY REPORT

REGIONAL COMPLIANCE FOR A SUSTAINABLE BAY

Prepared for:

City of San Pablo
1000 Gateway Avenue
San Pablo, California 94806

Prepared by:

Geosyntec Consultants, Inc.
1111 Broadway, 6th Floor
Oakland, California 94607

and

Kieser & Associates, LLC
536 E. Michigan Avenue, Suite 300
Kalamazoo, Michigan 49007

with assistance from:

Project Number: LA0594

March 3, 2023

FINAL

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LIST OF ATTACHMENTS AND APPENDICES

ACKNOWLEDGEMENTS

This Summary Report was developed as part of the Regional Compliance for a Sustainable Bay project (Project), funded by a United States Environmental Protection Agency (EPA) Region 9 Water Quality Improvement Fund Grant, led by the City of San Pablo.

This Summary Report was developed by the Project Consultant Team in coordination with the Project Steering Committee, listed below:

Steering Committee Members

Amanda Booth and Sarah Kolarik, City of San Pablo; Joanne Le, City of Richmond; Michele Mancuso, Contra Costa County; and Lucile Paquette and Steve Waymire, City of Walnut Creek.

Project Consultant Team

Kelly Havens, Lisa Austin, and Ken Susilo, Geosyntec Consultants; Mark Kieser and David Chen, Kieser & Associates, LLC; Jill Bicknell and Lisa Sabin, EOA, Inc.; Susanne Heim, Panorama Environmental; George Kelly, Bespoke Mitigation Partners; with consultation from Legal Advisor Brooks Smith of Troutman Pepper.

Acknowledgments also to members of the Project Technical Advisory Committee and the Project Advisory Committee, who provided input for this Summary Report:

Technical Advisory Committee

Luisa Valiela and Jacques Landy, EPA Region 9; Keith Lichten, Derek Beauduy, Zach Rokeach, San Francisco Bay Regional Water Quality Control Board; Cathleen Terentieff, City of Walnut Creek; Tony Hale and Gemma Shusterman, San Francisco Estuary Institute; and Greg Cannito, Corvias.

Advisory Committee

Shannan Young, City of Dublin; Kristin Hathaway, City of Oakland; Karin Graves, Contra Costa Clean Water Program; Frank Kennedy, Kennedy & Associates; Matt Fabry, San Mateo Countywide Water Pollution Program; James O'Connell, City of Redwood City; Rinta Perkins, City of Santa Clara; Pam Boyle Rodriguez, City of Palo Alto; Kevin Cullen, Fairfield-Suisun Sewer District; Rob Carson, Marin County Stormwater Pollution Prevention Program; Jamison Crosby, Napa County Stormwater Management Program; Sarah Minick, San Francisco Public Utilities Commission; Oriana Hart, County of Sonoma; Angela Clapp, Port of Oakland; and Hardeep Takhar and Wilfung Martono, Caltrans.

Assistance provided by Mitch Avalon, Contra Costa County Public Works, was also greatly appreciated.

ACRONYMS AND ABBREVIATIONS

Please refer to Glossary after Report sections for definitions of key terms.

AB	Assembly Bill
AGOL	ArcGIS Online
Bay Area	San Francisco Bay Area
BMP	best management practice
Caltrans	California Department of Transportation
CBP3	Community-Based Public Private Partnership
CCCWP	Contra Costa Clean Water Program
CE	Categorical Exemption
CEQA	California Environmental Quality Act
County	Contra Costa County
CWSRF	Clean Water State Revolving Fund
DBF	Design-Build-Finance
DBFOM-AP	Design-Build-Operate-Maintain-Availability Payment
East County Permittees	Antioch, Brentwood, Oakley, and the eastern portions of unincorporated Contra Costa County and the Contra Costa County Flood Control & Water Conservation District
EMC	Event Mean Concentrations
EPA	United States Environmental Protection Agency
Flood Control District	Contra Costa County Flood Control & Water Conservation District
Geosyntec	Geosyntec Consultants, Inc.
GI	green infrastructure
GSI	green stormwater infrastructure
HMP	hydromodification management
IGP	Industrial General Permit
LID	Low Impact Development
mg/L	milligrams per liter
MOU	Memoranda Of Understanding
MRP	Municipal Regional Stormwater NPDES Permit
MTC	Metropolitan Transportation Commission

ng/L	nanograms per liter
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
PBCs	performance-based contracts
PCBS	polychlorinated biphenyls
POTWs	publicly operated treatment works
Project	Regional Compliance For A Sustainable Bay project
RAA	Reasonable Assurance Analysis
RAC	regional alternative compliance
RFPs	Request For Proposals
RWSM	Regional Watershed Spreadsheet Model
SFEI	San Francisco Estuary Institute
SFPUC	San Francisco Public Utilities Commission
System Summary Report	Regional Alternative Compliance System Summary Report
TAC	Technical Advisory Committee
TMDLs	Total Maximum Daily Loads
TSS	total suspended solids
Water Board	San Francisco Bay Regional Water Quality Control Board
WDRs	Waste Discharge Requirements
WIFIA	Water Infrastructure Finance And Innovation Act
WQIF	Water Quality Improvement Fund

EXECUTIVE SUMMARY

E.1 Introduction

This Regional Alternative Compliance System Summary Report (System Summary Report) describes the efforts and outcomes of the United States Environmental Protection Agency (EPA) Water Quality Improvement Fund (WQIF) grant-funded Regional Compliance for a Sustainable Bay project (Project). The purpose of this Project is to develop and pilot a regional alternative compliance (RAC) system (referred to as the Contra Costa County RAC System) to achieve the water quality objectives of the San Francisco Bay Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (MRP; Order No. R2-2022-0018 and future related orders). The MRP incorporates performance standards for new development and redevelopment, as well as requiring control measures to implement the San Francisco Bay Total Maximum Daily Loads (TMDLs) for polychlorinated biphenyls (PCBs) and mercury. The Contra Costa County RAC System is intended to provide a flexible, cost-effective, and scientifically defensible compliance option for addressing the green stormwater infrastructure (GSI)[1] and mercury/PCBs control requirements outlined in the MRP (Provisions C.3, C.11, and C.12, respectively). The Contra Costa County RAC System framework is intended to be easily adaptable by the other San Francisco Bay Area (Bay Area) countywide programs.

E.2 Background Information and System Drivers

The key regulatory driver for regional alternative compliance in Contra Costa County (the County) is the MRP. County Permittees covered under the 2022 MRP include the cities of Clayton, Concord, El Cerrito, Hercules, Lafayette, Martinez, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon, and Walnut Creek, the towns of Danville and Moraga, unincorporated Contra Costa County, the Contra Costa County Flood Control and Water Conservation District, along with 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 (referred to as the East County Permittees). The East County Permittees are not subject to the San Francisco Bay TMDLs for PCBs and mercury, though they are subject to the Delta Methylmercury TMDL.

The San Francisco Bay Regional Water Quality Control Board (Water Board) reissued the MRP on May 11, 2022 and it became effective on July 1, 2022 (called "MRP 3"). MRP 3 includes new requirements relating to GSI in Provision C.3 as well as revised requirements for meeting TMDL load reductions in Provisions C.11 and C.12. Provision C.3.e allows for Regulated Projects, which must implement low impact development/GSI facilities to treat stormwater runoff generated from the project, the option to treat stormwater runoff off-site. Provision C.3.e includes two options for alternative compliance, and the MRP 3 Fact Sheet[2] (Attachment A, p A-124), also states:

[1] The 2015 MRP refers to GSI as "green infrastructure." MRP 3 uses "green stormwater infrastructure."
[2] The Fact Sheet for the MRP 3 includes cited regulatory and legal references and additional explanatory information in support of the requirements of the MRP.

"…the Permittees [may] submit new information for an alternative compliance program for exchanges of impervious surface treatment credits at the regional, county, and/or municipal level…"

Consistent with the above, this RAC System Summary Report will be submitted to the Water Board to seek approval of the Contra Costa County RAC System (Contra Costa County RAC System) as another alternative compliance option under MRP Provision C.3.e.

The following key objectives for the Contra Costa County RAC System were developed with input from the Project Steering Committee (comprised of municipal representatives guiding development of the Contra Costa County RAC System) and Advisory Committee (composed of advisory stakeholders that have an interest in future alternative compliance projects):

1. Flexible compliance with the MRP, particularly Provision C.3.b (Regulated Projects), using the Alternative Compliance Provision C.3.e, but potentially also Provision C.3.j (Green Infrastructure Planning and Implementation);
2. Cost efficiencies through implementation of larger stormwater capture projects that provide treatment at a lower cost per acre as well as lower maintenance and inspection costs;
3. Targeted implementation of facilities that can provide higher load reduction benefits toward compliance with the San Francisco Bay PCBs and mercury TMDLs to achieve reductions in MRP Provisions C.11 and C.12;
4. Implementation (i.e., funding, construction, and maintenance) of stormwater capture and water quality improvement projects that provide multiple benefits, including benefits ancillary to those relating to MRP Provisions C.3, C.11, and C.12; and
5. Flexibility to adapt the system to meet future water quality needs.

The proposed Contra Costa County RAC System is expected to qualify as a California Environmental Quality Act (CEQA) compliant document prepared in lieu of an environmental impact report (14 California Code of Regulations § 21080.5[b][2]). Water Board adoption of the Contra Costa RAC System and amendment to the MRP is therefore not anticipated to require additional CEQA review. Implementation of the Contra Costa County RAC System by individual Permittees will require adoption of implementing procedures, such as an ordinance, which is a discretionary action that meets the definition of a project under the CEQA. Because the Contra Costa County RAC System will provide a net environmental benefit for development projects, adoption of an ordinance to implement the RAC System is expected to meet the criteria for a CEQA Categorical Exemption. To address project-specific requirements for CEQA mitigation, the Contra Costa County RAC System includes a certification system that would provide substantial evidence that the mitigation is not deferred, is enforceable, is proportional to the impact being addressed, and have a clear nexus to the impact. Projects implemented as part of the RAC System would be subject to CEQA review, which would need to be completed prior to construction.

E.3 Proposed Contra Costa County RAC System Overview

The proposed Contra Costa County RAC System combines elements from in-lieu payment and (preliminarily) pay-for-performance/Community-Based Public Private Partnership (CBP3) programs. In accordance with MRP Provision C.3.e, participation in the Contra Costa County RAC System would provide Permittees and Regulated Project developers alternative compliance to MRP Provision C.3.b and benefits relating to Provisions C.11 (Mercury controls), C.12 (PCBs Controls), and, as opportunities arise, C.10 (Trash Load Reduction). The Contra Costa County RAC System is intended to be primarily established under MRP 3 Provision C.3.e. These RAC System documents are submitted to the Water Board for a permit amendment, an option identified in the MRP 3 Fact Sheet, and/or confirmation that they are consistent with current MRP 3 C.3.e language. If approved by the Water Board, the Contra Costa County RAC System would be formally recognized under or as compliant with MRP 3 Provision C.3.e.

The Contra Costa County RAC System creates an alternative pathway for C.3.b Regulated Projects to achieve compliance in accordance with MRP Section C.3.e. Instead of constructing Low Impact Development (LID)/GSI facilities on-site, the Regulated Project (i.e., RAC System "buyer") would make a compliance purchase that would cover capital costs for "Off-Site GSI Projects" that achieve C.3 compliance, and pay an annual ongoing Operations and Maintenance (O&M) fee for the long-term maintenance of the Off-Site GSI Projects. The O&M fee would be levied on the Regulated Project's onsite parcel. Although the Contra Costa County RAC System has been designed to achieve alternative compliance for Regulated Projects, Permittees seeking purchase of GSI retrofits could also participate as RAC System buyers.

The collected compliance purchase payments (i.e., for capital costs) would be pooled to fund Off-Site GSI Projects located on public or private land in urban areas within Contra Costa County that are certified and maintained through the Contra Costa County RAC System. Collected O&M fees would fund Off-Site GSI Project maintenance. Implementation of the Contra Costa County RAC System is expected to produce TMDL pollutant load reduction benefits through these Off-Site GSI Projects, which are anticipated to be primarily located in older urban and industrial areas demonstrated to have higher levels of PCBs (San Francisco Estuary Institute [SFEI], 2018; Contra Costa Clean Water Program [CCCWP], 2020). The proposed Contra Costa County RAC System is expected to provide:

- Flexible compliance for Permittees and Regulated Project owners;
- Cost savings through economies of scale, realized through implementation of larger regional Off-Site GSI Projects as well as potential cost savings through pay-for-performance or CBP3 contracting mechanisms rather than traditional procurement; and
- Additional water quality and environmental benefits and related TMDL compliance benefits through retrofit of untreated older urban and industrial areas with higher pollutant loading, in addition to the equivalent or increased water quality benefit requirement for Regulated Projects. Due to past development patterns in Contra Costa County, state-identified "Disadvantaged Communities" (DACs) generally overlap with older urban and industrial areas; therefore, retrofits in these areas could provide additional environmental justice benefits.

The Contra Costa County RAC System would be implemented in multiple phases:

1. Phase 1, Initial Pilot Exchanges, occurring concurrently with this Project. This phase entails piloting the RAC System through one or two exchanges and will result in reporting any issues and/or adjustments needed to streamline the System.
2. Phase 2 is anticipated to be a five-year initial roll-out of the RAC System. The objective of Phase 2 is wider acceptance and implementation of the RAC System across Contra Costa County. This phase may include additional studies, agreements, and mechanisms for contracting within Contra Costa County.
3. Phase 3 and beyond would begin after Phase 2 lessons learned have been addressed through RAC System amendments. In this phase, the RAC System would be established and fully operating, with adaptive management procedures in place.

The Contra Costa County RAC System would be primarily administered by the CCCWP, with additional aspects managed by County Permittees and certain fiduciary elements managed by the Contra Costa County Flood Control & Water Conservation District (Flood Control District). The CCCWP administrators are expected to include at least two specific entities:

1. The RAC Subcommittee, which is expected to be made up of volunteer Permittee stormwater program representatives that will make decisions regarding the Contra Costa County RAC System.
2. The RAC System Administrator, who will be responsible for management, financial administration, and reporting requirements for the Contra Costa County RAC System.

Other Contra Costa County RAC System administrators include:

1. County Permittees, which would manage Regulated Project applicants and compliance unit providers that construct Off-Site GSI Projects within their jurisdictional boundaries, facilitate exchanges, and facilitate and/or perform Off-Site GSI Project implementation, certification, O&M, and verification, and
2. The Flood Control District, which is anticipated to act as the fiduciary agent for the ongoing O&M fee.

E.4 Contra Costa County RAC System Compliance Unit and Control Measures

For the purposes of this report, the Contra Costa County RAC System metric is referred to as a "compliance unit." This is a unit of exchange that can be purchased by buyers seeking alternative compliance with the MRP.

With the use of the compliance purchase approach modeled on the MRP Provision C.3.e in-lieu fee option, the Contra Costa County RAC System compliance unit can be defined using language in subdivision (2) of MRP Provision C.3.e.i as requiring three elements:

1. Hydraulically-sized treatment in accordance with Provision C.3.d with LID/GSI treatment measures of an **equivalent quantity of both stormwater runoff and pollutant loading**, which is referred to as **"Equivalent Acres Greened;"**
2. A net environmental benefit; and
3. A proportional share of the O&M costs of the Off-Site GSI Project, which is referred to as an **"Ongoing O&M fee."**

Equivalent Acres Greened compliance units generated by Off-Site GSI Projects are calculated based on the Runoff Generating Acres captured and treated by (i.e., tributary to) the Off-Site GSI Projects. Runoff Generating Acres are defined as directly connected impervious areas and 10% of directly connected pervious areas. Each Equivalent Acre Greened compliance unit will have associated compliance unit attributes for rainfall zone and land use (or land use mix), along with impervious area, based on the drainage area(s) of the Off-Site GSI Project.

Allowable treatment types for Off-Site GSI Projects are the systems considered "LID" per the MRP and allowable in in the Contra Costa County Stormwater C.3 Guidebook 7th Edition (CCCWP, 2017), namely bioretention facilities, infiltration facilities, and stormwater capture and use.

For Regulated Projects requiring demonstration of equivalent volume and pollutant loading capture, the required Equivalent Acres Greened to be purchased are calculated as the Runoff Generating Area for which the owner is seeking alternative compliance, multiplied by a Rainfall Ratio and a Pollutant Ratio. For non-Regulated project buyers (e.g., Permittees seeking Equivalent Acres Greened to meet GSI retrofit needs), the equivalency demonstration is not required and the Equivalent Acres Greened compliance units for purchase are calculated based on the Runoff Generating Acres (or impervious acres) the buyer wishes to purchase.

When Regulated Projects choose to use the Contra Costa County RAC System alternative compliance approach, a net environmental benefit will be provided through a "NEB Ratio" applied to the compliance purchase. The capital compliance purchase is calculated as follows:

$$Purchase_{Compliance} = (Equivalent\ Acres\ Greened \times NEB\ Ratio) \times Cost_{EAG} + Payment_{Administrative}$$

Where:

Equivalent Acres Greened	=	Required compliance units for equivalency (for Regulated Projects) or desired for purchase (for non-Regulated project buyers)
NEB Ratio	=	1.1 for Regulated Projects and 1.0 for non-Regulated Project purchases.
$Cost_{EAG}$	=	Equivalent Acre Greened unit cost
$Payment_{Administrative}$	=	Administrative payment

Discounts may be applied to the NEB Ratio for certain exchanges that provide an increased net environmental benefit through location or project features.

E.5 System Requirements

Eligible Contra Costa County RAC System buyers are primarily expected to include private and public entity Regulated Project owners/developers seeking compliance with MRP Provisions C.3.c (LID). Contra Costa County RAC System buyers could also include Permittees seeking a means to purchase GSI retrofit acres for C.3.j. Other NPDES-regulated entities could be included as Contra Costa County RAC System buyer participants if opportunities arise as part of Phase 2, or during Phase 3 of the System.

Off-Site GSI Projects would be constructed to generate Equivalent Acres Greened compliance units for sale to the buyers. Off-Site GSI Projects are anticipated to be implemented in multiple phases: (1) design, (2) preliminary approval of appropriate sizing and design to generate compliance units available for exchange (optional), (3) construction, (4) certification, and (5) compliance unit calculation and confirmation. Any public or private entity that can operate within the constraints of the Contra Costa County RAC System and take actions that result in a demonstrable generation of Equivalent Acres Greened may participate in the implementation of Off-Site GSI Projects as compliance unit providers.

The design, implementation, and quantification of benefits[3] of Off-Site GSI Projects must be certified upon project completion by the jurisdiction in which the Off-Site GSI Project is located. The Off-Site GSI Project certification process is proposed to follow current Countywide processes, which are consistent with MRP requirements. In certain cases, Equivalent Acres Greened compliance units may be sold up to three years in advance Off-Site GSI Project construction as allowed by the MRP. Once the compliance units generated by an Off-Site GSI Project are approved or certified, they will be available within the Contra Costa County RAC System for exchange, and a buyer can purchase them.

Ongoing O&M of constructed Off-Site GSI Projects is expected to be managed and performed either by the jurisdiction (e.g., City or unincorporated County) in which the Off-Site GSI Project is located or by a contracted compliance unit provider as part of a pay-for-performance or CBP3 process. Ongoing O&M verification of the Off-Site GSI Project's performance, including required site inspections, will also be conducted by the jurisdiction in which the Off-Site GSI Project is located. The Off-Site GSI Project verification process is consistent with current Countywide processes, which follows current MRP requirements.

E.6 Compliance Purchase and O&M Assessment Cost Bases

The Contra Costa County RAC System will be primarily funded on an ongoing basis through compliance purchases. While some "Equivalent Acres Greened" compliance units may be exchanged in advance of Off-Site GSI Project construction, allowing for advance funding, this would only be allowed when there is high certainty that the Off-Site GSI Project would be constructed. Given uncertainty around implementation timelines and the potential for Off-Site GSI Projects to change for a variety of reasons, however, most Off-Site GSI Projects would likely need to be funded or financed upfront to avoid compliance unit risks in the RAC System.

[3] It is expected that preliminary quantification of benefits (including Equivalent Acres Greened compliance metrics generated) would occur as part of preliminary review processes and would be confirmed through certification.

A source of upfront funding or financing will be needed to allow for compliance unit generating Off-Site GSI Projects to be implemented.

Compliance purchases made by buyers are calculated using a unit cost for Equivalent Acres Greened compliance units and an administrative payment. It is assumed that the Equivalent Acre Greened unit cost ($Cost_{EAG}$) would be the same for all Contra Costa County RAC System buyers and would represent the average cost to generate an Equivalent Acre Greened compliance unit from Off-Site GSI Projects implemented through the Contra Costa County RAC System. The Equivalent Acre Greened unit cost would be revisited and potentially adjusted on a regular basis. Administrative payments would be developed through fee studies when fee schedules are updated by Permittees and the CCCWP and would cover all staff and/or consultant hours needed to perform the administrative functions. The payment amounts are anticipated to be informed by findings of Phase 1 of the Contra Costa County RAC System.

Participating buyers would voluntarily agree to pay an annual ongoing O&M fee per Equivalent Acres Greened compliance unit at a fixed rate with escalation for inflation. The ongoing O&M fee would cover O&M tasks along with the Flood Control District's administrative costs for maintaining the O&M needs of the Contra Costa County RAC System. The annual ongoing O&M fee would be captured through the property tax associated with the Regulated Project parcel.

E.7 Risk and Uncertainty Management

Identified sources of uncertainty for the Contra Costa County RAC System include: the compliance unit equivalency, through variability of precipitation, pollutant concentration, control measure effectiveness and performance; the costs of constructing and maintaining Off-Site GSI Projects; and market demand for purchasing Equivalent Acres Greened compliance units.

The Contra Costa County RAC System utilizes several mechanisms to manage identified risk and uncertainty that may affect Permittees, compliance unit providers, and environmental outcomes. The Contra Costa County RAC System includes factors in the compliance purchase calculation to provide equivalency, including a rainfall equivalency factor and a pollutant loading equivalency factor. While treatment through control measures could be expected to be variable, any variability in the outcomes of the treatment control measures used for Off-Site GSI Projects is expected to occur at the same rate as those used for on-site Regulated Project treatment. Off-Site GSI certification and ongoing verification processes are intended to provide some certainty that the facility is designed and installed consistent with RAC System requirements and is performing correctly on an ongoing basis.

Off-Site GSI Project construction and maintenance costs are used to set compliance purchase prices and ongoing O&M fees. As these costs can vary widely and change from year to year, the RAC System would average Off-Site GSI Project implementation costs across the RAC System to mitigate design and construction cost variability and allow equitable sale of compliance units. Additionally, increases in Equivalent Acre Greened unit costs would be allowed on an ongoing basis. Similarly, the RAC Administrator will conduct regular examination of the sufficiency of O&M fees and may increase these fees as needed to cover costs.

Market demand is subject to many factors. The RAC System has been designed such that larger-scale regional stormwater capture facilities could be implemented and generate compliance units for exchange. As larger scale facilities have been demonstrated to be more cost effective than smaller scale facilities, it is expected that RAC System participants would realize cost savings for their compliance needs. Compliance cost savings are likely to encourage demand.

E.8 Adaptive Management

Although Phase 2 of the Contra Costa County RAC System has a defined scope for its participants, compliance units, and jurisdiction, the RAC System is envisioned to provide a framework for entities across the San Francisco Bay area to meet water quality goals while generating economic opportunities. Key considerations for scaling up the Contra Costa County RAC System would be identified during regular RAC System evaluation.

It is anticipated that the CCCWP RAC Subcommittee and System Administrator would regularly review, approve, and, if needed, revise aspects of the Contra Costa County RAC System. Preliminarily, it is expected that minor programmatic changes to the Contra Costa County RAC System would be updated in internal RAC System Documents but would not require policy related changes. However, any changes to the RAC System that could affect water quality outcomes would require updates to permit language during the normal permit reissuance processes or an amendment to the MRP.

Adaptive management of the implementation of the Off-Site GSI Projects would be required at both the project level and programmatically as more Projects are constructed. At the programmatic level, the Contra Costa County RAC System Fund may be evaluated regularly by the CCCWP RAC System Administrator to address issues including, but not limited to, Contra Costa County RAC System costs exceeding compliance purchase revenue. The Contra Costa County RAC System must include a process to regularly evaluate the sufficiency of the compliance purchase amount—particularly the Equivalent Acre Greened unit cost and the administrative payment—and to adjust the compliance purchase amounts as needed.

E.9 Overview of Contra Costa County RAC System Tracking Tool

Tracking of Off-Site GSI Projects, including certification, Equivalent Acres Greened compliance units generated, compliance units exchanged, and ongoing verification of Off-Site GSI Projects will be tracked using the Contra Costa County RAC System Tracking Tool. Regulated Project participants will also be tracked in the County's current ArcGIS Online (AGOL) stormwater tracking tool, which is used for all C.3 projects.

A RAC System Tracking Tool is being developed for the Contra Costa County RAC System by the SFEI. The RAC System Tracking Tool will include a comprehensive database to track components of the RAC System and relate RAC System components to existing tracking tools. The components tracked will include:

- Information about Off-Site GSI Projects, including certification, verification, and compliance unit tracking. Project drainage area size and characteristics would also be tracked.

- Regulated Project information from the County's existing AGOL database. Project drainage area size and characteristics would also be tracked.
- Exchange Information, including compliance units exchanged and compliance purchase amounts.
- O&M fee tracking, potentially linked to Flood Control District tracking systems.

The System Tracking Tool will include an accounting system that provides tracking of generated compliance units, compliance purchase amounts, and whether and when payments were made. Reporting will be completed by the System Administrator in accordance with the requirements of the Water Board and MRP 3. Information regarding implemented Off-Site GSI Projects, certification, verification, exchanges, and ongoing O&M will be readily available in the System Tracking Tool. It is anticipated that this data would be extracted for annual reports using a defined process based on established reporting requirements.

E.10 Contra Costa County RAC System Template Documents

The Contra Costa County RAC System templates and forms were designed to build on existing processes, forms, and tracking systems where possible. The CCCWP has developed several standard templates and forms for Regulated Project design review, construction inspection, and O&M verification that have been incorporated into the documents required for RAC System certification, verification, and tracking.

The Contra Costa County RAC System templates/forms document all aspects of the RAC System, including:

- The Regulated Project's use of the alternative (off-site) compliance option;
- The Off-Site GSI Project, including:
  - Facility attributes;
  - Design review, construction inspection, and certification;
  - Ongoing O&M and O&M verification;
- Exchange details, including total compliance units and equivalency; and
- Necessary agreements and/or resolutions among participants in the System.

E.11 Contra Costa County RAC System Next Steps

This RAC System Summary Report describes the proposed Contra Costa County RAC System structure that is envisioned to be implemented during Phase 2 (i.e., initial System roll-out). Following completion of this RAC System Summary Report and prior to initiating Phase 2, one to two Phase 1 pilot exchanges will be conducted to test key components of the proposed Contra Costa County RAC System structure. Any lessons learned during the Phase 1 pilot exchanges will be integrated into the Final Program Documents used to guide Phase 2, anticipated to begin in 2023. Phase 2 will be launched after submittal of a formal package to include or approve the RAC System as an option under Provision C.3.e.

It is envisioned that Phase 2 will include required studies, approvals, and agreements and will result in RAC System exchanges by 2026. After the Phase 2 establishment period and implementation of required RAC System adjustments and amendments, the RAC System will shift into Phase 3, during which the RAC System will be fully operational. Based on the anticipated schedule, the Contra Costa County RAC System will be in Phase 3, fully established and operational, by 2029 to 2030.

1. INTRODUCTION

This Regional Alternative Compliance System Summary Report (System Summary Report) describes the efforts and outcomes of the United States Environmental Protection Agency (EPA) Water Quality Improvement Fund (WQIF) grant-funded Regional Compliance for a Sustainable Bay project (Project). The purpose of this Project is to develop and pilot a regional alterative compliance (RAC) system (referred to as the Contra Costa County RAC System) to achieve the water quality objectives of the San Francisco Bay Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (MRP; Order No. R2-2018-0022 and future related orders). The MRP incorporates performance standards for new development and redevelopment, as well as requiring control measures to implement the San Francisco Bay Total Maximum Daily Loads (TMDLs) for polychlorinated biphenyls (PCBs) and mercury. The Contra Costa County RAC System is intended to provide a flexible, cost-effective, and scientifically defensible compliance option for addressing the green stormwater infrastructure[4] (GSI) and mercury/PCBs control requirements outlined in the MRP (Provisions C.3, C.11, and C.12, respectively). The Contra Costa County RAC System framework is intended to be easily adaptable by the other San Francisco Bay Area (Bay Area) countywide programs.

This RAC System Summary Report has been developed through technical and legal analyses and discussions with technical, regulatory, legal, and stakeholder advisors and a Permittee steering committee. The Steering Committee and the Consultant Team comprise the Project Team. Project advisory committees engaged in the development of this Summary Report include:

- **Steering Committee**—The Steering Committee is comprised of representatives from the Cities of San Pablo, Walnut Creek, and Richmond, and Contra Costa County, who are guiding development of the Contra Costa County RAC System.
- **Advisory Committee**—The Advisory Committee is comprised of advisory stakeholders that have an interest in (regional) alternative compliance projects. The Advisory Committee includes representatives from Alameda County, San Mateo County, Santa Clara County, Solano County (Fairfield-Suisun and Vallejo), Marin County, Sonoma County, and Napa County stormwater programs, along with the California Department of Transportation (Caltrans), Port of Oakland, and San Francisco Public Utilities Commission (SFPUC) stormwater staff.
- **Technical Advisory Committee (TAC)**—The TAC is comprised of technical, regulatory, and legal experts that advise on specific issues or questions that arise as part of the Project.

[4] Green Stormwater Infrastructure (GSI) is infrastructure that uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, GSI refers to the patchwork of natural areas that provides habitat, localized flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, GSI refers to stormwater management systems that mimic nature by capturing and storing water. When used for Regulated Project compliance under MRP Provision C.3, GSI must be engineered and sized to meet permit specifications.

This RAC System Summary Report describes the key Contra Costa County RAC System drivers and objectives, the proposed RAC System approach and rationale, and key definitions and considerations for RAC System components. This Summary Report includes the following sections:

- Section 2 describes Contra Costa County RAC System drivers and regulatory background.
- Section 3 provides an overview of the proposed Contra Costa County RAC System, including the rationale for the alternative compliance approach, System components, and administrative roles.
- Section 4 includes a description of the Contra Costa County RAC System metric and allowable control measures.
- Section 5 provides details regarding Contra Costa County RAC System requirements, including eligibility rules and certification and verification processes.
- Section 6 describes the proposed compliance purchase cost setting approach.
- Section 7 discusses Contra Costa County RAC System risk and uncertainty considerations and management.
- Section 8 introduces Contra Costa County RAC System adaptive management.
- Section 9 provides an overview of the Contra Costa County RAC System Tracking Tool.
- Section 10 describes key Contra Costa County RAC System templates.

2. BACKGROUND INFORMATION

2.1 RAC System Drivers

The key regulatory driver for regional alternative compliance in Contra Costa County (the County) is the MRP. The MRP and other Contra Costa County RAC System drivers are described in the following sections.

2.1.1 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 by the San Francisco Bay Regional Water Quality Control Board (Water Board) to 76 entities, including cities, counties, and flood control districts, in 2009 (MRP 1.0), reissued in 2015 (MRP 2.0), revised in 2019, and most recently reissued in 2022 (MRP 3). Contra Costa County Permittees covered under the 2022 MRP reissuance include the cities of Clayton, Concord, El Cerrito, Hercules, Lafayette, Martinez, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon, and Walnut Creek, the towns of Danville and Moraga, unincorporated Contra Costa County, the Contra Costa County Flood Control & Water Conservation District (Flood Control District), and the cities of Antioch, Brentwood, Oakley. The 2019 MRP revision added 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 (referred to as "the East County Permittees"). The East County Permittees are located within the jurisdiction of the Central Valley Regional Water Quality Control Board (Region 5) and were previously covered under a separate Joint Municipal NPDES Permit titled "East Contra Costa County Municipal NPDES Permit." See Figure 1 for the County, Permittee, and Regional Board jurisdictional boundaries. The East County Permittees are not subject to the San Francisco Bay TMDLs for PCBs and mercury, though they are subject to the Delta Methylmercury TMDL.

MRP Provision C.3 requires specifies categories of new development and redevelopment projects (i.e., Regulated Projects) that must include low impact development (LID) source control, site design, on-site stormwater treatment (Provisions C.3.c-d), and hydromodification management measures (Provision C.3.g). Provision C.3 also specifies the certification and operation and maintenance (O&M) requirements for these measures (Provision C.3.f and C.3.h). Allowable LID stormwater treatment measures (also known as green infrastructure [GI] or GSI) for Regulated Projects are stormwater treatment facilities that capture stormwater for harvesting and use, infiltration, evapotranspiration, and/or biotreatment, and must be sized per numeric sizing criteria specified in the MRP. MRP Provision C.3.e allows Regulated Projects the option to treat stormwater runoff off-site. Provision C.3.e includes two options for alternative compliance:

> *"The Permittees may allow a Regulated Project to provide alternative compliance with Provision C.3.b in accordance with one of the two options listed below:*
>
> ***(1) Option 1: LID Treatment at an Offsite Location***

Treat a portion (this portion may be zero; Permittees should treat as much onsite as possible) of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with LID treatment measures onsite or with LID treatment measures at a joint stormwater treatment facility and treat the remaining portion of the Provision C.3.d runoff with LID treatment measures at an Offsite Project[5] in the same watershed[6]. The offsite LID treatment measures must provide hydraulically-sized treatment (in accordance with Provisions C.3.d and C.3.g, as appropriate) of an equivalent quantity of both stormwater runoff and pollutant loading and achieve a net environmental benefit.

(2) Option 2: Payment of In-Lieu Fees

Treat a portion (this portion may be zero; Permittees should treat as much onsite as possible) of the amount of runoff identified in Provision C.3.d for the Regulated Project's drainage area with LID treatment measures onsite or with LID treatment measures at a joint stormwater treatment facility and pay equivalent in-lieu fees[7] to treat the remaining portion of the Provision C.3.d runoff (and comply with Provision C.3.g, as appropriate) with LID treatment measures at a Regional Project[8] or Offsite Project. The Regional Project must achieve a net environmental benefit, through a net increase in impervious surface treated, and/or a net reduction in flow and/or pollutant load.

(3) For the alternative compliance options described in Provision C.3.e.i.(1) and (2) above (Options 1 and 2), all Offsite Projects and Regional Projects must be completed within three years after the end of construction of the Regulated Project. However, the timeline for completion of an Offsite Project or Regional Project may be extended, up to five years after the completion of the Regulated Project, with prior Executive Officer approval."

The MRP 3 Attachment A, Fact Sheet[9] (p A-124), also states:

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[5] MRP 3 includes the following definition: "***Offsite Project*** *– A stormwater treatment facility that discharges into the same watershed as the Regulated Project and is located at a different public or private parcel or property (e.g., right-of-way) from the Regulated Project.*"

[6] "The same watershed" is assumed for the purposes of this System Summary Report to be the San Francisco Bay watershed.

[7] MRP 3 includes the following definition: "***In-lieu fees*** *– Monetary amount necessary to provide both hydraulically-sized treatment (in accordance with Provision C.3.d) with LID treatment measures of an equivalent quantity of stormwater runoff and pollutant loading, and a proportional share of the operation and maintenance costs of the Offsite Project or Regional Project*."

[8] MRP 3 includes the following definition: "***Regional Project*** *– A regional or municipal stormwater treatment facility that captures runoff from a drainage area larger than the parcel on which it is located and discharges into the same watershed as the Regulated Project.*"

[9] The MRP 3 Fact Sheet includes cited regulatory and legal references and additional explanatory information in support of the requirements of the MRP.

> *"During the Permit term, the Permittees may submit new information for an alternative compliance program for exchanges of impervious surface treatment credits at the regional, county, and/or municipal level, resulting in offsite treatment or payment for equivalent offsite compliance for 100 percent of the required Provision C.3.c-d stormwater runoff (and Provision C.3.g, as appropriate).*
>
> *Any such program should include at least the following: a clear organizational framework; demonstration of the treatment of an equivalent quantity of both stormwater runoff and pollutant loading (e.g., through the equivalent or net increase in impervious surface treated, and the equivalent or net reduction in flow and/or pollutant load, but not necessarily in the same watershed) and the achievement of net environmental benefit; an accounting and reporting system; a process for collection and timely use of funds; compliance with Provisions C.3.c-d and C.3.f-h; program oversight by an entity or entities; and expectations for timing and location. If or when such a program proposal is submitted, the Water Board will consider the new information and may consider amending the Permit to include a third option in Provision C.3.e.i that formally recognizes and allows the program specified in the proposal. This is in part a response to the City of San Pablo-led U.S. EPA Water Quality Improvement Fund (WQIF)-funded Regional Compliance for a Sustainable Bay project, which is investigating such a program that would facilitate alternative compliance exchanges between Permittees within Contra Costa County, but may be of interest in other counties and regionally."*

Consistent with the above, this RAC System Summary Report is submitted to the Water Board as part of a formal process seeking approval of the Contra Costa County RAC System as another alternative compliance option under Provision C.3.e.

The program components that fulfill the required elements listed in the MRP 3 Fact Sheet are highlighted throughout this RAC System Summary Report and are summarized in Table 1.

Table 1: Summary of Proposed Program Submittal Requirements

MRP 3 Fact Sheet Requirement for Proposed Program Submittal	Location(s) in System Summary Report
A clear organizational framework	• Section 3.1 and 3.3
Demonstration of the treatment of an equivalent quantity of both stormwater runoff and pollutant loading (e.g., through the equivalent or net increase in impervious surface treated, and the equivalent or net reduction in flow and/or pollutant load, but not necessarily in the same watershed) and the achievement of net environmental benefit	• Section 4
An accounting and reporting system	• Section 5.6 • Section 5.7 • Section 9
A process for collection and timely use of funds	• Section 5.4 • Section 6.3 • Section 6.5
Compliance with Provisions C.3.c-d and C.3.f-h	• Section 3.2.4 • Section 4.2 • Section 5.6 • Section 5.7
Program oversight by an entity or entities	• Section 3.4 • Section 8.2 • Section 8.3
Expectations for timing and location	• Section 3.3 • Section 11

In addition to LID/GSI requirements for Regulated Projects, MRP 3 includes specific numeric goals for acres to be retrofit with GSI for each Permittee. Permittees may meet their total individual retrofit requirements on a Countywide basis, although each Permittee must implement a GSI project treating no less than 0.2 acres of impervious surface. The Countywide GSI retrofit requirement is 57.32 acres. Non-Regulated projects and green infrastructure beyond the minimum required by Provision C.3.d for a Regulated Project may be counted towards the numeric GSI retrofit requirements. If a non-Regulated Project or Regulated Project (beyond the minimum required by Provision C.3.d) GSI/LID is later used as part of an Alternative Compliance exchange to offset the treatment required by a Regulated Project, then it may no longer be counted towards the Provision C.3.j.GSI retrofit requirements.

MRP Provisions C.11 and C.12 require implementation of control programs for mercury and PCBs, respectively, consistent with the San Francisco Bay mercury and PCBs TMDLs. The required control programs include load reduction assessment, source control measures, treatment control measures, measures to reduce risk to consumers of Bay Area fish, and reporting on all these measures. Challenges with cost-efficient compliance with Provisions C.11 and C.12 treatment control requirements on an individual Permittee basis is another driver for the Contra Costa County RAC System, as described in Section 2.1.2.

The MRP 3 Provisions C.11.c and C.12.c require the Permittees to implement treatment control measures, diversion to wastewater treatment facilities, GSI associated with redevelopment, or

other control measures to achieve mercury and PCBs load reductions. Contra Costa County Permittees must comply with this provision through implementation of control measures treating 664 acres of old industrial land use area (Countywide) using 70 percent efficient treatment control measures, or a larger area using less effective control measures.

The East County Permittees are not subject to the PCBs and mercury TMDLs, although they have been implementing PCBs and mercury control measures in collaboration with the Contra Costa County Permittees located within the Water Board Region 2 jurisdiction. MRP 3 Provision C.19 incorporates requirements for the East County Permittees related to the Sacramento-San Joaquin Delta Estuary Methylmercury TMDL. The East Contra Costa Methylmercury Control Measure Plan and Reasonable Assurance Analysis report describes a plan and schedule for reducing East County Permittee methylmercury loads (Geosyntec Consultants, Inc. [Geosyntec], 2022). The East County Permittees need to implement GSI projects and other control measures within the Marsh Creek watershed to make progress towards the Delta methylmercury TMDL waste load allocation.

In addition to Provisions C.3, C.11, C.12, and C.19 discussed above, the Contra Costa County RAC System could provide localized benefits relating to Provision C.10, Trash Load Reduction requirements, though these benefits would not be exchanged through the RAC System.

2.1.2 Additional System Drivers

Additional Contra Costa County RAC System drivers include the limited resources available to manage stormwater across the County and the high cost to achieve compliance with MRP requirements. The estimated costs for Permittees to comply with MRP 3 are significant. The estimated cost to treat the public GSI project area identified in the Contra Costa TMDL Control Measure Plan ranges from $915 million to $1.884 billion (Contra Costa Clean Water Program [CCCWP], 2020). The Permittees are faced with these compliance costs even while municipal stormwater program funding is typically inadequate to cover existing storm drain infrastructure maintenance. A system that could provide compliance cost savings and additional benefits would be helpful for Countywide stormwater water quality and infrastructure management.

In addition to limited financial resources, the PCBs TMDL presents unique challenges when considering compliance at an individual Permittee level. Although the Permittees are allocated a PCBs waste load by the TMDL on a population basis, according to monitoring and regional modeling conducted by the San Francisco Estuary Institute (SFEI) and modeling conducted for the County Reasonable Assurance Analysis (RAA), the PCBs load is not distributed evenly across the County (Geosyntec, 2019; CCCWP, 2020). As a result, targeted management of PCBs is a more efficient and effective means of meeting compliance requirements, rather than investing in control measures based on jurisdictional population. Targeted management would entail Countywide investment of PCBs control measures in specific locations that achieve the highest load reductions. A regional alternative compliance approach (e.g., the proposed Contra Costa County RAC System) that can provide economies of scale while supporting targeted treatment in areas of higher PCBs loading would enable a more regionally efficient means of addressing the TMDL compliance targets.

2.2 Contra Costa County RAC System Objectives

The following key objectives for the Contra Costa County RAC System were developed with input from the Steering Committee and Advisory Committee:

1. Flexible compliance with the MRP, particularly Provision C.3.b (Regulated Projects), using the Alternative Compliance Provision C.3.e, but potentially also Provision C.3.j (Green Infrastructure Planning and Implementation);
2. Cost efficiencies through implementation of larger stormwater capture projects that provide treatment at a lower cost per acre as well as lower maintenance and inspection costs;
3. Targeted implementation of facilities that can provide higher load reduction benefits toward compliance with the San Francisco Bay PCBs and mercury TMDLs to achieve reductions in MRP Provisions C.11 and C.12;
4. Implementation (i.e., funding, construction, and maintenance) of stormwater capture and water quality improvement projects that provide multiple benefits, including benefits ancillary to those relating to MRP Provisions C.3, C.11, and C.12; and
5. Flexibility to adapt the system to meet future water quality needs.

2.3 Environmental Review Approach

The California Environmental Quality Act (CEQA) requires state and local government agencies to inform decision makers and the public about potential environmental impacts of proposed projects, and to mitigate any significant environmental effects to the extent feasible. CEQA defines a "project" as an activity that: (1) is a discretionary action by a governmental agency, and (2) will either have a direct or reasonably foreseeable indirect impact on the environment (Pub. Res. Code, § 21065). This section discusses the approach to CEQA compliance for each of the following stages of the Contra Costa County RAC System:

1. Water Board approval of the Contra Costa County RAC System (i.e., through a permit amendment or letter recognizing the RAC System is consistent with current MRP Provision C.3.e).
2. Adoption of local ordinances or other regulatory mechanism that allows implementation of the Contra Costa County RAC System.
3. Using the Contra Costa County RAC System as CEQA mitigation for development projects.
4. Approval of projects that will generate "compliance units" for exchange under the Contra Costa County RAC System.

2.3.1 Water Board Approval of the Contra Costa County System

In order to implement the Contra Costa County RAC System, the Water Board would need to amend the MRP to approve the Contra Costa County System as an alternative compliance option under Provision C.3.e. The Water Board amendment to the MRP would require compliance with

CEQA. The proposed Contra Costa County RAC System could be used as a CEQA compliant document in lieu of an environmental impact report, which would satisfy Water Board CEQA compliance (14 California Code of Regulations § 21080.5[b][2]). Water Board adoption of the Contra Costa RAC System is therefore not anticipated to require additional CEQA review.

2.3.2 CEQA Considerations for Adoption of Local Ordinance

Regulated development projects must comply with MRP Provision C.3 by implementing on-site mitigation (i.e., LID/GSI stormwater control measures) or approved off-site mitigation on a case-by-case basis. Implementation of the Contra Costa County RAC System would require adoption of implementing procedures by the MRP Permittees (i.e., the towns and cities within Contra Costa County, County Costa County, and the Flood Control District), such as an ordinance, that would allow use of the Contra Costa County RAC System for MRP compliance. The adoption of an ordinance or other regulatory mechanism to implement the Contra Costa County RAC System is a discretionary action that meets the definition of a project under CEQA because the activity is capable of causing a direct or reasonably foreseeable indirect physical change in the environment.[10] MRP Provision C.3.e specifically requires that alternative compliance for regulated projects "achieve a net environmental benefit." The Contra Costa County RAC System has been designed to provide a net environmental benefit for development projects, as discussed further in Sections 3.3 and 4.3 of this report. Because the Contra Costa County RAC System by design would provide a net environmental benefit for development projects, adoption of an ordinance to implement the RAC System is expected to meet the criteria for a CEQA Categorical Exemption (CE). The following categorical exemptions may apply: Class 7 CE Actions Taken by Regulatory Agencies for Protection of Natural Resources or Class 8 CE Actions Taken by Regulatory Agencies for the Protection of the Environment.

2.3.3 CEQA Considerations for Mitigation

The Contra Costa County RAC System would allow for development of projects that would require mitigation in one jurisdiction, such as a municipality and projects that would generate credits and serve as mitigation in other jurisdictions. Where the Contra Costa County RAC System is applied as mitigation to address project impacts, the mitigation must meet the requirements of CEQA Guidelines 15126.4, which requires mitigation to be enforceable,[11] not deferred,[12] roughly proportional to the impact, and have a clear nexus to the impact. To address these requirements for CEQA mitigation, the Contra Costa System, as defined herein, includes a

[10] Union of Medical Marijuana Patients, Inc. v. City of San Diego, S238563, p. 32

[11] Mitigation measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments. In the case of the adoption of a plan, policy, regulation, or other public project, mitigation measures can be incorporated into the plan, policy, regulation, or project design.

[12] The specific details of a mitigation measure, however, may be developed after project approval when it is impractical or infeasible to include those details during the project's environmental review, provided that the agency (1) commits itself to the mitigation, (2) adopts specific performance standards the mitigation will achieve, and (3) identifies the type(s) of potential action(s) that can feasibly achieve that performance standard and that will be considered, analyzed, and potentially incorporated in the mitigation measure. Compliance with a regulatory permit or other similar process may be identified as mitigation if compliance would result in implementation of measures that would be reasonably expected, based on substantial evidence in the record, to reduce the significant impact to the specified performance standards.

certification system that would provide substantial evidence that the mitigation is not deferred, is enforceable, and is proportional to the impact being addressed. The Contra Costa County RAC System certification process incorporates these requirements by ensuring that the compliance unit-generating projects exist in order to avoid deferral of mitigation and provide equivalent (proportional) pollution reduction to offset the impact. The Contra Costa County RAC System design also includes adequate enforcement mechanisms to meet the requirements of CEQA and avoid the need for separate pollution reduction mitigation where the Contra Costa County RAC System is used.

2.3.4 CEQA Considerations for Off-Site Mitigation Projects that Generate Compliance Units

Projects that are implemented to generate compliance units (i.e., Off-Site GSI Projects) would be subject to CEQA review because the projects would have a physical environmental effect. The lead agency for review of the Off-Site GSI Projects would be the agency with jurisdiction over the project, based on its location or funding, and is typically the same agency responsible for approving the project. Where multiple agencies would be required to issue approvals for a project, the agency with the greatest responsibility for supervising or approving the project as a whole should be the lead agency (CEQA Guidelines Section 15051[b]). The lead agency is usually the agency with general governmental powers, such as a city or county, rather than a single-purpose agency, such as a water district. The CEQA review for Off-Site GSI Projects would need to be completed prior to Off-Site GSI Project construction and certification.

3. PROPOSED CONTRA COSTA COUNTY RAC SYSTEM OVERVIEW

The **clear organizational framework** for the proposed Contra Costa County RAC System (as identified for proposed program submittal per MRP 3 Fact Sheet) is described in Section 3.1 – 3.3. Section 3.4 describes **program oversight by administrative entities**. Section 3.2.4. describes how the System may provide **compliance with MRP Provision C.3.g.**

3.1 Proposed Contra Costa County RAC System

The proposed Contra Costa County RAC System combines elements from in-lieu payment and (preliminarily) pay-for-performance/Community-Based Public Private Partnership (CBP3) programs. In accordance with MRP Provision C.3.e, participation in the Contra Costa County RAC System would provide Permittees and Regulated Project developers alternative compliance to MRP Provision C.3.b, and benefits relating to Provisions C.11 (Mercury controls), C.12 (PCBs Controls), and, as opportunities arise, C.10 (Trash Load Reduction). The proposed Contra Costa County RAC System is intended to be primarily established under MRP 3 Provision C.3.e, and RAC System documents are submitted to the Water Board as part of a permit amendment process, an option identified in the MRP 3 Fact Sheet, and/or confirmation that the RAC System is consistent with the current MRP 3 Provision C.3.e. If approved by the Water Board through the formal permit amendment process, the Contra Costa County RAC System would be formally recognized under MRP 3 Provision C.3.e.

The proposed RAC System approach was selected through input from the Steering Committee, the TAC, the Advisory Committee, and preliminary legal review, as described in Section 3.2. The proposed Contra Costa County RAC System is illustrated in Figure 2. A Regulated Project typically proceeds with the treat on-site track ("A" in Figure 2) and includes planning review, construction of on-site LID/GSI facilities, certification of on-site facilities, and ongoing O&M by the Regulated Project owner. The Contra Costa County RAC System creates a second optional pathway for C.3 compliance for Regulated Projects ("B" in Figure 2). Instead of constructing LID/GSI facilities on-site, the Regulated Project owner would make a "compliance purchase" and agree to annual ongoing O&M fees levied on the Regulated Project parcel, for a specified number of "compliance units."

The compliance purchase would cover capital costs for "Off-Site GSI Projects" that generate compliance units and are located on public or private land in urban areas within Contra Costa County. The collected funds from compliance purchases (i.e., to fund Off-Site GSI Project capital costs) would be pooled by the Contra Costa County RAC System, and would cover implementation and certification of Off-Site GSI Projects, along with RAC System administrative functions. The annual ongoing O&M fees would cover ongoing O&M and verification of Off-Site GSI Projects.

The Contra Costa County RAC System is expected to achieve TMDL load reduction benefits through the construction of Off-Site GSI Projects, which are anticipated to be primarily located in older urban and industrial areas known to have higher levels of PCBs (SFEI, 2018; CCCWP, 2020).

The proposed Contra Costa County RAC System is expected to provide:

- Flexible compliance for Permittees and Regulated Project owners;
- Cost savings through economies of scale realized through implementation of larger regional Off-Site GSI Projects as well as potential cost savings through using pay-for-performance or CBP3 contracting mechanisms rather than traditional procurement; and
- Additional water quality and environmental benefits and related TMDL compliance benefits through retrofit of untreated older urban and industrial areas with higher pollutant loading and application of equivalent or increased water quality benefit requirements for Regulated Projects.

The Contra Costa County RAC System would be implemented in at least three phases:

1. Phase 1, Initial Pilot Exchanges, occurring concurrently with this Project. This phase entails piloting the RAC System through a small number (1-2) of compliance unit exchanges, and will result in reporting any issues and/or adjustments that are needed to streamline the System.
2. Phase 2 is anticipated to be a five-year initial roll-out of the RAC System. The objective of Phase 2 is the wider acceptance and implementation of the RAC System across Contra Costa County. This phase may include additional studies, agreements, and mechanisms for contracting within the County.
3. Phase 3 and beyond would begin after Phase 2 lessons learned have been addressed through RAC System amendments. In this phase, the RAC System would be established and fully operating, with adaptive management procedures in place.

3.2 Rationale for Selection

3.2.1 Compliance Purchases

The Contra Costa County RAC System is envisioned to meet compliance needs for MRP Permittees and private developers subject to Provision C.3 development and redevelopment requirements. Offset crediting approaches, such as those documented in the Regional Alternative Compliance System Literature Review (City of San Pablo, 2020), were considered early in the Contra Costa County RAC System development. It was determined, however, that although offset crediting would be plausible for addressing GSI requirements and is allowed through MRP Provision C.3.e.i(1), a market-based approach would not be appropriate for addressing mercury and PCBs TMDL due to limited buyer demand for stand-alone load reduction metrics.

The Contra Costa County RAC System will operate with a "compliance purchase" approach. The compliance purchase approach was developed in the model of an in-lieu payment (i.e., fee) approach, currently allowed per MRP Provision C.3.e.i(2), and utilizes language from this option for program definitions[13]. Compliance purchases would be pooled to administer and fund the implementation of Off-Site GSI Projects to provide compliance with the LID/GSI requirements

[13] Though language from C.3.e.i(2) is used, following successful completion of the proposed permit amendment process described, the Contra Costa County RAC System would be formally recognized as a separate option in MRP 3 Provision C.3.e.

of Provision C.3 and provide a "net environmental benefit." In the future, non-GSI projects addressing other benefits could be incorporated into the Contra Costa County RAC System as it continues to evolve and additional buyers are identified (Section 3.3.1).

The recommended compliance purchase approach, modeled from an in-lieu payment approach, was defined consistent with input from the Project technical advisors, Steering Committee, TAC, and the Advisory Committee, who voiced the need for the Contra Costa County RAC System to be simple and to provide a means for flexible compliance, increased multiple benefits, and cost efficiencies. The compliance purchase approach, and the resulting Off-Site GSI Projects, managed through the Contra Costa County RAC System, allows for a simplified process for certification, verification, and tracking. A pay-for-performance or CBP3 contracting approach could be utilized to incentivize cost-effective project implementation.

Per MRP Provision C.3.e, Off-Site (GSI) Projects may be completed within three years after the end of construction of the Regulated Project. The RAC System may allow for sale of Equivalent Acres Greened units up to three years in advance of completion of the Off-Site GSI Project if there is a high level of certainty that project will be installed and would address the water quality impact caused by the Regulated Project. For advance sale of compliance units, tracking will be implemented as part of the program to ensure that the compliance units meet all legal and CEQA requirements for mitigation.

3.2.2 Integration into Existing Compliance Programs

The launch and ongoing administration of water quality programs may require substantial resources for program costs and infrastructure. Technical advisors cautioned the Project Team early in the Contra Costa County RAC System development that these program costs have undermined the cost-saving objectives of several early water quality programs and that reducing program costs would be essential for the RAC System's success. In response, the Contra Costa County RAC System has been developed in a manner that minimizes these program costs through integration with existing Permittee MRP C.3 LID/GSI compliance programs and existing administrative infrastructure and resources. This is expected to not only reduce program costs for the Contra Costa County RAC System, but would also reduce barriers to entry for Permittees familiar with the existing compliance programs and resources. The Contra Costa County RAC System is proposed to utilize existing staff and tools by aligning resource-intensive System processes, such as certification, verification, and tracking, with requirements in the existing MRP. See Sections 3.3.2.1, 5.6, and 5.7 for an overview of these processes.

3.2.3 Considerations for System Metric

For the purposes of this report, the Contra Costa County RAC System metric is referred to as a "compliance unit." This is a unit of exchange that can be purchased by buyers seeking alternative compliance with the MRP (or, potentially, other NPDES permits). With the use of the compliance purchase approach modeled on the MRP Provision C.3.e in-lieu fee option, the Contra Costa County RAC System compliance unit can be defined using language in MRP Provision C.3.e.i and the MRP 3 Fact Sheet (Section 2.1) as requiring three elements:

1. Hydraulically-sized treatment in accordance with Provision C.3.d with LID/GSI treatment measures of an **equivalent quantity of both stormwater runoff and pollutant loading**, which is referred to as **"Equivalent Acres Greened;"**
2. A net environmental benefit; and
3. A proportional share of the O&M costs of the Off-Site GSI Project, which is referred to as an **"Ongoing O&M fee."**

In order to demonstrate equivalent or better treatment of runoff and pollutant loading, analyses were conducted to define ratios and RAC System rules that must be applied when "Equivalent Acres Greened" compliance units are purchased via a compliance purchase. The Contra Costa County RAC System ratios and rules are expected to result in implementation of GSI primarily in older urban and industrial areas that, for the most part, currently discharge untreated stormwater to receiving waters, and additionally to result in a net increase in impervious surface treated. Implementation of GSI in higher polluting areas has been demonstrated to result in overall improvements to water quality.

In addition to the Contra Costa County RAC System compliance unit stormwater runoff and pollutant loading equivalency demonstration, the Off-Site GSI Projects generating compliance units must be maintained on a regular basis. The Contra Costa County RAC System compliance unit is further described in Section 4 of this document.

3.2.4 Hydromodification Management

At this time, it is not expected that Regulated Projects subject to hydromodification management requirements (Provision C.3.g) would participate in the first phase of the Contra Costa County RAC System. See Figure 1 for a map of areas in the County where hydromodification management requirements apply for Regulated Projects that meet the acreage threshold (i.e., one acre impervious surface added or replaced). Provision C.3.g.ii (HM Standard) specifically requires:

> *"Stormwater discharges from HM Projects shall not cause an increase in the erosion potential of the **receiving stream** over the pre-project (existing) condition. Increases in runoff flow and volume shall be managed so that post- project runoff shall not exceed estimated pre-project rates and durations, where such increased flow and/or volume is likely to cause increased potential for erosion of creek beds and banks, silt pollutant generation, or other adverse impacts on beneficial uses due to increased erosive force."*

Hydromodification management requirements focus specifically on limiting the impacts to the receiving stream of the Regulated Project. Therefore, any Off-Site GSI Project or other off-site project implemented to address hydromodification would need to be built within a constrained geographic area, such that it addresses impacts to the same receiving stream.

While there could be some unique situations where implementation of off-site hydromodification management measures could serve multiple Regulated Projects in an innovative fashion (e.g., where an in-stream measure could be used for a currently impacted and unstable channel, in partnership with a local non-profit), these situations are highly site specific. If these projects are

constructed as part of the Contra Costa County RAC System, there may be a need for a project-specific compliance purchase amount (i.e., capital cost) and ongoing O&M fee. Additionally, if water quality is not incorporated into the hydromodification management focused off-site project, a Regulated Project purchasing hydromodification management units would need to make a separate compliance purchase and pay an ongoing O&M fee for water quality compliance. The potential future hydromodification "track" is included in the Contra Costa County RAC System schematic diagram in Figure 3 to demonstrate how this track would integrate with the rest of the RAC System.

Alternatively, Regulated Projects subject to hydromodification management requirements that are meeting Provision C.3.g could participate in the Contra Costa County RAC System solely for water quality compliance needs. For example, the Regulated Project would install hydromodification management control measures on-site (i.e., that do not also comply with the GSI/LID and sizing requirements of MRP Provisions C.3.c and C.3.d) and purchase RAC System compliance units for water quality.

3.3 Contra Costa County RAC System Components

The main components of the Contra Costa County RAC System are described in this section. The hydromodification track, introduced in Figure 3 as a potential future addition to the Contra Costa County RAC System, is not included in this section and would be developed in System Phase 3 or later.

3.3.1 RAC System "Buyers"

Contra Costa County RAC System "buyers" are primarily expected to include Regulated Project owners/developers located within Contra Costa County seeking compliance with MRP Provisions C.3.c-d, f, and h (LID/GSI). Contra Costa County RAC System buyers could also include Permittees seeking Equivalent Acres Greened compliance units for Regulated Projects or to meet GSI retrofit acres required by MRP 3, or other non-Regulated project buyers located within Contra Costa County.

While Off-Site GSI Projects are expected to be located such that they provide enhanced TMDL load reduction benefits (as compared to on-site stormwater treatment), because there are other control measures for TMDL load reductions that may cost less, there is not expected to be substantial demand for Equivalent Acres Greened compliance units purchased solely for TMDL compliance purposes. Consequently, other entities subject to the TMDLs, such as publicly operated treatment works (POTWs) or industrial facilities, are also not expected to be interested in purchasing the Equivalent Acres Greened compliance units solely to meet their TMDL compliance requirements.

The amount of future development that would ultimately participate in the Contra Costa County RAC System is difficult to predict, not least because the level of participation is dependent on the implementation and roll-out of the RAC System. Because uncertain demand can impede a program's launch and success, one approach to provide Equivalent Acres Greened compliance unit demand in the early implementation phase is to launch the Contra Costa County RAC System with a Programmatic Demand (i.e., a minimum amount of compliance units guaranteed to be purchased, and recommended to be purchased by Permittees during the RAC System Phase

2). Additional information regarding this potential approach, along with development projection information, is provided in Section 6.2. There is potential for the Contra Costa County RAC System to be expanded to other interested buyers in the future (Figure 4). See Section 5.2 for additional details regarding other potential future buyers.

3.3.2 Off-Site GSI Projects

Off-Site GSI Projects would be constructed and certified within Contra Costa County to generate Equivalent Acres Greened compliance units for sale to the RAC System buyers. See Section 4.2.1 for details regarding allowable control measures for Off-Site GSI Projects. Off-Site GSI Projects are expected to be implemented through public and/or private "compliance unit providers" or "sellers." The RAC System would include a pre-screening application process to allow for preliminary approval of compliance units generated, which compliance unit providers may complete for this assurance prior to conducting design, construction, and certification of Off-Site GSI Projects. Unit providers who do not complete the pre-screening application process would still be eligible to request certification of compliance units generated from Off-Site GSI Projects they have constructed, though they run the risk that the constructed project has not addressed an issue required for certification that could have been identified through pre-screening.

Following preliminary review (if the pre-screening application process is conducted), and approval from the private property owner (if located on private land), Off-Site GSI Projects would undergo typical construction approval processes by the jurisdiction in which the proposed facility is to be located, including required CEQA review and plan review, and begin construction. The jurisdiction in which the Off-Site GSI Project is located would certify the project following installation, and the compliance units generated would be available for exchange through the RAC System. See additional details for certification in Section 5.2.

In some cases, compliance units may be exchanged prior to full construction of the Off-Site GSI Project. The RAC System Administrator would likely only allow this when there is high certainty that the Off-Site GSI Project would be implemented, for example, the Project has been fully designed, approved, has completed the pre-screening process, and is funded or has a clear plan for funding. In these instances, compliance units would be exchanged up to three years in advance and would be fully certified after the Off-Site GSI Project has been constructed.

3.3.2.1 Off-Site GSI Project Certification, Verification, and Tracking

The jurisdiction in which the Off-Site GSI Project is located would certify the Off-Site GSI Project and quantification of benefits[14] to make the compliance units available within the Contra Costa County RAC System for exchange. In some cases, compliance units could be available for exchange in advance of Off-Site GSI Project implementation, after review and approval of the design and quantification of benefits. If compliance units are available in advance of Off-Site GSI Project certification, the same jurisdiction would be responsible for certifying implementation upon project completion. The Off-Site GSI Project certification process is

[14] It is expected that preliminary quantification of benefits (including Equivalent Acres Greened compliance metrics generated) would occur as part of preliminary review processes and would be confirmed through certification.

proposed to follow current County processes, which are consistent with MRP requirements, and is described in further detail in Section 5.4 and Attachment B.

The jurisdiction in which the Off-Site GSI Project is located would conduct ongoing O&M verification of the Off-Site GSI Project's performance, including required site inspections. The Off-Site GSI Project verification process has also been developed to be consistent with current County processes, which are compliant with MRP requirements, and is described in Section 5.5.

Tracking of Off-Site GSI Projects is expected to primarily be conducted by the jurisdiction in which the Off-Site GSI Project is located. Information tracked would include certification, total Equivalent Acres Greened compliance units generated, compliance units exchanged, and ongoing verification of Off-Site GSI Projects and their associated compliance units. The Contra Costa County RAC System Tracking Tool is described in Section 9 and Appendix A. The RAC System Tracking Tool would also be used to track documentation from the certification and verification processes, as well as provide transparency and accountability to the public. Regulated Project participants would also be tracked in the County's current ArcGIS Online (AGOL) tracking tool, as described in Sections 5.5 and 5.6.

3.3.2.2 Ongoing Off-Site GSI Project Operation and Maintenance

Ongoing O&M of constructed Off-Site GSI Projects is expected to be managed and performed either by the jurisdiction in which the Off-Site GSI Project is located and/or by a contracted compliance unit provider as part of a pay-for-performance or CBP3 contracting process (Section 6.3.3). In either case, funds for ongoing O&M are proposed to be collected through an ongoing O&M fee (Sections 4.6 and 6.7).

3.3.3 Net Environmental Benefit

MRP Provision C.3.e requires a Net Environmental Benefit to be provided when Regulated Projects use the alternative compliance approach. Net Environmental Benefit has been incorporated into the compliance metrics, as described in Section 4. To ensure a Net Environmental Benefit, an "NEB Ratio" is applied to the in-lieu fee (see Sections 3.3.4 and 4.3). Collected funds associated with the NEB Ratio would, for the initial roll-out of the program (i.e., Phase 2), be directed towards generating additional Equivalent Acres Greened compliance units through Off-Site GSI Projects. The additional Equivalent Acres Greened compliance units associated with the NEB Ratio for each exchange would provide a net increase in impervious surface treated and a net reduction in pollutant load.

Following Phase 2 of the Contra Costa County System, the NEB Ratio may also be directed towards an expanded list of projects and programs beyond additional Equivalent Acres Greened compliance metrics generated through Off-Site GSI Projects to address future water quality objectives.

3.3.4 Compliance Purchases

3.3.4.1 One-Time Compliance Purchase

The one-time compliance purchase (in contrast to the ongoing O&M fee) is calculated based on the amount of Equivalent Acres Greened compliance units that are exchanged, plus an Administrative Payment. The amount of Equivalent Acres Greened compliance units needed for each exchange is calculated based on the Regulated Project area and land use type, as described

in Section 4. This amount of Equivalent Acres Greened compliance units is then multiplied by the NEB Ratio, to demonstrate "net environmental benefit," before being multiplied by the Equivalent Acre Greened unit cost ($Cost_{EAG}$). The resulting compliance purchase is calculated as:

$$Purchase_{Compliance} = (Equivalent\ Acres\ Greened \times NEB\ Ratio) \times Cost_{EAG} + Payment_{Administrative}$$

The Equivalent Acre Greened unit cost is envisioned to be developed through a cost study led and/or commissioned by the CCCWP RAC Subcommittee, and would be consistent for all participants in the Contra Costa County RAC System. While participation in the Contra Costa County RAC System and payment for a corresponding compliance purchase is optional, and therefore not subject to the requirements of Assembly Bill (AB) 1600, the cost study would be developed using similar methods to those required by AB 1600 to allow for transparency in how the Equivalent Acre Greened unit cost is developed.

The administrative payment would include monetary charges for CCCWP System Administrator, along with charges by the jurisdiction in which the Regulated Project is located. Administrative payment amounts would be developed through studies when fee schedules are updated by Permittees and will cover all staff and/or consultant hours, along with materials and overhead, to perform administrative functions needed for the Contra Costa County RAC System. This process is anticipated to be informed by Phase 1 and is further described in Section 6.4.2.

Compliance purchases would be collected by the jurisdiction in which Regulated Project participant(s) are located. After deducting the administrative payment for the jurisdiction in which the Regulated Project is located, the remaining compliance purchase payment would be transferred to and pooled by the CCCWP System Administrators. See Sections 3.4 and 6.5 for further detail on fund administration and management.

3.3.5 Ongoing O&M Fee

Participating buyers would pay an annual ongoing O&M fee to pay for long-term maintenance of the Off-site GSI Projects that generate compliance units. Based on an analysis of possible mechanisms for the ongoing O&M fee, it is preliminarily proposed that these fees would be levied through a Community Facilities District. The ongoing O&M fee would be set to include the costs of LID/GSI facility O&M and associated administrative costs. The Community Facilities District would disburse pooled O&M funds to entities when proof of completed O&M is received. O&M activities and payments would be documented through the RAC System Tracking Tool. See Section 4.6 for further detail regarding the ongoing O&M fee and potential Community Facilities District structure.

3.4 Summary of Preliminary Administrative Structure

As the Contra Costa County RAC System encompasses many participants and cities across the County, the administration of the RAC System would involve many public entities and additional coordination with private participants. The Contra Costa County RAC System is envisioned to be primarily administered by the CCCWP, with additional aspects managed by County Permittees and the Flood Control District. All entities involved are expected to engage in agreements relating to their participation in the RAC System. Additionally, Permittees

implementing the Contra Costa County RAC System within their jurisdiction would be expected to update their stormwater ordinances to include the RAC System (Model Stormwater Ordinance language for the Contra Costa County RAC System is provided in Appendix C-1) and complete a Participant Memorandum of Understanding (MOU, see Appendix C-2).

The CCCWP administrators are expected to include at least two specific entities:

1. The RAC Subcommittee, which is expected to be made up of volunteer Permittee stormwater program representatives that would make decisions regarding the Contra Costa County RAC System.
2. The RAC System Administrator, who would perform management, financial administration of the Contra Costa County RAC System, RAC System Tracking Tool management, and complete reporting.

Other Contra Costa County RAC System administrators include:

1. County Permittees, which would manage Regulated Project applicants and compliance unit providers that construct Off-Site GSI Projects within their jurisdictional boundaries, facilitate exchanges, and facilitate and/or perform Off-Site GSI Project implementation, certification, O&M, and verification, and
2. The Flood Control District, which is anticipated to act as the fiduciary agent for the ongoing O&M fee.

Table 2: Summary of System Administrative Entities, Roles, and Responsibilities

System Entity	System Role	System Responsibility

Clean Water Program	RAC Subcommittee	• Create and update Off-Site GSI Project prioritization criteria for RAC System.
		• Review and approve Off-Site GSI Project applications from compliance unit providers.
		• Review and approve contractors hired to implement Off-Site GSI Projects and/or serve as a pay-for-performance or CBP3 contractor.
		• Determine administrating agency for contractors.
		• Solicit and/or review applicable cost studies for the RAC System.
		• RAC System adaptive management including (see Section 8):
		  ○ Participating in RAC System Strategy Meetings,
		  ○ Making recommendations on RAC System priorities and technical needs,
		  ○ Reviewing and recommending regular cost updates, and
		  ○ Developing an as-needed list of RAC System amendments on a regular basis.

System Entity	System Role	System Responsibility

Clean Water Program	System Administrator	• Pool compliance purchase payments and disburse to compliance unit provider(s) for Off-Site GSI Project implementation.
		• Manage and complete reporting for the RAC System.
		• Manage RAC System Tracking Tool (e.g., managing Tracking Tool operator, quality assurance/quality control).
		• Enter data into RAC System Tracking Tool for non-Regulated project buyers and exchanges.
		• Perform functions to be determined for the RAC System Community Facilities District (potentially including O&M fee pooling, disbursement, cost adjustments, and/or reporting).
		• Perform required annual reporting in compliance with the MRP.
		• Conduct recommended adaptive management including:
		  ○ Amend RAC System in response to future permit reissuances, and/or
		  ○ Enact other identified RAC System revisions recommended by RAC Subcommittee.

Flood Control District	Community Facilities District Fiduciary Agent and/or Administrator TBD	• Levy and collect the ongoing O&M fee. • Perform other functions to be determined for the RAC System Community Facilities District (potentially including O&M fee pooling, disbursement, cost adjustments, and/or reporting).

Permittees	Exchange Facilitator; Certifying Entity; Verifying Entity	• For Regulated Projects:
		  ○ Application review and approval of Regulated Project owners interested in participating in the Contra Costa County RAC System.
		  ○ Calculation and/or confirmation of compliance purchase amounts.
		  ○ Collection of compliance purchase payments and transfer of compliance purchase payments (deducting jurisdiction-specific administrative payments) to the CCCWP RAC System Administrator.
		  ○ Enter Regulated Project participant data into RAC System Tracking Tool.
		• For Off-Site GSI Projects:
		  ○ Approve applications.
		  ○ Perform plan checks.
		  ○ Conduct certification and verification processes.
		  ○ Perform ongoing O&M.
		  ○ Enter Off-Site GSI Projects in RAC System Tracking Tool.
		• Notify participants and public of amendments to the RAC System Framework or preapproved list of control measures.

These administrative roles are also shown visually in Figure 5. Additional information about certification and verification processes are provided in Sections 5.4 and 5.5.

3.5 RAC System Next Steps

Next steps for the Contra Costa County RAC System will include successful completion of initial pilot exchanges, and lessons learned applied to the launch of RAC System Phase 1. Prior to launching Phase 2, the RAC System will be submitted to the Water Board as part of a formal amendment process. The intent of this process would be to formally adopt the RAC System as an alternative compliance option under MRP 3. During RAC System Phase 2, which is intended to be a fully operating program, adaptive management practices will be conducted on an ongoing basis as described in Section 8. Additional details regarding the submittal for permit amendment or approval under the current MRP 3 Provision C.3.e language, along with other next steps for Contra Costa County RAC System Phase 2, are provided in Section 11.

4. CONTRA COSTA COUNTY RAC SYSTEM COMPLIANCE UNIT DEFINITION AND CONTROL MEASURES

The **demonstration of the treatment of an equivalent quantity of both stormwater runoff and pollutant loading and achievement of net environmental benefit** for the proposed Contra Costa County RAC System (as required for proposed program submittal per MRP 3 Fact Sheet), provided by clear definitions of the Contra Costa County RAC System metric (i.e., compliance unit) and allowable control measures, is described in this section. Additionally, descriptions of how the compliance unit is defined to provide **compliance with MRP Provisions C.3.c-d** are also included in this section.

4.1 Compliance Unit Definition

Using MRP Provision C.3.e language, the Contra Costa County RAC System compliance unit includes three parts:

1. Equivalent Acres Greened;
2. A Net Environmental Benefit; and
3. An ongoing O&M fee.

This section describes how the three parts of the compliance unit are defined for the Contra Costa County RAC System.

4.2 Equivalent Acres Greened

Equivalent Acres Greened is the portion of the Contra Costa County RAC System compliance unit that would be generated through Off-Site GSI Projects. For Regulated Projects, Equivalent Acres Greened compliance units purchased must meet the Provision C.3.e requirement of "hydraulically sized treatment in accordance with Provision C.3.d with LID/GSI treatment measures of an equivalent quantity of both stormwater runoff and pollutant loading." The Provision C.3.d sizing and LID/GSI treatment measure requirements would also apply to compliance units purchased by non-Regulated projects through the Contra Costa System. See Section 4.2.1 for the facility-specific RAC System compliance unit requirements.

Regulated Project owners participating in the Contra Costa County RAC System must purchase compliance units that meet the Provision C.3.e requirement of providing "equivalent quantity of both stormwater runoff and pollutant loading" to an on-site facility (Section 4.2.3). However, non-Regulated project buyers that choose to participate in the Contra Costa County RAC System do not need to purchase compliance units that meet equivalent volume and equivalent pollutant loading requirements and would instead purchase compliance units on the basis of runoff-generating area (Section 4.2.2). The Equivalent Acres Greened calculation for all buyers, along with a summary of the Equivalent Acres Greened calculation, is described in Section 4.2.4.

4.2.1 Treatment ("Greened") Requirements and Allowable Control Measures

4.2.1.1 Off-Site GSI Project Sizing Requirements

Equivalent Acres Greened are generated through treatment by Off-Site GSI Projects sized to capture the MRP-defined volume hydraulic design basis or the MRP-defined flow hydraulic design basis. MRP Provision C.3.d. Numeric Sizing Criteria for Stormwater Treatment Systems includes:

> *(1) Volume Hydraulic Design Basis – Treatment systems whose primary mode of action depends on volume capacity shall be designed to treat stormwater runoff equal to:*
>
> > *(a) The maximized stormwater capture volume for the area, on the basis of historical rainfall records, determined using the formula and volume capture coefficients set forth in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998), pages 175–178 (e.g., approximately the 85th percentile 24-hour storm runoff event); or*
> >
> > *(b) The volume of annual runoff required to achieve 80 percent or more capture, determined in accordance with the methodology set forth in Section 5 of CASQA's Stormwater Best Management Practice Handbook, New Development and Redevelopment (2003), using local rainfall data.*
>
> *(2) Flow Hydraulic Design Basis – Treatment systems whose primary mode of action depends on flow capacity shall be sized to treat:*
>
> > *(a) 10 percent of the 50-year peak flow rate;*
> >
> > *(b) The flow of runoff produced by a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depths; or*
> >
> > *(c) The flow of runoff resulting from a rain event equal to at least 0.2 inches per hour intensity.*
>
> *(3) Combination Flow and Volume Design Basis – Treatment systems that use a combination of flow and volume capacity shall be sized to treat at least 80 percent of the total runoff over the life of the project, using local rainfall data.*

In order for the generated Equivalent Acres Greened to be to be available for exchange, the review and approval process must include verification that the Off-Site GSI Projects are sized in accordance with the C.3.d requirements. This must be confirmed through certification processes.

4.2.1.2 Allowable Control Measures for Off-Site GSI Projects

Properly-sized control measure types allowable for Off-Site GSI Projects generating Equivalent Acres Greened are those included in the Contra Costa County Stormwater C.3 Guidebook 7th Edition (CCCWP, 2017) and considered low impact development or LID per the MRP.

Allowable treatment facilities include:

- ***Bioretention facilities***—Bioretention captures runoff in a shallow vegetated reservoir on a mulched biotreatment soil media surface, then filters the runoff through plant roots and biologically active soil mix (which removes pollutants), into a gravel layer. From the gravel layer, runoff ultimately infiltrates to the subsurface or is conveyed through an underdrain to the storm drain system.
- ***Flow-through planters***—Flow through planters include vegetation and soil media similar to bioretention but are contained within a concrete box and are designed to discharge all treated runoff.
- ***Dry wells and infiltration basins***—Infiltration-based facilities take advantage of rapidly-draining soils to capture and infiltrate large amounts of stormwater runoff to the subsurface. Infiltration facilities are only feasible where soils with sufficiently high infiltration rates are present and where there are no subsurface hazards that could be impacted by infiltration (i.e., adequate depth to groundwater, and no geotechnical hazards or subsurface contamination).

Other allowable facility types not specifically included in the C.3 Guidebook include properly sized tree well facilities and suspended pavement systems, which filter runoff vertically at a 5 inch-per-hour loading rate, contain vegetation, and perform similarly to bioretention, as well as stormwater capture and use. In addition to the control measures listed, the C.3 Guidebook also includes a "Cistern + Bioretention Facility" and "Bioretention + Vault Facility;" these facility combinations are intended to manage both hydromodification and water quality (CCCWP, 2017). While allowable, it is expected that these types of facilities would not be used in Phase 2 of the Contra Costa County RAC System because of the additional cost required for sizing to hydromodification standards. Self-treating and self-retaining control measures may be eligible to generate Equivalent Acres Greened compliance units with justification from compliance unit providers.

Control measures other than those listed could be used to generate Equivalent Acres Greened compliance units if compliance unit generators can demonstrate that the facilities are designed consistent with the C.3 Guidebook requirements (CCCWP, 2017) and provide equivalent volume capture and pollutant load reduction performance as the listed control measures. It is expected that Phase 2 of the Contra Costa County RAC System would limit allowable control measures to LID/GSI facilities only. Non-LID/GSI facility types could be considered in the future through Contra Costa County RAC System adaptive management protocol to address future water quality objectives (Section 8).

4.2.2 Runoff Generating Area

Runoff generating area (or acres) forms the base unit of the Equivalent Acres Greened calculation. Runoff is assumed to be generated from 100% of directly-connected impervious surfaces and 10% of pervious surfaces within a given drainage area. The assumption that 100% of impervious acres and 10% of pervious surfaces generate runoff is consistent with the "Treatment Only" (i.e., GSI) runoff factors for pervious surfaces in the Contra Costa C.3 Technical Manual Table 3-2 (CCCWP, 2017). The runoff coefficient of 10% of pervious surfaces is also validated through the hydrology model developed for the County's RAA for

mercury and PCBs, developed in compliance with MRP Provisions C.11 and C.12 (CCCWP, 2020). Details regarding the RAA validation of the 10% runoff coefficient for pervious surfaces are provided in Appendix B.

For Regulated Projects (i.e., to calculate Equivalent Acres Greened required to be purchased), this calculation would be conducted for the untreated proposed development footprint. For Off-Site GSI Projects (i.e., to calculate the amount of Equivalent Acres Greened generated), this calculation would be performed for the portion(s) of the delineated Drainage Area(s) tributary to the Off-Site GSI Project that is not treated by upstream facilities. The total Runoff Generating Acres are calculated as:

$$Runoff\ Generating\ Acres = Acres_{Impervious} + (0.1 \times Acres_{Pervious}) \quad \text{Eq. 4-1}$$

For Off-Site GSI Projects, Equivalent Acres Greened compliance units generated are calculated as included in Equation 4-2.

$$Equivalent\ Acres\ Greened_{Generated} = Runoff\ Generating\ Acres_{Off-Site\ GSI\ Facility} \quad \text{Eq. 4-2}$$

Each Equivalent Acre Greened compliance unit (or portion of a unit) generated by an Off-Site GSI Project would have a rainfall zone, land use, and imperviousness associated with it (i.e., as compliance unit attributes) based on the geospatial location of the Drainage Area generating the compliance units. An Off-Site GSI Project may have multiple different Drainage Areas that are tributary to different control measures or facilities that make up the overall Off-Site GSI Project. In the current Contra Costa County C.3 Manual, these different areas are called "drainage management areas" or DMAs (CCCWP, 2017). As a result, different compliance units generated by an Off-Site GSI Project may have different attributes associated with them. These attributes would be associated with each generated Equivalent Acre Greened compliance unit and tracked in the RAC System Tracking Tool.

For Regulated Projects, the Equivalent Acres Greened compliance units required to be purchased is calculated based on the Regulated Project's Runoff Generating Acres along with a Rainfall Ratio and Pollutant Ratio, described in Section 4.2.3. For non-Regulated Project buyers, Equivalent Acres Greened compliance units do not require a Rainfall Ratio and Pollutant Ratio and may be purchased based on the desired number of Runoff Generating Acres or impervious acres desired for purchase.

4.2.3 Equivalent Volume and Pollutant Loading

The Equivalent Acres Greened compliance units purchased by Regulated Projects must meet the equivalent volume and pollutant loading requirements when comparing the Regulated Project drainage area to the (previously untreated) drainage area(s) of the compliance unit-generating Off-Site GSI Project(s). These elements are defined as follows:

1. Equivalent Volume – Achieved when equivalent **runoff generating area** is exchanged and there is **equivalent or higher rainfall** associated with the Equivalent Acres Greened compliance units as compared to rainfall at the Regulated Project. If equivalent or higher rainfall is not associated with the Equivalent Acres Greened compliance units as compared to the Regulated Project purchasing those compliance units, a Rainfall Ratio is applied to demonstrate equivalent volume (Section 4.2.3.1).

2. Equivalent Pollutant Loading – Achieved when **equivalent volume** is demonstrated and there are **equivalent or higher pollutant concentrations** (based on land use) associated with the Equivalent Acres Greened, as compared to land uses within the Regulated Project drainage area. If equivalent or higher pollutant loading is not associated with the Equivalent Acres Greened compliance units as compared to the Regulated Project, a Pollutant Ratio is applied to demonstrate equivalent pollutant loading (Section 4.2.3.2).

Equivalent volume and equivalent pollutant loading are summarized in Figure 6. The calculations to determine equivalent volume and equivalent pollutant loading are described in further detail in the following sections.

4.2.3.1 Equivalent Rainfall

Rainfall varies widely throughout the County. Providing that equivalent Runoff Generating Acres are purchased by the Regulated Project, there must be equivalent rainfall associated with the compliance units purchased to meet the equivalent volume demonstration. Using PRISM 30-year annual normal precipitation values, average annual rainfall zones have been identified across the County (Figure 7) (PRISM Climate Group, 2023).

If the rainfall zone associated with the Equivalent Acre Greened compliance units generated within a Drainage Area tributary to an Off-Site GSI Project is different than the rainfall zone associated with the Regulated Project purchasing the compliance units, a rainfall ratio (i.e., exchange ratio[15] that includes rainfall considerations) must be applied to the Runoff Generating Acres of the Regulated Project as part of the compliance unit calculation to achieve the equivalent volume demonstration for the exchange.

The Rainfall Ratio is calculated based on the proportional difference in rainfall between the Regulated Project and the location of the Off-Site GSI Project generating the Equivalent Acre(s) Greened, rounded to the nearest 10%. The Rainfall Ratio is used to demonstrate equivalent volume is captured at the Off-Site GSI Project as would have been captured by an on-site GSI facility at the Regulated Project. The minimum Rainfall Ratio allowable by the Contra Costa County RAC System is 1.0.[16] The Rainfall Ratio is calculated as:

$$Rainfall\ Ratio = Rainfall_{Regulated\ Project} / Rainfall_{Equivalent\ Acre\ Greened\ Unit} \quad \text{Eq. 4-3}$$

A matrix of Rainfall Ratios for all combinations of compliance unit exchanges in Contra Costa County is provided in Table 3.

[15] Exchange ratios are numeric values that adjust generated compliance units from an Off-Site GSI Project to account for environmental and programmatic needs to reduce compliance liability for participants in the RAC System. These are adapted from market-based programs where ratios are used to address calculation uncertainty, exchange equivalence, and net water quality benefit.

[16] The 1.0 minimum Rainfall Ratio allows more Equivalent Acres Greened compliance units to be available for purchase at the minimum cost and limits the potential for bias towards purchasing Equivalent Acres Greened compliance units generated in higher rainfall zones.

Once identified, the Rainfall Ratio is applied to Regulated Project Runoff Generating Acres to calculate Equivalent Volume Acres required for purchase, as follows:

$$Equivalent\ Volume\ Acres\ =\ Runoff\ Generating\ Acres_{Regulated\ Project} \times Rainfall\ Ratio \qquad \text{Eq. 4-4}$$

Table 3: Rainfall Ratio Matrix for Rainfall Zones Across the County

Exchange Ratio Matrix		Equivalent Acres Greened Annual Average Rainfall Zone[1] (inches)																				
		≤13	≤14	≤15	≤16	≤17	≤18	≤19	≤20	≤21	≤22	≤23	≤24	≤25	≤26	≤27	≤28	≤29	≤30	≤31	≤32	≤33
Regulated Project Annual Average Rainfall Zone (inches)	≤13	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤14	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤15	1.2	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤16	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤17	1.3	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤18	1.4	1.3	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤19	1.5	1.4	1.3	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤20	1.5	1.4	1.3	1.3	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤21	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤22	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤23	1.8	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤24	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤25	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤26	2.0	1.9	1.7	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤27	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤28	2.2	2.0	1.9	1.8	1.6	1.6	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤29	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤30	2.3	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
	≤31	2.4	2.2	2.1	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	*1.0*	*1.0*	*1.0*	*1.0*
	≤32	2.5	2.3	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	*1.0*	*1.0*	*1.0*
	≤33	2.5	2.4	2.2	2.1	1.9	1.8	1.7	1.7	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	*1.0*	*1.0*

[1] Determined based on location of compliance unit-generating Off-site GSI Project drainage area.

4.2.3.2 Equivalent Pollutant Loading

In addition to the equivalent volume requirement for Regulated Project participants, as covered in Section 4.2.3.1, the Off-Site GSI Project (i.e., which is generating Equivalent Acres Greened compliance units) must also provide capture and treatment of equivalent pollutant load for compliance with MRP C.3.e. Pollutant load reduction achieved through a GSI facility can be calculated as the difference between the influent load and the effluent load.

It is anticipated that the control measures implemented as Off-Site GSI Projects would primarily include bioretention facilities, other facilities that use filtration media such as planter boxes, and, where feasible, infiltration-based facilities. Facilities that are designed to infiltrate the MRP Provision C.3.d required volume remove stormwater runoff and any entrained pollutants and therefore consistently do not produce treated effluent for the design runoff volume.

Filtration-based facilities have been demonstrated to exhibit a relatively consistent effluent concentration with little to no dependence on influent concentration, especially for sediment-bound pollutants. For example, media filters tend to produce relatively consistent effluent concentrations that are independent of influent concentration because sediment is typically removed within the first few inches of media (Barrett, 2005). These effluent outcomes have also been observed from analyzing International Stormwater Best Management Practice (BMP) Database data; as a result, Leisenring et al. (2013) recommended using a constant effluent concentration when modeling the removal of total suspended solids (TSS) and particulate-bound pollutants for sand filters and bioretention cells.

Given that the anticipated control measures are likely to achieve similar effluent concentrations for a wide range of influent concentrations typical of urban runoff, similar influent load must be treated by the Off-Site GSI Project to achieve equivalent or increased reduction in pollutant load as compared to what would have been achieved by an on-site GSI facility located at the Regulated Project. For the Contra Costa County RAC System, equivalent influent pollutant loading between the Regulated Project and the Drainage Area(s) of the Off-Site GSI Project generating the compliance units exchanged is demonstrated based on PCBs and TSS land use-based loading.[17] Mercury is not included as one of the pollutants to demonstrate equivalency as one of the main sources of mercury is atmospheric deposition and is therefore more distributed across different land use types. This was demonstrated in SFEI's calibration of the Regional Watershed Spreadsheet Model (RWSM), where a relatively even distribution of mercury concentrations over different land uses was found, consistent with the "conceptual understanding of the diffuse nature of [mercury] sources in the landscape and the influence of atmospheric deposition" (Wu et al., 2016). Additionally, mercury, which is typically sediment-bound, is assumed to be reduced when TSS has been reduced in stormwater control measures.

If the PCBs loading and the TSS loading associated with the compliance units to be purchased are greater than or equal to that of the Regulated Project, equivalent pollutant loading is demonstrated. The PCBs loading and TSS loading associated with the compliance units purchased is proposed to be estimated on the basis of the land uses within the unit generating

[17] TSS is used to represent pollutant loading strength of typical urban pollutants of concern, many of which are sediment-bound.

Off-Site GSI Project drainage area(s). The Regulated Project loading would be based on the land uses within the development boundary.

PCBs Loading

PCBs land use-based loading is obtained from the RWSM Toolbox v1.0 Pollutant Model, "Pollutant Spreadsheet Model Calculations – Region" results (from SFEI, 2018 as summarized in Geosyntec, 2019). The division between "old" and "new" land uses is approximately 1968 (i.e., Old Industrial land use areas that have been industrial since at least 1968). This cutoff was selected to represent areas that may have been exposed to PCBs prior to regulatory changes to phase out the use of PCBs in the United States.

Table 4: PCBs Land Use-Based Concentrations

Land Use Category	Total PCBs (ng/L)
Old Industrial and Source Areas	204
Old Commercial and Old Transportation	40
Old Residential	4
New Urban	0.2

Note: ng/L - nanograms per liter

TSS Loading

TSS land use-based Event Mean Concentrations (EMC) were developed using data from the National Stormwater Quality Database (Pitt, 2015). The database was queried to obtain all TSS stormwater runoff samples collected within EPA Rain Zone 6 in California, in Spring, Fall, or Winter seasons. This query returned 650 stormwater runoff sample results from 647 rain events at 40 sites for "Residential," "Commercial," "Institutional," "Freeway," "Industrial," and "Open Space" land uses.

The data for each land use category were analyzed for outliers prior to developing EMCs. Following removal of outliers, the data were examined for normality. Open Space land use data was concluded to not come from a normally distributed population. Given this finding, and that Open Space land use is not expected to make up a large part of GSI drainage areas, Open Space data were not examined further for EMC development.

Land uses were compared to each other to understand if significant differences in the distribution of TSS concentrations exist. The distributions for each land use are shown in Appendix B. Initial box plot results demonstrate that confidence intervals of the median TSS concentration for Industrial land use do not overlap with those of residential, commercial, and institutional, which are more similar to each other throughout their distributions, and Freeway TSS concentrations are almost always higher than residential, commercial, and institutional throughout the distribution. To investigate this further, a series of Wilcoxon-Mann-Whitney tests were conducted to compare each land use pair. For all potential land use comparisons, data associated with Industrial land use were found to be derived from different data populations than Residential, Commercial, and Institutional land uses, and Freeway land use was found to be derived from a different population than Commercial and Residential. Based on the tests performed, the central tendencies of the data associated with Commercial, Institutional, and

Residential land uses do not appear to be statistically different and were combined for the pollutant ratio development (Appendix B and Figure 8).

TSS EMCs were developed for the three land use categories by taking the arithmetic mean of the natural log-transformed distributions, using the natural logs of the mean and the standard deviation as shown in the Equation 4-5 below (from Geosyntec and Wright Water Engineers, 2009).

$$Sample\ Mean = \exp\left(\mu_{ln} + 0.5\sigma_{ln}^2\right) \quad \text{Eq. 4-5}$$

Where:

exp = e to the power of

μ_{ln} = the mean of the natural log-transformed distribution

σ_{ln}= the standard deviation of the natural log-transformed distribution

Table 5: TSS EMCs by Land Use

Land Use	μ_{ln}	σ_{ln}	TSS EMC (mg/L)	Notes
Residential/ Commercial/ Institutional	4.07	0.95	92	Concentration data are not statistically different between these land use classes and the combined EMC is shown
Freeway	4.39	0.86	117	Concentration data are statistically different from the other land use classes
Industrial	4.79	0.79	166	Concentration data are statistically different from the other land use classes

Note: mg/L - milligrams per liter

Combined Pollutant Loading

The PCBs and TSS concentrations are summarized in Table 6 for eight distinct land use categories. All "new" land uses are assumed to have the same PCBs concentration, consistent with the RWSM findings. "Old" and "New" land use-based TSS concentrations were assumed to be the same for the same land use categories as information to categorize available TSS data into "Old" and "New" land uses was not available.

Table 6: Resulting Average Concentration and Proposed Pollutant Ratios

Land Use Category	PCBs Average Concentration (ng/L)	TSS Event Mean Concentration (mg/L)
New Residential/ Commercial/ Institutional	0.2	92
New Freeway	0.2	117
New Industrial	0.2	166
Old Residential	4	92
Old Commercial/Institutional	40	
Old Transportation	40	117
Old Industrial and Source Areas	204	166

It is not expected that Regulated Projects would have "Old" designated land uses within their on-site drainage area required to be treated for C.3 compliance, since redeveloped areas triggering C.3 would be considered "New" land uses following redevelopment (i.e., which would result in resurfacing and material replacement of those building materials that may contain PCBs). For any instances where "Old" land uses are part of the Regulated Project that the owner is seeking alternative compliance for, the "Old" portion of the area would need to be treated on-site or, if that is infeasible, be subject to limitations on the compliance units eligible for purchase on the basis of the land use associated with the compliance unit. See Table 7 for a matrix of Pollutant Ratios that would be applied for different Regulated Project land use to compliance unit land use exchanges.

Table 7: Pollutant Ratios for Identified Land Use Categories

Exchange Ratio Matrix		Off-Site Project Land Use Category			
		Residential, Commercial, or Institutional [1]	**Transportation [2]**	**New Industrial**	**Old Industrial and Source Areas**
Regulated Project Land Use Category	**Residential, Commercial, or Institutional [1]**	1.0	1.0	1.0	1.0[3]
	Transportation [2]	1.3	1.0	1.0	1.0[3]
	Industrial	1.8	1.4	1.0	1.0[3]

Notes: [1] Includes adjacent collector and local roadways.
[2] Transportation includes interstate highways, freeways, multilane highways, and principal arterials consistent with findings of the American Associate of State Highway and Transportation Officials (2015).
[3] Net environmental benefit discount applied to purchase (Section 4.3).

4.2.4 Equivalent Acres Greened Summary

For Regulated Projects, the required Equivalent Acres Greened is calculated as summarized in Equation 4-6, based on the attributes of the Regulated Project and the Equivalent Acres Greened compliance units purchased.

$$Equivalent\ Acres\ Greened_{RP} = Runoff\ Generating\ Acres_{RP} \times Ratio_{Rainfall} \times Ratio_{Pollutant}$$ Eq. 4-6

Where:

Runoff Generating $Acres_{RP}$ = The runoff generating acres for which the Regulated Project owner is seeking alternative compliance.

$Ratio_{Rainfall}$ = Calculated using Table 3 and Figure 7 (minimum value of 1.0).

$Ratio_{Pollutant}$ = Determined as described in Table 7.

For non-Regulated project buyers (e.g., Permittees purchasing Equivalent Acres Greened for retrofit GSI needs and other non-regulated projects), the equivalency demonstration is not required; Equivalent Acres Greened compliance units for purchase are calculated as:

$$Equivalent\ Acres\ Greened = Runoff\ Generating\ Acres_{non-Regulated\ Project\ purchase} \quad \text{Eq. 4-7}$$

Some non-Regulated project buyers may want to purchase Equivalent Acres Greened compliance units on the basis of impervious acres treated rather than Runoff Generating Acres. The impervious acres treated per compliance unit will range and may be slightly lower than the Runoff Generating Acres depending on the land area treated by the Off-Site GSI Project generating the compliance units.[18] This information would be provided in the RAC System Tracking Tool for each compliance unit.

4.3 Net Environmental Benefit

Provision C.3.e requires a net environmental benefit through the alternative compliance approach. To provide a net environmental benefit for the Contra Costa County RAC System, a "NEB Ratio" is applied to Equivalent Acres Greened units when calculating participant compliance purchase amounts. The baseline NEB Ratio is proposed at 1.1 for Regulated Projects participating in the Contra Costa County RAC System, such that the additional 0.1 Equivalent Acre Greened for each acre of impact will provide a net increase in impervious surface treated and resulting net reduction in flow and/or pollutant load. For buyers not subject to MRP Provision C.3.e alternative compliance requirements (e.g., Permittees seeking Equivalent Acres Greened to meet GSI retrofit needs and other non-Regulated projects), the NEB Ratio is 1.0, providing equivalent impervious surface treatment.

Equivalent Acres Greened units generated by Off-Site GSI Projects that treat "Old Industrial" land uses are proposed to be exchanged to Regulated Projects associated with "New Residential," "New Commercial," "New Institutional" or "New Transportation" at a discounted WQB Ratio of 1.0 to encourage their exchange. Only Equivalent Acres Greened units treating "Old Industrial" land use would be allowed to be sold at the discount. For these compliance units, the Off-Site GSI Facility would be treating additional pollutant load beyond that required to meet equivalent pollutant loading due to the much higher PCBs loading from "Old Industrial" land uses. For these exchanges, equivalent impervious surface treated and equivalent reduction in flow will also be provided through the 1.0 NEB ratio.

4.4 Required Baseline(s)

Off-Site GSI Projects used to generate Equivalent Acres Greened compliance units must meet the baselines described below:

[18] The difference between runoff generating acres (equal to Equivalent Acres Greened for non-Regulated buyers) and impervious acres is not expected to be large in most cases as only 10% of the treated pervious area is included in the Equivalent Acres Greened calculation. For example, for a 10-acre 65% impervious drainage area treated by an Off-Site GSI Project, there are 6.5 impervious acres and a total of 6.85 Runoff Generating Acres per the RAC System calculation. Non-Regulated project buyers who must purchase on the basis of impervious acres may therefore need to purchase slightly more Equivalent Acres Greened compliance units to meet their needs.

1. **Off-Site GSI Projects must treat drainage area(s) that are currently untreated by GSI facilities** – If a portion of a drainage area tributary to a proposed Off-Site GSI Project is already treated with GSI, that portion of the drainage area cannot be exchanged as Equivalent Acres Greened compliance units.
2. **Any acres required to be treated for compliance with an NPDES permit are not eligible to be certified as Equivalent Acres Greened compliance units** – Runoff Generating Acres captured and treated by Off-Site GSI Projects are not eligible if they are required to be treated to meet compliance with the MRP; the Phase II General Permit; the Industrial General Permit (Order No. 2014-0057-DWQ, IGP); an individual NPDES Permit; or any other NPDES permit. If an Off-Site GSI Project is constructed such that only a portion of its drainage area(s) require(s) NPDES compliant treatment, the non-Regulated portion of the drainage area(s) only may be eligible to generate Equivalent Acres Greened.

Additional information regarding eligibility is provided in Section 5.

4.5 Compliance Purchase Calculation Methods

The number of Equivalent Acres Greened compliance units purchased by a buyer and the Net Environmental Benefit are incorporated into the capital compliance purchase and calculated as follows:

$$Purchase_{Compliance} = (Equivalent\ Acres\ Greened \times NEB\ Ratio) \times Cost_{EAG} + Payment_{Administrative} \quad \text{Eq. 4-8}$$

Where:

Equivalent Acres Greened	=	Required compliance units for equivalency; calculated as described in Section 4.2.4.
NEB Ratio	=	1.1 for Regulated Projects and 1.0 for other non-Regulated Project purchases. A discount ratio of 1.0 is applied for purchases of Equivalent Acres Greened units associated with Old Industrial land use.
$Cost_{EAG}$	=	Equivalent Acre Greened unit cost, developed as described in Section 6.
$Payment_{Administrative}$	=	Administrative payment, developed as described in Section 6.

For each exchange, the number of Equivalent Acres Greened units exchanged are tracked and marked as "sold" in the Contra Costa County RAC System Tracking Tool. For Regulated Project exchanges, the number of Equivalent Acres Greened exchanged is calculated as $(Equivalent\ Acres\ Greened \times NEB\ Ratio)$; this is the value included in the exchange ledger in the System Tracking Tool.

4.6 Ongoing O&M Fee

As indicated by MRP Provision C.3.e.i(2), and included as part of the basis to define compliance units, Regulated Projects participating in the Contra Costa County RAC System must provide a proportional share of the O&M costs for the Off-Site GSI Project. This is proposed to be accomplished through an ongoing O&M fee levied on Contra Costa County RAC System participants on a per "Equivalent Acre Greened" basis.

4.6.1 O&M Fee Mechanism

Through the development of this Summary Report, the Project Team explored a number of potential mechanisms for O&M. As these facilities are required to be maintained on a long-term basis, an upfront payment is not considered a viable solution. An upfront payment would likely not cover all potential future facility costs and could be prohibitively expensive for some participants. An ongoing O&M fee was identified as a sustainable approach to O&M that would minimize future risk of noncompliance.

The Project Team examined several different potential approaches for an ongoing O&M fee. Contra Costa County pursued a stormwater fee ballot measure in 2012, which failed, and other agencies throughout the state have had similar failures or have not wanted to pursue such a measure given the level of effort and potential for failure. Any solution that would require voter approval was therefore not considered a reasonable pathway. An assessment district was considered, but has limitations as the assessment must be associated with a "special benefit" that could be difficult to demonstrate when funds are pooled for Off-site GSI Projects located in different jurisdictions than where the assessment is paid. The Project Team has therefore identified and recommended a Countywide Community Facilities District as the approach for the ongoing O&M fee. The Community Facilities District fee would be levied on participating Regulated Project parcels on a cost per "Equivalent Acre Greened" basis.

There are some limitations with Community Facilities Districts, as this approach may limit participation from public agency buyers and additionally may limit payments for maintenance of Off-site GSI Projects located on private property. The Administrator of the Community Facilities District must still be identified, though it is anticipated that the Flood Control District would act as the fiduciary agent. These and other critical considerations will be explored during the next phase of the Contra Costa County RAC System development.

Given this, it is anticipated that participants who have opted to participate in the Contra Costa County RAC System would be charged annual, recurring O&M fees on a cost per "Equivalent Acre Greened" basis via two pathways:

1. Parcel-based participants (i.e., private or public Regulated Project participants) would ballot into the new Community Facilities District as part of their RAC System participation and be charged annually per an established rate schedule. A fee will continue to be levied on the parcel as long as the parcel participates in the Contra Costa County RAC System.
2. Non-parcel-based participants, including cities or other agencies purchasing compliance units for GSI retrofit needs and other purposes, would enter into a long-term agreement (duration to be determined) with the O&M fee Administrator and/or the Flood Control

District (acting as fiduciary agent), allowing them to be invoiced annually per an established rate schedule.

For both pathways, long-term participation in the Contra Costa County RAC System and subsequent recurring payment of O&M fee for long-term compliance with the MRP would be dependent on the RAC System continuing to be a compliance option under the MRP. See Section 6.4 for more information about ongoing O&M fee development.

5. CONTRA COSTA COUNTY RAC SYSTEM REQUIREMENTS

The Contra Costa County RAC System is structured to support Regulated Project owners within Contra Costa County with achieving alternative compliance as defined by MRP Provision C.3.e. The primary objective of the Contra Costa County RAC System is to enable Equivalent Acres Greened units generated from Off-Site GSI Projects treating nonpoint source urban stormwater runoff to be exchanged with nonpoint source Regulated Projects and other non-Regulated project buyers. Eligibility and restrictions for the Contra Costa County RAC System were developed to support alternative compliance as defined by the MRP. Requirements described in this Section will pertain to Phase 2 of the Contra Costa County RAC System and are subject to amendment in the future as the System expands (Section 8).

The process for collection of funds is described in Section 5.4. **Compliance with Provision C.3.d/C.3.f** (i.e., certification) and **C.3.h** (verification) for the proposed Contra Costa County RAC System are described in Section 5.6 and 5.7, respectively. Sections 5.6 and 5.7 also provide details about the **accounting and reporting system** (i.e., System Tracking Tool).

5.1 Eligible Participants

Eligible participants may include entities within West Contra Costa County or East County interested in exchanging Equivalent Acres Greened compliance units. These may include developers with Regulated Projects within the jurisdictions of Contra Costa County and Permittees with Regulated Projects fitting the category descriptions listed in MRP Provision C.3.b.ii. This may also include other non-Regulated entities. Any public or private entity that is able to operate within the constraints of the Contra Costa County RAC System and able to take actions that result in a demonstrable generation of Equivalent Acres Greened may implement Off-Site GSI Projects as potential compliance unit providers. This may also include third-party aggregators. CCCWP permittees must complete a Participant MOU (see Appendix C-2) for Regulated Projects within their boundaries and their jurisdictions to participate in the RAC System.

5.2 Eligible Regulated Projects and Other "Buyers"

For Regulated Project owners participating as buyers, the jurisdiction in which the Regulated Project is located may decide whether the Regulated Project is eligible to participate in the Contra Costa County RAC System. The decision by the jurisdiction may be based on the Regulated Project's location, density, land use type, or other factors. It is expected that high-density Regulated Projects that are not subject to hydromodification management requirements would be eligible to participate. Non-regulated project buyers are expected to be limited to MRP Permittees within the County as part of Phase 2 of the Contra Costa County RAC System.

There is potential for the Contra Costa County RAC System to be expanded more broadly to other interested non-Regulated project buyers if opportunities arise as part of Phase 2, or during Phase 3. These additional entities may include those subject to the NPDES General Permit For

Waste Discharge Requirements (WDRs) for Storm Water Discharges From Small MS4s[19] (Phase II General Permit) issued in 2013 and revised in 2015, 2016, and 2018 (California State Water Resources Control Board, 2013), Caltrans, or potentially other entities with TMDL compliance requirements, particularly if there are TMDL requirements for other pollutants of concern in the future. Projects that are under the jurisdiction of the Industrial General Permit (IGP; Order No. 2014-0057-DWQ as amended by Order No. 2015-0122-DWQ) or an individual NPDES permit, if interested in participating, are likely be considered on a case-by-case basis during Phase 2 of the Contra Costa County RAC System and beyond.

The Contra Costa County RAC System may additionally promote partnership opportunities for implementation of other water quality management practices in Phase 2 or beyond as part of future water quality goals. Other buyers would participate in the Contra Costa County RAC System as shown in Figure 4.

5.3 Eligible Off-Site GSI Projects

Off-Site GSI Projects, on public or private land in urban areas within Contra Costa County, that meet the baseline eligibility requirements outlined in Section 4.4 may be eligible to generate compliance units. All proposed Off-Site GSI Projects must meet the criteria set out by the CCCWP RAC Subcommittee and be certified by the jurisdiction in which the Off-Site GSI Project is located before the compliance units generated at the Off-Site GSI Project are available for exchange. The RAC Administrator and/or jurisdiction may review and approve compliance units and allow for them to be exchanged prior to the Off-Site GSI Facility being constructed. The RAC Administrator and/or local jurisdiction will likely only allow this in specific cases where there is a high level of certainty that the Off-Site GSI Facility will be constructed. In this case, construction must be completed within three years of initial exchange, after which Off-Site GSI Projects must be certified and compliance units confirmed (see Section 5.6). All Off-Site GSI Projects are subject to ongoing verification processes (see Section 5.7).

It is envisioned there would be an application process to allow for approval that proposed compliance units preliminarily meet RAC System requirements, which compliance unit providers may complete for this assurance prior to conducting design and construction of Off-Site GSI Projects. Unit providers who do not complete the pre-screening application process would still be eligible to request certification of compliance units generated from Off-Site GSI Projects they have constructed, though they run the risk that the constructed project has not addressed a requirement for certification that could have been identified through pre-screening. If the RAC System Off-Site GSI Projects are implemented through a pay-for-performance or CBP3 contracting process, an optimized suite of Off-Site GSI Projects located on both public and private land may be sought through a request for proposals. More information about what a pay-for-performance or CBP3 process would entail is provided in Section 6.6.

Interested compliance unit providers must demonstrate control of the property where the Off-Site GSI Project would be or has been implemented. Off-Site GSI Projects are expected to utilize the

[19] Water Quality (WQ) Order 2013-0001-DWQ NPDES No. Cas000004 as amended by Order WQ 2015-0133-Exec, Order WQ 2016-0069-Exec, WQ Order 2017-XXXX-DWQ, Order WQ 2018-0001-Exec, And Order WQ 2018-0007-Exec.

pre-approved control measures (Section 4.2.1.2) and must be maintained and operated on a long-term, ongoing basis. These Off-Site GSI Projects would be managed following an O&M plan and/or agreement that is consistent with any relevant land use restrictions, such as easements or deed restrictions; the O&M plan would be required to be recorded to the parcel record(s) to ensure the property is managed consistent with that plan. Any entity seeking to construct non-preapproved control measures, with the intent of generating compliance units, must meet all guidelines established through the processes described in Section 8.2.

Pre-constructed facilities may be eligible for inclusion in the Contra Costa County RAC System as Off-Site GSI Projects. At this time, it is envisioned that pre-constructed facilities built in year 2020 or later may be eligible providing they meet the required baselines (see Section 4.4).

5.4 Exchanges

Generated compliance units from approved Off-Site GSI Projects would be entered into the Contra Costa County RAC System Tracking Tool by the approving entity (Section 5.6). Each compliance unit would have attributes indicating the associated rainfall zone and land use(s). Once entered into the RAC System Tracking Tool, these compliance units could be exchanged with participating buyers using the compliance purchase equations. If compliance units are approved for exchange prior to construction, the compliance units must be certified within three years of initial exchange when the Off-Site GSI Facility generating the compliance units is fully constructed. Visual schematics of exchanges between different entities and associated roles are provided as Figures 9a through 9f.

It is envisioned that exchanges would be facilitated by Permittees during Phase 2 of the Contra Costa County RAC System. The required Equivalent Acres Greened compliance units would be identified and calculated using the RAC System Tool based on the rainfall zones and land uses associated with the Regulated Project and compliance units, respectively, as applicable. The calculation would also include the appropriate NEB Ratio.

Following calculation of needed compliance units, the Permittees would reserve available compliance units in the RAC System Tracking Tool and initiate the exchange. The exchange would be completed and the purchased compliance units would be identified as “sold” in the RAC System Tracking Tool following payment for the required compliance purchase to the Permittee. Non-Regulated project buyer exchanges are envisioned to be facilitated by the CCCWP RAC System Administrator. In this case, all of the actions listed would be performed by the RAC System Administrator to facilitate the exchange.

5.5 System Restrictions

5.5.1 Land Use Restrictions

The Contra Costa County RAC System does not prohibit the participation of either Regulated Projects or Off-Site GSI Projects based on their land use type. Any land use that would require coverage under the IGP or an individual NPDES Permit would not be expected to participate in the Phase 2 of the System. Jurisdictions may choose to disallow certain Regulated Projects from participating with reasonable cause, such as projects that have adequate space within their

development footprint to implement on-site treatment or development that occurs on a known source property site.

5.5.2 Watershed and Jurisdictional Restrictions

The Contra Costa County RAC System would require all Regulated Projects and Off-Site GSI Projects be located within Contra Costa County. All exchanges would occur between entities draining to the San Francisco Bay watershed within Contra Costa County. During Phase 2 of the Contra Costa County RAC System implementation, Regulated Projects subject to Provision C.3.g. are not expected to seek participation in the Contra Costa County RAC System to cover hydromodification management requirements off-site through the RAC System due to the need to address impacts to downstream San Francisco Bay tributaries (i.e., which would require exchanges at a smaller watershed scale). However, Regulated Projects subject to Provision C.3.g. may still utilize the RAC System to meet their Provision C.3.e requirements (i.e., LID/GSI requirements) off-site.

During Phase 2 of RAC System implementation, exchanges may occur between West Contra Costa County (i.e., within the Water Board Region 2 boundary) and East Contra Costa County. While both County areas are covered under the MRP, each Region has different TMDLs, so any party participating in an exchange between West County and East County would need to consider potential water quality compliance outcomes of such an exchange.

It is possible that future expansion of the RAC System would allow for inter-county exchanges with other areas that that drain to the San Francisco Bay.

5.6 Certification Requirements

The design, quantification of compliance units, and implementation of an Off-Site GSI Project must be certified upon project completion, by the Permittee in which jurisdiction the Off-Site GSI Project is located. Certification of the Off-Site GSI Project verifies that the Equivalent Acres Greened compliance units were implemented consistent with the Off-Site GSI Project review and approval process, if it takes place prior to certification. The review and approval process confirms that the compliance units proposed to be generated by the Off-Site GSI Project are calculated correctly and identifies the compliance units as available for exchange.

In most cases, it is expected that the Off-Site GSI Project would be an LID/GSI treatment facility with tributary drainage area(s) that is not associated with or include a Regulated Project. There may be situations where an LID/GSI treatment facility is built as part of a Regulated Project but is designed to treat a drainage area not associated with that of the Regulated Project (e.g., when a private Regulated Project elects to construct LID/GSI in the public right-of-way along the project frontage); in this case, the private Regulated Project developer may also be eligible to exchange generated Equivalent Acres Greened compliance units. In this case, the Certifying Entity (i.e., local Permittee) would be responsible for confirming the total compliance units generated by the project, calculating the quantity of compliance units needed by the Regulated Project for C.3 compliance, and the excess quantity of compliance units available for exchange. In the case where the certifying entity could be the same entity as the seller, an independent 3rd party could be tasked with certification.

In some cases where there is high certainty that an Off-Site GSI Project will be constructed, a pre-construction certification process may be conducted to allow compliance units to be available for exchange up to three years prior to final construction. In all cases, the final certification process for the Off-Site GSI Project and associated compliance units would take place after the Off-Site GSI Project is fully constructed and the O&M responsibility has been assigned. The certification process consists of the following steps:

1. Entry of the Completed Off-Site GSI Project into the System Tracking Tool: Upon completion of Off-Site GSI Project design and/or construction certification processes, the Certifying Entity will provide Off-Site GSI Project attribute information, which will be uploaded to the RAC System Tracking Tool (in a manner to be determined). If compliance units will be made available prior to Off-Site GSI Project construction, the Pre-Construction Off-Site GSI Project Data and Design Certification Form (Appendix C-3) would be completed as part of pre-construction review and design approval. For all Off-Site GSI Projects, once the Project is constructed, the Off-Site GSI Project Data Form (Appendix C-2) would be completed or updated with final Project information. If Off-Site GSI Project compliance units will not be made available until after construction, only the Off-Site GSI Project Data Form (Appendix C-4) is needed.

   Attributes include: facility ID number; facility type and location; drainage area size(s), location(s), and land use(s); total impervious and pervious surface area within the drainage area(s); total Equivalent Acres Greened; facility owner; project cost; and associated multiple benefits. In some cases, the RAC System Administrator and local jurisdiction may allow the Compliance Units to be available for exchange after this step. If the Off-Site GSI Project is entered into the RAC System prior to completion of construction, post-construction certification information would be input at a later date.

   The other documents related to the certification process (e.g., the construction inspection checklists, O&M Plan and Agreement, and Post-Construction Certification Form, described in Steps 2-6 below) will also be uploaded to the RAC System Tracking Tool when completed. All of the data and documentation for the certified Off-Site GSI Project must be completed and uploaded within three years of initial exchange of compliance units. For most Off-Site GSI Projects, the compliance units become available for exchange(s) with Regulated Project(s) following upload of all certification information.

2. Design Review by the Certifying Entity: The Certifying Entity would review the design documents for the Off-Site GSI Project, including calculations, plans, details, and specifications, and would determine whether the LID/GSI treatment facility meets the design requirements established in MRP Provision C.3 and is consistent with standard design practice described in the CCCWP's Stormwater C.3 Guidebook (CCCWP, 2017). The design review would follow the Certifying Entity's typical development application or capital project review process, leading to issuance of a building permit (for a private project) or commencement of a bid procurement and award (for a public project). If an alternative delivery approach (e.g., design-build or progressive design-build) is used for public projects, the certification could occur concurrently with design and construction. If compliance units will be made available prior to Off-Site GSI Project construction, the Certifying Entity would complete design review in the Pre-Construction Off-Site GSI

Project Data and Design Certification Form (Appendix C-3). After the Off-Site GSI Project is constructed, the Certifying Entity will complete Section 1 (Design Review) of the Off-Site GSI Project Post-Construction Certification Form (Appendix C-5) to certify that the design review was completed and that the design meets the C.3 requirements and standard practices. If Off-Site GSI Project compliance units will not be made available until after construction, only the Off-Site GSI Project Post-Construction Certification Form (Appendix C-5) is needed.

3. Construction Inspection by the Certifying Entity: The Certifying Entity would conduct inspections of the Off-Site GSI Project, at appropriate stages during and at completion of construction, to ensure that the Off-Site GSI Project is constructed in accordance with approved plans. The Certifying Entity would complete the CCCWP Stormwater Treatment Facilities Construction Inspection Checklist (see Appendix C-6) for each inspection. If the Certifying Entity approves making the compliance units available for sale prior to construction, the Construction Inspection would take place following Step 4.
4. Entry of the Completed Off-Site GSI Project into AGOL Tool: Following the upload of Off-Site GSI Project data to the System Tracking Tool, the Certifying Entity would also upload data to CCCWP's current "C3 Project Tracking and Load Reduction AGOL Application" to track installed stormwater treatment facilities and estimate pollutant loads reduced. The data in AGOL would be used to generate reports required by the MRP, including to demonstrate compliance of any Regulated Project(s) that purchase compliance units from the Contra Costa County RAC System, per Provision C.3 requirements.[20]
5. Operation and Maintenance Assurance: The Certifying Entity would ensure that an O&M Plan is prepared for the Off-Site GSI Project and would review the Plan for consistency with the CCCWP Stormwater C.3 Guidebook and Stormwater Facilities O&M Plan Template (Appendix C-6). The Certifying Entity would also ensure that an O&M Agreement, with the entity responsible for maintenance of the Off-Site GSI Project, is prepared, signed, and recorded to the parcel, if appropriate. The O&M Agreement would be prepared consistent with the CCCWP Stormwater Management Facilities O&M Agreement Template (Appendix C-7) and include the O&M Plan.
6. Post-Construction Certification: The Certifying Entity will complete Sections 2 and 3 of the Off-Site GSI Project Post-Construction Certification Form (Appendix C-5) to certify that construction inspections were conducted, and the facility was constructed consistent with the final plans (i.e., completion of Step 2), and that the O&M Plan and Agreement for the Off-Site GSI Project were prepared and signed (i.e., completion of Step 3).

More information about the specific forms and templates used to document the certification process is provided in Section 10.

[20] There are currently no regulatory requirements to report data on Off-Site GSI Projects, compliance metrics, and exchanges from the System Tracking Tool. However, this is subject to change with the upcoming MRP reissuance.

5.7 Verification Requirements

Ongoing verification of the Off-Site GSI Project's performance is important for ensuring that the project is regularly maintained and continues to adequately treat the Equivalent Acres Greened associated with the Regulated Project(s). Verification will be performed via the municipal O&M verification inspection programs currently required by the MRP for all installed treatment facilities. In most cases, the O&M verification inspections of the Off-Site GSI Project will be conducted by the jurisdiction in which the Off-Site GSI Project is located (i.e., the "Verifying Entity" is the same as the Certifying Entity). However, there may be situations in which the Certifying Entity delegates the responsibility for O&M verification inspections to another entity. This is acceptable as long as the Verifying Entity is not the same entity designated in the O&M Agreement as responsible for routine maintenance of the project, if the project is privately-owned.

The verification process for the Off-Site GSI Project and associated compliance units takes place following completion of construction and throughout the life of the Off-Site GSI Project. The verification process consists of the following steps:

1. O&M Verification Inspection by the Verifying Entity: The Verifying Entity would conduct inspections of the Off-Site GSI Project at such intervals the Permittee deems appropriate to ensure that the LID/GSI treatment facility is adequately maintained for optimal performance. The Verifying Entity would complete the CCCWP Stormwater Facility O&M Inspection Report form (Appendix C-9) for each inspection. If any deficiencies are found, they would be documented on the form and discussed with the responsible party. Follow-up inspections would be conducted until the deficiencies are corrected and documented on the inspection form. Information from these inspection forms would be stored in the Verifying Entity's local database for O&M verification inspection data, as required by the MRP.
2. Summary of Off-Site GSI Project Verification: On an annual basis, the Verifying Entity would complete the Off-Site GSI Project O&M Verification Form (Appendix C-10) that summarizes verification actions, including documenting that O&M was performed, the project was inspected (by whom and when), and any deficiencies were corrected. The Verifying Entity would upload this completed document to the System Tracking Tool to demonstrate ongoing verification of the project.

More information about the specific forms used to document the verification process is provided in Section 10.

6. COMPLIANCE PURCHASE AND O&M ASSESSMENT COST BASES

Section 6 covers financial aspects of the Contra Costa County RAC System, and Sections 6.3 and 6.5 describe aspects of **the processes for collection and timely use of funds,** required for proposed program submittal per MRP 3 Fact Sheet.

6.1 Cost Basis Considerations

The Contra Costa County RAC System is expected to be primarily funded through compliance purchases, similar to most in-lieu payment (or fee) programs, which are typically receipt-based. Financial solvency is essential to the ability of these types of programs to operate. Under-collection of payments is a threat to the sustainability of an in-lieu payment program. The typical program portfolio includes the program's net assets (e.g., credits, cash), based on payment collection, and liabilities (e.g., existing and future contracts, administrative costs necessary to complete program requirements). Accordingly, it is essential that the payments are sufficient to cover the actual program project and administrative costs and risk factors. Given key regulatory and facility cost factors that apply to the Contra Costa County RAC System, there are some challenges to predicting program project and administrative costs, and additional considerations are needed for the RAC System's compliance purchase cost basis.

While some "Equivalent Acres Greened" compliance units may be exchanged in advance of Off-Site GSI Project construction, this would only be allowed when there is high certainty that the Off-Site GSI Project would be constructed. This approach could allow for advance funding of Off-Site GSI Projects through exchange of their compliance units, while also ensuring that the compliance units generated are tied to specific project benefits. Given uncertainty around implementation timelines and the potential for Off-Site GSI Projects to change for a variety of reasons, however, most Off-Site GSI Projects would likely need to be funded upfront through other means to avoid compliance unit risks in the RAC System. A source of upfront funding or financing will be needed to allow for compliance unit generating Off-Site GSI Projects to be implemented.

Additionally, the use of standard municipal procurement processes to build these projects could cause the generated Equivalent Acres Greened compliance units to be prohibitively expensive, based on existing GSI design and construction cost data compiled from Contra Costa County Permittees.

Regulated Project owners may choose to act as the compliance unit provider and construct an Off-Site GSI Project in a location other than their Regulated Project(s) to generate compliance units to apply toward future Regulated Projects. Other private entities could be relied upon to construct Off-Site GSI Projects at a lower cost than standard public procurement processes, through a pay-for-performance or CBP3 approach. However, these entities often achieve cost savings through large volumes of Off-Site GSI Project implementation (and resulting compliance unit generation) and may not be interested in participating in a program with low or unknown demand, due to the potential risk of not selling compliance units associated with Off-Site GSI Projects they build. In addition to the upfront construction requirements, demand uncertainties, and high potential cost for traditional procurement, there is also a desire for transparency in setting the compliance purchase price. All of these challenges require an innovative approach to

cost setting and program implementation. The proposed approach to address these uncertainties is discussed below.

6.2 Compliance Unit Demand Considerations

6.2.1 Permittee Demand

The Contra Costa Permittees may want to purchase Equivalent Acres Greened compliance units to fulfill their water quality compliance or planning needs, including:

- Requirements to construct LID/GSI facilities for Regulated Projects, including public parcel and new roadway projects;
- GSI public retrofit projects; and
- TMDL compliance.

Based on LID/GSI cost data collected from Contra Costa County Permittees, the cost to construct LID/GSI projects to meet these project needs using traditional procurement processes are very high. For example, the approximate cost to build the public GSI projects identified in the Permittees' Green Infrastructure Plans by 2040 to address the PCBs and mercury TMDLs in Contra Costa County is estimated to exceed $1 billion (CCCWP, 2020). Based on a recent examination of costs for seven GSI projects implemented by Contra Costa County jurisdictions, treating an acre of stormwater runoff can cost over $300,000 (in 2020 dollars). This is consistent with average per-acre treated green streets costs documented in San Mateo County in 2021.

6.2.1.1 Programmatic Demand Option

With sufficient compliance unit demand, there is more certainty that compliance units would be sold; thus, there would be more interest from entities to build Off-Site GSI Projects as a result of the lower financial risk to participating in the program. One way to provide demand certainty is to establish a minimum program purchase guarantee ("Programmatic Demand"). This initial "Programmatic Demand" could be purchased by Permittees to allow for sufficient exchange activity during Phase 2 of the Contra Costa County RAC System. Guaranteed exchange activity would better enable the Contra Costa County RAC System to achieve economies of scale, demonstrate proof of concept, garner interest, and grow the System. If Regulated Project owners or other entities can provide guarantees of compliance unit purchase at the initiation of Phase 2, they could also be included in the initial Programmatic Demand.

Permittees interested in participating in the Programmatic Demand purchases would identify the Equivalent Acres Greened compliance units they may purchase over Phase 2 of RAC System operation to meet their C.3 (and potentially, C.11/C.12) compliance requirements. In addition to providing economies of scale for the Contra Costa County RAC System launch, it is expected that this approach would allow for a lower compliance cost for Permittees. Furthermore, financing (or funding) and constructing Off-Site GSI Projects to meet an initial upfront Programmatic Demand (Section 6.3) would allow for completing CEQA and generating compliance units prior to exchange.

In the Programmatic Demand scenario, Permittees could identify the cost to construct LID/GSI facilities to meet their compliance requirements through traditional procurement and consider

what (lower) price they would be willing to pay instead through the Contra Costa County RAC System. Permittees could then identify the quantity of compliance units they would want to purchase, if Equivalent Acres Greened compliance units were available at their suggested price. This combined quantity of Equivalent Acres Greened compliance units identified by County Permittees would serve as the "Programmatic Demand" for Equivalent Acres Greened compliance units. Permittees could anticipate cost savings in meeting their GSI permit requirements through this approach.

With the knowledge that the Contra Costa County RAC System has a guaranteed baseline demand for compliance units, private compliance unit providers would have increased interest in participating in the Contra Costa County RAC System.

6.2.2 Regulated Project Demand

Currently, the compliance unit demand from Regulated Projects is difficult to determine. Challenges to estimating the amount of Regulated Project demand include fluctuations in the development market, difficulty in identifying potential developers over the next five to twenty-plus years, and the potential for developers to be reticent to provide their suggested demand without knowing more about the Contra Costa County RAC System. A number of developers have applied for MRP Provision C.3.e.ii, "Special Project"[21] status within the County, and likely more could be interested in making a compliance purchase to not have to construct stormwater treatment facilities on-site, especially for higher value or higher density redevelopment projects.

Development projections can be used to inform estimates of potential Regulated Project demand. As part of the RAA prepared for Contra Costa County (CCCWP, 2020), private development that occurred between 2003 and 2019 was compiled geospatially, and future private development was projected for 2020, 2030, and 2040. To forecast future private development area, CCCWP used the output of UrbanSim, a model developed by the Urban Analytics Lab at the University of California under contract to the Bay Area Metropolitan Transportation Commission (MTC) (MTC, 2021; Waddell, 2013). The UrbanSim modeling system was developed to support the need for analyzing the potential effects of land use policies and infrastructure investments on the development and character of cities and regions. The Bay Area's application of UrbanSim was developed specifically to support the development of Plan Bay Area, the Bay Area's Regional Transportation Plan/Sustainable Communities Strategy-equivalent planning effort (CCCWP, 2020).

MTC forecasts growth in households and jobs and uses the UrbanSim model to identify new development and redevelopment sites to satisfy future demand. Model inputs include parcel-specific zoning and real estate data; model outputs show increases in households or jobs attributable to specific parcels. The methods and results of the Bay Area UrbanSim model have

[21] Per the MRP 3 Provision C.3.e.ii: "Certain land development projects characterized as smart growth, high density, or transit-oriented development can either reduce existing impervious surfaces or create less "accessory" impervious areas and automobile-related pollutant impacts. Incentive LID Treatment Reduction Credits approved by the Water Board may be applied to these Special Projects, which are Regulated Projects that meet the specific criteria listed … in Provision C.3.e.ii.(2)."

been approved by both MTC and Association of Bay Area Governments' Committees for use in transportation projections and the regional Plan Bay Area development process.

The CCCWP RAA process used outputs from the Bay Area UrbanSim model to map parcels predicted to undergo new development or redevelopment in each Contra Costa jurisdiction at the time increments specified in the MRP (i.e., 2020, 2030, and 2040). The resulting maps were reviewed by Permittee staff for consistency with local knowledge and local planning and economic development initiatives and were revised as needed. Notably, the specific parcels identified by UrbanSim may or may not be realistically developed; however, the quantity of acres developed and approximate locations of, and zoning associated with, the parcels is considered representative of potential development in the County.

A summary of UrbanSim projections for 2021 – 2030 and 2031 – 2040 for the County are provided in Table 7. Development estimates for the County are separated out by Water Board region and estimated hydromodification management (HMP) requirements. Development projected as high density, with an assumed imperviousness of 85%, has been further separated out since these types of Regulated Projects may be most likely to seek alternative compliance for stormwater.

Table 8: Summary of UrbanSim Development Projections

Region	HMP Status	2020 – 2030 Equivalent Acres[1] by Development Density		2030 – 2040 Equivalent Acres[1] by Development Density		2020 - 2040 Equivalent Acres[1] by Development Density		
		Low/Med	High	Low/Med	High	Low/Med	High	All
Region 2	HMP Applicable	145	172	207	129	352	301	653
	HMP Exempt	59	**249**	77	**271**	136	**520**	656
	HMP Undetermined	7	9	75	1	82	10	92
	Region 2 Total	*211*	*430*	*359*	*401*	*570*	*831*	*1,401*
Region 5	HMP Applicable	279	21	562	50	841	71	912
	HMP Exempt	1,248	15	158	43	1,406	58	1,464
	HMP Undetermined	0	0	0	0	0	0	0
	Region 5 Total	*1,527*	*36*	*720*	*93*	*2,247*	*129*	*2,376*
Countywide Total		***1,737***	***466***	***1,081***	***493***	***2,818***	***959***	***3,777***

[1] Defined as 100% of directly connected impervious areas and 10% of directly connected pervious areas.

The UrbanSim development projections estimate approximately 520 acres of high-density, HMP exempt development in Region 2 that is expected to be constructed over the next 20 years (i.e., 249 acres from 2020 – 2030 and 271 acres from 2030 – 2040, see bolded values in Table 8). However, the amount of this development that may ultimately take place in the Contra Costa County RAC System is unknown.

6.3 Off-Site GSI Project Implementation Considerations

While some Off-Site GSI Projects could be partially funded or financed through sale of compliance units in advance of final construction, this would only be allowable for select Projects. A source of funding or financing would be needed to construct most Off-Site GSI Projects prior to collection of compliance purchase payments. The project delivery approaches used to implement Off-Site GSI Projects under the Contra Costa County RAC System would determine the ability to leverage private financing and the overall administrative structure of the program.

6.3.1 Upfront Financing of RAC System Off-Site GSI Projects

One option to implement RAC System Off-Site GSI Projects is to finance a suite of Off-Site GSI Projects to satisfy the initial projected demand or Programmatic Demand, if implemented. Financing could be obtained through public programs, such as the Clean Water State Revolving Fund (CWSRF) or Water Infrastructure Finance and Innovation Act (WIFIA) loans.

There is the potential that Permittee loans for compliance units purchased specifically for TMDL compliance that are not ultimately purchased by private developers could be forgiven through a public finance pathway. If the compliance unit-generating Off-Site GSI Projects are financed through CWSRF or WIFIA, the TMDL compliance unit portion could potentially be part of the loan that is ultimately "forgiven" because LID/GSI facilities in older urban or industrial areas provide water quality improvements that meet the intent of the CWSRF and WIFIA programs. Other compliance purchases by permittees (e.g., GSI retrofit requirements) are current or expected permit compliance requirements and are consequently less likely to be forgiven under this financing structure.

6.3.2 Alternative Delivery Approaches

There are three principal approaches for delivery of Off-Site GSI Projects to generate Equivalent Acres Greened compliance units: (1) traditional design-bid-build procured by the program administrator using the loan funds (or after compliance purchase payments are collected); (2) performance-based contracting for turn-key and fixed-price solutions; and (3) public-private partnership (P3), where a private enterprise engages with the program administrator and plays a larger role in administering the program and delivering the off-site projects.

6.3.2.1 Traditional Design-Bid-Build

Traditional public project funding involves a funder that pays a private entity (engineer/contractor) for a pre-defined scope of work. The payment schedule is typically linked to direct cost reimbursement and may include mark-up for overhead costs and an acceptable profit. If profit is allowed, it is linked to the project cost, providing an incentive for the private entity to increase costs in both the proposal phase and through change orders. Since the private entity is paid for work completed, and payments are not linked to outcomes, the funder bears all project risks. The funder may need to issue multiple Requests for Proposals (RFPs) for a given project for project design, construction management, and construction.

6.3.2.2 Performance-Based Contracts

Performance-based contracts (or simply performance contracts) (PBCs) condition payments based on defined performance outcomes that reflect the quality of the project delivered. This

strategy typically requires private capital to finance project implementation. Funders pay implementers an agreed-upon price per compliance unit after pollutant load or volumetric reductions are verified and all requirements are met for certified compliance units. Since the Contra Costa County RAC System compliance purchases would not include O&M costs, those costs would be levied separately on the property on an annual basis (Section 6.4.4).

6.3.2.3 Public-Private Partnerships (P3s)

P3s are a relatively common way for the public and private sector to collaboratively deliver and maintain GSI projects. A CBP3 is a form of alternative delivery in which a government agency and private partner seek to improve both water quality and quality of life for a community through LID/GSI projects that meet multiple environmental and social metrics (e.g., metrics tied to workforce and equity benefits).

As noted above, there are less administrative burdens under the performance-based or P3 delivery models, often leading to cost savings. Traditional procurement requires significant management and oversight of every facet of a project, while PBCs and P3s require more limited oversight and fewer RFPs.

6.3.3 Pay-for-Performance or CBP3 Model for Compliance Unit Providers

Depending on the entity responsible for control measure O&M, the Contra Costa County RAC System could utilize one of two models for a pay-for-performance or CBP3 contract with compliance unit providers. A Design-Build-Finance (DBF) model could be utilized if Permittees and/or the Countywide Maintenance District perform ongoing maintenance, and a Design-Build-Finance-Operate-Maintain-Availability Payment (DBFOM-AP) model could be used if the compliance unit provider is required to perform ongoing maintenance.

A DBF model only obligates the compliance unit provider to finance and deliver an Off-Site GSI Project that generates the Equivalent Acres Greened. Payment for capital expenditure would be released by the CCCWP System Administrator upon successful certification of the Off-Site GSI Project and generated compliance units.

A DMFOM-AP model requires the compliance unit providers to be responsible for financing, while the Contra Costa County RAC System maintains control over payments and revenue collection and makes pre-established payments to the private entity for project delivery and performance commitments. This model would completely shift the financial risk for performance to the private sector. The contract would require provisions that allocate pooled Countywide Maintenance District O&M assessments to the compliance unit providers, contingent on successful verification of O&M, delivery on additional performance standards, and timely responses to maintenance requests.

6.3.4 Private Financing

Private capital's primary role in the project financing process is to assume risk, accelerate implementation, and achieve project implementation in the most efficient and cost-effective manner possible. There is a limited role for private capital unless there are elements of risk, outcome-based approaches, and payment schedules that may require upfront private capital. In the context of the envisioned Contra Costa County RAC System project delivery, the opportunity

to leverage private capital participation would primarily be through the performance-based contracting and P3 delivery models, not under traditional public project funding.

6.4 Cost Setting

It is assumed that the Equivalent Acre Greened unit cost ($Cost_{EAG}$) would be the same for all System buyers and would represent the average cost to generate an Equivalent Acre Greened compliance unit from Off-Site GSI Projects implemented through the Contra Costa County RAC System. As described in Section 8.4.2, the Equivalent Acre Greened unit cost would need to be revisited and potentially adjusted on a regular basis.

6.4.1 Other Compliance Purchase Considerations

The costs used to establish the compliance purchase cost basis would be based on full cost accounting, including expenses such as project planning, design, permitting, and construction costs, as well as administration of the Contra Costa County RAC System. Accordingly, the overall compliance purchase amounts would be determined by project costs, administrative costs, overhead inventory, and risk. Since O&M costs would be covered separately through payments to a separate fund, these costs would not be included.

Once the amounts of the compliance purchase cost components are established, it is crucial that the Contra Costa County RAC System has a process in place to regularly evaluate the sufficiency of the compliance purchase amounts and to adjust the amounts as needed. See Section 8.4 for additional considerations for compliance purchase component adjustments.

The compliance purchase approach offers developers the option to navigate the C.3.e payment obligations in a limited time frame and avoid the technical, complex, and evolving regulations that govern the implementation of these GSI projects. These two benefits save considerable time and money, and lower the risk to the developer, which may make it more likely that the developer participates. Conversely, if the developer has to undertake many on-site commitments and the marginal costs of LID/GSI compliance is nominal, then it could lessen the benefits of using the Contra Costa County RAC System.

6.4.2 Administrative Payment

An administrative payment is proposed to be incorporated into the compliance purchase amount. The administrative payment would include costs for CCCWP System Administrator, along with costs charged by the jurisdiction in which the Regulated Project is located. Administrative payment amounts would be developed through cost studies when fee schedules are updated by Permittees and will cover all staff and/or consultant hours, along with materials and overhead, to perform administrative functions needed for the Contra Costa County RAC System. CCCWP cost amounts will similarly be developed through fee schedule updates. This process is anticipated to be informed by Phase 1 of the System. Administrative functions that may be incorporated into the payment are anticipated to include, but may not be limited to:

- Review preliminary applications to the Contra Costa County RAC System;
- Conduct Regulated Project review, as needed;
- Identify compliance units for sale for interested buyers;

- Perform or confirm exchange calculations;
- Conduct plan review and oversight processes for Off-Site GSI Projects;
- Enter data into the System Tracking Tool;
- Conduct certification and verification processes; and/or
- Other System administrative tasks.

The administrative payment may include costs from multiple entities that are involved in any given exchange and could vary depending on the jurisdictions involved in the exchange. For example, for a given exchange, the payment could include administrative costs associated with (but not limited to):

1. Cost for processing the Regulated Project buyer, identifying compliance units for exchange, and tracking, by the jurisdiction in which the Regulated Project is located;
2. Cost for design and construction phase review and certification of the Off-Site GSI Project associated with compliance units purchased, by the jurisdiction in which the Off-Site GSI Project is located; and
3. System administrator costs for overall System administration.

Many programs collect an administrative fee between 5% and 20% on top of other program costs. The method of procurement delivery determines the scope and costs of administration. If the Contra Costa County RAC System adopts a traditional design/bid/build delivery method for procuring the Off-Site GSI Projects, it would require more staff to oversee the program than a performance-based contracting or CBP3 approach.

6.4.3 Ongoing O&M Fees

To meet the requirements of MRP Provision C.3.e, a proportional share of the O&M cost for the Off-Site GSI Project shall be obtained from the buyer through an ongoing O&M fee. Participating buyers would pay an annual ongoing O&M fee per Equivalent Acres Greened compliance unit at a fixed rate with escalation for inflation and other costs.

At this time, it is envisioned that the ongoing O&M fee would be levied through a Community Facilities District and/or through specific long-term agreements. In either case, the rate schedule would reflect the cost of conducting O&M activities for all of the Off-site GSI Projects in the System. It is anticipated that the rate schedule may be initially established through detailed O&M cost estimates for Off-Site GSI Projects expected to generate compliance units for the System, along with an estimated O&M reserve (if permitted, for Off-Site GSI Projects that have compliance units still un-sold), and administrative costs. Though individual participants may be purchasing compliance units associated with specific Off-site GSI Projects, the fee rate schedule would consider O&M costs for all the Off-Site GSI Projects included in the System. This approach would allow for equity and consistency across the program. It is envisioned that the O&M fee would be adjusted as needed over time as O&M cost data are collected for Off-Site GSI Projects implemented for the Contra Costa County RAC System to adequately cover the actual cost of O&M. The cost of O&M activities will be developed through a detailed engineer's

report prepared by a registered professional engineer certified by the State of California commissioned by the CCCWP RAC Subcommittee.

The ongoing O&M fee will also cover the costs for administering the O&M funding for the Contra Costa County RAC System. This portion of the fee will cover activities including, but not limited to: collecting (and potentially pooling) O&M fees, validating successful O&M verification, distributing O&M funds to entities performing O&M, managing the O&M reserve as applicable, and completing RAC System reporting, as needed.

6.5 System Fund Management

6.5.1 Contra Costa County RAC System Fund

Funds collected through the compliance purchase payments will be managed in a fund that is administered by the CCCWP RAC System Administrator. Fund management may entail, but is not limited to:

1. Mechanisms for transferring payments between the System Administrator and Permittees;
2. Tracking payments collected and confirming appropriate payment amounts;
3. Pooling collected compliance purchase payments into combined fund;
4. Paying back public financing loans;
5. Managing loans with Permittees;
6. Payments to compliance unit providers and/or pay-for-performance or CBP3 contractor(s);
7. Investments into additional compliance unit-generating Off-Site GSI Projects;
8. Tracking and managing administrative program costs; and/or

6.5.2 Ongoing O&M Fund

The O&M fee administrator and/or the Flood Control District (acting as fiduciary agent) would pool ongoing O&M fee funds and disburse funds as appropriate to the O&M effort spent by Permittees and/or private contractors performing O&M work with proof of completed O&M, as documented through the RAC System Tracking Tool. If O&M is conducted by a pay-for-performance or CBP3 contract, O&M efforts will be described in the contracting documents. The O&M Fund will also be required to conduct adequate tracking and perform financial reporting.

6.5.3 Harmonized and Pooled Funding

The Contra Costa County RAC System would provide authority to the CCCWP RAC System Administrator to pool funding resources as allowable. Pooling, if conducted, could include the Equivalent Acres Greened portion of the compliance purchases, multiplied by the NEB ratio as applicable (i.e., capital costs), and could include funds from other sources into the RAC System Fund. Pooling funds could enable the Contra Costa County RAC System to implement larger-scale projects and solutions. The unit cost of implementing small LID/GSI facilities (from any provider type) is typically higher than regional projects. Costs for design, mobilization,

construction, monitoring, and maintenance often become less expensive per unit on larger projects.

In addition, pooling of funds could facilitate leveraging low-cost financing sources, such as SRF funds; the capacity to link water quality financing with economic development and diversification funding sources; and the ability to work in partnership with private investors in the delivery of cost-effective GSI projects more quickly and with less risk to RAC System member agencies.

7. RISK AND UNCERTAINTY MANAGEMENT

Phase 2 of the Contra Costa County RAC System is anticipated to manage a variety of buyers, Off-Site GSI Projects, and participants across Contra Costa County's diverse landscape. With a multitude of elements to manage, there are likely to be risks and uncertainty that would need to be addressed to ensure that Permittees participating in the Contra Costa County RAC System would not face compliance liability. This section describes sources of uncertainty, followed by recommended management actions.

7.1 Sources of Uncertainty

Identified sources of uncertainty for the Contra Costa County RAC System are related to the variability of precipitation, pollutant concentration, control measure implementation, effectiveness and performance, and costs of constructing and maintaining Off-Site GSI Projects. Additionally, market demand for purchasing Equivalent Acres Greened compliance units is uncertain.

7.1.1 Capture of Equivalent Quantity of Stormwater Runoff and Pollutant Loading

The Equivalent Acres Greened compliance unit is designed to provide off-site equivalent quantity of stormwater runoff and pollutant loading in accordance with Provision C.3.e requirements for Regulated Projects. Precipitation and land use are the primary, non-management related factors that would influence the quantity of stormwater runoff and pollutant loading captured by Off-Site GSI Projects, respectively. As Contra Costa County contains a wide range of precipitation rates and historic land use, equating stormwater runoff and pollutant loading from a Regulated Project to an Off-Site GSI Project in different locations can be challenging. In addition, site-specific conditions may affect pollutant concentrations and control measure effectiveness and introduce a degree of uncertainty in environmental outcomes.

7.1.2 Risk of Noncompliance due to Project Failure

The failure in the implementation, operation, or maintenance of Off-Site GSI Projects can result in noncompliance for the Contra Costa County RAC System or System participants. As some compliance units may be exchanged up to three years before the Off-Site GSI Project generating the units is operational, a delay or failure to ultimately construct the compliance unit-generating Off-Site GSI Project could lead to noncompliance. Ongoing O&M is of particular concern for the System, as many of the anticipated compliance unit-generating projects are required to be operated and maintained on a long-term, ongoing basis.

7.1.3 Cost and Demand Uncertainty

Off-Site GSI Project construction and maintenance costs are used to set compliance purchase prices and ongoing O&M fees. These costs can vary widely and change from year to year, and there is risk of buyer shock if compliance purchase costs or O&M fees change drastically in a short time period. The number of participants in the RAC System and the magnitude of compliance units exchanged is difficult to predict as described in Section 6.2.

7.2 Managing Uncertainty

The Contra Costa County RAC System utilizes several mechanisms to manage identified risk and uncertainty that may affect Permittees, compliance unit providers, and environmental outcomes.

7.2.1 Runoff Equivalency – Rainfall Ratio

The Contra Costa County RAC System would require a rainfall equivalency factor (i.e., Rainfall Ratio) to be applied to the Regulated Project Runoff Generating Acres for exchanges of Equivalent Acres Greened compliance units generated in other Rainfall bands across the County (see Section 4.2.3.1). The Rainfall Ratio would account for variability in precipitation across Contra Costa County and provide the demonstration of "equivalent volume" required under Provision C.3.e.(2).

7.2.2 Pollutant Load Equivalency – Pollutant Ratio

A portion of the uncertainty surrounding the equivalency of pollutant loading between a Regulated Project and an Off-Site GSI Project is anticipated to be addressed through the RAC System's Rainfall Ratio, which accounts for runoff volume generation differences. To account for pollutant loading differences between land use types, a comparison of average concentrations of PCBs and TSS (as surrogate for urban pollutants of concern) was conducted as described in Section 4.2.3.2. As PCBs are a legacy pollutant, new and re-development projects are anticipated to always produce lower concentrations than older urban areas. Based on the TSS analysis, there was no statistical difference in loading between commercial, residential, and institutional land use classifications; however, transportation and industrial land uses would be expected to produce higher levels of TSS and potentially other adsorbed pollutants. Therefore, any new or re-development projects that are proposed to have these land use types would require a higher Pollutant Ratio to apply to the Equivalent Acres Greened compliance units exchanged to provide the pollutant load capture equivalency demonstration required by MRP Provision C.3.e.i.

While treatment through control measures could be expected to be variable, any variability in the outcomes of the treatment control measures used for Off-Site GSI Projects is expected to occur at the same rate as those used for on-site Regulated projects.

7.2.3 Contractual Mechanisms

Traditional contracting mechanisms obligate payment based on the completion of a scope of work that is intended to provide desired outcomes. However, this approach still burdens buyers with the risk of underperformance of the desired outcomes. The mechanism used to contract the compliance unit providers, whether a pay-for-performance or CBP3 approach, is intended to reduce the occurrence of underperformance (e.g., project failure, inadequate LID/GSI implementation) by shifting the financial burden of underperformance from buyer to the provider of the service (in this case, the compliance unit provider).

7.2.3.1 Project Failure

Participants in the Contra Costa County RAC System would be required to agree to contractual provisions intended to provide assurances for performance of control measures, account for unseen conditions, and provide remedies for deficiencies. This may include financial assurances,

such as performance bonds. The contracts for compliance unit providers participating in the RAC System can be structured on pay-for-performance or CBP3 principles for larger-scale implementation. These contracts would require financial compensation to be tied to performance outcomes, such as the design, implementation, and O&M (if conducted by a private entity) of Off-Site GSI Projects. A pay-for-performance or CBP3 approach for the Contra Costa County RAC System may mitigate Off-Site GSI Project implementation or performance risk, while providing an incentive for compliance unit providers to provide cost-effective compliance units. Payments from CCCWP would be tied to milestones, including the successful certification of a properly-designed and implemented project. In addition, contracts would be expected to obligate compliance unit providers with the financial responsibility of addressing project failures. Compliance unit providers would be responsible for addressing failures revealed during certification and ongoing verification of O&M within a specified grace period. Some compliance units may be exchanged before the compliance unit-generating Off-Site GSI Project is constructed; however, the RAC System Administrator or local jurisdiction would only approve such pre-construction exchanges when there is high certainty that the Off-Site GSI Project would be constructed.

If private entities are identified as responsible for ongoing O&M and/or verification under a pay-for-performance or CBP3 approach, they would be similarly required to demonstrate proof of O&M conducted and adequate performance of Off-Site GSI Projects prior to receiving payment through the Countywide Maintenance District. Jurisdictions who conduct O&M for Off-Site GSI Projects would similarly need to demonstrate proof of O&M prior to receiving funds from the Countywide Maintenance District.

7.2.3.2 Unaddressed Catastrophic Project Failure

In the rare instance that a project failure is not addressed by a compliance unit provider within the specified grace period, contract provisions are expected to require financial compensation from the compliance unit provider for the Contra Costa County RAC System to provide MRP Permittees compliance units from another source. During Phases 1 and 2, the CCCWP RAC Subcommittee and/or Administrator would be responsible for locating and attaining Equivalent Acres Greened compliance units to replace defaulted compliance units. In future iterations of the RAC System, a supply of reserve compliance units may be obtained through a reserve pool of compliance units set aside and pooled from MRP Permittees.

7.2.3.3 Assurances for Compliance Unit Providers

Contractual provisions are also expected to provide assurances to compliance unit providers that certified Off-Site GSI Projects would not be subject to modifications to the Contra Costa County RAC System that occur after the establishment of the contract. This would pertain directly to changes to exchange ratios and/or calculation methods for compliance units and certification requirements. These types of contractual provisions are intended to reduce uncertainty and risk for compliance unit providers during their financial planning and decision-making process for Off-Site GSI Projects.

7.2.4 Cost and Demand Uncertainty

The RAC System would average Off-Site GSI Project implementation costs across the RAC System to mitigate design and construction cost variability and allow equitable sale of

compliance units. Additionally, increases in Equivalent Acre Greened unit costs would be allowed on an ongoing basis. Similarly, the RAC Administrator will conduct regular examination of the sufficiency of O&M fees and may increase these fees as needed to cover costs.

Market demand is subject to many factors. The RAC System has been designed such that larger-scale regional stormwater capture facilities could be implemented and generate compliance units for exchange. As larger scale facilities have been demonstrated to be more cost effective than smaller scale facilities, it is expected that RAC System participants would realize cost savings for their compliance needs. Compliance cost savings are likely to encourage demand.

8. ADAPTIVE MANAGEMENT

Section 8 describes adaptive management procedures for the Contra Costa County RAC System, and Sections 8.2 and 8.3 describe the responsibilities for adaptive management for timing and **oversight by entities**. This section refers to adaptive management processes that would occur following approval of the Contra Costa County RAC System through a permit amendment or other process, which would allow for the initiation of Phase 2 of the RAC System under MRP 3.

8.1 Scaling the Contra Costa County RAC System

Although Phase 2 of the Contra Costa County RAC System has a defined scope for its participants, compliance units, and jurisdiction, the RAC System was envisioned to provide a framework that would allow entities across the Bay Area to meet water quality goals while generating economic opportunities. Scaling the Contra Costa County RAC System to encompass more objectives and participation, or to allow for exchanges with other Countywide regional alternative compliance systems, could create opportunities for economies of scales and incentivize nonregulatory-based interests, such as environmental justice. This section provides considerations for scaling the Contra Costa County RAC System beyond Phase 2.

8.1.1 Scaling for Additional Compliance Units and Control Measures

It is anticipated that, after Phase 2 of the Contra Costa County RAC System, more control measures and associated compliance units could be integrated to address MRP provisions and other community needs.

8.1.1.1 Provision C.3.g. Hydromodification Management

Permittees with Regulated Projects subject to MRP Provision C.3.g. hydromodification management requirements may participate in the Contra Costa County RAC System to address Provision C.3.b. (LID/GSI requirements) for their Regulated Project off-site provided that their hydromodification control requirements are met on-site. As addressing water quality treatment and hydromodification control in the same on-site facility would be expected to be more cost-effective, it is not expected that many Regulated Projects would use this option. The Contra Costa County RAC System could be updated in the future to incorporate a separate Permittee hydromodification management track for a new hydromodification management compliance unit, if there is substantial interest.

The Permittee hydromodification management track would include a separate suite of hydromodification management facilities developed to ensure that impacts to soft-bottomed receiving waters directly downstream of Regulated Projects are adequately mitigated. These projects could potentially include regional hydromodification controls and/or in-stream measures as defined in MRP Provision C.3.g.iv. The impact to the direct receiving waters of Regulated Projects would necessitate a compliance unit that takes into account flow control mitigation that is based on the amount of impervious surface mitigated and geographically-specific to address the direct receiving waters. This hydromodification compliance unit would have to consider the relative location of Regulated Projects and Off-Site GSI Projects and would involve specific boundary restrictions on exchanges based on sub-watersheds.

Participating Regulated Projects seeking C.3.g hydromodification management compliance would participate in the Contra Costa County RAC System through payment of an exchange-specific hydromodification management compliance payment that would be added to the overall compliance purchase, along with a parcel-specific hydromodification management ongoing O&M fee, which would be added to the ongoing O&M fee.

8.1.1.2 Net Environmental Benefit

As described, during Phases 1 and 2, the funds collected for the NEB Ratio would be directed towards additional Equivalent Acres Greened compliance units. The additional Equivalent Acres Greened compliance units associated with the NEB Ratio for each exchange would provide a net increase in impervious surface treated and/or a net reduction in pollutant load.

Following the Phase 2 of the Contra Costa County RAC System, the NEB Ratio could be directed towards an expanded list of water quality projects and programs beyond additional Equivalent Acres Greened, in response to changing water quality objectives. These would be considered as part of the Contra Costa County RAC System adaptive management procedures described in Section 8.3.

8.1.2 Tracking and Incentivizing Ancillary Benefits

The LID/GSI and pollutant control measures implemented through the Contra Costa County RAC System may generate valuable co-benefits for Contra Costa County communities that are unrelated to provisions of the MRP, such as climate resiliency, localized flooding reduction, and environmental justice for disadvantaged communities. The objectives of the Contra Costa County RAC System could be expanded in the future beyond alternative compliance and include the incentivization of these types of ecosystem services and social benefits for Contra Costa County communities.

Incentivization of co-benefits could be accomplished by creating compliance units for each ancillary benefit and/or identifying disadvantaged communities and incorporating discounting factors into the CCCWP RAC Subcommittee's selection criteria for Off-Site GSI Projects. Compliance unit providers could be incentivized to generate ancillary benefits through discount factors applied to Equivalent Acres Greened compliance unit-generating projects (e.g., through the WQB Ratio) that meet a minimum threshold for ancillary benefits and/or are located in designated disadvantaged communities. There may also be opportunities to maximize ancillary benefits through use of a CBP3 approach, see Section 6.6.

8.1.3 Scaling for Additional Participation

Although the Contra Costa County RAC System is envisioned to provide alternative compliance for Regulated Projects, there are several public and private entities in the Bay Area with overlapping interests and water quality goals that would benefit from participation in the RAC System.

8.1.3.1 Additional Buyers

During Phase 2, the primary source of funding for the Contra Costa County RAC System Off-Site GSI Projects would be compliance purchase payments collected from Permittees and private developers of Regulated Projects participating in the RAC System. The RAC System could incorporate ancillary funding from sources invested in water quality improvements in the Bay

Area, including Caltrans, Phase II MS4 permitted entities, IGP or individual NPDES Permittees, POTWs interested in TMDL reductions, or conservation groups interested in "retiring" (i.e., purchasing for non-compliance related water quality benefit) compliance units.

After or during Phase 2, it is recommended that the CCCWP RAC Subcommittee conduct a preliminary investigation into the interest and demand from other NDPES-regulated entities. If demand exists from other entities to participate in the Contra Costa County RAC System, the CCCWP RAC Subcommittee could identify amendments to the Contra Costa County RAC System framework and Off-Site GSI Project selection criteria that could widen the scope of potential buyers of compliance units generated from Off-Site GSI Projects.

For example, if demand exists from IGP Permittees, the CCCWP RAC Subcommittee could identify revisions to the certification process such that compliance units generated in the system could be used by both developers and IGP Permittees. An expansion of System buyers to other NPDES-permitted entities may require review and approval by the Water Board, the State Water Resources Control Board, EPA, and/or other regulators.

The Subcommittee could also consider creating a simple cost structure for other entities, as streamlining the funding process has been a heavily echoed sentiment from current MRP Permittees and a likely request from other entities.

8.1.3.2 Additional Compliance Unit Generators

The anticipated compliance unit providers during the Phase 2 of the Contra Costa County RAC System are municipalities and private entrepreneurial entities with experience developing LID/GSI in the urban landscape. As the Contra Costa County RAC System expands, it is anticipated that other public entities or non-governmental organization with similar water quality objectives could participate in generating cost-effective compliance units through economies of scale with large mitigation projects. In the Bay Area, this could potentially include Caltrans Trash/POC mitigation projects, source control programs, stream restoration projects led by non-governmental organizations, or other similar water quality improvement projects or programs.

8.1.4 Scaling for a Regional Inter-County Program

One of the priorities envisioned for the Contra Costa County RAC System following Phase 2 is exploring how to expand the RAC System to include additional Permittees, outside of Contra Costa County, subject to the MRP requirements and the PCBs and mercury TMDLs, across the Bay Area. Scaling the Contra Costa County RAC System to a larger regional inter-county program may require:

- Coordination and agreement between counties to ensure uniform adoption of the Contra Costa County RAC System framework;
- Approval from regulators;
- Clear roles for collecting and dispersing compliance purchase payments and ongoing O&M fees; certification, verification, and tracking of compliance units; and, if possible, identification of centralized entities that may be able provide these services across jurisdictions;

- Inclusion of inter-county stakeholders in Contra Costa County RAC System RAC Subcommittee;
- Consensus on how Permittees may claim pollutant load reductions generated by Off-Site GSI Projects in other jurisdictions for Regulated Projects within their jurisdiction and vice versa;
- Refinement or expansion of Rainfall Ratio to account for precipitation rainfall across the Bay Area;
- Considerations for pollutants of concern hot spots in an inter-county context; and/or
- Updates to the tracking system to incorporate new counties and avoidance of issues such as double-counting.

8.1.5 Scaling for Other Considerations

As participation grows, the Contra Costa County RAC System may consider leveraging a larger number of Off-Site GSI Projects across the System to mitigate the risk of catastrophic project failure. This could be accomplished in future iterations with a reserve pool of compliance units, which is often implemented through a reserve ratio applied to the buyer. For example, a reserve ratio of 1.1:1 would require 10% of purchased Equivalent Acres Greened to be set aside for a reserve pool that would be used to mitigate any catastrophic project failures in the System.

8.2 Ongoing System Decision Points

Regular review and revision of the Contra Costa County RAC System Off-Site GSI Projects and the technical aspects of the Contra Costa County RAC System is anticipated. These ongoing decision points would be the responsibility of the CCCWP RAC Subcommittee and System Administrator.

8.2.1 Selection Criteria for Off-Site GSI Projects

Off-Site GSI Projects generating the compliance units to meet the initial projected demand could be constructed as part of the same contract through a pay-for-performance or CBP3 contracting model. If a larger regional contract to implement Off-Site GSI Projects is pursued, one primary function of the CCCWP RAC Subcommittee would include developing criteria for Off-Site GSI Project selection, reviewing applications, and approving Off-Site GSI Project for compliance unit generation for the contract. Criteria for selection may include but not be limited to: confirmation the Off-Site GSI Project meets baseline requirements, TMDL load reduction potential, multi-benefits provided, geographic location, and/or costs.

8.2.2 Technical Review

The CCCWP RAC Subcommittee and/or their appointed technical reviewers would be responsible for providing regular review on the technical aspects of the Contra Costa County RAC System and proposing updates to the RAC System framework, as necessary. This may include, but not be limited to, regular review and revision of:

- Approved control measures and quantification methodologies for associated generated compliance units;

- Precipitation and land use classification data;
- System Ratios, including the Rainfall Ratio, Pollutant Ratio, WQB Ratio, or other ratios that may be incorporated;
- Equivalent Acres Greened compliance unit calculation; and/or
- Key System Tracking Tool capabilities.

Other control measures not included in section 5.3 could be used to generate Equivalent Acres Greened compliance units, if compliance unit providers wishing to use them can demonstrate that the facilities are designed consistent with the C.3 Guidebook requirements (CCCWP, 2017) and provide equivalent volume capture and pollutant load reduction performance as the facility types listed. It is envisioned that Phase 2 of the Contra Costa County RAC System would limit allowable control measures to LID/GSI facilities only. Non-LID/GSI facility types could potentially be considered in the future, through the Contra Costa County RAC System adaptive management protocol outlined in Section 8.3.2.

8.3 Procedures for System Changes

As the Contra Costa County RAC System evolves and expands, there could be interest in incorporating new pollutants of concern, benefits, participants, and jurisdictions into the System framework. Changes related to the System framework would involve the CCCWP RAC Subcommittee, identified technical advisors, the Flood Control District, contracted entities, and/or others involved in System administration, and incorporate stakeholder recommendations. Preliminarily, it is expected that minor programmatic changes to the Contra Costa County RAC System would be updated in RAC System Documents but would not require policy related changes. However, any changes to the RAC System that could affect water quality outcomes would require an amendment to the MRP. These major changes would entail completion of the formal permit amendment process required by the Water Board. RAC System changes would be expected to be reported through the required RAC System reporting processes.

8.3.1 Process for RAC System Changes

The Contra Costa County RAC System is expected to be reviewed regularly. RAC System changes would be completed on an as-needed basis and would involve the following process:

- **Draft RAC System Priorities** - The CCCWP RAC Subcommittee would be responsible for identifying areas for change in the Contra Costa County RAC System framework. The RAC System Priorities process would summarize the status of the RAC System, identify changes, and whether proposed changes would require completion of a formal permit amendment process.
- **Stakeholder Feedback**– The CCCWP RAC Subcommittee would be responsible for sharing the RAC System priorities, with any identified technical advisors as well as the public to collect feedback. This process is envisioned to be separate from a formal public input process that may occur as part of a permit amendment.
- **Technical Recommendations** - Technical aspects of the Contra Costa County RAC System framework would be reviewed on an as-needed basis by the CCCWP RAC

Subcommittee and/or technical advisors. These components may be reviewed based on outcomes observed by the RAC System Administrator and CCCWP RAC Subcommittee, or may be reviewed per a request from the Water Board following formal reporting procedures. Recommendations for changes would be developed prior to a regularly scheduled RAC System Strategy Meeting. Technical recommendations would only be applied to future exchanges; they would not affect exchanges already completed or in progress (i.e., it is anticipated that all completed exchanges would be "grandfathered" under the RAC System). Technical aspects that may be reviewed include:

- Precipitation and equivalent stormwater runoff across locations
- Land use classification and equivalent pollutant loading across locations
- Ratios pertaining to equivalency, uncertainty, and (potentially) reserve ratios
- Compliance purchase compliance unit calculation
- Allowable control measures
- Integrating a market-based approach to determine cost per Equivalent Acres Greened

- **RAC System Strategy Meeting** – The CCCWP RAC Subcommittee and technical advisors would convene on a regular basis to share stakeholder feedback and recommendations pertaining to the RAC System framework and draft system priorities prior to completing RAC System changes.
- **RAC System Changes and Public Notification** - The CCCWP System Administrator would amend the RAC System Framework with the approved list of recommended RAC System amendments. The RAC System Administrator will publish notices of any substantial amendments made to the RAC System to participants and the general public.
- **Permit Reissuance Cycles and Permit Amendments –** Substantial structural changes to the RAC System may require changes to permit language for the RAC System option. Permit language changes, if identified, are anticipated to occur during permit reissuance cycles; however, there is a possibility that future permit amendments may be needed.

8.3.2 Changes to Preapproved List of Control Measures

Potential compliance unit providers interested in generating Equivalent Acres Greened compliance units would be encouraged to design projects using control measures from the preapproved list of control measures (Section 4.2.1.2). Changes to allowable control measure types that are not accepted in the current MRP and/or future issuances would be expected to result in a formal permit amendment process.

8.4 Funding and Financing Considerations

8.4.1 Financing of Off-Site GSI Projects

Adaptive management of the implementation of the Off-Site GSI Projects would be required at the project level and programmatically. For each Off-Site GSI Project, the project design and implementation plan would be required to address elements of risk, uncertainty, and the dynamic

nature of these GSI projects to optimize performance. This also may include financial assurances (e.g., performance bonds) and adaptive management criteria. Adaptive management is likely to be particularly important for Off-Site GSI Projects implemented through a pay-for-performance or CBP3 contracting model with compliance unit providers, financed upfront through public or private financing opportunities.

8.4.2 Compliance Purchase Amount Review and Adjustment

At the programmatic level, the RAC System Fund may be evaluated regularly by the CCCWP System Administrator to address the annual inflation rate, market conditions, changes in the regulatory environment, new procurement strategies, and construction and project stewardship costs. If the implementation costs for the Contra Costa County RAC System exceed compliance purchase revenue, then the CCCWP System Administrator may adjust the compliance purchase components upward to address the documented deficiencies. Following Phase 2 of the Contra Costa County RAC System, the funding and financing for the RAC System would be expected to change as the RAC System evolves.

The Contra Costa County RAC System would include a process to regularly evaluate the sufficiency of the compliance purchase amounts, particularly the Equivalent Acre Greened unit cost and the administrative payment, and to adjust the compliance purchase components as needed. The CCCWP System Administrator would regularly evaluate how Off-Site GSI Project implementation costs align with the Equivalent Acre Greened unit cost ($Cost_{EAG}$) and could make associated needed adjustments. This could be based on the RAC System regular reporting process.

Adaptive management procedures for the ongoing O&M fees would be defined in updates to the Flood Control District Expenditure Policy, the O&M fee Operational Procedures; and the O&M fee Operational Plan, developed as part of the establishment and approval of the ongoing O&M fee.

Some programs note that cumbersome processes discourage them from adjusting prices as frequently as may be desirable. Others have reported that they have standard practices in place for regular—often annual—evaluation of whether the payments collected are enough to cover project and administrative costs. Programs that have flexibility to update their required payment amounts without lengthy approval or amendment processes may be better equipped to update the payment amounts as needed.

9. OVERVIEW OF TRACKING TOOL

Section 9 describes **the accounting and reporting system,** required for proposed program submittal per MRP 3 Fact Sheet.

9.1 Contra Costa County RAC System Components Tracked

A RAC System Tracking Tool is being developed for the Contra Costa County RAC System by SFEI. The RAC System Tracking Tool will include a comprehensive database to track components of the RAC System and relate RAC System components to existing tracking tools. The components tracked will include:

- Off-Site GSI Project identification; location (i.e., geospatial information); drainage area and imperviousness; rainfall zone; tributary land uses; control measure type; and calculated compliance units.
    - Off-Site GSI Project certification, including confirmation of appropriate control measure type and sizing; and links to relevant forms completed by certifying entities.
    - On-going GSI Project verification, including the results of regular inspections and links to relevant forms completed by certifying entities.
    - Compliance units, including: Off-Site GSI Project generating units; rainfall zone; and tributary land use.
    - Off-Site GSI Project ledger, tracking the number of compliance units sold and associated exchange identification numbers (see below); and the remaining compliance units available for purchase.
- Regulated Project information, linked from the County's existing AGOL tool.
- Exchange Information, including: an exchange identification number; the number of compliance units required for purchase by a Regulated Project, calculated using Equation 4-8 in Section 4 of this document; or the number of compliance units desired for purchase by another buyer; the identified compliance units for purchase with associated attributes; the compliance purchase payment amount, including applicable administrative payments associated with the jurisdictions in which the Off-Site Project and/or buyer are located in, along with the System administrator; the ongoing O&M fee identification; links to relevant agreements signed by the Regulated Project and/or other buyer, and confirmation that the compliance purchase has been paid.
- O&M fee tracking, potentially linked to the Flood Control District's tax tracking system.

Other Contra Costa County RAC System information that will be tracked at the administrative level include signed agreements from participants, contracts with CBP3 developers or others implementing Off-Site GSI Projects, System rules and requirements, and summaries of regular meetings and resulting amendments/addendums to System rules and requirements.

Section 10 and Appendix C include additional information on templates that will be completed for the Contra Costa County RAC System and include details of the data collected and tracked in the System Tracking Tool.

9.2 Accounting System

The RAC System Tracking Tool will include an accounting system that provides tracking of generated compliance units, compliance purchase amounts, and whether and when payments were made. Generated compliance units will be populated in the RAC System Tracking Tool associated with the Off-Site GSI Projects, and a linked ledger will track "sold" compliance units and available compliance units. It is expected that financial tracking will be conducted by individual jurisdictions collecting and/or transferring compliance purchase payments, but the System Tracking Tool will include tracking of whether and when the payment was made. It is expected that O&M fee financial tracking will be managed by the O&M fee Administrator and/or the Flood Control District.

9.3 Reporting System

Template documents will be used to document Off-Site GSI Project certification, verification, and individual exchanges. This information will be available as completed forms linked within the System Tracking Tool, as well as in the System Tracking Tool database, as described in Section 9.1. Reporting will be completed by the System Administrator in accordance with the requirements of the Water Board and MRP 3. Information regarding implemented Off-Site GSI Projects, certification, verification, exchanges, and ongoing O&M will be readily available in the System Tracking Tool. It is anticipated that this data would be extracted for annual reports using a defined process based on the established reporting requirements.

10. CONTRA COSTA COUNTY RAC SYSTEM TEMPLATE DOCUMENTS

10.1 Approach to Development of RAC System Templates

The System templates and forms were designed to build on existing processes, forms, and tracking systems where possible. The CCCWP has developed a number of standard templates and forms for Regulated Project design review, construction inspection, and O&M verification that were incorporated into the documents for RAC System certification, verification, and tracking.

System templates/forms need to document all aspects of the RAC System, including:

- The Regulated Project's use of the alternative (off-site) compliance option;
- The Off-Site GSI Project, including:
  - Facility attributes;
  - Design review, construction inspection, and certification;
  - Ongoing O&M (including O&M Plan and Agreement) and O&M verification;
- Exchange details, including total compliance units and equivalency; and
- Necessary agreements and/or resolutions among participants in the RAC System.

The RAC System templates/forms need to interface with the RAC System Tracking Tool, described in Section 9. Some of the forms will be used to input data directly into the Tracking Tool, and some of the templates/forms will be uploaded as documents for storage in the Tracking Tool. Development of the RAC System templates/forms requires close coordination with the design and development of the Tracking Tool to ensure an integrated approach.

The following sections describe the existing and newly developed forms to be used to document the various aspects of the System.

10.2 Regulated Project Documentation

10.2.1 Stormwater Control Plan

CCCWP Permittees currently require that a Regulated Project applicant submit a Stormwater Control Plan describing the project and site characteristics, the selection and sizing of required site design, source control, stormwater treatment measures, and operation and maintenance of treatment measures. For this purpose, Permittees have used or adapted the existing CCCWP Stormwater Control Plan template.[22]

As part of development of RAC System templates, the existing Stormwater Control Plan template has been modified to include sections to document the applicant's choice of alternative

[22] Existing CCCWP templates and forms can be found on the CCCWP website: https://www.cccleanwater.org/development-infrastructure/development

compliance (in lieu of some or all onsite treatment) and to require submittal of the Off-Site GSI Project Data Form (Section 10.3.1) and the Alternative Compliance Exchange Documentation Form (see Section 10.4). These two forms, available from the System Tracking Tool, will document an authorized exchange and payment of compliance purchases and will allow the reviewing agency to confirm compliance with MRP Provision C.3. The modified Stormwater Control Plan is provided in Appendix C-11.

For Regulated Projects selecting alternative compliance, applicants would use the revised Stormwater Control Plan to provide project data, identify required source controls, and incorporate site design measures where feasible.

10.2.2 Regulated Project Tracking in AGOL

Contra Costa Permittees currently use the AGOL Application, "C3 Project Tracking and Load Reduction Tool" to track completed Regulated Projects and associated stormwater treatment measures in order to calculate estimated PCBs and mercury load reductions resulting from these projects. For Regulated Projects selecting alternative compliance, project attributes would continue to be entered into AGOL per the current procedure. The use of the System would be entered under the "Alternative Compliance Measures" field in AGOL, which would link to information about the Off-Site GSI Project, which would have also been entered into AGOL when completed and certified via the Off-Site GSI Project ID.

10.3 Off-Site GSI Project Forms

This section reviews the forms required to describe, certify, and verify the Off-Site GSI Project/s and provide documentation in the RAC System Tracking Tool. These forms include a number of existing forms currently used by Contra Costa Permittees as well as three new forms specific to implementing the System.

10.3.1 Pre-Construction Off-Site GSI Project Data and Design Certification Form

The Pre-Construction Off-Site GSI Project Data and Design Certification Form (Appendix C-3) is a new form that will only be used for Off-Site GSI Projects that are approved by the RAC System Administrator and/or local jurisdiction to exchange compliance units prior to final construction. This form contains the attributes of the Off-Site GSI Project that will be entered into the Tracking Tool. This form will be completed after review and approval of the Off-Site GSI Project to generate compliance units. It will also be used to summarize the design review and approval processes completed by the Certifying Entity. It includes sign-offs by Certifying Entity staff on design review. For these Off-Site GSI Projects, the Off-Site GSI Project Data Form (Appendix C-4) and the Off-Site GSI Project Post-Construction Certification Form (Appendix C-5) must be updated and submitted once construction is completed, no later than three years after initial exchange of compliance units.

Off-Site GSI Projects that are not approved for compliance unit exchange prior to construction do not need to complete the Pre-Construction Off-Site GSI Project Data and Design Certification Form (Appendix C-3), and will instead just complete the Off-Site GSI Project Data Form (Appendix C-4) and the Off-Site GSI Project Post-Construction Certification Form (Appendix C-5).

10.3.2 Off-Site GSI Project Data Form

The Off-Site GSI Project Data Form (Appendix C-4) is a new form containing the attributes of the Off-Site GSI Project that will be entered into the Tracking Tool. This form will be completed after review and approval of the Off-Site GSI Project to generate compliance units. If review and approval occurs prior to certification, the form will be updated when certification occurs post-construction. Attributes to be entered into the form (and subsequently the Tracking Tool) include: facility ID number; facility type and location; Drainage Area size(s), location(s), and land use(s); total impervious and pervious surface within the Drainage Area(s); total greened acres; facility owner; and optionally, project cost; and associated multiple benefits.

10.3.3 Off-Site GSI Project Post-Construction Certification Form

The Off-Site GSI Project Post-Construction Certification Form (Appendix C-5) is a new form that will be used to summarize the design and construction review and approval processes completed by the Certifying Entity. It includes sign-offs by Certifying Entity staff on design review and construction inspections, as well as verification of a complete and acceptable O&M Plan and, as appropriate, an O&M Agreement. It also helps organize the multiple documents that are currently used by Contra Costa Permittees to (1) conduct inspections of stormwater treatment facilities during and at completion of construction, and (2) fulfill MRP requirements for ensuring facilities will be properly maintained for the life of the project by a responsible party. These existing documents include:

- Stormwater Treatment Facilities Construction Inspection Checklist (Appendix C-6)
- Stormwater Facilities O&M Plan Template (Appendix C-7)
- Stormwater Management Facilities O&M Agreement Template (Appendix C-8)

These three documents also need to be prepared for the Off-Site GSI Project and uploaded to the Tracking Tool to complete the certification process. There will likely be multiple Construction Inspection Checklists, since inspections are conducted during different phases of construction of the Off-Site GSI Project, as well as at completion of construction.

10.3.4 Off-Site GSI Project O&M Verification Form

The Off-Site GSI Project O&M Verification Form (Appendix C-10) is another new summary form that documents that: 1) O&M of the Off-Site GSI Project was performed; 2) O&M verification inspections were conducted (by whom and when); and 3) any maintenance deficiencies found were corrected. It relies on the use of the existing Stormwater Facility O&M Inspection Report (Appendix C-9) for documentation of the O&M verification inspections. The O&M Verification Form is intended to be completed once the O&M verification inspection(s) have been completed by the Verifying Entity. If deficiencies in maintenance are found, there may need to be one or more additional inspections performed to ensure that deficiencies have been corrected before the O&M Verification Form can be completed and uploaded into the Tracking Tool.

Note that the O&M Verification Form is required to be uploaded to the Tracking Tool as proof of ongoing Off-Site GSI Project verification. However, the Stormwater Facility O&M Inspection

Report forms are to be retained by the Verifying Entity and the inspection data from the forms entered into the Verifying Entity's local O&M inspection database.

10.4 Exchange Documentation

An "Alternative Compliance Exchange Documentation Form" (Appendix C-10) was developed to document each individual exchange transaction that takes place in the Contra Costa County RAC System and confirm that: (1) the required compliance purchases were paid; and (2) the exchange was reported to the O&M fee Administrator so that the required annual O&M fees can be added to the regulated parcel's property tax fees. An individual exchange transaction is defined as the payment of compliance purchases and annual O&M fees by the owner of the Regulated Project (i.e., the buyer) in exchange for a specified quantity of Equivalent Acres Greened produced by one Off-Site GSI Project (i.e., the seller). Each individual exchange transaction is assigned a unique Exchange ID.

The Alternative Compliance Exchange Documentation Form provides the details of the exchange, including calculation of the quantity of Equivalent Acres Greened that a Regulated Project needs to purchase for compliance purposes, the amount of Equivalent Acres Greened that the Regulated Project is purchasing from a specific Off-Site GSI Project with this exchange, and calculation of the compliance purchase amounts and annual O&M fees associated with the amount of Equivalent Acres Greened purchased via this exchange. The Form also provides confirmation that the compliance purchase was paid in full and that the information on annual O&M fees was provided to the O&M fee Administrator to allow for ongoing fees for the Regulated Project's parcel. If a Regulated Project is purchasing Equivalent Acres Greened from more than one Off-Site GSI Project, a separate Form is completed for each exchange. Each Form is uploaded to the Tracking Tool and linked to the appropriate Off-Site GSI Project via the Facility ID. The Regulated Project associated with each Exchange ID is identified with the same Regulated Project ID that is used in the County's AGOL system.

10.5 Participant MOU and Stormwater Ordinance Language and Participant MOU

Example stormwater ordinance language and an example agreement or MOU are provided in Appendix C. Jurisdictions would be expected to update their Stormwater Ordinances to include the Contra Costa County RAC System as a compliance option for Regulated Projects. Model Stormwater Ordinance language to include the RAC System is provided in Appendix C-1. Note that this is expected to be updated following Water Board approval of the final Contra Costa County RAC System . In addition to updating their Stormwater Ordinances, Permittees would be required to complete the agreement to participate in the RAC System, to allow Off-Site GSI Projects to be located within their jurisdictions, and to allow Regulated Projects within their jurisdictions to participate in the RAC System. It is expected that the example MOU provided in Appendix C-2 may be updated for consistency with the Contra Costa County RAC System permit amendment or other Water Board approval documentation and will be further reviewed by City attorneys before being finalized for Phase 2 of the RAC System.

11. CONTRA COSTA COUNTY RAC SYSTEM NEXT STEPS

Section 11 describes Contra Costa County RAC System **expectations for timing**.

This RAC System Summary Report primarily describes the proposed Contra Costa County RAC System structure that is envisioned to be implemented during Phase 2 (i.e., initial System roll-out). Prior to initiating Phase 2 and following completion of this System Summary Report, one to two Phase 1 pilot exchanges will be conducted to test key components of the proposed Contra Costa County RAC System structure. Any lessons learned during the Phase 1 pilot exchanges will be applied to this System Summary Report to create the Final Program Documents used to guide Phase 2 of the Contra Costa County RAC System. Phase 2 will be launched after Water Board approval of the RAC System as an option under Provision C.3.e through a permit amendment or other mechanism.

During the Contra Costa County RAC System launch and initial implementation as part of Phase 2, the CCCWP RAC Subcommittee and System Administrator will use the adaptive management procedures described in Section 8 to amend the Final Program Documents to address lessons learned. After this Contra Costa County RAC System establishment period and implementation of required System adjustments and amendments, the System will shift into Phase 3, during which the System will be fully operational. At this phase, it is expected that adaptive management adjustments will be minimal and based primarily on forces external to the RAC System, such as market and regulatory changes.

A proposed schedule for Contra Costa County RAC System implementation and launch following completion of this RAC System Summary Report is provided in Table 9. Key administrative entities responsible for the next steps listed are identified. The time frames included in the table are subject to change depending on lessons learned during Phase 1 or Phase 2. Based on this anticipated schedule, the Contra Costa County RAC System will be fully established and operational (i.e., in Phase 3 of development) by 2029 to 2030.

Table 9: Contra Costa County RAC System Implementation Phases Schedule

Stage	Who	Steps	Anticipated Time Period
Phase 1 (Pilot Exchanges)	Project Steering Committee and Project Consultant Team	1. Identify Equivalent Acres Greened compliance units. 2. Identify buyer(s). 3. Calculate compliance units and compliance purchase amount for pilot exchange. 4. Develop MOUs. 5. Perform Certification and Tracking. 6. Pilot Template Documents. 7. Report Lessons Learned.	2022–2023

Stage	Who	Steps	Anticipated Time Period
Phase 2 (Initial System Roll-Out)	CCCWP System Administrator	1. Prepare MRP amendment submittal. 2. Update CCCWP MOU or establish other agreement for permittee participants. 3. Establish CCCWP administrator, subcommittee(s), meeting scheduling, and other administrative structural needs. 4. Establish financial transaction processes. 5. Identify project implementation strategy (e.g., financing for larger-scale implementation through CBP3 or other process). 6. Conduct cost study to set the Equivalent Acre Greened unit cost portion of the Phase 2 compliance purchase. 7. (As applicable) Identify compliance unit generator contractor(s).	2022-2026
	O&M Fee Administrator	1. Establish O&M fee mechanism (proposed to be a Community Facilities District). 2. Establish O&M Fund. 3. Develop and implement Operational Procedures that describe how the O&M fees are levied, managed, and distributed through the identified mechanism and/or other administrative funds and processes. 4. Conduct cost study to set Phase 2 ongoing O&M fee rate schedule or per unit amount.	2023-2026
	Permittees	1. Perform CEQA evaluation. 2. Update Stormwater Ordinance (see Appendix C) 3. Develop administrative payment and payment transfer. processes and other financial processes. 4. Sign agreement with CCCWP Administrator. 5. Receive training and/or instructions for RAC System implementation.	2023-2025
	All entities	1. Launch System (including outreach). 2. Conduct minor ongoing adaptive management.	2025-2027
Phase 3 and beyond (Established and Fully Operational System)	CCCWP Regional Alternative Compliance Subcommittee	1. Evaluate Phase 2 of System (see Section 8). 2. Submit supplemental information as part of MRP 3 Report of Waste Discharge or MRP 4 permit reissuance process. 3. Identify needed internal RAC System changes based on results of evaluation. 4. Adjust Equivalent Acre Greened unit cost portion of the compliance purchase as needed. 5. Consider outreach or other expansion needs. 6. Conduct ongoing adaptive management processes.	2028-2029
	CCCWP Administrator	1. Amend System as needed (see Section 8). 2. Conduct outreach relating to System expansion needs. 3. Implement ongoing adaptive management needs.	2028-2030
	O&M Fee Administrator	1. Adjust ongoing O&M fee amount as needed.	2028-2029

12. REFERENCES

American Associate of State Highway and Transportation Officials (AASHTO). 2015. Transferability of Post-Construction Stormwater Quality BMP Effectiveness Studies. Standing Committee on the Environment. July.

Barrett, M.E. 2005. "Performance comparison of structural stormwater best management practices." Water Environ. Res., 77(1): 78-86.

California State Water Resources Control Board. 2013. National Pollutant Discharge Elimination System (NPDES) General Permit for Waste Discharge Requirements (WDRs) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). Available at: https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/phase_ii_municipam/provisions_phaseii_smallms4permit.pdf

City of San Pablo. 2020. Regional Alternative Compliance System Literature Review. Prepared by Kieser & Associates and Geosyntec Consultants.

Contra Costa Clean Water Program (CCCWP). 2017. Stormwater C.3. Guidebook: Stormwater Quality Requirements for Development Applications. 7th Edition. May.

CCCWP. 2020. Contra Costa PCBs and Mercury TMDL Control Measure Plan and Reasonable Assurance Analysis. September.

Geosyntec Consultants, Inc. (Geosyntec) and Wright Water Engineers, Inc. 2009. Urban Stormwater BMP Performance Monitoring. October.

Geosyntec. 2019. Regional Watershed Spreadsheet Model Version 1.0 Results Summary Memorandum. April.

Geosyntec. 2022. East Contra Costa Methylmercury Control Measure Plan and Reasonable Assurance Analysis. Prepared by Geosyntec Consultants for the Contra Costa Clean Water Program. November.

Leisenring, M., M. Barrett, C.A. Pomeroy, A. Poresky, L.A. Roesner, A.C. Rowney, and E. Strecker. 2013. Linking BMP Systems Performance to Receiving Water Protection - BMP Performance Algorithms. Final report to the Water Environment Research Foundation, Alexandria, VA. WERF SWC1R06bmp.

Metropolitan Transportation Commission (MTC). 2021. Bay Area UrbanSim. http://bayareametro.github.io/bayarea_urbansim/model_overview/ .

Pitt, R. 2015. National Stormwater Quality Database (NSQD) v 4.02. Downloaded January 28, 2021. bmpdatabase.org/nsqdstat.html

PRISM Climate Group. 2023. Oregon State University, http://prism.oregonstate.edu. Accessed March 2023.

San Francisco Estuary Institute (SFEI). 2018. Regional Watershed Spreadsheet Model (RWSM) Toolbox v1.0 User Manual and Pollutant Model. Available here: https://www.sfei.org/projects/regional-watershed-spreadsheet-model#sthash.kOKnKvF2.dpbs.

San Francisco Bay Regional Water Quality Control Board (Water Board). 2015. Municipal Regional Stormwater NPDES Permit. Order No. R2-2015-0049. NPDES Permit No. CAS612008. San Francisco Bay California Regional Water Quality Control Board.

Water Board, 2022. Municipal Regional Stormwater NPDES Permit. Order No. R2-2022-0018. NPDES Permit No. CAS612008. San Francisco Bay California Regional Water Quality Control Board.

Waddell, Paul. 2013. Draft Technical Documentation: San Francisco Bay Area UrbanSim Application. Prepared for Metropolitan Transportation Commission in collaboration with Association of Bay Area Governments (ABAG).

Wu, J., A.N. Gilbreath, and L.J. McKee. 2016. Regional Watershed Spreadsheet Model (RWSM): Year 5 Progress Report. A technical report prepared for the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP), Sources, Pathways and Loadings Workgroup (SPLWG), Small Tributaries Loading Strategy (STLS). Contribution No. 788. San Francisco Estuary Institute, Richmond, California.

GLOSSARY

Alternative Compliance Systems: Flexible compliance programs that allow regulated dischargers with costly or infeasible pollution control requirements to meet equivalent discharge reductions by investing in the implementation of cost-effective and feasible controls at other source locations, thereby achieving an overall environmental benefit at a reduced overall cost.

Baseline: Requirements that must be achieved by a source before generating a unit of metric. This may include meeting specific load reduction requirements before surplus load reductions may be exchanged or other requirements in the alternative compliance system.

Buyer: The regulated entity that purchases or provides funding for surplus compliance units generated by another entity to meet their own water quality compliance requirements.

Certification: Process that involves the formal inspection, documentation and tracking of implemented actions necessary to ensure the benefits being exchanged as compliance units are being achieved throughout time. Certification is a demonstration to all stakeholders that the project that is generating compliance units will meet expectations. Certification often involves third-party project reviews and physical inspections of implemented practices to ensure actions are appropriately designed, implemented and maintained to achieve intended outcomes as defined by the alternative compliance system framework, guidelines and/or requirements.

Compliance and Enforcement: Entity that ensures that criteria for participants in an alternative compliance system are being met. In the event of non-compliance, the entity can either report to, or is, a delegated authority able to enforce water quality non-compliance provisions as necessary.

Control Measure: Structural or non-structural practices, management changes, or activities that can be implemented to generate measurable or estimated compliance units in an alternative compliance system.

Community-Based Public-Private-Partnership: A form of alternative delivery in which a government agency and private entity partner to improve both water quality and quality of life for a community in a cost-effective way. CBP3s are typically focused on implementing green infrastructure approaches that provide for local economic growth in urban and underserved community.

Compliance Unit: A common measurement unit of equivalent pollutant discharge reduction that reflects both the regulatory pollution control requirement and the measurable or estimated outcome at the alternative source of control. This metric is often expressed as mass pollutant load reduction per time (e.g., pounds/year) or as a scientifically-defensible measure of equivalency between the regulatory requirement and the benefits metric from the alternative control (e.g., “acres greened”, “acres treated”, or “volume managed/treated”). The compliance unit in an alternative compliance system is the unit of water quality benefit, such as a pollution reduction credit or offset, that can be generated and utilized in the alternative compliance system.

Compliance Unit Providers: Entities or individuals that construct or otherwise implement Off-Site GSI Projects that are certified through the Contra Costa County RAC System. Compliance

unit providers are eligible to receive payment when compliance units generated by the Off-Site Projects they have implemented are exchanged.

Compliance Unit-Generating Project: See Off-Site GSI Project.

Current Conditions: An exchange baseline defined as the onsite performance, based on the selected metric(s), of an area prior to the implementation of a control measure or project. This type of exchange baseline allows for all units of water quality benefit generated from a control measure or project to be exchanged as surplus.

Design-Build-Finance (DBF): An approach that combines innovation of design-build with some amount of private sector capital (such as debt or equity). This model often combines private sector funds with existing public sources and allows private capital to fill any gaps in funding.

Design-Build-Finance-Maintain (DBFM): Similar to the DBF approach, DBFM also includes short to medium term financial and maintenance responsibility for the private partner and requires the public partner to retain the responsibility for operation.

Design-Build-Finance-Operate-Maintain-Availability Payment (DBFOM-AP): Similar to DBOM, DBFOM-AP requires the private partner to be responsible for financing while the public partner maintains control over fees and revenue collection (if applicable) and makes pre-established payments to the private entity for project delivery and performance commitments.

Design-Build-Operate-Maintain (DBOM): Similar to the DBF approach, DBOM also includes a short to medium-term operational and maintenance responsibility for the private partner.

Eligible Entities: The types of entities that are allowed to participate as either a buyer or seller in an alternative compliance system.

Eligible Exchanges: The types of purchases, trades, and/or sales of compliance units that are allowable in the system.

Exchange: In authorized alternative compliance systems, “exchange” refers to compliance units that can be transacted between entities to mutually achieve required pollutant reductions. Surplus cost-effective pollutant reductions (compliance units) achieved for one pollutant source can be exchanged with another regulated entity for their alternative compliance.

Exchange Ratio: A numerical value used to convert an estimated load reduction into a tradable compliance unit. An exchange (or trade) ratio may include considerations for: 1) lack of information and risk associated with control measures, implementation and performance (uncertainty); 2) trading of different pollutants or different forms of the same pollutant (equivalency); 3) the distance and unique watershed features that will affect pollutant fate and transport between exchanging entities (delivery); and, 4) compliance risk reduction mechanisms (reserve and retirement).

Grants and Reserve Accounts: A fund set aside by an entity to meet future costs of green infrastructure upkeep and any unexpected future costs.

Green Stormwater Infrastructure: Infrastructure that uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or

county, green stormwater infrastructure refers to the patchwork of natural areas that provides habitat, localized flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green stormwater infrastructure refers to stormwater management systems that mimic nature by capturing and storing water.

Guidance: In the context of a legal basis for alternative compliance systems, guidance refers to standards or frameworks provided or approved by a Clean Water Act-delegated agency to provide advice on how best to comply with specific rules.

In-Lieu Fee: An approach to compensatory mitigation for losses of aquatic resources that allows Permittees to provide funds in the form of a payment to an administering government or non-profit conservation organization. Such payments are then pooled to build and maintain off-site mitigation sites.

Legal Basis for Alternative Compliance: Mechanism necessary for implementing an alternative compliance system. This may include, but is not limited to rules, guidance, or plans.

Nonpoint Source: Source of water impairment that does not come from any discernable, confined, and discrete conveyance including, but not limited to, land runoff, precipitation, atmospheric deposition, drainage, seepage, or hydrologic modification.

Off-Site GSI Project: A stormwater capture facility that is designed consistent with MRP C.3.c and C.3.d and captures and treats tributary drainage area that is not associated with a Regulated Project.

Offset Program: Similar to water quality trading, an offset program is a market-based alternative compliance approach in which a source can purchase pollutant reduction credits from another source to achieve a pollutant discharge requirement. Unlike water quality trading, an offset program is often utilized in contexts where regulated dischargers are interested in meeting a water quality pollutant reduction requirement, such as new development or urban growth, but may not have to meet a collective cap on water pollutant discharges.

Performance-based Contracting (PBC): Unlike traditional contracting where payment is based on control measure implementation, performance-based contracting (or "Pay-for-Performance") is an approach to alternative compliance where payment is contingent on the delivery of an outcome. Performance-based contracting can be utilized in several combinations to tie payment to different outcomes.

Plan: In the context of a legal basis for alternative compliance systems, a plan refers to a Clean Water Act-delegated agency approved course of action, such as a TMDL implementation plan, designed to meet water quality standards.

Point Source: Sources of water impairment that come from any discernable, confined, and discrete conveyance.

Public-Private-Partnership: Partnerships involving collaboration between a government agency and a private entity. P3 models may provide communities with an alternative for the finance, design, construction, and operation and maintenance of green stormwater infrastructure, such as green streets.

Regulatory Requirements/TMDL Allocations: An exchange baseline based on regulatory requirements in the region, such as a TMDL allocation. Compliance unit generators must meet these regulatory requirements first, before generating surplus compliance units. Any additional compliance units generated beyond the regulatory requirement by the control measure or project is considered surplus and can be exchanged.

Reserve Pool: A pool of compliance units obtained by the administrator of the alternative compliance system to insure against unforeseen compliance unit losses due to project failure. These compliance units may be set aside from an applied trade ratio.

Rule: In the context of a legal basis for alternative compliance systems, a rule is formal legislation approved by a state's legislative body.

Seller: Entity that generates surplus compliance unit by implementing an approved control measure in order to exchange the generated compliance unit(s) with a buyer in an alternative compliance system. Sellers are also referred to as generators.

System Restrictions/Restricted Waters: Potential limitations placed on the generation or utilization of a compliance unit.

Verification: The part of the certification process that involves the physical inspection of control measures for proper implementation, operation, and maintenance to ensure adherence to the requirements of the alternative compliance system. Verification may be performed by the entity responsible for the certification process or by a verification entity approved by the entity responsible for certification.

Water Quality Monitoring and Evaluation: Protocols within an alternative compliance system implemented to measure and/or track program success and shortcomings. This may include site-specific monitoring of control measures and practices, ambient monitoring of the watershed, or a periodic program evaluation to identify deficiencies in the system design and ensure environmental benefits are being delivered.

FIGURES

APPENDIX A

Contra Costa County RAC System Tracking Tool Overview and Instructions

[To Be Provided by SFEI]

APPENDIX B
Contra Costa County RAC System Technical Analyses Details

APPENDIX C
Contra Costa County RAC System Template Documents

Pinole
Hercules
San Pablo
Richmond
El Cerrito
Martinez
Pleasant Hill
Concord
Pittsburg
Antioch
Oakley
Brentwood
Clayton
Walnut Creek
Lafayette
Orinda
Moraga
Danville
San Ramon
Unincorporated

Legend

- Contra Costa County
- City Boundaries
- State Water Resources Control Board Region Boundary
- Within Urban Limit Line or Census Designated Places
- Hydromodification Management Plan (HMP) Applicable
- HMP Applicable AND Within Urban Limit Line or Census Designated Places
- HMP Status Undetermined

N

0 3 6 Miles

Contra Costa County
Urban Limit Line and
Hydromodification Plan Applicable Areas
Regional Compliance for a Sustainable Bay

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Figure 1

LA0594 | March 2023

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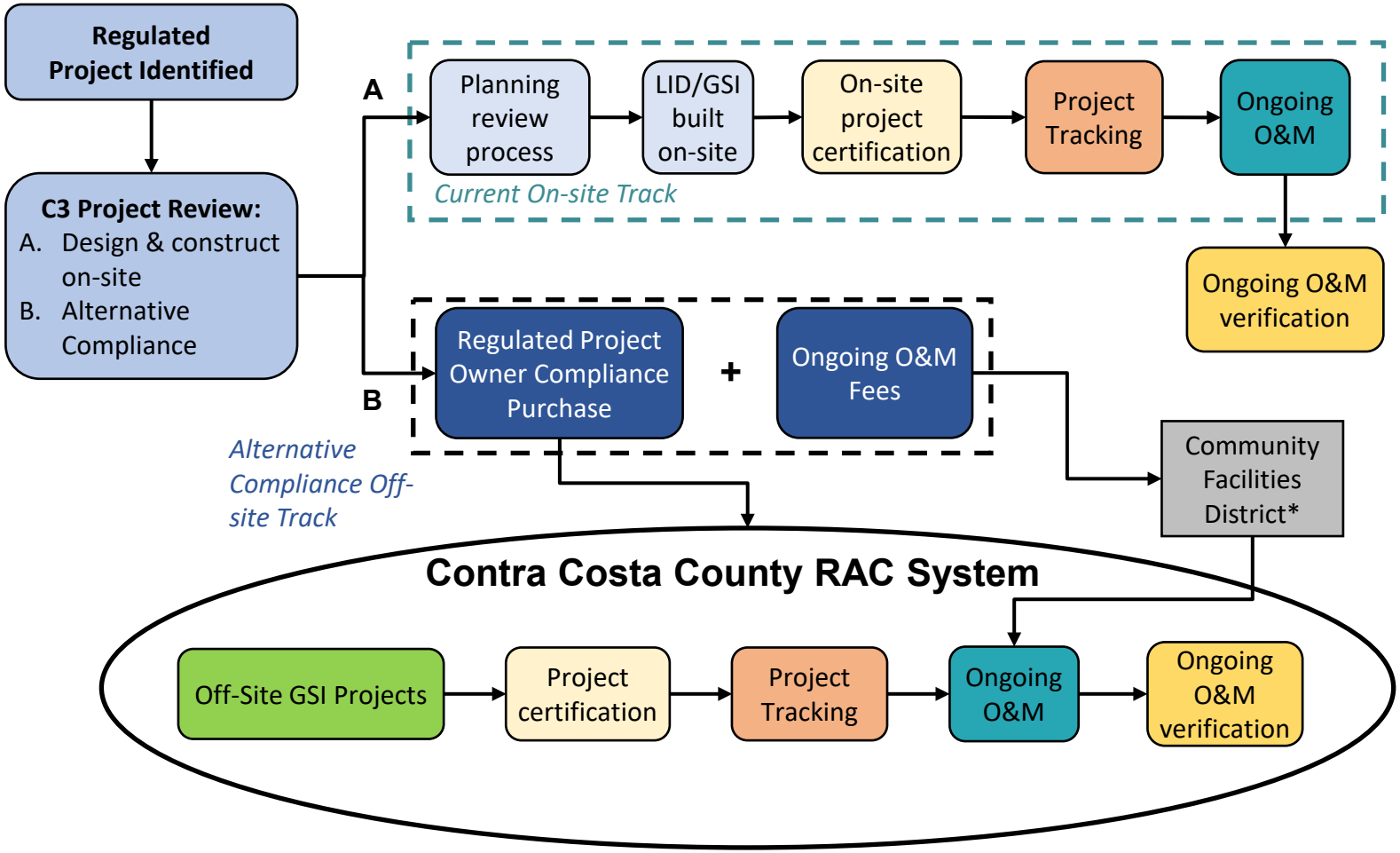

*Feasibility study and development of a Community Facilities District or other O&M fee mechanism will take place during Phase 2 of the RAC System.

Proposed Contra Costa County RAC System

Regional Compliance for a Sustainable Bay System Summary Report

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Figure 2

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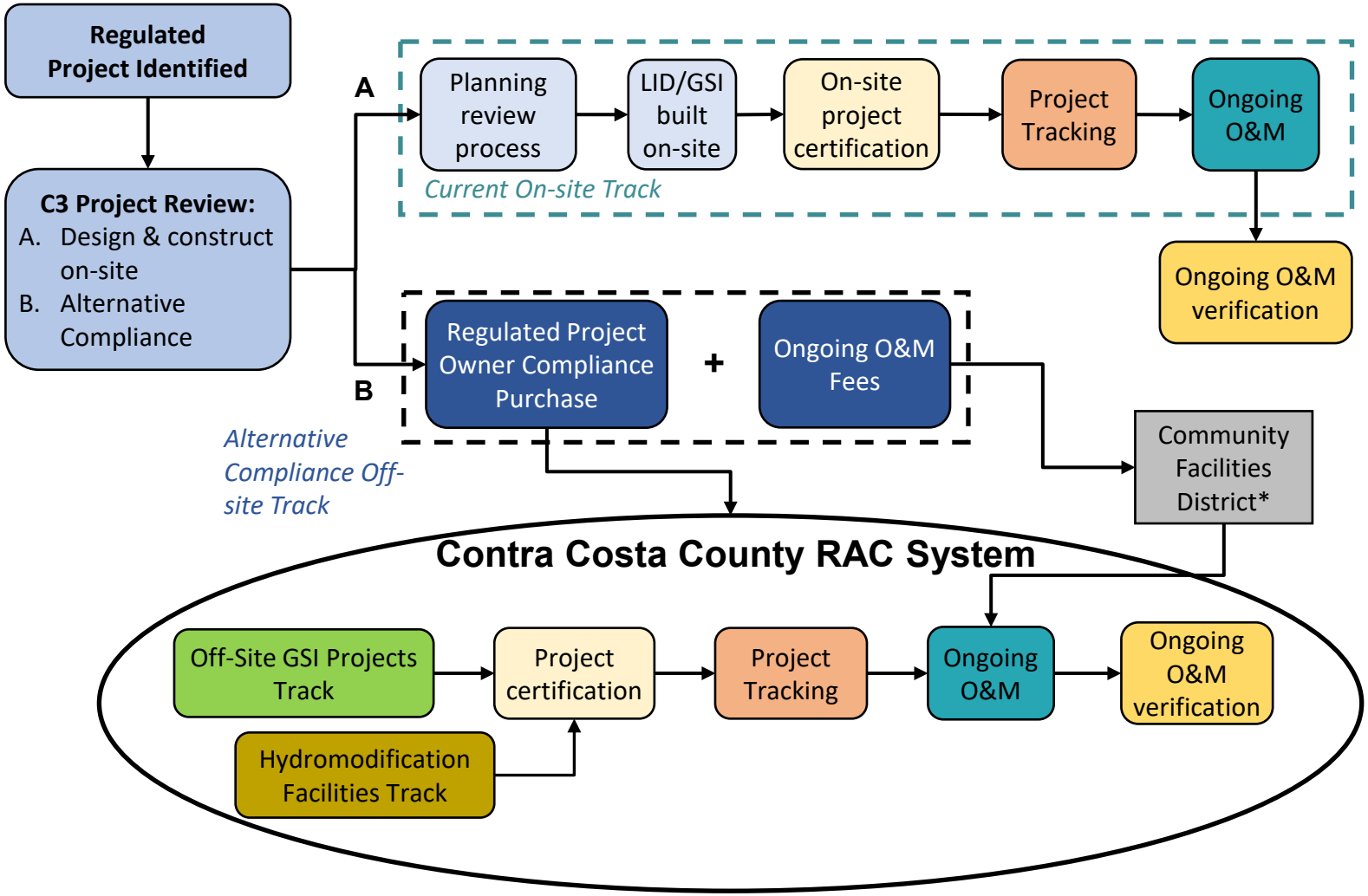

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Proposed Contra Costa County RAC System With Potential Future Hydromod Track
Regional Compliance for a Sustainable Bay System Summary Report

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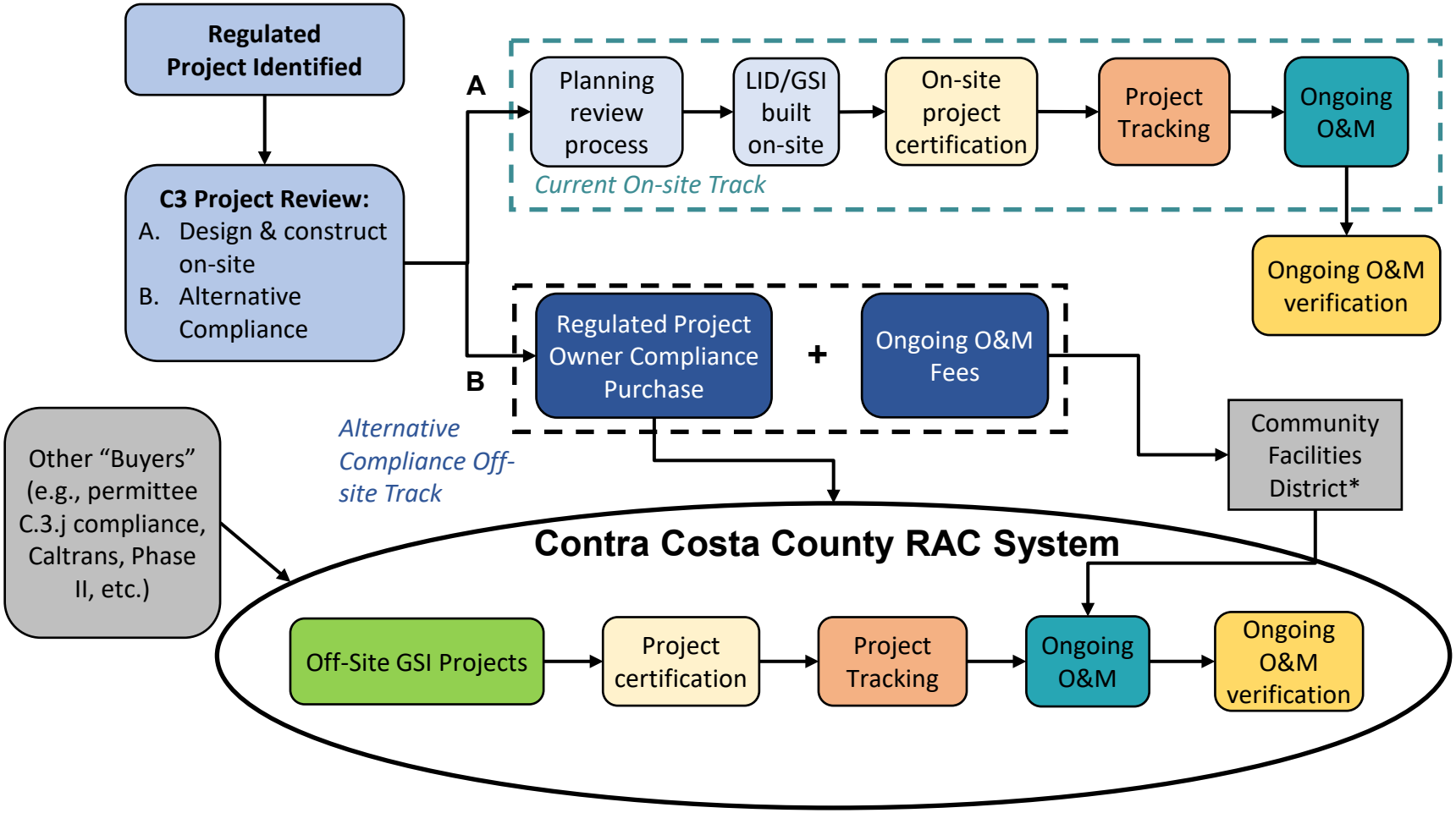
LA0594	March 2023	**Figure 3**



*Feasibility study and development of a Community Facilities District or other O&M fee mechanism will take place during Phase 2 of the RAC System.

Proposed Contra Costa County System With Other Buyers
Regional Compliance for a Sustainable Bay System Summary Report

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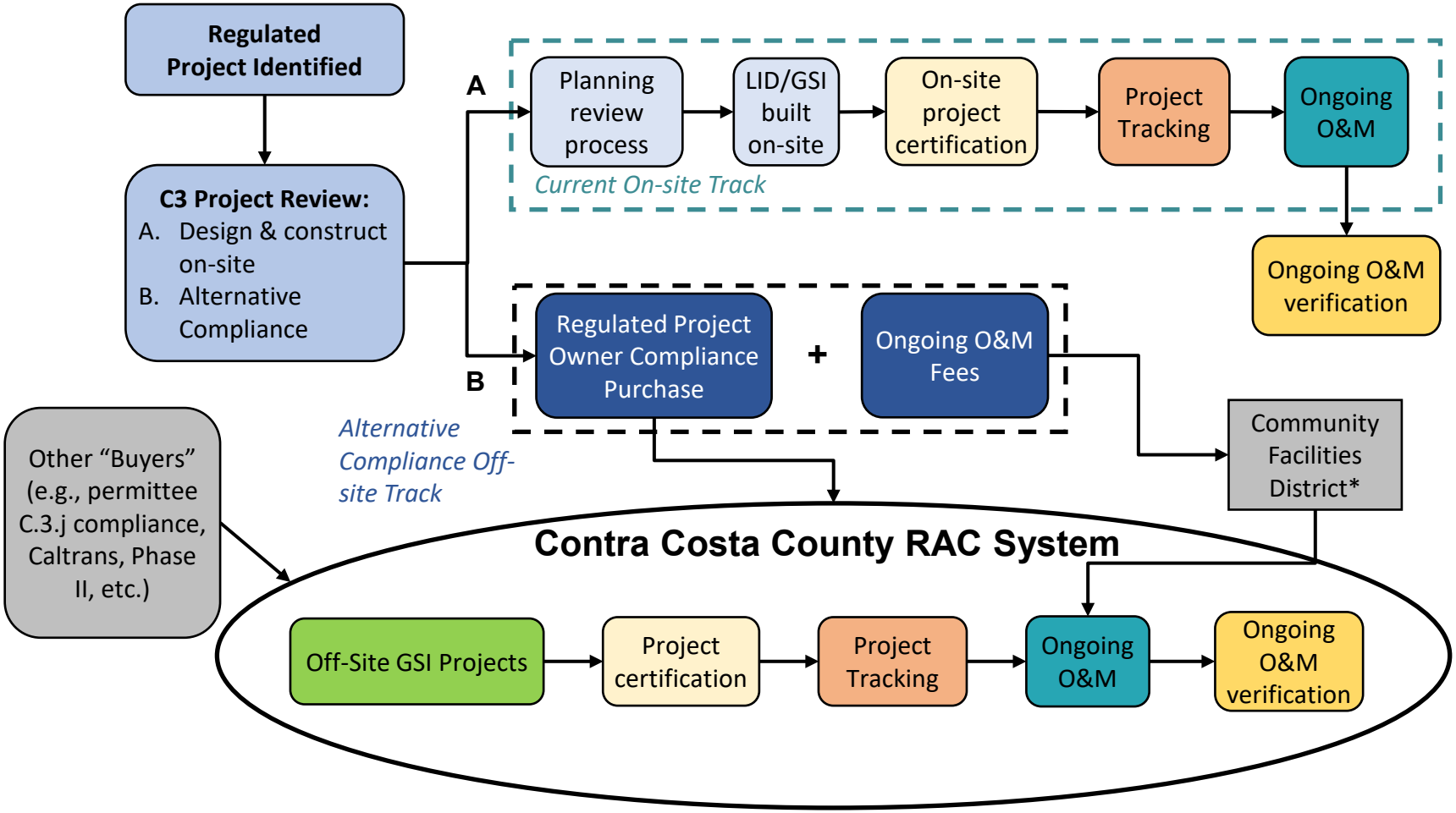
LA0594	March 2023	**Figure 4**



*Feasibility study and development of a Community Facilities District or other O&M fee mechanism will take place during Phase 2 of the RAC System.

Proposed Contra Costa County System With Other Buyers
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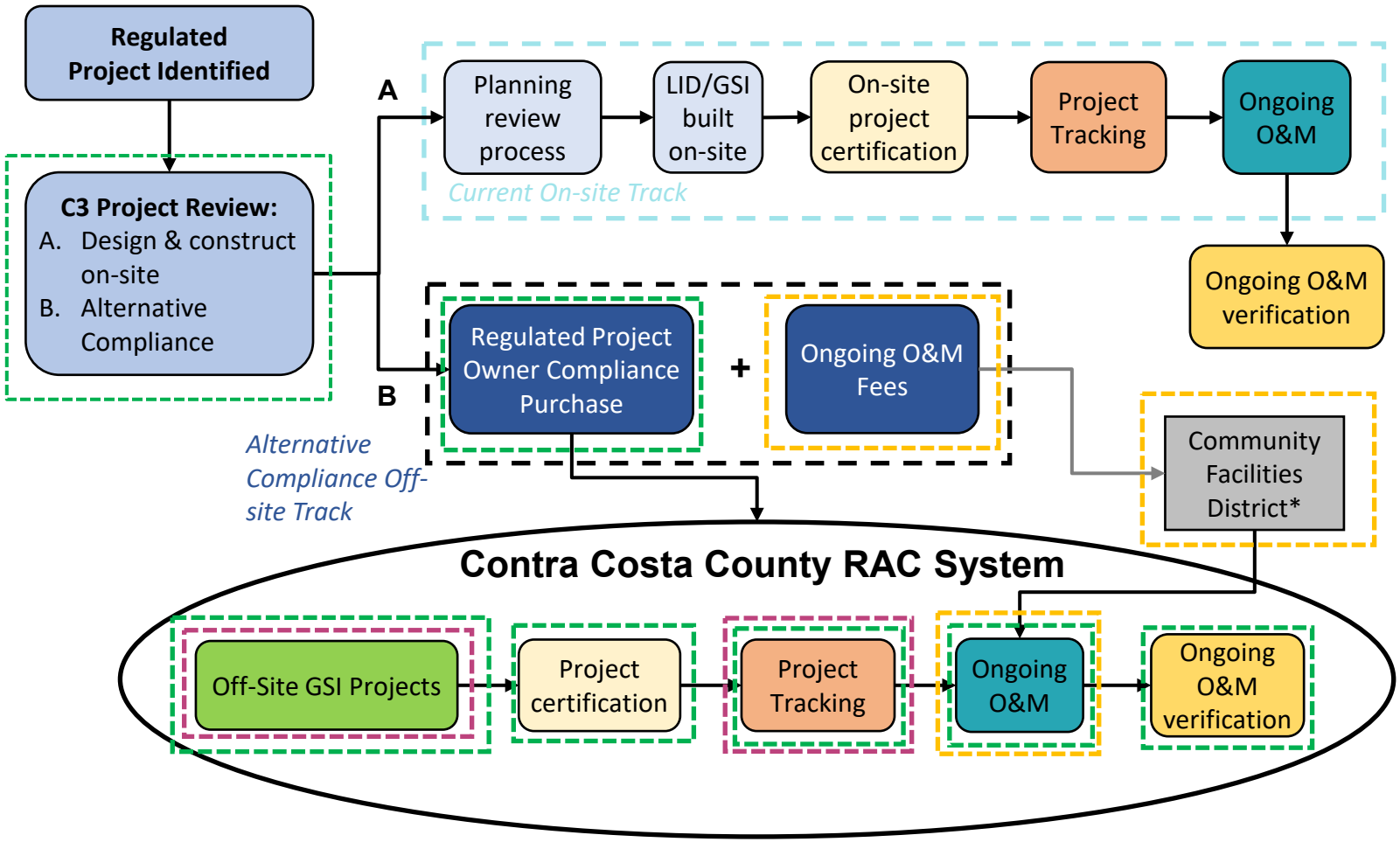
LA0594	March 2023	**Figure 4**



Permittee Administrative responsibilities are shown in Green Hatched Boxes

O&M Fee/Fund Administrative responsibilities are shown in Yellow Hatched Boxes

The CCCWP Administrator and the RAC Subcommittee responsibilities are shown in Pink Hatched Boxes

*Feasibility study and development of a Community Facilities District will take place during Phase 2 of the RAC System.

Contra Costa County RAC System
Administrating Entities Roles/Responsibilities
Regional Compliance for a Sustainable Bay System Summary Report

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Figure 5

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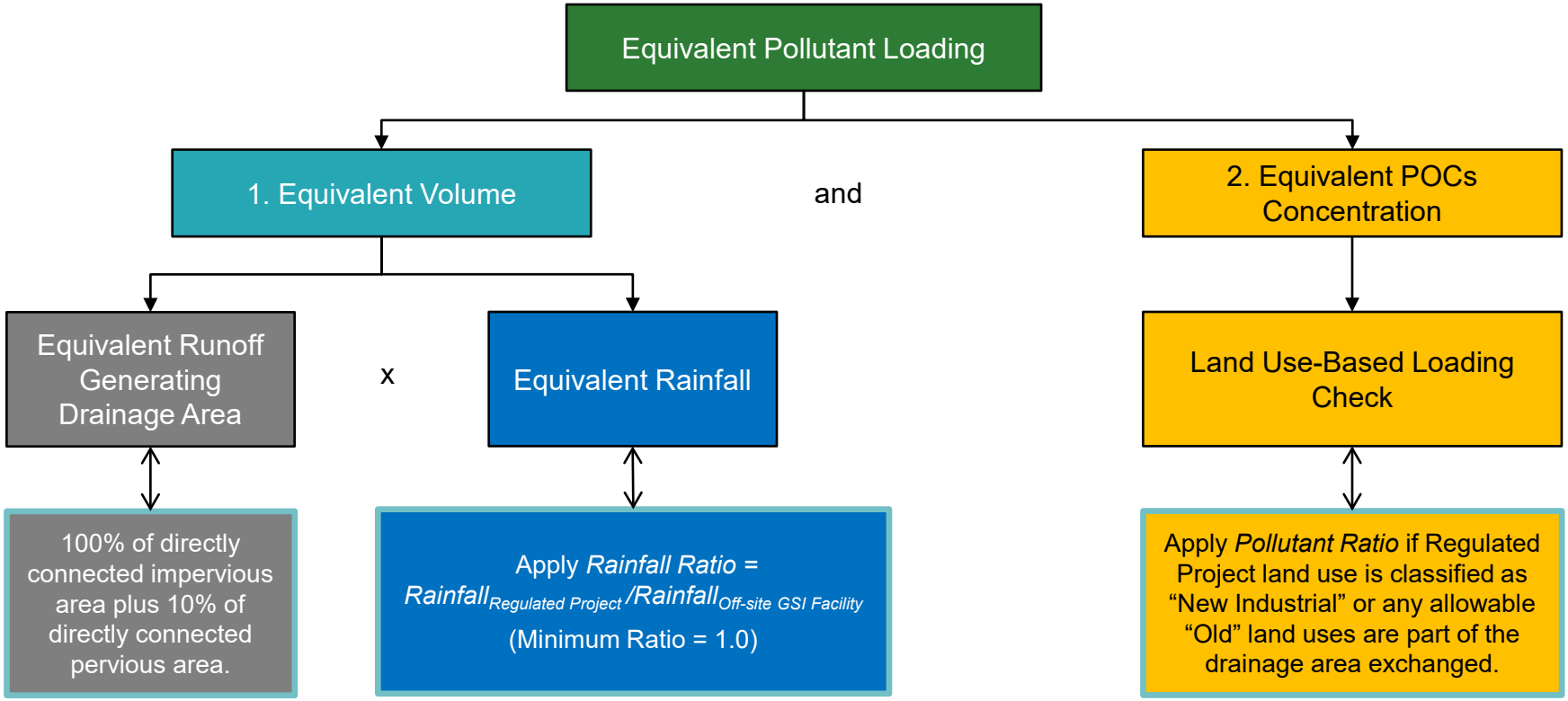

Equivalent Acres Greened generated from Off-Site GSI Facilities are calculated based on Runoff Generated Area only.

- To calculate the Equivalent Acres Greened metrics required for purchase by Regulated Projects, buyers use the formula:

  Equivalent Acres Greened = Runoff Generated Acres $_{Regulated\ Project}$ x Ratio $_{Rainfall}$ x Ratio $_{Pollutant}$

- To calculate the Equivalent Acres Greened metric for purchase by nonregulated projects, buyers use the formula:

  Equivalent Acres Greened = Runoff Generated Acres $_{non\text{-}Regulated\ Project\ purchase}$

Contra Costa County System Equivalent Acres Greened Equivalency Demonstration
Regional Compliance for a Sustainable Bay System Summary Report

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LA0594	March 2023	**Figure 6**

Rodeo
Hercules
Pinole
Sobrante
San Pablo
Richmond
Martinez
Shore Acres
Bay Point
Pittsburg
Antioch
Bethel Island
Oakley
Neroly
Sand Hill
Concord
Pleasant Hill
Cowell
Clayton
Brentwood
CONTRA COSTA
Walnut Creek
Lafayette
Discovery Bay
Marsh Creek State Park (State Historic Park)
Mount Diablo State Park
Byron
Canyon
Danville
Blackhawk
San Ramon

Annual Average Precipitation (PRISM, inches)

- ≤29
- ≤28
- ≤27
- ≤26
- ≤25
- ≤24
- ≤23
- ≤22
- ≤21
- ≤20
- ≤19
- ≤18
- ≤17
- ≤16
- ≤15
- ≤14
- ≤13

Legend

- Contra Costa County
- State Water Resources Control Board Region Boundary
- Within Urban Limit Line or Census Designated Places

Notes:

Precipitation values based on Oregon State University PRISM Climate Group 30-year (1991-2020) normal annual precipitation values, grouped into one-inch intervals, for areas either within the Urban Development Boundary or within Census Designated Places in Contra Costa County.

Precipitation values shown within the Contra Costa County Urban Limit Line and within Census Designated Places.

N

0 3 6 Miles

Contra Costa County
Annual Average Precipitation
Regional Compliance for a Sustainable Bay

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LA0594	October 2022	**Figure 7**

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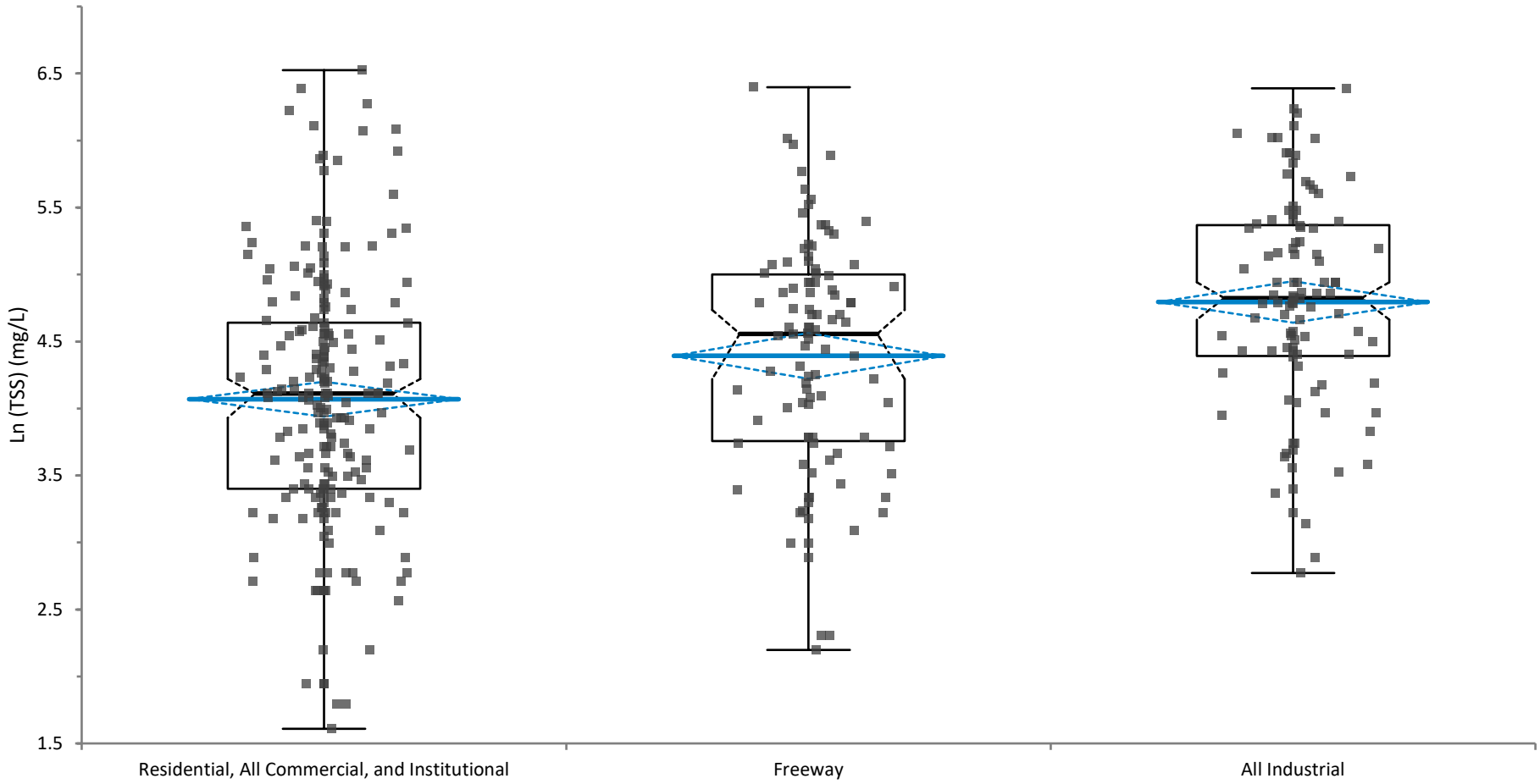

Natural Log Distribution of NSQD TSS Data by Land Use Groups

Regional Compliance for a Sustainable Bay System Summary Report

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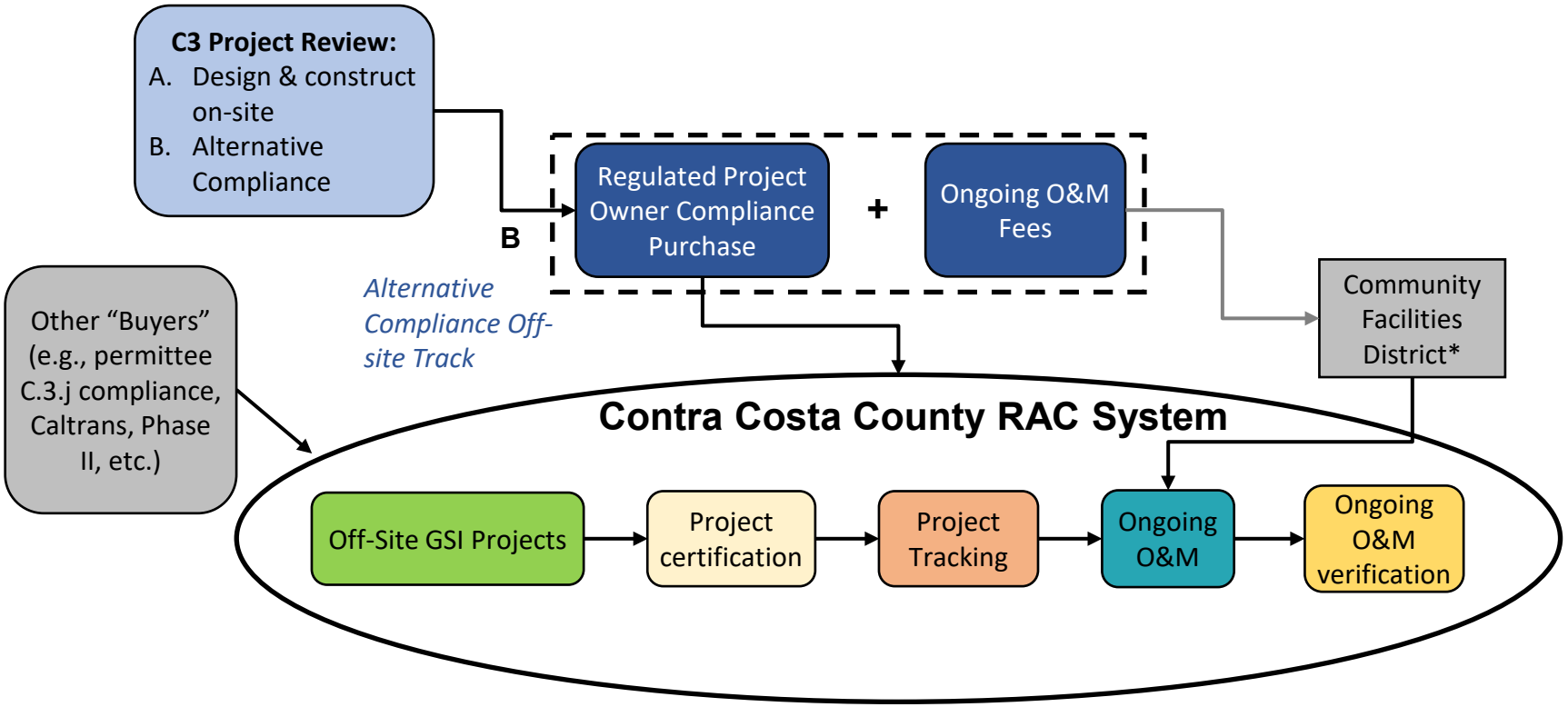
LA0594	March 2023	**Figure 8**



*Feasibility study and development of a Community Facilities District or other O&M fee mechanism will take place during Phase 2 of the RAC System.

Contra Costa County RAC System Exchange Schematics
Regional Compliance for a Sustainable Bay RAC System Summary Report

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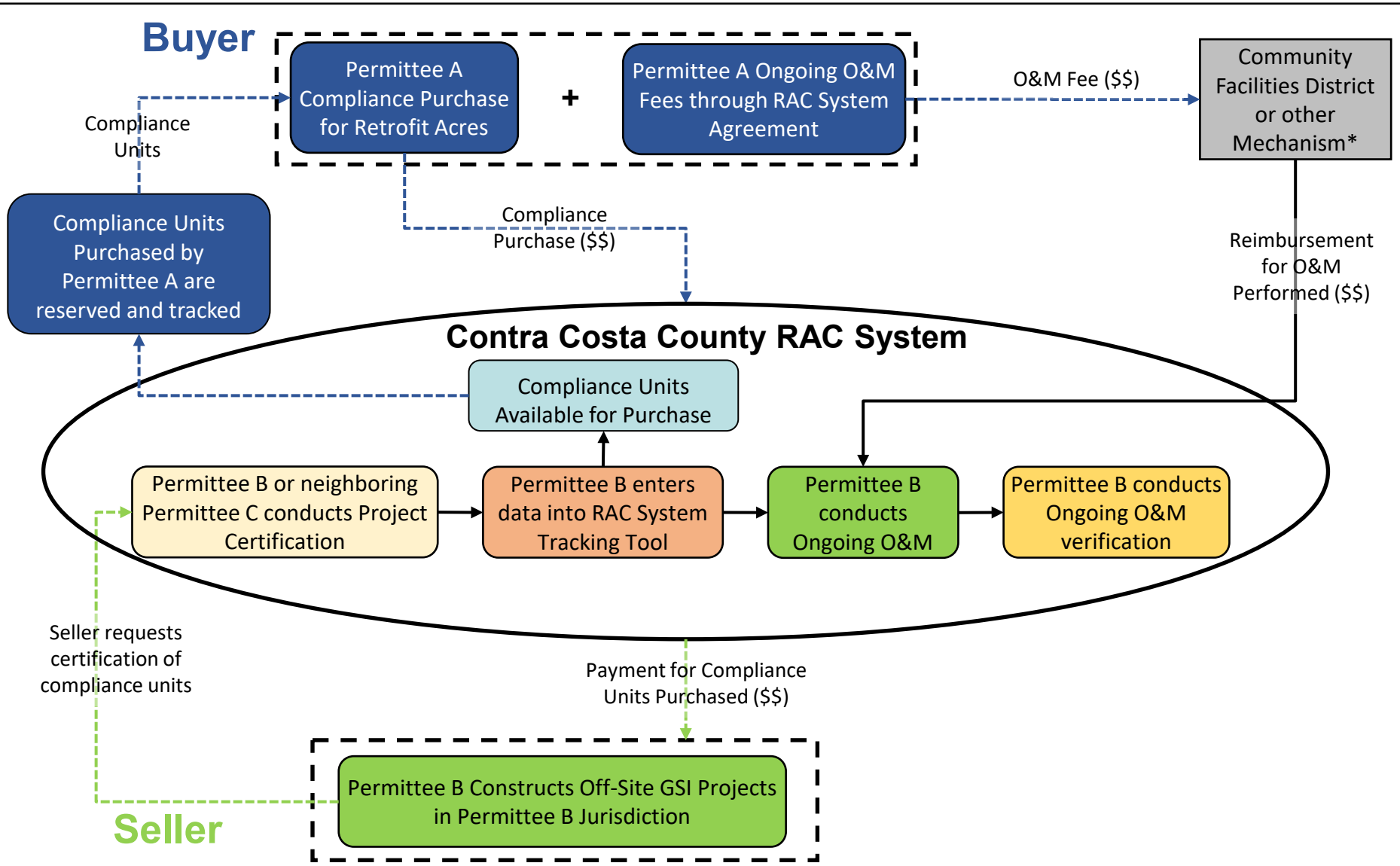
LA0594	March 2023	**Figure 9a**



*Feasibility study and development of a Community Facilities District or other O&M fee mechanism will take place during Phase 2 of the RAC System.

Example 1: Permittee to Permittee Exchange

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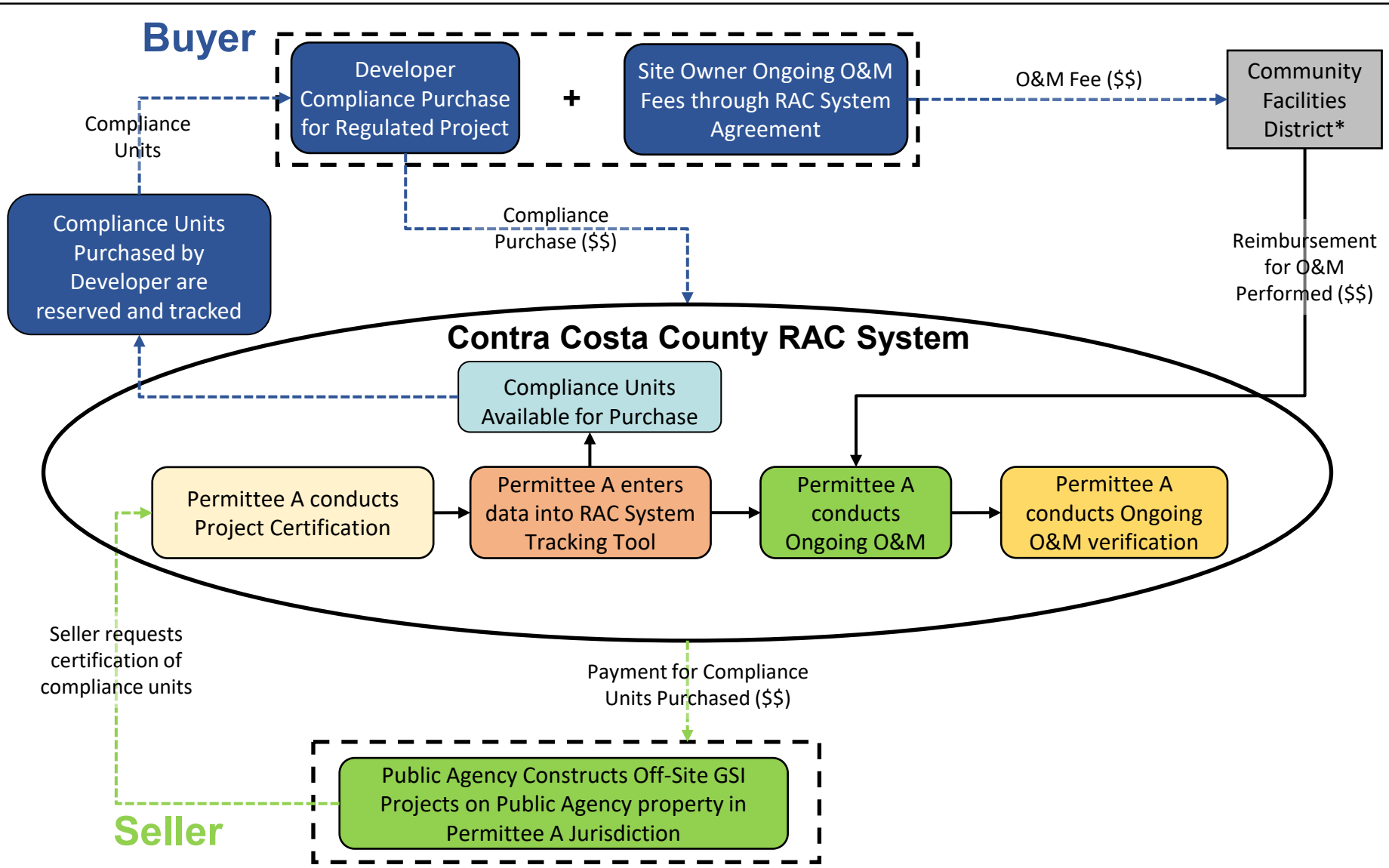
LA0594	March 2023	**Figure 9b**



*Feasibility study and development of a Community Facilities District or other O&M fee mechanism will take place during Phase 2 of the RAC System.

Example 2: Public Agency to Developer Exchange

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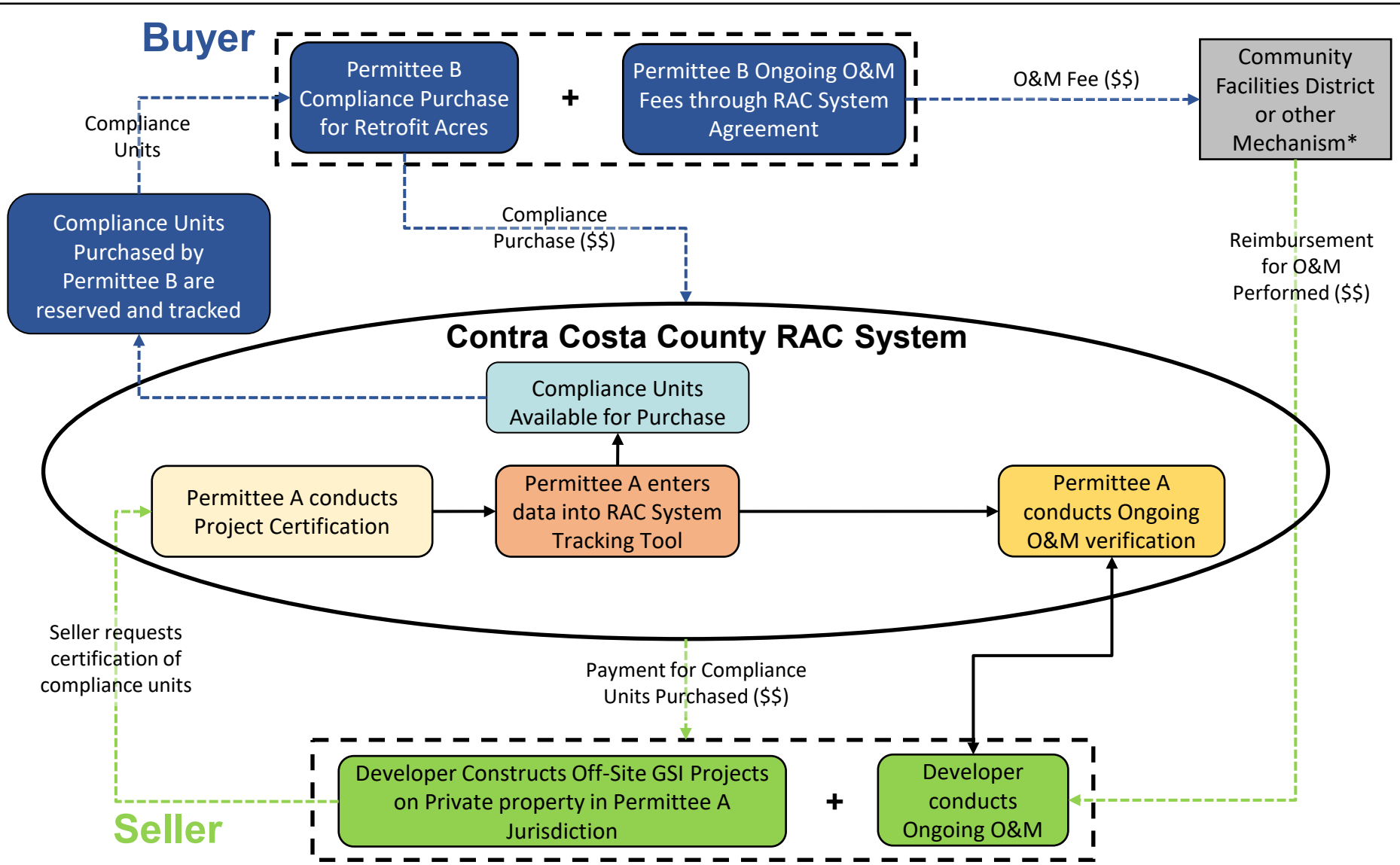
CITY OF SAN PABLO City of New Directions

LA0594	March 2023	**Figure 9c**



*Feasibility study and development of a Community Facilities District or other O&M fee mechanism will take place during Phase 2 of the RAC System.

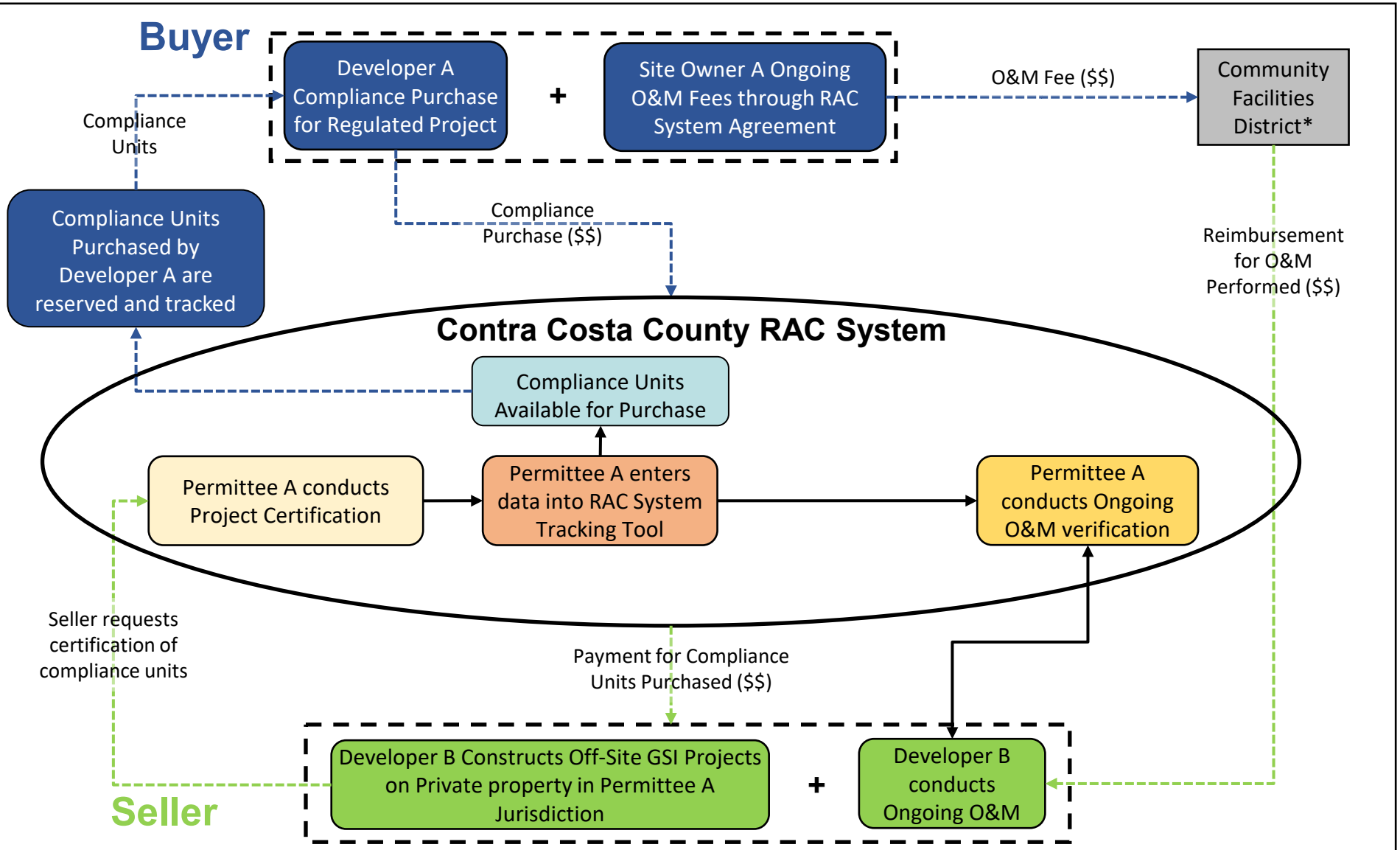
Example 3: Private Entity to Public Agency Exchange

Regional Compliance for a Sustainable Bay RAC System Summary Report

Geosyntec consultants

CITY OF SAN PABLO City of New Directions

LA0594	March 2023	**Figure 9d**



*Feasibility study and development of a Community Facilities District or other O&M fee mechanism will take place during Phase 2 of the RAC System.

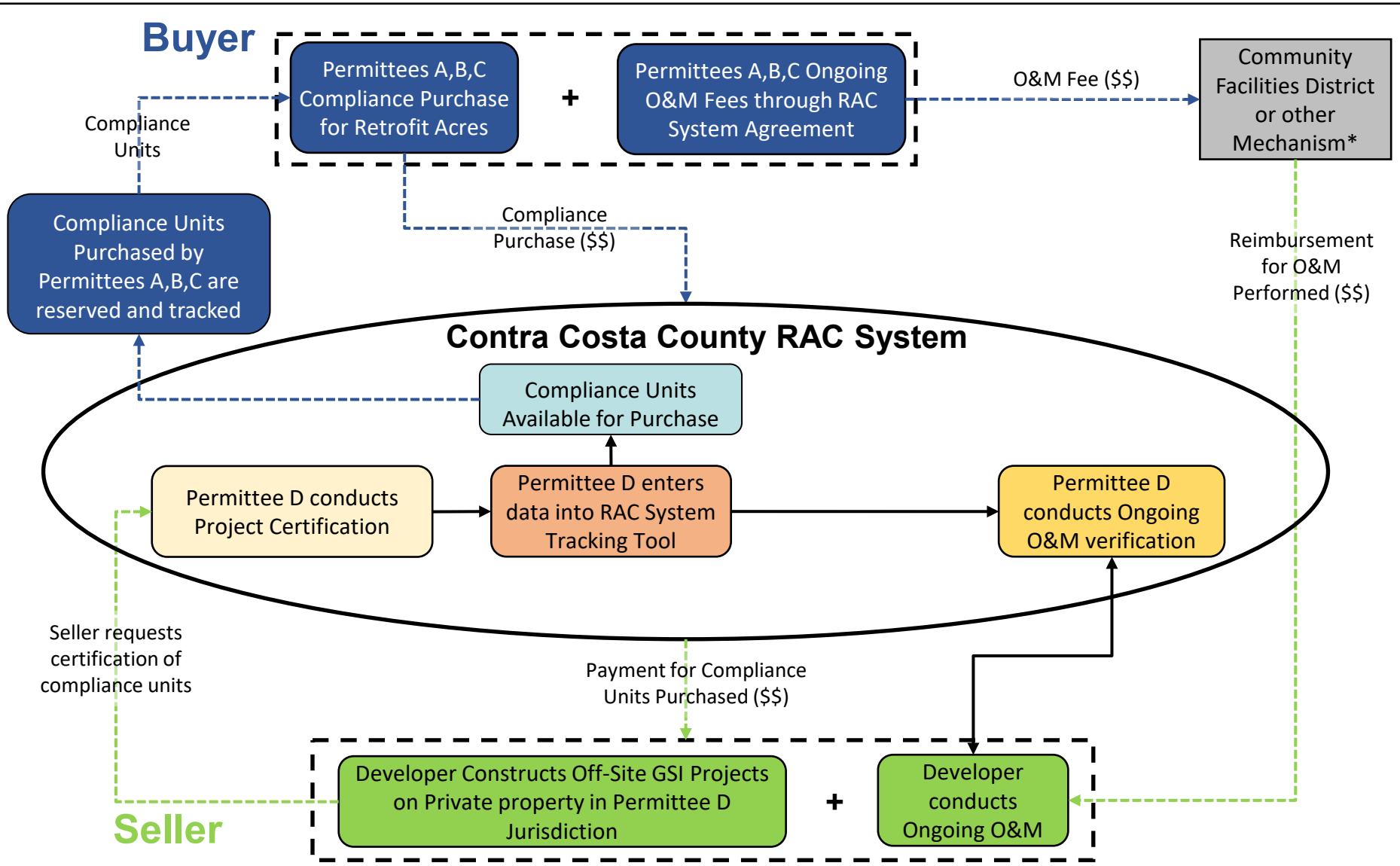
Example 4: Private Entity to Private Entity Exchange

Regional Compliance for a Sustainable Bay RAC System Summary Report

Geosyntec consultants

CITY OF SAN PABLO City of New Directions

LA0594	March 2023	**Figure 9e**



*Feasibility study and development of a Community Facilities District or other O&M fee mechanism will take place during Phase 2 of the RAC System.

Example 5: Private Entity to Permittee Exchange

Regional Compliance for a Sustainable Bay RAC System Summary Report

Geosyntec consultants

CITY OF SAN PABLO City of New Directions

LA0594	March 2023	**Figure 9f**

APPENDIX A

Contra Costa County RAC System Tracking Tool Overview and Instructions

[To Be Provided by SFEI]

APPENDIX B
Contra Costa County RAC System Technical Analyses Details

Appendix B. CONTRA COSTA COUNTY SYSTEM TECHNICAL ANALYSES DETAILS

Details relating to calculations and analyses conducted for the Contra Costa County System are provided in this Technical Appendix.

B.1 Runoff Generating Area

Runoff is assumed to be generated from 100% of directly connected impervious surfaces and 10% of pervious surfaces within the area of interest. Assuming 100% of impervious acres and 10% of pervious surfaces will generate runoff is consistent with the "Treatment Only" (i.e., GSI) runoff factors for pervious surfaces in Contra Costa C.3 Technical Manual Table 3-2 (CCCWP, 2017). The runoff coefficient of 10% of pervious surfaces is also validated through the hydrology model developed for the County's Reasonable Assurance Analysis (RAA) for mercury and PCBs, developed in compliance with MRP Provisions C.11 and C.12 (CCCWP, 2020).

The Contra Costa County RAA baseline hydrology model produces average annual runoff values for the WY 2000 – 2009 baseline period of record using a hydrologic response unit (HRU) approach (CCCWP, 2018; CCCWP, 2020). The HRU approach involves modeling various components of land surface features. A total of 586 unique pervious HRU models, which are defined by the combinations of rainfall zone, evapotranspiration zone, hydrologic soil group, slope, and development condition, were modeled across the County. The RAA model was applied to all areas within the Contra Costa County Urban Limit Line (ULL) (i.e., the "65/35" land preservation ordinance that limits urban development in the county to no more than thirty-five percent of the land in the County, see Figure 1). Total precipitation and total estimated runoff for the period of record were aggregated using a geospatial approach for all pervious areas within the County ULL. The aggregated outputs were used to develop an average runoff coefficient for all pervious areas within the County ULL. The resulting pervious runoff coefficient within the County ULL is 9.6%. The runoff coefficient does vary within the County, as soils in the eastern portion of the county are typically sandier than those near the San Francisco Bay margin. When looking at pervious areas within the Region 2 area of the County within the ULL, the resulting pervious runoff coefficient is 10.9%. These values support the use of 10% of pervious surfaces to calculate runoff generating area.

B.2 TSS EMC Development

Event Mean Concentration (EMC) is an analytical parameter that refers to a flow-weighted average concentration of a pollutant during a rainfall-runoff event. An EMC is defined as the total event mass load divided by the total event runoff volume. As such, estimates of EMCs can be combined with runoff volume estimates to estimate pollutant loading. EMCs for Total Suspended Solids (TSS) were developed for several land use classifications, using data from the National Stormwater Quality Database (NSQD), a database developed by the University of Alabama and the Center for Watershed Protection under support from the U.S. Environmental Protection Agency (Pitt, 2015).

B.2.1 Data

The NSQD was queried to obtain all TSS stormwater runoff samples collected within EPA Rain Zone 6 in California, in Spring, Fall, or Winter seasons. This query returned 650 stormwater runoff sample results from 647 rain events at 40 sites. Results were separated by the primary land use assigned in the NSQD. Table B-1 below shows the count of data for the listed land use category. Single land use categories are those with greater than 85% of the primary land use in the drainage area tributary to the data sampling point. Mixed land use categories are those with than 85% of the primary land use in the drainage area tributary to the data sampling point less (i.e., "[Land Use] Mix").

Table B-1: Summary of Selected NSQD TSS Data by Land Use

Land Use Category	Count TSS data
Commercial	10
Commercial Mix	38
Freeway	105
Freeway Mix	78
Industrial	14
Industrial Mix	95
Institutional	51
Residential	114
Residential Mix	75
Open Space	70
Grand Total	**650**

As shown in Table 1 above, if data associated with sites that contain less than 85% of the primary land use are removed, the number of data points is greatly decreased in some cases (for example, for Commercial and Industrial) and may not be adequate for developing EMC statistics. Given the data paucity and specifics of the land uses, Geosyntec used the following data analysis groupings to develop representative land use-based TSS EMCs:

- Commercial: Combination of NSQD "commercial" and "commercial mix" data due to the low amount of data.
- Transportation: "Freeway" only data, no mixed freeway land use data.
- Industrial: Combination of "industrial" and "industrial mix" due to the low amount of data.
- Institutional: Summarize "institutional" data and keep separate from Commercial.
- Residential: Use "residential" only data as there is sufficient data.

B.2.2 Statistical Analysis

Data were first transformed by taking the natural logarithm of each data point, with the hypothesis that environmental data is lognormally distributed. The data for each land use category were analyzed for outliers prior to developing EMCs. Outliers were defined as any data more than 1.5 interquartile ranges (IQRs) below the first quartile or above the third quartile.

Outliers were excluded from future steps in the analysis. The number of outliers removed by land use is shown in Table B-2.

Table B-2: Outliers Removed by Land Use

Land Use[1]	Outliers Removed
Residential	2
All Commercial	3
Freeway	5
All Industrial	5
Institutional	0
Open Space	0
Grand Total	**15**

[1] 'All [Land Use]' indicate land use types that are the combinations of single land use and mixed land use data.

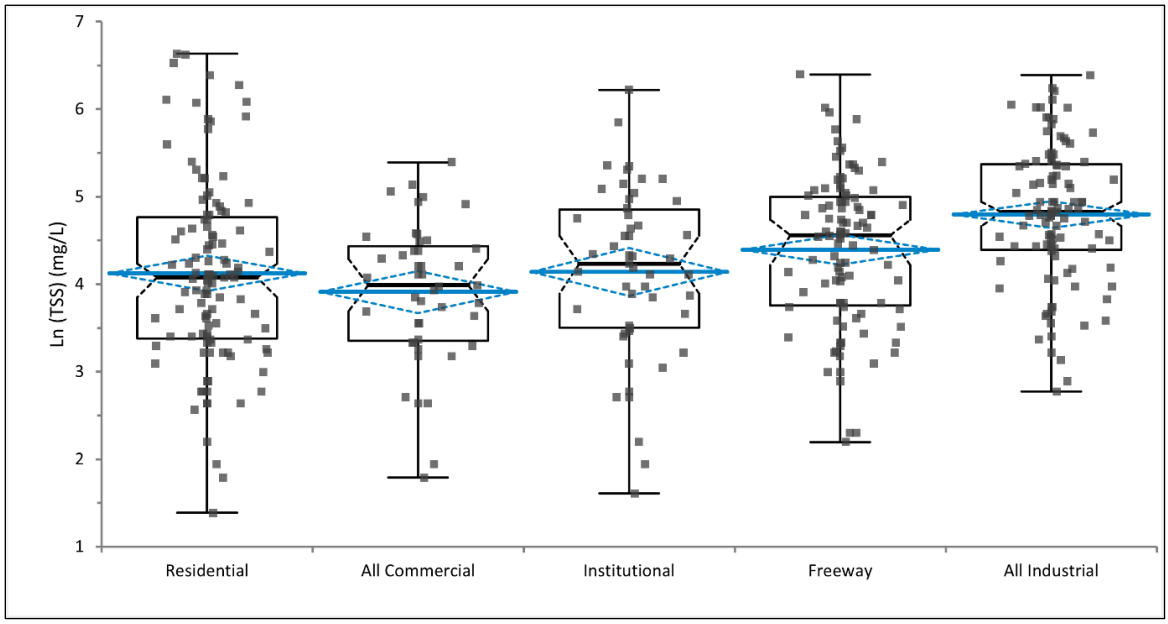
The log-transformed data were assessed for normality using the Shapiro-Wilk test, the results of which are shown in Table B-3. A p-value below the alpha value of 0.05 indicates there is evidence the sample did not come from a normally distributed population. Open Space land use data was concluded to not come from a normally distributed population. Given this finding and that Open Space land use is not expected to make up a large part of GSI drainage areas, Open Space data was not examined further for EMC development.

Table B-3: Shapiro-Wilk Test Results by Land Use

Land Use	W	p	Conclusion
Residential	0.98	0.199	Normal
All Commercial	0.97	0.252	Normal
Freeway	0.98	0.271	Normal
All Industrial	0.99	0.335	Normal
Institutional	0.98	0.589	Normal
Open Space	0.95	0.007	Not normal

Land uses were compared to each other to understand if significant differences in the distribution of TSS concentrations exist. The distributions for each land use are shown in Figure 1, and their cumulative distribution functions (with 95% confidence interval bands) are shown in Figure 2.

Figure B-1: Distribution of TSS Results by Land Use



Throughout this document, medians are shown as bold lines (with a 95% confidence interval shown as a notch on the box) means as blue lines (with 95% confidence interval shown as a dashed diamond), the 1st and 3rd quartiles as the edges of the boxes, and minimums/maximums as end caps.

Box plot results demonstrate that the data mean, median, 25th, and 75th percentile TSS concentrations for All Industrial and Freeway land use groupings are higher than those for the other three land uses, which are more similar to each other. To investigate this, a series of Wilcoxon-Mann-Whitney tests were conducted to compare each land use pair. The results of the tests are shown in Table B-4. A p-value below the alpha value of 0.05 indicates the TSS values of the compared land uses are likely not derived from the same population.

Table B-4: Wilcoxon-Mann-Whitney Tests by Land Use

Land Use Comparisons	Wilcoxon-Mann-Whitney Test p-Values
All Commercial *and* Institutional	0.1554
All Commercial *and* Residential	0.4375
Institutional *and* Residential	0.5240
Institutional *and* Freeway	0.1504
All Industrial *and* Freeway	0.0017
All Industrial *and* Institutional	<0.0001
All Industrial *and* Residential	<0.0001
Residential *and* Freeway	0.0147
All Commercial *and* All Industrial	<0.0001
All Commercial *and* Freeway	0.0020

The results shown in Table 4 indicate that the Residential, All Commercial, and Institutional data sets are likely derived from the same population (i.e., TSS concentrations are not statistically

different between these land uses based on data analyzed). Since All Commercial, Residential, and Institutional do not have statistically distinct TSS concentrations, the three land use categories are combined for EMC development. In contrast, All Industrial data is significantly different than all the other land uses and Freeway is statistically different than almost all the other land uses.

Given the results of the Wilcoxon-Mann-Whitney tests and review of the data distributions, the following data groupings were used for TSS EMCs and Pollutant Ratio developments:

- Residential, All Commercial, and Institutional
- Freeway
- All Industrial

The box plot showing the data distributions for these data groupings is shown in Figure B-2. The cumulative distribution functions for the data groupings is provided as Figure B-3. Both support the selection of land use groupings used to develop TSS EMCs.

Figure B-2: Distribution of TSS Results by Final Land Use Groups

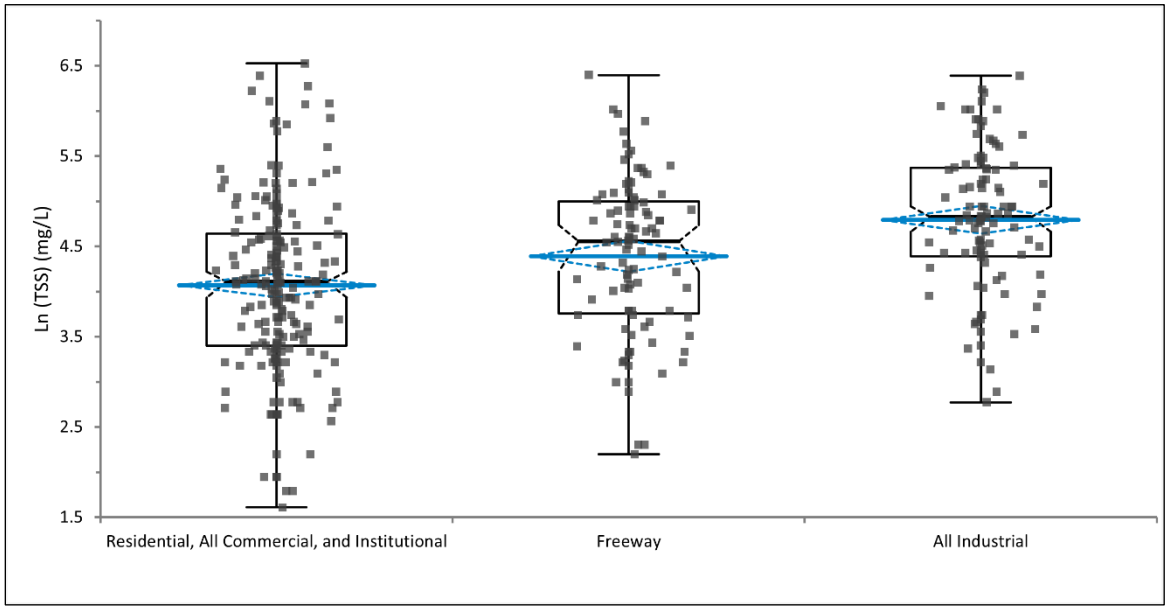
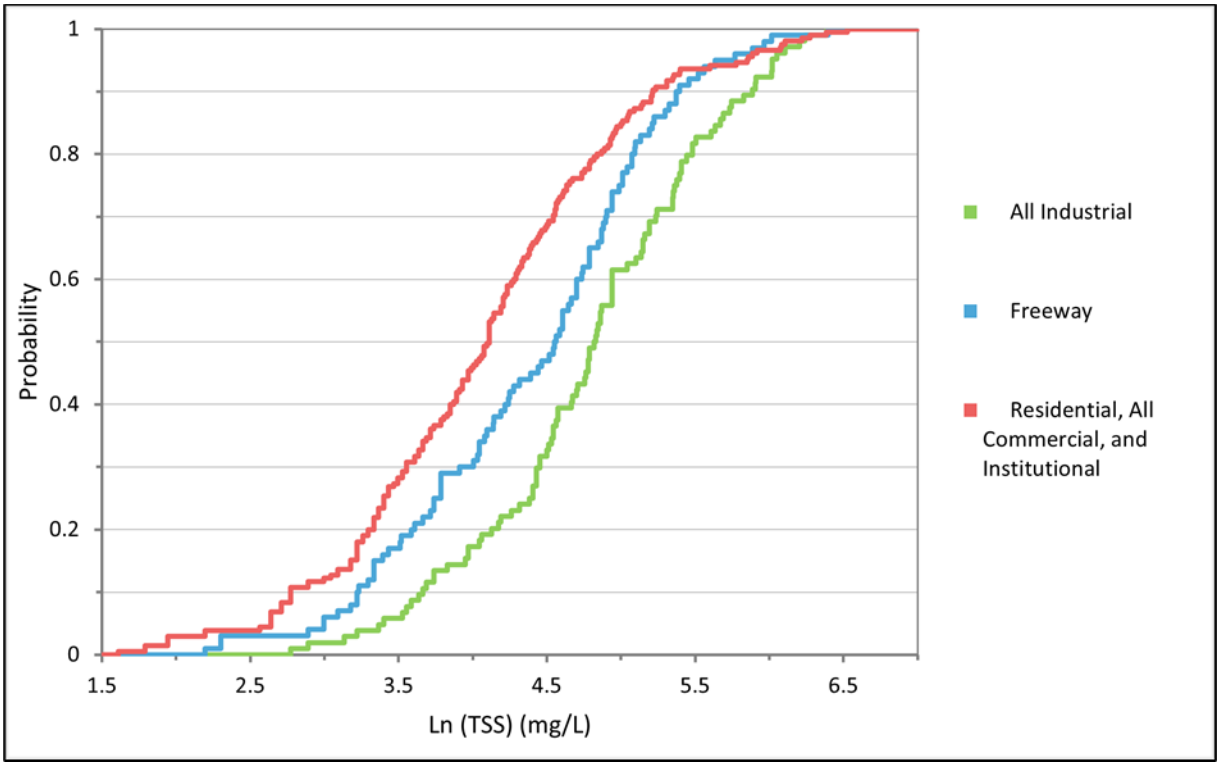


Figure B-3: Cumulative Distribution Functions for TSS Results by Final Land Use Groups



B.2.3 Conclusions

TSS EMCs were developed for the three land use groupings by taking the arithmetic mean of the natural log-transformed distributions, using the natural logs of the mean and the standard deviation as shown in the equation below (from Geosyntec and Wright Water Engineers, 2009):

$$Sample\ Mean = \exp\left(\mu_{ln} + 0.5\sigma_{ln}^2\right)$$

Where:

exp = e to the power of

μ_{ln} = the mean of the natural log-transformed distribution

σ_{ln}= the standard deviation of the natural log-transformed distribution

The back-transformed results are shown in Table B-5.

Table B-5: TSS EMCs by Land Use

Land Use	Data Count	μ_{ln}	σ_{ln}	TSS EMC (mg/L)
Residential, All Commercial, and Institutional[1,2]	205	4.07	0.95	92
Freeway/ Transportation[3]	100	4.39	0.86	117
All Industrial	104	4.79	0.79	166

[1] Three additional outliers were removed after combining the dataset associated with the three land uses.

[2] Includes adjacent collector and local roadways.

[3] Transportation includes interstate highways, freeways, multilane highways, and principal arterials.

B.3 References

Geosyntec Consultants and Wright Water Engineers, Inc., 2009. Urban Stormwater BMP Performance Monitoring. October.

Pitt, R., 2015. National Stormwater Quality Database (NSQD) v 4.02. Downloaded January 28, 2021. bmpdatabase.org/nsqdstat.html

San Francisco Estuary Institute (SFEI), 2018. Regional Watershed Spreadsheet Model (RWSM) Toolbox v1.0 User Manual and Pollutant Model.

APPENDIX C
Contra Costa County RAC System Template Documents

APPENDIX C
Contra Costa County RAC System Template Documents

Model Stormwater Ordinance Language for the Contra Costa County RAC System

Preliminary Draft – Model Stormwater Ordinance Revisions
Subject to Change

Appendix C-1
Model Stormwater Ordinance Language Revisions[1]
for the Contra Costa County Regional Alternative Compliance System

City of _____
Ordinance No.

An Ordinance of the City of _____Amending Chapter __ of Title _ of the Municipal Code relating to Stormwater Management and Discharge Control

The City Council of the City of _____ does ordain as follows:

Section 1.

Chapter __ of Title _ of the _____ Municipal Code is hereby amended to read as follows:

Chapter __. Stormwater Management and Discharge Control

Sec. _____. 01. Intent and Purpose.

(a) The intent of this chapter is to protect and enhance the water quality in the City of _____'s watercourses pursuant to, and consistent with the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.) and the Federal Clean Water Act (33 U.S.C. section 1251 et seq.).

(b) This chapter also carries out the conditions in the City's National Pollutant Discharge Elimination System (NPDES) permit that require implementation of appropriate source control and site design measures and stormwater treatment measures for development projects.

(c) It is the purpose of the City Council in enacting this chapter to protect the health, safety and general welfare of _____'s citizens by:

(1) minimizing non-stormwater discharges, whose pollutants would otherwise degrade the water quality of local streams, to the stormwater system.

(2) minimizing increases in nonpoint source pollution caused by stormwater runoff from development that would otherwise degrade local water quality.

(3) controlling the discharge to the City's stormwater system from spills, dumping or disposal of materials other than stormwater.

[1] Revisions made to the CCCWP Model Stormwater Ordinance dated March 5, 2013.

(4) reducing stormwater run-off rates and volumes and nonpoint source pollution whenever possible, through stormwater management controls and ensuring that these management controls are properly maintained and pose no threat to public safety.

Sec. _____. 02. Definitions.

The following words and phrases when used in this chapter shall be as defined herein. Words and phrases in this chapter and not otherwise defined shall be interpreted as defined in the regulations issued by the U.S. Environmental Protection Agency to implement the provisions of the Federal Clean Water Act, and as defined by the State Water Resources Control Board to implement the Porter-Cologne Act:

(a) ***Alternative compliance*** shall mean a method allowed by the City's NPDES permit by which an applicant may comply with development runoff requirements for stormwater management facility(ies) at one or more offsite location(s) or pay equivalent in-lieu fees to provide stormwater management at an offsite project constructed and maintained by others.

(~~a~~b) ***Best management practices or "BMP"*** are structural devices, measures, stormwater management facilities, activities, prohibitions, or practices; general good housekeeping, pollution prevention practices, maintenance procedures, and other management practices, to prevent or reduce the discharge of pollutants directly or indirectly to watercourses, water bodies, and wetlands.

(~~b~~c) ***City's NPDES permit*** shall mean the NPDES permit issued to the City of _____, Permit No. CAS612008 [for East County: Permit No. CAS083313] and any subsequent amendment, reissuance or successor to this NPDES permit.

(d) ***Compliance units*** shall mean a unit of exchange defined in the Contra Costa County Regional Alternative Compliance System Summary Report that can be purchased by buyers seeking alternative compliance with development runoff requirements.

(e) ***Contra Costa County Regional Alternative Compliance System*** shall mean the System, as described in the most recent version of the Contra Costa County Regional Alternative Compliance System Summary Report, in which an applicant may achieve alternative compliance with development runoff requirements for stormwater management facilities by purchasing compliance units from an offsite stormwater management facility that has been certified by the System.

(~~c~~f) ***Development runoff requirements*** shall mean the provisions in the City's NPDES permit that contain performance standards to address both the construction and post-construction phase impacts of new projects and redeveloped projects on stormwater quality.

(~~d~~g) ***Director*** shall mean the _____ of the City of _____ or his or her designee.

(~~e~~h) ***Enforcement officer or Officer*** shall mean those individuals designated by the Director to act as authorized enforcement officers.

(~~f~~i) ***Guidebook*** shall mean the most recent version of the Contra Costa Clean Water Program Stormwater C.3. Guidebook.

(~~g~~j) ***Non-stormwater discharge*** is any addition of any pollutant to the City's stormwater system, except discharges pursuant to a NPDES permit, or discharges further exempted in Section _____.06(c) and (d) of this chapter.

(~~h~~k) ***Pollutant*** shall mean any material other than stormwater including, but not limited to, petroleum products or by-products, solid waste, incinerator residue, sewage, sewage sludge, heat, chemical waste, biological materials, radioactive materials, wrecked or discarded equipment, rock, sand, soil and industrial, municipal or agricultural waste discharged into the water or stormwater system.

(~~i~~l) ***Premises*** shall mean any building, structure, facility, or installation, (including a building's grounds or other appurtenances), and adjacent sidewalks and parking strips.

(~~j~~m) ***Responsible person*** shall mean the owner or occupant of any premises or who engages in any activity from which there is or may be a non-stormwater discharge or any person who releases pollutants to the City's stormwater system.

(~~k~~n) ***Stormwater*** shall mean flow on the surface of the ground resulting from precipitation.

(~~l~~o) ***Stormwater control plan*** shall mean a plan that meets those criteria contained in the most recent version of the Contra Costa Clean Water Program Stormwater C.3. Guidebook.

(~~m~~p) ***Stormwater management facility*** shall mean any device that utilizes detention, retention, filtration, harvest for reuse, evapotranspiration or infiltration to provide treatment (and/or control volume, flows, and durations) of stormwater for purposes of compliance with development runoff requirements.

(~~n~~q) ***Stormwater system*** is that system of facilities by which stormwater may be conveyed to any stream, watercourse, other body of water or wetlands, including flood control channels, any roads with drainage systems, city streets, catch basins, curbs, gutters, ditches, improved channels, storm drains or storm drain system, which are not part of a Publicly Owned Treatment Works ("POTW") as that term is defined in 40 CFR section 122.2.

Sec. _____. 03. Responsibility for Administration.

The Director or his designee shall administer this chapter for the City.

Sec. _____. 04. Construction and Application.

This chapter shall be construed consistent with the requirements of the Federal Clean Water Act and amendments thereto or applicable implementing regulations and the City's NPDES permit.

Sec. _____. 05 Stormwater Control Plan Required.

(a) In accordance with thresholds and effective dates in the City's NPDES Permit, every application for a development project, including but not limited to a rezoning, tentative map, parcel map, conditional use permit, variance, site development permit, design review, or building permit that is subject to the development runoff requirements in the City's NPDES permit shall be accompanied by a stormwater control plan that meets the criteria in the most recent version of the Contra Costa Clean Water Program Stormwater C.3. Guidebook. The stormwater control plan shall include a description of the low impact development site design measures, pollutant source control measures, stormwater treatment (and/or control of volume, flows, and durations as applicable) in stormwater management facility(ies), and construction-phase BMPs in accordance with the Guidebook..

(b) Implementation of an approved stormwater control plan and submittal of an approved stormwater control operation and maintenance plan by the applicant shall be a condition precedent to the issuance of a certificate of occupancy for a project subject to this section. If the applicant has chosen to comply with stormwater management facility requirements by purchasing compliance units from the Contra Costa County Regional Alternative Compliance System, the applicant must submit documentation describing the offsite stormwater management facility being used for alternative compliance and authorizing the exchange of compliance units and the payment of in-lieu fees and annual O&M payments.

(c) All stormwater management facilities shall be designed in a manner to minimize the need for maintenance and reduce the chances of failure. Design guidelines are outlined in the Guidebook.

(d) All stormwater management facilities shall be maintained according to the Guidebook and the approved stormwater control operation and maintenance plan. The person(s) or organization(s) responsible for maintenance shall be designated in the stormwater control operation and maintenance plan. Unless a different time period is provided for in the plan, those responsible for maintenance shall inspect the stormwater management facility at least annually. The stormwater operation and maintenance plan shall also describe how the maintenance costs will be funded. Upon the failure of a responsible person to maintain a stormwater management facility in accordance with this chapter or the plan, the City may perform the maintenance and recover its costs from the responsible person as provided in sections __.17 and __.18.

(e) For access to stormwater management facilities for inspections and maintenance, recorded covenants or easements shall be provided by the property owner for access by the City, the Contra Costa Mosquito and Vector Control District, and the Regional Water Quality Control Board.

Sec. _____. 06. Prohibited Discharges.

(a) The release of non-stormwater discharges to the City stormwater system is prohibited.

(b) The discharge of stormwater from premises or an activity that causes or contributes to a violation of receiving water limitations in the City's NPDES permit is prohibited.

(c) The following discharges are exempt from the prohibition set forth in subsection (a) above:

(1) any discharge in compliance with a NPDES permit issued to the discharger.

(2) flows from riparian habitats and wetlands, diverted stream flows, flows from natural springs, rising ground waters, uncontaminated and unpolluted groundwater infiltration, single-family homes' pumped groundwater, foundation drains, and water from crawl space pumps and footing drains, and pumped groundwater from drinking water aquifers.

(d) The following discharges are exempt from the prohibition set forth in subsection (a) above if and only if the discharges are in accordance with conditions including but not limited to specific conditions for each type of discharge set forth in Section C.15 of the City's NPDES permit: pumped groundwater from non-drinking-water aquifers; pumped groundwater from other sources, foundation drains, and water from crawl space pumps and footing drains; air conditioning condensate; planned discharges from routine operation and maintenance activities in the potable water distribution system; unplanned discharges from breaks, leaks, overflows, fire hydrant shearing, or emergency flushing of the potable water distribution system; emergency discharges of the potable water distribution system as a result of firefighting, unauthorized hydrant openings, or natural or man-made disasters; individual residential car washing; swimming pool, hot tub, spa, and fountain water discharges, and discharges from irrigation water, landscape irrigation, and lawn or garden watering.

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Sec. _____. 07. Discharge in Violation of NPDES Permit.

Any discharge that would result in or contribute to a violation of the City's NPDES permit either separately considered or when combined with other discharges, is prohibited. Liability for any such discharge shall be the responsibility of the person causing or responsible for the discharge, and such person shall defend, indemnify and hold harmless the City in any administrative or judicial enforcement action relating to such discharge.

Sec. _____. 08. Unlawful Discharge and Unlawful Connections.

(a) It is unlawful to establish, use, maintain or continue unauthorized drainage connections to the City's stormwater system, and to commence or continue any unauthorized discharges to the City's stormwater system.

(b) No discharge shall cause the following conditions, create a nuisance, or adversely affect beneficial uses of waters of the State:

(1) floating, suspended or deposited macroscopic matter or foam;

(2) bottom deposits or aquatic growth;

(3) alterations of temperature, sediment load, nutrient load, or dissolved oxygen, which cause significant adverse impacts to native aquatic biota;

(4) visible, floating, suspended or deposited oil or products of petroleum origin; or,

(5) substances present in concentrations or quantities which cause deleterious effects on aquatic biota, wildlife or waterfowl, or which render any of these unfit for human consumption.

Sec._____. 09. Best Management Practices and Standards.

(a) ***Generally.*** Any person owning or operating premises that may contribute pollutants to the City's stormwater system shall undertake best management practices to reduce the potential for pollutants entering the system to the maximum extent practicable. Examples of such premises include, but are not limited to, parking lots, gasoline stations, industrial facilities, and other commercial enterprises. Examples of best management practices include, but are not limited to, those described in publications by the United States Environmental Protection Agency, the California Water Boards, the California Stormwater Quality Association, the Bay Area Stormwater Management Agencies Association, the Contra Costa Clean Water Program, and, the City of _____.

(b) ***Litter.*** No person shall throw, deposit, leave, keep or permit to be thrown, deposited, placed, left or maintained, any refuse, rubbish, garbage or other discarded or abandoned objects, articles or other litter in or upon any street, alley, sidewalk, business place, creek, stormwater system, fountain, pool, lake, stream, river or any other body of water, or upon any public or private parcel of land so that the same might become a pollutant, except in containers or in lawfully established waste disposal facilities.

(c) ***Sidewalks.*** The occupant or tenant, or in the absence of occupant or tenant, the owner or proprietor of any real property in front of which there is a paved sidewalk shall maintain said sidewalk free of dirt or litter to the maximum extent practicable. Sweepings from the sidewalk shall not be swept or otherwise made or allowed to go into the gutter or roadway, but shall be disposed of in receptacles maintained as required for the disposal of solid waste. This section constitutes an alternative procedure and shall not limit or restrict the City from the civil, criminal or administrative enforcement of this or other city ordinances in any other matter provided by law.

(d) ***Maintenance of Facilities and Landscaped Areas.*** Best Management Practices shall be implemented to minimize the release of pesticides, fertilizers, herbicides, and other related materials used to maintain landscaping and facilities.

(e) ***Parking Lots, Paved Areas and Related Stormwater Systems.*** Persons owning, operating or maintaining a paved parking lot, the paved areas of a gasoline station, a paved private street or road, and related stormwater systems shall clean those premises as frequently and thoroughly as practicable in a manner that does not result in the discharge of pollutants to the City's stormwater system. The Director may require installation and maintenance of devices or facilities to prevent the discharge of trash or other pollutants from private parking lots, streets, roads, and drainage facilities into the storm drain system. Failure or refusal to comply with such requirement is prohibited and shall constitute a violation of this Chapter.

(f) ***Construction Activities.*** All construction projects shall incorporate site-specific BMPs, which can be a combination of BMPs from the California BMP Handbook, Construction, January 2003, the Caltrans Stormwater Quality Handbooks, Construction Site Best Management Practices Manual, March 2003, the San Francisco Bay Regional Water Quality Control Board Erosion and Sediment Control Field Manual, 2002, the City's grading and erosion control ordinance and other generally accepted engineering practices for erosion control as required by the director. The Director may establish controls on the rate, volume, and duration of stormwater runoff from new developments as may be appropriate to minimize the discharge and transport of pollutants.

(g) ***Notification of Intent and Compliance with General Permits.*** Each discharger associated with construction activity or other discharger described in any general stormwater permit addressing discharges, as may be adopted by the United States Environmental Protection Agency, the State Water Resources Control Board, or the California Regional Water Quality Control Board, San Francisco Bay Region [for East County: Central Valley Region], shall provide the Director with the notice of intent, comply with and undertake all other activities required by any general stormwater permit applicable to such dischargers. Each discharger identified in an individual NPDES permit relating to stormwater discharges shall comply with and undertake all activities required by the permit.

(h) ***Development Runoff Requirements***. For each new development project subject to the development runoff requirements, every applicant will submit a stormwater control plan and implement conditions of approval that reduce stormwater pollutant discharges through the construction, operation and maintenance of treatment measures and other appropriate source control and site design measures. Similarly, increases in runoff volume, flows, and durations shall be managed in accordance with the development runoff requirements. An applicant may comply with development runoff requirements for stormwater management facility(ies) through alternative compliance at one or more offsite location(s) or pay equivalent in-lieu fees to provide stormwater management at an offsite project constructed and maintained by others, in accordance with the City's NPDES permit and criteria in the most recent version of the Contra Costa Clean Water Program Stormwater C.3. Guidebook. Alternative compliance may include purchasing compliance units from an offsite stormwater management facility that has been certified by the Contra Costa County Regional Alternative Compliance System.

(i) ***Stormwater Pollution Prevention Plan.*** The Director may require any business or utility in the City that is engaged in activities that may result in non-stormwater discharges or runoff pollutants to develop and implement a stormwater pollution prevention plan, which must include an employee training program. Business activities which may require a stormwater pollution prevention plan include maintenance, storage, manufacturing, assembly, equipment operations, vehicle loading, fueling, vehicle maintenance, food handling or processing, or cleanup procedures, carried out partially or wholly out of doors.

(j) ***Coordination with Hazardous Material Release Response and Inventory Plans.*** Any business subject to the Hazardous Material Release Response and Inventory Plan, Division 20, chapter 6.95 of the California Health and Safety Code (commencing with section 25500), shall include, in that Plan, provision for compliance with this chapter, including the prohibitions of non-stormwater discharges and the requirement to reduce release of pollutants to the maximum extent practicable.

Sec. _____. 10. Authority to Inspect.

(a) ***Generally.*** Routine or scheduled inspections shall be based upon as reasonable a selection process as may be deemed necessary to carry out the intent of this chapter, including, but not limited to, random sampling or sampling in areas with evidence of stormwater contamination, evidence of the discharge of non-stormwater to the stormwater system, inspection of stormwater treatment and flow-control facilities for proper operation and evidence of routine and corrective maintenance, or similar activities. Inspections may also be conducted in conjunction with routine or scheduled inspections conducted by other public agencies or special districts, including but not limited to the Central Contra Costa Sanitary District, the Contra Costa County Fire Protection District, County Environmental Health Department, the Contra Costa Mosquito and Vector Control District, or the Regional Water Quality Control Board. The City Council may by resolution establish a schedule of fees for inspections.

(b) ***Authority to Sample and Establish Sampling Devices.*** With the consent of the owner or occupant, or pursuant to a search or inspection warrant, any Officer may establish on any property such devices as are reasonably necessary to conduct sampling or metering operations. During all authorized inspections, the Officer may take any sample deemed necessary to aid in the pursuit of the inquiry or in the recordation of the activities on site.

(c) ***Notification of Spills.*** All persons in charge of the premises or responsible for emergency response for the premises have a responsibility to train premises' personnel and maintain notification procedures to ensure that immediate notification is provided to the City of any suspected, confirmed or unconfirmed release of pollutants creating a risk of non-stormwater discharge into the City stormwater system.

As soon as any person in charge of the premises or responsible for emergency response for the premises has knowledge of any suspected, confirmed or unconfirmed release of non-stormwater discharge entering the City stormwater system, such person shall take all necessary steps to ensure the detection and containment and clean up of such release and shall notify the City of the occurrence by telephoning the Director. This notification requirement is in addition to and not in lieu of other required notifications.

(d) ***Requirement to Test or Monitor.*** Any Officer may require that any person engaged in any activity or owning or operating any premises that may cause or contribute to non-stormwater discharges, undertake such monitoring activities or analysis and furnish such reports as the Officer may specify. The burden, including costs of these activities, analysis and reports shall bear a reasonable relationship to the need for the monitoring, analysis and reports and the benefits to be obtained. The recipient of such request shall undertake and provide the monitoring, analysis and reports required.

Sec. _____. 11. Violations

(a) The violation of any provision of this chapter, or failure to comply with any of the mandatory requirements of this article shall constitute a misdemeanor, except that notwithstanding any other provisions of this article, any violation constituting a misdemeanor under this chapter may, at the discretion of the Officer or city attorney, be charged and prosecuted as an infraction.

(b) Any person required to perform monitoring, analysis, reporting or corrective activity pursuant to this Chapter by any Officer may be informed of such decision, in writing, by a notice of violation. Any person aggrieved by the decision of the Officer, may file a written appeal of the notice of violation to the Director within 10 (ten) days following the date of the notice of violation. Upon receipt of such request, the Director shall request a report and recommendation from the Officer and shall set the matter for hearing at the earliest practical date. At said hearing, all evidence and testimony deemed relevant and admissible by the Director shall be considered, and the Director may reject, affirm, or modify the Officer's decision. Formal rules of evidence shall not apply. The decisions of the Director shall be final. Failure to request a hearing or appear at the hearing shall constitute a waiver and failure to exhaust administrative remedies.

(c) In addition to the penalties and procedures provided herein, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to the public health, safety and welfare. Such condition is hereby declared and deemed to be a nuisance, which may be abated as provided in Chapter _ of Title _ (commencing with section _____) of this Code including the assessment of the costs of abatement which may be collected at the same time and in the same manner as ordinary municipal taxes as provided by Government Code section 38773.5, and by civil action to abate, enjoin or otherwise compel the cessation of such nuisance by the City Attorney.

Sec. _____. 12. Penalty for Violation.

(a) Upon conviction of a misdemeanor, a person shall be subject to payment of a fine, or imprisonment, or both, not to exceed the limits set forth in California Government Code section 36901.

(b) Upon conviction of an infraction, a person shall be subject to payment of a fine, not to exceed the limits set forth in California Government Code section 36900.

Sec. _____. 13. Continuing Violation.

Every day that any violation of this chapter shall continue shall constitute a separate offense.

Sec. _____. 14. Concealment.

Concealing, aiding or abetting a violation of any provision of this chapter shall constitute a violation of such provision.

Sec. _____. 15. Acts Potentially Resulting in Violation of the Federal Clean Water Act or Porter-Cologne Act.

Any person who violates any provision of this chapter, or the provisions of any permit issued pursuant to this chapter, or who releases a non-stormwater discharge, or who violates any cease and desist order, prohibition or effluent limitation, may also be in violation of the Federal Clean Water Act or the Porter-Cologne Act and may be subject to the enforcement provisions of

those acts, including civil and criminal penalties. Any enforcement actions authorized pursuant to this chapter may also include notice to the violator of such potential liability pursuant to federal or state law.

Sec. _____. 16. Civil Actions.

(a) In addition to any other remedies provided in this chapter, any violation of this chapter may be enforced by civil action brought by the City. In any such action, the City may seek, as appropriate, any and all of the following remedies:

(1) a temporary restraining order, preliminary injunction and permanent injunction;

(2) an action for an unlawful business practice pursuant to Business and Professions Code section 17206;

(b) In addition any person violating this chapter shall be liable for:

(1) reimbursement for the costs of any investigation, inspection or monitoring which led to the discovery of the violation;

(2) costs incurred in removing, correcting, or terminating the adverse effect(s) resulting from the violation;

(3) compensatory damages for the loss of, or destruction to, water quality, wildlife, fish or aquatic life. Costs and damages under this subsection shall be paid to the City and shall be used exclusively for costs associated with monitoring and establishing a stormwater discharge pollution control system and implementing or enforcing the provisions of this chapter;

(4) the cost of maintenance and repair of any BMP or stormwater management facility that is not maintained in accordance with the guidebook or the stormwater control plan;

(5) the reasonable costs of preparing and bringing administrative action under this chapter.

Sec. _____. 17. Remedies Not Exclusive.

The remedies identified in this chapter are in addition to, and do not supersede or limit, any and all other remedies, administrative, civil or criminal. The remedies provided for herein shall be cumulative and not exclusive.

Sec. _____. 18. Judicial Review.

The provisions of Code of Civil Procedure section 1094.5 are applicable to judicial review of determinations made by the Director pursuant to this chapter.

Section 2.

This ordinance shall take effect on the 31st day following its adoption.

Participant Memorandum of Understanding (MOU) – Annotated Outline
Draft – August 23, 2022

This Contra Costa County Regional Alternative Compliance System (RAC System) participant agreement (agreement) outlines the roles and responsibilities of both the RAC System administrator and the municipalities agreeing to participate in the RAC System. The agreement is a Memorandum of Understanding (MOU) that participant municipalities will sign and reference in their stormwater ordinances and/or municipal codes. Participation in the RAC System is voluntary; however, all participants must adhere to the RAC System as described in the Regional Alternative Compliance System Summary Report (Summary Report) (Exhibit A).

This MOU is made and entered into this _____ day of _____ 20__ by and between the Contra Costa Clean Water Program (CCCWP), Contra Costa County Flood Control District (Flood Control District), and all Contra Costa County municipalities subject to the prevailing Municipal Regional Permit (MRP)[1] (Permittees) that voluntarily agree to participate in the program (i.e., RAC System Participants). All of the above-mentioned entities are hereinafter collectively referred to as "PARTIES" or individually as "PARTY".

I. Background -- This section describes the background that led to the need for the RAC System; i.e., permitting requirements, water quality issues, space constraints, and funding needs that the RAC System was developed to address.

The key regulatory driver for regional alternative compliance in Contra Costa County (the County) is the MRP, NPDES Permit No. CAS6122008. Three provisions of the MRP acted as the impetus to the development of the RAC System:

Provision C.3- New Development & Redevelopment

MRP 3.0 included specific numeric goals for impervious acres treated by Green Stormwater Infrastructure (GSI) retrofit projects. The MRP 3.0 Appendix H, Table H-1, includes GSI retrofit requirements for each permittee expressed as impervious acres treated. Permittees may meet their individual retrofit requirements on a countywide basis. The Contra Costa County countywide GSI retrofit requirement is 57.32 impervious acres treated.

Provisions C.11.c and C.12.c – Mercury and Polychlorinated Biphenyls (PCBs) Controls

MRP 3.0 Provisions C.11.c and C.12.c require Permittees to implement treatment control measures, diversion to wastewater treatment facilities, GSI, or other control measures to achieve mercury and PCBs load reductions. Contra Costa County Permittees may comply with this provision through implementation of control measures within 664 acres of old industrial land use area[2] (countywide), based on the implementation of 70 percent efficient treatment control measures, or a larger area using less effective control measures.

[1] MRP 3.0, effective July 1, 2022. Order No. R2-2022-0018; NPDES Permit No. CAS612008.
[2] The MRP defines old industrial land use areas as "land areas where industrial activities occurred prior to 1980 and continue today." The MRP further identifies 11,199 acres of old industrial land use in Contra Costa County draining to an MS4 that have not been redeveloped or treated with GSI or other treatment controls.

The estimated costs for Permittees to comply with the MRP are significant. The costs to treat the public GSI project area identified in the Contra Costa TMDL Control Measure Plan ranges from $915 million to $1.88 billion (CCCWP, 2020). The Permittees are faced with these compliance costs even while municipal stormwater program funding is typically inadequate to cover existing storm drain infrastructure maintenance. A system that can provide compliance cost savings and additional benefits would be helpful for Countywide stormwater water quality and infrastructure management.

II. Purpose - This section describes the overall purpose of the RAC System and specific goals/objectives that the program was designed to achieve.

The Contra Costa County RAC System is intended to provide a flexible, efficient, cost-effective, and scientifically defensible compliance option for addressing the GSI and mercury/PCBs control requirements outlined in the MRP (Provisions C.3, C.11, and C.12, respectively). Specific objectives of the RAC System include the following:

- Flexible compliance with the MRP, particularly Provision C.3.b (Regulated Projects) using the Alternative Compliance Provision C.3.e, but potentially also Provision C.3.j (Green Infrastructure Planning and Implementation);
- Cost efficiencies through implementation of regional stormwater capture projects that provide treatment at a lower cost per acre as well as lower maintenance, operation, and inspection costs;
- Targeted implementation of facilities that can provide higher load reduction benefits toward compliance with the San Francisco Bay mercury and PCBs Total Maximum Daily Loads (TMDLs) to achieve reductions in MRP Provisions C.11 and C.12 respectively;
- Implementation of stormwater capture and water quality improvement projects that provide multiple benefits, including benefits ancillary to those relating to MRP Provisions C.3, C.11, and C.12; and
- Flexibility to adapt the RAC System to meet future water quality needs.

III. PARTIES and Roles – This section identifies the PARTIES to this MOU and defines their roles.

- The RAC System Administrator will be the primary administrator of the Contra Costa County RAC System and will be responsible for the management, financial administration, and reporting requirements for the Contra Costa County RAC System. The RAC System Administrator is responsible for conducting the following RAC System tasks:
    - Pool compliance purchase payments and disburse them to compliance metric provider(s) for project implementation.
    - Manage and complete Countywide reporting for the RAC System.
    - Manage RAC System Tracking Tool (e.g., managing Tracking Tool operator, QA/QC).
    - Conduct QA/QC review of data entered by Jurisdictions into the RAC System Tracking Tool regarding non-Regulated project buyers and exchanges.
    - Conduct recommended adaptive management including:
        - Amend RAC System Framework and pre-approved list of control measures, and/or
        - Enact other identified RAC System revisions.

- The RAC System Assessor will manage the ongoing Operation and Maintenance (O&M) Assessment levied through [the mechanism for the assessment]. The Assessor is responsible for conducting the following RAC System tasks:
    - Levy and collect the ongoing O&M assessments.
    - Pool the assessments through [the mechanism].
    - Disburse the collected O&M assessment funds.
    - Evaluate (in coordination with the RAC System Administrator) and update the O&M assessment amount regularly.
    - Perform associated reporting.
- RAC System Participants will include participating Permittees and participating private and public Regulated Project owners. By participating in the RAC System, each participating Permittee agrees to manage MRP Provision C.3 Regulated Project applicants and compliance metric providers that construct Off-Site GSI Projects within their jurisdictional boundaries. RAC System Participants also agree to facilitate exchanges, as appropriate, and complete Off-Site GSI construction and O&M inspections, O&M, and verification. Participating Permittees are responsible for conducting the following RAC System tasks within their jurisdiction:
    - For Regulated Projects:
        - Application review and approval of Regulated Project owners interested in participating in the Contra Costa County RAC System based on the established criteria in Section XXX of XXX document.
        - Calculation and/or confirmation of metrics and compliance purchase amounts.
        - Collection of compliance purchase payments and transfer of compliance purchase payments (deducting jurisdiction-specific administrative payments) to the RAC System Administrator.
        - Enter Regulated Project participant data into RAC System Tracking Tool.
    - For Off-Site GSI Projects:
        - Approve application packages.
        - Perform plan checks.
        - Calculation and/or confirmation of metrics types and amounts.
        - Conduct construction inspections in accordance with C.3 requirements.
        - Conduct initial certification and periodic verification processes.
        - Enter Off-Site GSI Projects in RAC System Tracking Tool.
        - Perform ongoing O&M.
        - Submit O&M certification documentation to the [TBD]
    - Attend training on the implementation and updates for the RAC System

- Notify participants and the public of amendments to the RAC System Framework for a preapproved list of control measures.

- The RAC Subcommittee, which is made up of volunteer Permittee stormwater program representatives, will make decisions regarding the Contra Costa County RAC System, as defined in the Summary Report (City of San Pablo 2022). The Subcommittee is responsible for conducting the following RAC System tasks:
  - For projects funded through the CCCWP:
    - Create and update Off-Site GSI Project selection criteria for the RAC System program of projects.
    - Review and approve Off-Site GSI Project applications from compliance metric providers.
  - When requested, participate in the procurement process for contractors hired to implement projects and/or serve as a pay-for-performance or CBP3 contractor.
  - Recommend administrating agency for the selected contractors.
  - Solicit and/or review applicable cost studies for the RAC System.
  - RAC System adaptive management including (see Section 8):
    - RAC System Priorities and Technical Recommendations,
    - RAC System Strategy Meetings,
    - Regular cost updates, and
    - As-needed list of system amendments.

IV. Commitments and Actions – This section describes the specific actions each PARTY to the RAC System will be required to complete beyond the roles and responsibilities described in Section III.

In order to implement the Contra Costa County RAC System, each PARTY agrees to adopt policies, procedures, ordinances or other appropriate legal mechanisms, to allow the use of the Contra Costa County RAC System for MRP compliance.

V. Term, Updates and Modifications – This section identifies the initial term of the agreement, describes the process for renewal/update of the agreement and for amending the agreement during the agreement term.

The term of this MOU shall commence on the date that all initial duly authorized representative PARTIES execute it. This MOU shall have a term of ten (10) years.

CCCWP RAC Subcommittee and RAC System Administrator would regularly review, approve, and revise the System program of projects and the technical aspects of the Contra Costa County RAC System. After a review, changes would be made and agreed upon through the RAC Subcommittee and approved through a CCCWP Management Committee vote. Compliance metrics given to a previously approved project are protected for the lifetime of the project if it is in good standing. Any future updates or

amendments to the RAC System would be implemented as described in detail in the RAC System Report (City of San Pablo 2022).

VI. Termination – This section describes the termination of the MOU, and any associated outcomes/consequences for all the PARTIES if the MOU is terminated.

Any PARTY may terminate its participation in this MOU for future projects by giving the RAC System Administrator at least thirty (30) days' written notice. The terminating PARTY will continue to follow RAC System requirements for any projects implemented under the RAC System prior to termination and will bear the full responsibility for its compliance with the GSI and mercury/PCBs control requirements outlined in the MRP (Provisions C.3, C.11, and C.12, respectively), commencing on the date it terminates its participation.

VII. All Writings Contained Herein

This MOU contains all the terms and conditions agreed upon by the PARTIES. No other understandings, oral or otherwise, regarding the subject matter of the MOU shall be deemed to exist or to bind the PARTIES hereto.

VIII. Signatories – This section contains the signatures and dates for all PARTIES to the MOU.

IN WITNESS WHEREOF, The PARTIES have executed this MOU as of the dates shown below.

RAC System Administrator:

By: _____

Name: _____

Title: _____

Date: _____

RAC System Assessor:

By: _____

Name: _____

Title: _____

Date: _____

City/Town/County of _____:

By: _____

Name: _____

Title: _____

Date: _____

Placeholder of legal items for review by legal counsel

- Title - Should this document be a Memorandum of Understanding or an Agreement?
- Section V (Term, Updates, and Modification) - Missing Indemnification and hold harmless clause. Possible clause to consider: "Participants shall at all times indemnify and hold harmless the RAC System Administrator and RAC System Assessor, its agents, and employees on any claims, damages, personal injuries, property losses, and/or economic damages sustained by or alleged to have been sustained by any person or entity, in connection with the design or construction of the Off-Site GSI projects with this agreement."
- Section V (Term, Updates, and Modification) – Updates due to significant changes in the Permit or the RAC System. In accordance with the RAC System Report, the MOU will be subject to change based on reviews/updates to the System Program. Everything in the MOU should refer to the RAC System Report.
- Section V (Term, Updates, Modification) – Preservation of granted credits to previously approved projects. Do we need to add clarification that these changes won't affect the lifespan of metrics from a project (i.e., 'credits' are protected for some period of time)? Otherwise, the 'market' could be seen as too unreliable or volatile for participants if there is uncertainty around the value of metrics for a minimum period of time after verification. Possible clause to consider: "Compliance metrics given to a previously approved project are protected for the lifetime of project as long as it is in good standing."
- (Missing) Minimum insurance coverage and limits of liability.
- (Missing) Resolution of issue or dispute that arises.
- (Missing) Compliance with applicable laws. Possible clause to consider, "Participants shall comply with applicable Federal, State and local laws, rules and ordinances, decisions and executive orders, and shall obtain all necessary permits and licenses for any proposed work."
- (Missing) Succession. If the RAC System Administrator can no longer fulfill the obligations of this Agreement? Who should take over the oversight responsibilities pertaining to the RAC System?

Your Logo Here

Pre-Construction Off-Site GSI Project Data and Design Certification Form

This form provides Off-Site GSI Project data that are needed to identify the project and the relevant attributes that will be stored in the Regional Alternative Compliance (RAC) System Tracking Tool. This form documents all appropriate pre-construction requirements have been met for preliminary approval of compliance units generated. Data from this form will be entered into the Tracking Tool.

Project Information

Project ID: Estimated Construction Date:

Project Name:

Jurisdiction(s) where project is located: *1st jurisdiction* *2nd jurisdiction, if applicable*

Project Location (street address/intersection/segment, or other location descriptors):

Project Owner Contact Information

Project Owner:		Project Owner's Representative (if applicable):	
Name:		Name:	
Phone #:		Phone #:	
Address:		Address:	
Email:		Email:	

Project Data

Total Project Drainage Area: *(acres)* Average Annual Rainfall: *(inches)*

Total Impervious Area in Drainage Area: *(acres)*

Total Pervious Area in Drainage Area: *(acres)* Total Area Greened: 0 *(acres)*

☐ 100% designs for the project have been uploaded to the Tracking Tool.

☐ Geospatial data providing the project location and drainage area have been uploaded to the Tracking Tool.

Cost Information (Optional)

Estimated Project Capital Cost:

What is included in the capital cost?

☐ Administrative/Project Management ☐ Construction

☐ Design ☐ Other:

Multiple Benefit Information

Multiple Benefits:

☐ Habitat ☐ Urban Forestry ☐ Other:

☐ Climate Resilience ☐ Trash Reduction

☐ Reduced Local Flooding ☐ Recreational Space

☐ Reduced Heat Island Effect ☐ Brownfield Cleanup

Pre-Construction Off-Site GSI Project Data and Design Certification Form, cont.

Drainage Management Areas (DMAs)

Total Number of Project DMAs: 0

DMA #	Acres of Land Use Classifications in each DMA								Total Acres
	Source Property	Old Industrial	Old Commercial/ Transportation	Old Residential	New Industrial	New Commercial/ Transportation	New Residential	Ag/ Open Space	
Total	0	0	0	0	0	0	0	0	0

Integrated Management Practices (IMPs)

Total Number of Project IMPs: 0

DMA #	IMP Type in each DMA (enter "1" under appropriate type in each DMA)							
	Bioretention	Dry Well	Flow-through Planter	Pervious Pavement	Bioretention + Vault	Cisterns + Bioretention	Self-treating/ Self-retaining	Other
Total	0	0	0	0	0	0	0	0

Project Description (provide additional details about project attributes):

Pre-Construction Off-Site GSI Project Data and Design Certification Form, cont.

Pre-Construction Design Review

Project ID: Project Name:

Name of the Certifying Agency:

Reviewer Name:

Phone Number: Email:

☐ The Certifying Agency's design review process for compliance with C.3 regulations and standard design practice was completed and the design was approved.

☐ The Certifying Agency confirms the drainage area to the off-site project that is available for exchange is not associated with a regulated project.

Design Review Sign-Off

Approval Signature:

Date: *(month/day/year)*

Your Logo Here

Off-Site GSI Project Data Form

This form provides Off-Site GSI Project data that are needed to identify the project and the relevant attributes that will be stored in the Regional Alternative Compliance (RAC) System Tracking Tool. Data from this form will be entered into the Tracking Tool.

Project Information

Project ID: Final Construction Date:

☐ This project was added to the RAC System prior to construction via the ***Pre-construction Off-Site GSI Project Data and Design Certification Form***. Any changes based on as-builts are identified on this form.

Project Name:

Jurisdiction(s) where project is located: *1st jurisdiction* *2nd jurisdiction, if applicable*

Project Location (street address/intersection/segment, or other location descriptors):

Project Owner Contact Information

Project Owner:		Project Owner's Representative (if applicable):	
Name:		Name:	
Phone #:		Phone #:	
Address:		Address:	
Email:		Email:	

Project Data

Total Project Drainage Area: *(acres)* Average Annual Rainfall: *(inches)*

Total Impervious Area in Drainage Area: *(acres)*

Total Pervious Area in Drainage Area: *(acres)* Total Area Greened: 0 *(acres)*

☐ As-built designs for the project have been uploaded to the Tracking Tool.

☐ Geospatial data providing the project location and drainage area have been uploaded to the Tracking Tool.

☐ The project has been entered into the County AGOL System. AGOL Project ID:

Cost Information (Optional)

Project Capital Cost:

What is included in the capital cost?

☐ Administrative/Project Management ☐ Construction

☐ Design ☐ Other:

Multiple Benefit Information

Multiple Benefits:

☐ Habitat ☐ Urban Forestry ☐ Other:

☐ Climate Resilience ☐ Trash Reduction

☐ Reduced Local Flooding ☐ Recreational Space

☐ Reduced Heat Island Effect ☐ Brownfield Cleanup

Off-Site GSI Project Data Form, continued

Drainage Management Areas (DMAs)

Total Number of Project DMAs: 0

DMA #	Acres of Land Use Classifications in each DMA								Total Acres
	Source Property	Old Industrial	Old Commercial/ Transportation	Old Residential	New Industrial	New Commercial/ Transportation	New Residential	Ag/ Open Space	
Total	0	0	0	0	0	0	0	0	0

Integrated Management Practices (IMPs)

Total Number of Project IMPs: 0

DMA #	IMP Type in each DMA (enter "1" under appropriate type in each DMA)							
	Bioretention	Dry Well	Flow-through Planter	Pervious Pavement	Bioretention + Vault	Cisterns + Bioretention	Self-treating/ Self-retaining	Other
Total	0	0	0	0	0	0	0	0

Project Description (provide additional details about project attributes):

Your Logo Here

Off-Site GSI Project Post-Construction Certification Form

This form is used to document all appropriate post-construction certification requirements have been met. This form and related attachments will be uploaded as documents to the Regional Alternative Compliance (RAC) System Tracking Tool.

Section 1: Design Review

Project ID: Project Name:

Name of the Certifying Agency:

Reviewer Name:

Phone Number: Email:

☐ The Certifying Agency's design review process for compliance with C.3 regulations and standard design practice was completed and the design was approved.

☐ The Certifying Agency confirms the drainage area to the off-site project that is available for exchange is not associated with a regulated project.

Design Review Sign-Off

Approval Signature:

Date: *(month/day/year)*

Section 2: Construction Review

Name of the Certifying Agency:

Reviewer Name:

Phone Number: Email:

☐ The "Stormwater Treatment Facilities Construction Inspection Checklist" form(s) was/were completed and uploaded to the Tracking Tool.

☐ The Certifying Agency's review process was completed for all stages of construction, and the construction was approved.

Construction Review Sign-Off

Approval Signature:

Date: *(month/day/year)*

Section 3: Operation and Maintenance (O&M) Plan and Agreement

Name of Party Responsible for Ongoing O&M:

Maintenance Contact: Name:

Phone Number: Email:

☐ An approved O&M Plan was completed and uploaded to the Tracking Tool.

☐ An approved O&M agreement was completed and uploaded to the Tracking Tool.

☐ The project was added to the County Maintenance District.

MODEL STORMWATER TREATMENT FACILITIES CONSTRUCTION INSPECTION CHECKLIST

YOUR LOGO HERE

PROJECT INFORMATION

Location: _____

_____

Inspector: _____ Phone: _____

Engineer: _____ Phone: _____

PERMIT No: _____

IMPs ON-SITE: Total # of IMPs _____

☐ Bioretention Facilities ☐ Flow-through Planters

☐ Dry Wells ☐ Cisterns _____

☐ Other _____

ENGINEERING INSPECTION REQUEST LINE

[Edit instructions per local procedures] Call and leave message for assigned inspector prior to midnight on the day before the requested inspection date. Provide City Permit number, address of project, and type of inspection requested. Failure to provide this information may result in the inspection not being made. To obtain an approximate time for the inspection, call the assigned inspector between 8:00 and 8:30 am on the morning of your requested inspection.

IMP GROUP 1 includes IMP#

Layout	Excavation	Overflow Inlet/Surface Connection to SD	Underground connection to SD/outlet orifice	Drain rock/sub-drain
Soil media mix	Soil media installation	Irrigation	Planting	Engineering Final

Comments:

IMP GROUP 2 includes IMP#

Layout	Excavation	Overflow Inlet/Surface Connection to SD	Underground connection to SD/outlet orifice	Drain rock/sub-drain
Soil media mix	Soil media installation	Irrigation	Planting	Engineering Final

Comments:

IMP GROUP 3 includes IMP#

Layout	Excavation	Overflow Inlet/Surface Connection to SD	Underground connection to SD/outlet orifice	Drain rock/sub-drain
Soil media mix	Soil media installation	Irrigation	Planting	Engineering Final

Comments:

IMP GROUP 4 includes IMP#

Layout	Excavation	Overflow Inlet/Surface Connection to SD	Underground connection to SD/outlet orifice	Drain rock/sub-drain
Soil media mix	Soil media installation	Irrigation	Planting	Engineering Final

Comments:

IMP GROUP 5 includes IMP#

Layout	Excavation	Overflow Inlet/Surface Connection to SD	Underground connection to SD/outlet orifice	Drain rock/sub-drain
Soil media mix	Soil media installation	Irrigation	Planting	Engineering Final

Comments:

IMP GROUP 6 includes IMP#

Layout	Excavation	Overflow Inlet/Surface Connection to SD	Underground connection to SD/outlet orifice	Drain rock/sub-drain
Soil media mix	Soil media installation	Irrigation	Planting	Engineering Final

Comments:

IMP GROUP 7 includes IMP#

Layout	Excavation	Overflow Inlet/Surface Connection to SD	Underground connection to SD/outlet orifice	Drain rock/sub-drain
Soil media mix	Soil media installation	Irrigation	Planting	Engineering Final

Comments:

INSPECTION SEQUENCE REQUIREMENTS

LAYOUT inspection is required prior to beginning the excavation.

EXCAVATION inspection is required prior to backfilling any materials or pipe installation.

OVERFLOW INLET or SURFACE CONNECTION TO STORM DRAIN inspection is required prior to backfill of any materials.

CONNECTION TO STORM DRAIN or OUTLET ORIFICE inspection is required prior to backfilling IMP with any materials.

DRAIN ROCK/SUB-DRAIN inspection is required prior to soil media mix (test) and installation.

SOIL MEDIA MIX inspection (test) is required prior to soil media installation.

SOIL MEDIA INSTALLATION inspection is required prior to irrigation installation.

IRRIGATION inspection is required prior to plant materials installation.

PLANTING inspection is required prior to FINAL INSPECTION.

Items to be Inspected

Layout (Certification may be required)

- ☐ Square footage of the facility meets or exceeds minimum shown in Stormwater Control Plan.
- ☐ Site grading and grade breaks are consistent with the boundaries of the tributary Drainage Management Area(s) shown in the Stormwater Control Plan.
- ☐ Preliminary inlet elevation of the facility is low enough to receive drainage from the entire tributary Drainage Management Area(s).
- ☐ Locations and elevations of overland flow or piping, including roof leaders, from impervious areas to the facility have been laid out and any conflicts resolved.
- ☐ Rim elevation of the facility is laid out to be level all the way around, or elevations are consistent with a detailed cross-section showing location and height of interior dams.
- ☐ Locations for vaults, utility boxes, and light standards have been planned so that they will not conflict with the facility.
- ☐ Facility protected as needed from construction-phase runoff and sediment.

Excavation (Certification may be required)

- ☐ Excavation conducted with materials and techniques to minimize compaction of soils within the facility area.
- ☐ Excavation is to proper area and depth.
- ☐ Slopes or side walls protect from sloughing of native soils into the facility.
- ☐ Moisture barrier, if needed, added to protect adjacent pavement or structures.
- ☐ Native soils at bottom of excavation are ripped or loosened to promote infiltration.

Overflow Inlet/Surface Connection to Storm Drainage

- ☐ Overflow inlet is at specified elevation (typically no lower than two inches below facility rim).
- ☐ No knockouts or side inlets are in overflow riser.
- ☐ Inlet location selected to minimize surface flow velocity (near and offset from inlet recommended).
- ☐ Grating selected to exclude mulch and litter (beehive or atrium-style grates with ¼" openings recommended).
- ☐ Inlet is connected to storm drain via appropriately sized piping.
- ☐ Facility emergency overflow path designed to avoid flood damage.

Underground Connection to Storm Drain/Outlet Orifice

- ☐ Perforated pipe underdrain (PVC SDR 35 or approved equivalent) is installed with holes facing down.
- ☐ No filter fabric is installed around the underdrain.
- ☐ Perforated pipe is connected to storm drain (treatment-only) or orifice (treatment-plus-flow-control) per plans.
- ☐ Underdrain pipe is at elevation shown in plans. In facilities allowing infiltration, preferred elevation is above native soil (but low enough to be covered at least 2 inches by Class 2 perm); in sealed planter boxes or bioretention facilities with liners, preferred elevation is as near bottom as possible.
- ☐ Cleanouts are in accessible location(s) and connected via sweeps.
- ☐ Structures (arches or large diameter pipes) for additional subsurface storage are installed as shown in plans and specifications and have the specified volume.

Drain Rock/Subdrain

- ☐ Rock is installed as specified. Class 2 permeable, Caltrans specification 68-1.025 recommended, or 4"-6" pea gravel is installed at the top of the crushed rock layer.
- ☐ Rock is smoothed to a consistent top elevation. Depth and top elevation are as shown in plans, accounting for depth of soil mix and mulch to follow and required top reservoir depth.
- ☐ No filter fabric is placed between the subdrain and soil mix layers.

Soil Media Mix (Certification may be required)

- ☐ Soil media mix is as specified. Quality of mix is confirmed by delivery ticket or on-site testing as appropriate to the size and complexity of the job.
- ☐ Mix is installed in lifts not exceeding 12".
- ☐ Mix is not compacted during installation but may be wetted thoroughly to encourage consolidation.
- ☐ Mix is smoothed to a consistent top elevation. Depth of mix (18" minimum) and top elevation are as shown in plans, accounting for depth of mulch to follow and required top reservoir depth.

Irrigation

- ☐ Irrigation system is installed so it can be controlled separately from other landscaped areas. Smart irrigation controllers and drip emitters are recommended.
- ☐ Spray heads, if any, are positioned to avoid direct spray into outlet structures.

Planting

- ☐ Plants are installed consistent with the approved planting plan.
- ☐ Any trees and large shrubs are staked securely.
- ☐ No fertilizer is added. Compost tea may be used.
- ☐ No native soil or clayey material are imported into the facility with plantings.
- ☐ 1" to 2" mulch may be applied following planting. Mulch selected to avoid floating.
- ☐ Maintain final design elevation of soil mix following planting.
- ☐ Curb openings are free of obstructions.

Final Engineering Inspection

- ☐ Drainage Management Area(s) are free of construction sediment; landscaped areas are stabilized.
- ☐ Inlets are installed to provide smooth entry of runoff from adjoining pavement, have sufficient reveal (drop) from the adjoining pavement to the top of the mulch or soil mix, and are not blocked.
- ☐ Inflows from roof leaders and pipes are connected and operable.
- ☐ Temporary flow diversions are removed.
- ☐ Rock or other energy dissipation at piped or surface inlets is adequate.
- ☐ Overflow outlets are configured to allow the facility to flood and fill to near rim before overflow.
- ☐ Plantings are healthy and becoming established.
- ☐ Irrigation is operable.
- ☐ Facility drains rapidly; no surface ponding is evident.
- ☐ Any accumulated construction debris, trash, or sediment is removed from facility.

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- ☑ Irrigation system is installed so it can be controlled separately from other landscaped areas. Smart irrigation controllers and drip emitters are recommended.
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- ☑ Irrigation is operable.
- ☑ Facility drains rapidly; no surface ponding is evident.
- ☑ Any accumulated construction debris, trash, or sediment is removed from facility.

Instructions to preparer:

This template provides instructions, format, organization, and some recommended content for your O&M Plan.

Instructions and notes in yellow highlight should be deleted prior to submittal.

Replace all information in [brackets] with your project-specific information.

Some of the recommended content is for bioretention facilities. For other facility types, this content should be replaced with content appropriate to your project facilities.

Your O&M Plan and attachments should be submitted in .pdf format. Check with staff for submittal instructions.

Write the Plan in the present tense as if it is already constructed and all agreements are executed and the owner is reading the document.

[TEMPLATE FOR]
STORMWATER FACILITIES OPERATION AND MAINTENANCE PLAN
for
[PROJECT NAME]
[PROJECT NUMBER (subdivision number, or consult with staff)]

[date]
[revision date]

[Name of Owner]
[Owner's Representative and Contact Information]

prepared by:

[Preparer's Name]
[Preparer's Contact Information]

TABLE OF CONTENTS

Tables

Figures

Attachments

Acronyms and Abbreviations

C.3	Provision C.3 in the Municipal Regional Stormwater Permit issued by the California Regional Water Quality Control Board for the San Francisco Bay Region
IMP	Integrated Management Practice
O&M Plan	Operations and Maintenance Plan

This Stormwater Facilities Operation and Maintenance Plan was prepared using the template dated February 2018.

I. INSPECTION AND MAINTENANCE LOG

Facility Name	
Address	
Begin Date	End Date

Date	BMP ID#	BMP Description	Inspected by:	Cause for Inspection	Exceptions Noted	Comments and Actions Taken

Instructions: Record all inspections and maintenance for all treatment BMPs on this form. Use additional log sheets and/or attach extended comments or documentation as necessary.

- BMP ID# — Always use ID# from the Operation and Maintenance Manual.
- Inspected by — Note all inspections and maintenance on this form.
- Cause for inspection — Note if the inspection is routine, pre-rainy-season, post-storm, annual, or in response to a noted problem or complaint.

- Exceptions noted — Note any condition that requires correction or indicates a need for maintenance.
- Comments and actions taken — Describe any maintenance done and need for follow-up.

II. UPDATE TO DESIGNATION OF RESPONSIBLE INDIVIDUALS

** **Use this form to update the plan when responsible individuals change**. ** Date Completed	
Facility Name	
Facility Address	
Designated Contact for Operation and Maintenance	
Name:	Title or Position:
Telephone:	Alternate Telephone:
Email:	
Off-Hours or Emergency Contact	
Name:	Title or Position:
Telephone:	Alternate Telephone:
Email:	
Corporate Officer (authorized to execute contracts with the City, Town, or County)	
Name:	Title or Position:
Address:	
Telephone:	Alternate Telephone:
Email:	

III. UPDATES, REVISIONS, AND ERRATA

Date	Num.	Updates, Revisions, or Errata Title	Description/Purpose	By (full name):

I. INTRODUCTION

This plan addresses operation and maintenance of facilities constructed as part of the following development project:

[project name].

The final, approved Stormwater Control Plan for this project is in Appendix A.

I.A. Background

Suggested language to include: This Stormwater Facilities Operation and Maintenance Plan (O&M Plan) is for facilities (and pervious pavement systems) constructed as part of the development project referenced above. Construction of these facilities was required by Provision C.3 in the Municipal Regional Stormwater Permit issued by the California Regional Water Quality Control Board for the San Francisco Bay Region. Provision C.3. also requires the [Agency] to verify ongoing operation and maintenance of stormwater treatment and hydromodification management facilities, and certain pervious pavement installations.

I.B. Associated Agreements

Suggested language to include: This O&M Plan is referenced in an O&M Agreement between the property owner and the [Agency]. The agreement, [reference], grants the [Agency] access to the property to conduct inspections and, if needed, to perform maintenance on the facilities at the owner's expense. The agreement also grants access for inspections to the Contra Costa Mosquito and Vector Control District (CCMVCD).

As provided in the O&M Agreement, this O&M Plan may be modified, but only with the review and consent of the [Agency] [Public Works Director/City Engineer]. The official O&M Plan is the version which is on file at the [Agency] Public Works Department. Any modifications made to the O&M Plan with the consent of the [Public Works Director/City Engineer] must be filed at the Public Works Department.

I.C. Funding for and Organization of Facility Operation and Maintenance

Describe how facility operation and maintenance is funded on an ongoing basis in the present tense as if it is already constructed and all agreements are executed. Include descriptions and references for agreements or associations among homeowners or other property owners, budget line items, sources and expenditures of operating funds and reserve funds, administration, and oversight. Describe the personnel positions or contracts used to conduct maintenance, and oversight of these personnel or contracts. Include or attach an organization chart.

I.D. Site Description

Describe site location in the present tense as if it is already constructed. Include the size, topography, abutting streets and properties, structures, paved areas, underlying soils, and grading. Describe the number and type of stormwater facilities and the routing of treated runoff and untreated overflow to the public drainage system.

II. DESIGNATION AND TRAINING OF RESPONSIBLE INDIVIDUALS

II.A. Designated Contact for Operation and Maintenance

[name, title or position]
[address]
[telephone and email]

II.B. Off-Hours or Emergency Contact

[name, title or position]
[address]
[telephone and email]

II.C. Corporate Officer (authorized to execute agreements with the County)

[name, title or position]
[address]
[telephone and email]

II.D. Initial Training of Responsible Individuals

Suggested language to include: Following completion of construction, the bioretention facilities will be maintained by the contractor for two years, except for routine policing for trash, which will be done by the owner's and lessee's personnel. During this 2-year period, the owner's landscape maintenance crew will coordinate to meet with the contractor's personnel on-site during maintenance. At these times, the contractor's personnel will demonstrate proper maintenance procedures.

II.E. Ongoing Training of Responsible Individuals

Describe a plan for ongoing oversight and training for maintenance personnel.

III. FACILITIES TO BE MAINTAINED

III.A. Facility Descriptions

State the number and type(s) of facilities. Describe their common elements. For bioretention facilities, include in the description structural elements, media layers and depth of each, underdrain material, overflow structure, depth of surface reservoir, plantings (including species), irrigation system, and signage (if any). Include an explanatory sketch or schematic such as the one below. Then, include specific descriptions of each facility in the subsections below.

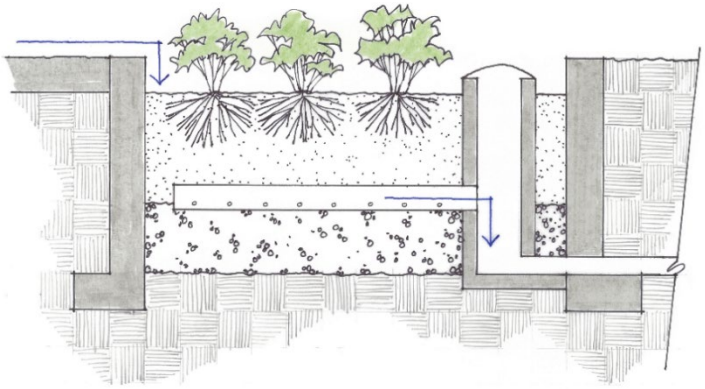

Figure [x]. Bioretention Cross-Section (schematic)

III.A.1. [Bioretention Facility #1]

Reference the Stormwater Control Plan Exhibit. Reference and describe the Drainage Management Areas (DMAs) from which the facility receives drainage, including the square footage, surface type, and features of each DMA. Describe how flow is routed from the DMA to the facility (piped, sheet flow, or curb inlet). Describe the connections of the underdrain and overflow structure. Describe any specific or special features of the facility.

III.A.2. [Bioretention Facility #2]

III.A.3. [Bioretention Facility #3]

IV. MAINTENANCE ACTIVITIES

IV.A. General Maintenance Rules

Suggested language to include for bioretention facilities: At no time will synthetic pesticides or fertilizers be applied, nor will any soil amendments, other than aged compost mulch or sand/compost mix, be introduced. The top of soil surface will be maintained at or near the design elevation throughout. Irrigation systems will be maintained to conserve water while maintaining plant health.

Although it is unlikely to be needed, if plants are not thriving compost tea may be applied at a recommended rate of 5 gallons mixed with 15 gallons of water per acre, up to once per year between March and June. Compost tea will not be applied when temperatures are below 50°F or above 90°F or when rain is forecast within the next 48 hours.

The following may be applied for pest control if needed:

- Beneficial nematodes
- Safer® products

- Neem oil

Plants may need to be replaced with the following mix as specified by the landscape architect [list species] or with similar plantings appropriate for the unique conditions.

IV.B. Maintenance Schedule

Suggested language to include for bioretention facilities:

The [state number] [bioretention] facilities will be maintained on the following schedule at a minimum:

IV.B.1. Routine Activities

Suggested language to include for bioretention facilities: The facilities will be examined [daily for commercial; weekly for residential] for visible trash, and trash will be removed. Any graffiti, vandalism, or other damage will be noted and addressed within 48 hours.

The planted areas will be weeded by hand approximately monthly. At this time, plants will be inspected for health and the irrigation system will be turned on manually and checked for any leaks or broken lines, misdirected spray patterns etc. Any dead plants will be replaced.

IV.B.2. Following Significant Rain Events

Suggested language to include for bioretention facilities: A significant rain event will be considered to be one that produces approximately a half-inch or more rainfall in a 24-hour period. Within 24 hours after each such event, the following will be conducted:

- The surface of the facility will be observed to confirm there is no ponding.
- Inlets will be inspected, and any accumulations of trash or debris will be removed. Any erosion at inlets should be restored to grade.
- The surface of the mulch layer will be inspected for movement of material. Mulch will be replaced and raked smooth if needed.
- Outlet structure will be inspected for any obstructions to assure that mulch is not washed out.

IV.B.3. Prior to the Start of the Rainy Season

Suggested language to include for bioretention facilities: In September of each year, facility inlets and outlets [including flow-control orifices, if any] will be inspected to confirm there is no accumulation of debris that would block flow. Stormwater should drain freely into the bioretention facilities. If not previously addressed during monthly maintenance, any growth and spread of plantings that blocks inlets or the movement of runoff across the surface of the facility will be cut back or removed.

IV.B.4. Annually During Winter

Suggested language to include for bioretention facilities: Once, in December – February of each year, vegetation will be cut back as needed, debris removed, and plants and mulch replaced as needed. The concrete work will be inspected for damage. The elevation of the top of soil and mulch layer will be confirmed to be consistent with the 6-inch reservoir depth.

An Agreement for the Owner of a Single Parcel to Operate and Maintain a Stormwater Management Facility
Instruction Sheet for this Agreement

This agreement is designed to be used when development is occurring on a single parcel of property, and stormwater management facilities are required to be constructed on that property. (This agreement can also be used for a subdivision where the stormwater management facility is located on one of the resident's privately owned lots and the stormwater management facility will be maintained by the owner of that lot.)

1. Fill in the name of your jurisdiction in the appropriate blanks on the cover page, in the opening paragraph of the agreement, in the definition of NPDES Permit, in Section 1, and on the signature page. Fill in the appropriate citation to your jurisdictions stormwater ordinance in the definition of Ordinance.

2. Fill in the name of the property owner in the blank on the cover page, in the opening paragraph of the Agreement, in the definition of Property Owner (twice) and on the signature page. Get the name from a title report. If the owner is a corporation, two signatures of corporate officers are required. An incorrect name may result in the agreement not being indexed properly by the County Recorder. Also insert the name of the project and the assessor's parcel number on the cover page.

3. Insert the street address of the project in the definition of Property. (If the stormwater management facility is located on a newly created lot that does not have a street address, give the lot and subdivision number, e.g. "Lot _ of Subdivision ____.")

4. Insert the name of the preparer and the date of approval of the Stormwater Operations and Maintenance Plan in the definition of Plan.

5. Insert the name of the adjoining public street in Recital B and Section 6. This is very important because for this Agreement to be binding on successors to the present owner, the law requires that the property "benefited" by the Agreement be specified in the Agreement.

6. Insert the month of the year you want the annual inspection to occur in Section 2.

7. Add the legal description of the property to Exhibit A. Again this is very important. For the Agreement to be binding on successors they must have the constructive notice of the Agreement that is provided by proper recording of the Agreement. Take the legal description from the title report and proof-read it. It is this legal description that gives notice to successors, not the assessor's parcel number you inserted on the cover page.

11/7/2007
Recording Requested By:
CITY OF _____

Return to: **CITY OF _____**
City Clerk
P.O. Box
_____, CA 945

Document Title

CITY OF _____

COVENANT RUNNING WITH THE LAND,
STORMWATER MANAGEMENT FACILITY OPERATIONS
AND MAINTENANCE AGREEMENT, AND RIGHT OF ENTRY
(Single Parcel)

PROJECT: _____

OWNERS NAMES: _____

ASSESSOR'S PARCEL NUMBER: _____

COVENANT RUNNING WITH THE LAND, STORMWATER MANAGEMENT FACILITIES OPERATION AND MAINTENANCE AGREEMENT, AND RIGHT OF ENTRY

This Covenant Running with the Land, Stormwater Management Facilities Operation and Maintenance Agreement and Right of Entry ("Agreement") is made and entered into this _____ day of _____, 20___, by and between _____, (hereinafter referred to as "Property Owner") and The City of _____, a municipal corporation ("City").

The following terms used in this Agreement shall have the meanings specified below:

DEFINITIONS

Maintain: The term "**Maintain**" or "**Maintained**" shall mean taking all actions reasonably necessary to keep the Stormwater Facility in first class operation, condition and repair, which actions include but are not limited to regular inspections, painting, cleaning, maintenance, refinishing, repairing, replacing and reconstructing the Stormwater Facility, and in the case of landscaping, plant replacement, mulch replacement, irrigating, trimming, mowing, and fertilizing the landscaping. The term shall also include the routine maintenance, and the annual inspection and reporting described in the Stormwater Control Operation and Maintenance Plan, and the payment of any applicable City fees.

NPDES Permit: The term "**NPDES Permit**" shall mean the San Francisco Bay Regional Water Quality Control Board's National Pollutant Discharge Elimination System (NPDES) Permit No. CAS0029912 (issued to the City of _____) as amended, and as may be superseded by subsequent NPDES permits that are reissued from time to time.

Ordinance: The term "**Ordinance**" shall mean Chapter __ of Title _ of the _____ Municipal Code (Stormwater Management and Discharge Control), as may be amended from time to time.

Property Owner: The term "**Property Owner**" and "**Property Owners**" shall mean _____ and all heirs, successors, executors, administrators and assigns of _____ in the Property, it being the intent of the parties hereto that the obligations undertaken in this Agreement, as provided in Civil Code section 1468, run with the Property described in Exhibit A and constitute a lien against the Property.

Property: The term "**Property**" shall mean that certain real property located at __[insert street address]__, and more particularly described in Exhibit A which is attached hereto and hereby incorporated herein by reference.

Plan: The term "**Plan**" or "**Operation and Maintenance Plan**" means the City-approved Stormwater Control Operation and Maintenance Plan prepared by _____ and approved by the City Engineer in writing, which may be subsequently modified from time to time with City Engineer's written approval.

Stormwater Facility: The term "**Stormwater Facility**" means the permanent stormwater management facilities located and constructed on the Property.

RECITALS

This Agreement is made and entered into with reference to the following facts:

A. The Property Owner is the owner of the real property more particularly described on the attached Exhibit A.

B. The City is the owner of _____ Street and its storm drains that are adjacent to the Property, and the City is required to ensure that stormwater run-off from the Property into its storm drains meets the requirements of its NPDES Permit.

C. To meet its obligations under its NPDES Permit the City has required the Property Owner to construct the Stormwater Facility on the Property.

D. To meet its obligations under its NPDES Permit the City has approved the Property Owner's Operation and Maintenance Plan for the Stormwater Facility.

E. To meet its obligations under its NPDES Permit the City's Ordinance requires proper operation and maintenance in perpetuity of the Stormwater Facility constructed on the Property.

F. The Plan includes an annual inspection and reporting requirement for the Stormwater Facility constructed on the Property.

G. This Agreement memorializes the Property Owner's maintenance, operations, and inspection obligations under the City's Ordinance, the City's NPDES Permit and the Plan.

AGREEMENT

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

SECTION 1

Responsibility for Operation and Maintenance: No portion of the Stormwater Facility may be altered, in any way, by the Property Owner without the prior written consent of the City Engineer of the City of _____. The Property Owner shall Maintain the Stormwater Facility in first class operating condition, and in compliance with all applicable state, county and city laws and regulations. Applicable regulations include, but are not limited to, the City-approved Stormwater Control Operation and Maintenance Plan, and the provisions of the Ordinance, as they may be amended from time to time.

The Property Owner shall engage a landscape contractor or other licensed contractor to Maintain the Stormwater Facility. The City Engineer, in her or his sole absolute discretion, may approve an alternate

method for the maintenance of the Stormwater Facility. The City Engineer, also in her or his sole absolute discretion, may revoke the approval of a previously approved alternate method for the maintenance of the Stormwater Facility.

SECTION 2

Inspection by Property Owner: The Property Owner shall cause its contractor to conduct annual inspections during the month of_____ of each year. The annual inspection report shall include completion of the checklist described in the approved Operation and Maintenance Plan. The Property Owner or its contractor must submit the inspection report to the City Engineer within 30 days after the annual inspection. A Management and/or Inspection fee established in the City's standard fee schedule shall accompany the annual inspection report.

SECTION 3

Right of Entry and Stormwater Facility Inspection by the City: The Property Owner hereby grants permission to the City, its authorized agents and employees, and the Central Contra Costa Sanitary District, the Contra Costa County Fire Protection District, County Environmental Health Department, the Contra Costa Mosquito and Vector Control District, and the Regional Water Quality Control Board to enter the portion of the Property where the Stormwater Facility is located, and to inspect the Stormwater Facility whenever any of the forgoing entities deems necessary to enforce provisions of the City's Ordinance. These entities may enter the premises at any reasonable time to inspect the Stormwater Facility's maintenance and operation, to inspect and copy records related to compliance with stormwater regulations, and to collect samples and take measurements. Whenever possible, these entities will provide notice prior to entry.

SECTION 4

Failure to Perform Required Stormwater Facility Repairs or Maintenance by the Property Owner: If the Property Owner or its successors fails to Maintain the Stormwater Facility in good working order and in accordance with the approved Plan and the City's Ordinance, the City, with prior notice, may enter the Property to return the Stormwater Facility to good working order. The City is under no obligation to Maintain or repair the Stormwater Facility, and this Agreement may not be construed to impose any such obligation on the City. If the City, under this section takes any action to return the Stormwater Facility to good working order, the Property Owner shall reimburse the City for all the costs incurred by the City, including administrative costs. The City will provide the Property Owner with an itemized invoice of the City's costs and the Property Owner will have 30 days to pay the invoice. If the Property Owner fails to pay the invoice within 30 days, the City may secure a lien against the real property of the Property Owner in the amount of such costs. In addition the City may make the cost of abatement of the nuisance caused by the failure to maintain the Stormwater Facility a special assessment against the Property that may be collected at the same time and in the same manner as ordinary municipal taxes are collected as provided in Government Code section 38773.5. This Section 4 does not prohibit the City from pursuing other legal recourse against the Property Owner.

SECTION 5

Indemnity: The Property Owner agrees to defend, indemnify and holds harmless the City, its officials, employees and its authorized agents from any and all damages, accidents, casualties, occurrences, claims, penalties or fines which might arise or be asserted against the City and which are in any way connected with the construction, operation, presence, existence or maintenance of the Stormwater Facility by the Property Owner, or from any personal injury or property damage that may result from the City or other public entities entering the Property under Section 3 or 4.

SECTION 6

Successors and Assigns: The covenants of the Property Owner set forth in numbered Sections 1 through 5 above shall run with the land, and the burdens thereof shall be binding upon each and every part of the Property and upon the Property Owner, its successors and assigns in ownership (or any interest therein), for the benefit of _____ Street and its storm drains and each and every part thereof and said covenants shall inure to the benefit of and be enforceable by the City, its successors and assigns in ownership of each and every part of the Street and storm drains.

SECTION 7

Severability: Invalidation of any one of the provisions of this Agreement shall in no way effect any other provisions and all other provisions shall remain in full force and effect.

Recommended for approval: City of _____:

_____ _____
City Engineer Mayor

Reviewed by: Attest:

_____ _____
City Attorney City Clerk

Property Owners:

_____
Owner's Name

_____

Owner's Name

Attachments: Acknowledgements
Exhibit A

ALL PURPOSE ACKNOWLEDGMENT

State of California)
) s.s.
County of _____)

On _____, before me,
_____, personally appeared
_____,
_____ personally known to me;
_____ or proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal. (SEAL)

_____
Signature of Notary Public

CAPACITY CLAIMED BY SIGNER:

Though statute does not require the notary to fill in the data below, doing so may prove invaluable to persons relying on the document.

_____ Individual(s)
_____ Corporate Officer(s) Titles _____ and _____
_____ Partner(s) _____ Limited _____ General
_____ Attorney-in-Fact
_____ Trustee(s)
_____ Guardian/Conservator
_____ Other : _____

Signer is representing: _____

ATTENTION NOTARY: Although the information requested below is optional, it could prevent fraudulent attachment of this certificate to unauthorized document.

Title or type of document _____
Number of pages: _____ Date of document: _____
Signer(s) other than named above: _____

THIS CERTIFICATE MUST BE ATTACHED TO THE DOCUMENT DESCRIBED ABOVE

EXHIBIT A

Legal description

Stormwater Facility Operation and Maintenance Inspection Report

General	
SITE NAME	ADDRESS
DATE AND TIME OF VISIT	REASON FOR INSPECTION (e.g. routine/annual, follow-up, or response to complaint)
Review of Stormwater Control Operation and Maintenance Plan	
Was the on-site copy of the Plan available on request? ❑ YES ❑ NO	SECTIONS OUT OF DATE AND UPDATES NEEDED: ❑ Owner contact Information ❑ Information on changes to facilities ❑ Records of previous inspections ❑ Other:
Date of last update to Plan: ____/_____/_____	
MAINTENANCE LOGS: ❑ Consistent with maintenance schedule in Plan. ❑ Not consistent with maintenance schedule (note exceptions):	
Results of Site Inspection	
Overall condition of site and any exceptional circumstances:	
LIST STORMWATER FACILITIES INSPECTED (Use designations/IMP #s from Plan) _____ _____ _____ _____ _____ _____ _____ _____ _____	ITEMS INSPECTED AND EXCEPTIONS NOTED:
Compliance Summary and Recommended Follow-up	
SITE STATUS: ❑ In compliance—no corrective actions required. ❑ In compliance—Implement corrective actions. ❑ Not in compliance—Correct and reinspect.	FOLLOW-UP PLAN AND SCHEDULE: INSPECTOR: DATE:

Your Logo Here

Off-Site GSI Project O&M Verification Form

This form provides summary information to document the completion of regularly scheduled O&M verification inspections.This form will be uploaded as a document to the Tracking Tool.

Project ID:

Project Location:

O&M Verifying Agency:

O&M Verification Inspection Frequency: *(e.g., annual, biannual, etc.)*

Inspection Completed by *(Name of Inspector, Agency):*

Inspection Date: *(month/day/year)*

☐ O&M Inspection Report form(s) was/were completed.

☐ O&M inspection documentation and photos are complete and available upon request.

Location of O&M Inspection Report data:

Select the option(s) that apply:

☐ All project IMPs were inspected and O&M is acceptable; no deficiencies identified.

OR

☐ All project IMPs were inspected and O&M deficiencies were identified.

☐ All deficiencies identified were corrected.

Date all correction(s) completed: *(month,year)*

Appendix C-11
Modified Stormwater Control Plan
for the Contra Costa County Alternative Compliance System
[additions in red text]

STORMWATER CONTROL PLAN
for
[NAME OF PROJECT]

[date]

[This template is to be used in conjunction with the instructions, criteria, and minimum requirements in the Contra Costa Clean Water Program *Stormwater C.3 Guidebook, 7th Edition.*

The contents and level of detail required for a Stormwater Control Plan varies with project characteristics. Check with local staff regarding requirements for your project.

Check the Contra Costa Clean Water Program website at http://www.cccleanwater.org/new-development-c-3/ **for new information and updates to the Guidebook and this template.]**

[Name of Owner]
[Owner's Representative and Contact Information]

prepared by:

[Preparer's Name]
[Preparer's Contact Information]

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Tables

Figures

Attachments

Stormwater Control Plan Exhibit

IMP Sizing Calculator Output

Appendix

HM Compliance [if applicable]

This Stormwater Control Plan was prepared using the template dated February 2018.

I. PROJECT DATA [Complete the following table and include in Stormwater Control Plan.]

Table 1. Project Data

Project Name/Number	
Application Submittal Date	[to be verified by municipal staff per 14 CCR §15060]
Project Location	[Provide both APN and street address if available]
Name of Developer	
Project Phase No.	[If project is being constructed in phases, indicate the phase number. If not, enter "NA"]
Project Type and Description	[Example entries: "5-story office building," "Residential with 160 single-family homes with five 4-story buildings to contain 200 condominiums," "100-unit, 2-story shopping mall," "mixed use retail and residential development (apartments)", "Industrial warehouse."]
Project Watershed	[Request from municipal staff]
Total Project Site Area (acres)	
Total Area of Land Disturbed (acres)	
Total New Impervious Surface Area (sq. ft.)	
Total Replaced Impervious Surface Area	[See instructions on p. 14 of the *Guidebook* 7th Edition.]
Total Pre-Project Impervious Surface Area	
Total Post-Project Impervious Surface Area	
50% Rule[*]	[Applies or Doesn't Apply]
Project Density	[State DU/Acre and/or Floor Area Ratio. See definitions on p. 46 of the *Guidebook* 7th Edition.]
Applicable Special Project Categories [Complete even if all treatment is LID]	[State A, B, C, or none. If "C", state basis for location credits, density, and parking credits.]
Percent LID and non-LID treatment on-site and percent LID treatment off-site if applicable	[State totals for project and provide details under "Documentation of Drainage Design."]
HM Compliance [†]	[State "applies," or state "exempt" and explain reason for exemption. See page 9 of the *Guidebook* 7th Edition.]

[*50% rule applies if:
Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area]

[†HM required (unless project meets one of the exemptions on *Guidebook* p. 9) if:
(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre]

II. SETTING

[See instructions on pp. 14-15 of the *Guidebook*.]

II.A. Project Location and Description

[Include site location, division of parcels, planned land uses, zoning, setback and open space requirements, project phasing, number of residential units or square footage of office or retail, parking requirements, neighborhood character, project design objectives (for example LEED certification), other notable project characteristics. Include a vicinity map.]

II.B. Existing Site Features and Conditions

[Include site size, shape, and topography. Hydrologic features, including any contiguous natural areas, wetlands, watercourses, seeps, or springs. Existing land uses. Soil types and hydrologic soil groups, depth to groundwater, vegetative cover, and impervious areas, if any. Existing drainage for site and nearby areas, including location of municipal storm drains.]

II.C. Opportunities and Constraints for Stormwater Control

[Examples of constraints: impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, density/high-intensity land use, heavy pedestrian or vehicular traffic, utility locations, safety concerns.]

[Examples of opportunities: Existing natural areas, low areas, oddly configured or otherwise unbuildable areas, easements and required landscape amenities including open space and buffers that might be used for bioretention facilities, and differences in elevation, which can provide needed hydraulic head.]

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

[See *Guidebook* pp. 16 and 24-29. Review each of the strategies and describe here how each has been incorporated into your project. Not every strategy applies to every project; if a strategy doesn't apply, state the reason.]

III.A. Optimization of Site Layout

[In a narrative, address the points in each of the subheadings to the level of detail appropriate for your project. Subheadings may be used or omitted.]

III.A.1. Limitation of development envelope

III.A.2. Preservation of natural drainage features

III.A.3. Setbacks from creeks, wetlands, and riparian habitats

III.A.4. Minimization of imperviousness

III.A.5. Use of drainage as a design element

III.B. Use of Permeable Pavements

III.C. Dispersal of Runoff to Pervious Areas

III.D. Bioretention or other Integrated Management Practices

[See the guidance, *Guidebook* pp. 27-29, for siting and designing bioretention facilities. Describe how the facilities in your project have been designed to be consistent with this guidance. In addition, ensure your stormwater control design is fully coordinated with the site plan, grading plan, and landscaping plan being proposed for the site. See *Guidebook* p. 43.]

[If applicable, indicate whether the project will utilize the alternative compliance option to construct LID treatment off-site, or will utilize the Contra Costa County Alternative Compliance System in-lieu fee option, in lieu of some or all on-site treatment.]

IV. DOCUMENTATION OF DRAINAGE DESIGN

[If utilizing the Contra Costa County Alternative Compliance System in-lieu fee option, skip to Section IV.D.]

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

Table x. Drainage Management Areas

DMA Name	*Area (SF)*	*Surface Type/Description*	*DMA Type/Drains to*

IV.A.2. Drainage Management Area Descriptions

DMA [name], totaling x,xxx square feet, drains [description of area]. DMA [name] drains to [Self-Retaining DMA name or IMP name]. [Describe notable or exceptional characteristics or conditions.]

DMA [name], totaling x,xxx square feet, drains [description of area]. DMA [name] drains to [Self-Retaining DMA name or IMP name]. [Describe notable or exceptional characteristics or conditions.]

DMA [name], totaling x,xxx square feet, drains [description of area]. DMA [name] drains to [Self-Retaining DMA name or IMP name]. [Describe notable or exceptional characteristics or conditions.]

DMA [name], totaling x,xxx square feet, drains [description of area]. DMA [name] drains to [Self-Retaining DMA name or IMP name]. [Describe notable or exceptional characteristics or conditions.]

[For DMAs draining to non-LID treatment systems, include a description of the uses of all impervious paved areas, and for landscaped areas, a description of the technical constraints preventing their use as LID IMPs. Also include a narrative discussion of the infeasibility of offsite treatment.]

IV.B. Integrated Management Practice Descriptions

[Include a description of the facilities, including design criteria. See the design sheets in *Guidebook* Chapter 4. Describe any special or notable features or design characteristics. Include a sketch showing key elevations if necessary to demonstrate sufficient hydraulic head.]

IV.B.1. *Areas Draining to Non-LID Treatment* ["Special Projects" only—See Table 3-8, p. 46]

Table x. Areas Draining to Non-LID Treatment

DMA Name	*Area (square feet)*	*Non-LID Treatment System*	*Minimum Design Criteria Referenced*

IV.C. Tabulation and Sizing Calculations

[Attach and reference output from the IMP Sizing Calculator.]

IV.D. Description of Off-Site GSI Project (if Applicable)

[If the Contra Costa County Alternative Compliance System in-lieu fee option will be used to provide treatment at an Off-Site GSI Project, the following additional forms must be provided[1]:

- *Off-Site GSI Project Data Form* for a constructed project being used for alternative compliance; OR *Pre-Construction Off-Site GSI Project Data and Design Certification Form* for a fully designed but not yet constructed project being used for alternative compliance;
- *Alternative Compliance Exchange Documentation Form* authorizing the exchange and the payment of in-lieu fees and annual O&M payments.

[1] Forms describing the Off-Site GSI Project and documenting the exchange authorized by the Contra Costa County Alternative Compliance System are available from the Contra Costa County System Tracking Tool at [provide link].

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

V.B. Source Control Table

Table x. Source Controls

[See the instructions on page 16 of the Guidebook and the checklist in Appendix D.]

Potential source of runoff pollutants	*Permanent source control BMPs*	*Operational source control BMPs*

V.C. Features, Materials, and Methods of Construction of Source Control BMPs

VI. STORMWATER FACILITY MAINTENANCE

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

[Include (1) a commitment to execute any necessary agreements and/or annex into a fee mechanism, per local requirements, and (2) a statement accepting responsibility for operation and maintenance of facilities until that responsibility is formally transferred.]

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

[For guidance on what to include in this section, see the Operation and Maintenance Fact Sheet at http://www.cccleanwater.org/stormwater-c-3-guidebook/]

VII. CONSTRUCTION PLAN C.3 CHECKLIST

[See the instructions on page 18 of the Guidebook. Number and list each measure or BMP you have specified in your Stormwater Control Plan in Columns 1 and 2 of the table. Leave Column 3 blank. When you submit grading and improvement plans for engineering review, duplicate this table on those plans, with Column 3 also completed. Also, before completing your Plan and accompanying exhibit, perform another check to ensure your stormwater control design is fully coordinated with the site plan, grading plan, and landscaping plan being proposed for the site. Identify any conflicts with codes and requirements, or other obstacles to implementing the Plan as submitted. See p. 43 of the *Guidebook*.]

Table x. Construction Plan C.3 Checklist

Stormwater Control	*BMP Description*	*See Plan Sheet #s*

Plan
Page #

VIII. CERTIFICATIONS

The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2015-0049.

[Check with local staff regarding other certification requirements.]

_____

By

_____

Print Name

Your Logo Here

Alternative Compliance Exchange Documentation Form

This form documents a Regulated Project's use of the alternative (off-site) compliance option provided by the Contra Costa County Regional Alternative Compliance (RAC) System, and summarizes the details of the Regulated Project's exchange of in-lieu fees for the Off-Site GSI Project's Equivalent Acres Greened with Net Environmental Benefit. This form will be submitted to the Agency reviewing the Regulated Project for C.3 compliance as part of the Regulated Project's Stormwater Control Plan, and uploaded as a document to the Tracking Tool.

Regulated Project Information

Regulated Project ID: Jurisdiction:

Regulated Project Address:

Project Owner:

Phone #: Email:

Annual Average Rainfall: *(inches)* Non-Industrial Land Use: *(acres)*

New Industrial Land Use: *(acres)*

Total Impervious Area in Drainage Area (IMP_{RP}): *(acres)*

Total Pervious Area in Drainage Area (PER_{RP}): *(acres)*

Runoff Generating Area for which the Regulated Project owner is seeking alternative compliance (RGA_{RP}) = IMP_{RP} + (0.10 * PER_{RP}): 0 *(acres)*

Off-Site GSI Project Information

Project ID: Project Name:

Project Location:

☐ Off-site GSI project is not yet constructed at the time of this exchange.

Net Environmental Benefit (NEB) Ratio 1.1

*NEB = 1.1 unless purchasing compliance metrics that are treating old industrial land use; for off-site GSI projects is treating old industrial land use, NEB Ratio = 1.0 for Equivalent Acres Greened units treating old industrial land use.

Annual Average Rainfall: *(inches)*

☐ Off-site GSI project is associated with higher pollutant loading than the regulated project. (check this box if NEB = 1.0

Equivalent Acres Greened Available for Exchange: *(acres)*

Date Available for Exchange: *(month/day/year)*

Equivalent Acres Greened Unit Cost: *($/acre)*

Jurisdiction's Administrative Fees: *($)*

Clean Water Program System Administrative Fees: *($)*

Annual O&M Fee Unit Cost: *($/acre/year)*

Alternative Compliance Exchange Form, continued

Exchange Information

Exchange ID: _____ Exchange Date: _____ (month/day/year)

Regulated Project Rainfall Ratio ($Ratio_{Rainfall}$): 1.0 *See attached Rainfall Ratio Matrix to determine this value.

Regulated Project Pollutant Ratio ($Ratio_{Pollutant}$): 1.0 *See attached Pollutant Ratios Matrix to determine this value.

Required Equivalent Acres Greened for Off-Site Compliance = (RGA_{RP} x $Ratio_{Rainfall}$ x $Ratio_{Pollutant}$): 0 *(acres)*

Quantity of Equivalent Acres Greened (EAG) Purchased: _____ *(acres)*

Total In-lieu Fee = (EAG x NEB Ratio x EAG Unit Cost) + Admin Fees: 0 *($)*

Annual O&M Fee (to be paid annually by the Regulated Project Owner): 0 *($/year)*

☐ A copy of this Exchange Form to be provided to the County Maintenance District to allow for ongoing O&M fee assessments.

Confirmation of Completion of the Exchange

Confirming Agency (Jurisdiction of Regulated Project): _____

Confirming Agency Representative: _____

Phone Number and Email: _____

☐ In-lieu fee was paid in full. Date Paid: _____ *(month/day/year)*

☐ This exchange completes all requirements for the Regulated Project's off-site compliance as part of the Contra Costa County Regional Alternative Compliance (RAC) System.

☐ Additional exchange(s) are required for the Regulated Project to achieve off-site compliance.
All additional Exchange ID(s) are listed here:

_____

Exchange Completion Sign-Off

Approval Signature: _____

Date: _____ *(month/day/year)*

Alternative Compliance Exchange Form, continued

Rainfall Ratio Matrix for Rainfall Zones Across the County

Exchange Ratio Matrix	Equivalent Acres Greened Annual Average Rainfall Zone[1] (inches)																				
Regulated Project Annual Average Rainfall Zone (inches)	≤13	≤14	≤15	≤16	≤17	≤18	≤19	≤20	≤21	≤22	≤23	≤24	≤25	≤26	≤27	≤28	≤29	≤30	≤31	≤32	≤33
≤13	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤14	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤15	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤16	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤17	1.3	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤18	1.4	1.3	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤19	1.5	1.4	1.3	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤20	1.5	1.4	1.3	1.3	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤21	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤22	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤23	1.8	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤24	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤25	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤26	2.0	1.9	1.7	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤27	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤28	2.2	2.0	1.9	1.8	1.6	1.6	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0
≤29	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0
≤30	2.3	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0
≤31	2.4	2.2	2.1	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.0
≤32	2.5	2.3	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0
≤33	2.5	2.4	2.2	2.1	1.9	1.8	1.7	1.7	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0

Alternative Compliance Exchange Form, continued

Pollutant Ratio Matrix for Identified Land Use Categories

Exchange Ratio Matrix		Off-Site Project Land Use Category			
		Residential, Commercial, or Institutional [1]	Transportation [2]	New Industrial	Old Industrial and Source Areas
Regulated Project Land Use Category	**Residential, Commercial, or Institutional [1]**	1.0	1.0	1.0	1.0 [3]
	Transportation [2]	1.3	1.0	1.0	1.0 [3]
	Industrial	1.8	1.4	1.0	1.0 [3]

[1] Includes adjacent collector and local roadways.

[2] Transportation includes interstate highways, freeways, multilane highways, and principal arterials.

[3] Net environmental benefit discount applied to purchase, see RAC System Summary Report, section 4.3.

CONTRA COSTA CLEAN WATER PROGRAM

Date: March 15, 2023

To: Management Committee

From: Lisa Welsh (Geosyntec), Augmented Staff for Monitoring Committee

Subject: Update on the DRAFT Contra Costa Clean Water Program LID Monitoring Plan and Quality Assurance Project Plan (QAPP)

Recommendation:

Accept update on the CCCWP LID Monitoring Plan and QAPP.

Background:

MRP 3 requires Permittees to conduct Low Impact Development (LID) monitoring during the permit term per specifications identified in Provision C.8.d. The purpose of this monitoring is to measure the effectiveness of LID controls. The monitoring is intended to provide information that will improve the understanding of the benefit of LID implementation on pollutant loading and hydrology of receiving waters within Permittees' jurisdictions, at different space and time scales, and inform the design, construction, operation and maintenance (O&M) and future implementation of LID.

MRP Provision C.8.d specifies minimum monitoring requirements to assess their effectiveness by addressing two main management questions:

1. What are the pollutant removal and hydrologic benefits, such as addressing impacts associated with hydromodification, of different types of LID facilities, systems, components, and design variations, at different spatial scales (e.g., single control vs watershed or catchment scale), and how do they change over time?
2. What are the minimum levels of O&M necessary to avoid deteriorated LID facilities, systems, and components that reduce pollutant removal and hydrologic performance?

The Monitoring Plan (MP) addresses sampling and analysis activities related to the implementation of the LID monitoring project (the Project) on behalf of CCCWP. This MP,

and an associated Quality Assurance Project Plan (QAPP), was developed in collaboration with the other Bay Area Municipal Stormwater Coalition (BAMSC) Programs.

The monitoring conducted on behalf of CCCWP will provide information relevant to the two proposed management questions specific to two LID treatment facilities: 1) a roadside biofiltration rain garden that was previously monitored by the San Francisco Estuary Institute (SFEI) in partnership with the San Francisco Estuary Partnership (SFEP) in Water Years 2011-2012 and as part of the Clean Watersheds for a Clean Bay project (CW4CB) in Water Year 2014, and (2) a bioretention basin rain garden that was constructed in 2014 and has not been monitored previously.

The two facilities planned for monitoring by CCCWP are summarized in Table 1 below.

Table 1. Description of Contra Costa County Structural Treatment LID Controls to be Monitored

Site ID	Location	Treatment Type	Facility Area (sq ft)	Catchment Area (acres)	Year Constructed
ELC-B1	San Pablo Ave. near Eureka Ave.	Unlined bioretention cell with underdrain	80	1.0	2010
ELC-RG1	Fairmont Ave. at Richmond St.	Unlined bioretention basin with underdrain	3,500	2.0	2014

Staff and the Program's Monitoring Consultant are coordinating with the City of El Cerrito to obtain approval on site selection.

Schedule:

Monitoring Committee will review the Draft LID Monitoring Plan and QAPP in March. The Draft Plan and QAPP will be shared for review on March 9 and with comments due on March 24.

The Revised Draft Plan will be shared with Monitoring Committee on April 5 and the Final Draft Plan will be shared with Management Committee on April 12. It will be presented for approval by Management Committee on April 19. The Plan will be submitted to RWB on May 1, 2023, for Executive Officer approval.

Fiscal Impact:

None.

Attachments:

None.

SANTA CLARA VALLEY
URBAN RUNOFF
POLLUTION PREVENTION PROGRAM

REVIEW OF
MEMORANDUM OF AGREEMENT

HF&H CONSULTANTS, LLC

January 9, 2023

REVIEW OF MEMORANDUM OF AGREEMENT

January 9, 2023

HILTON FARNKOPF & HOBSON, LLC
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January 9, 2023

Mr. Chris Sommers
Santa Clara Valley Urban Runoff Pollution Prevention Program
1410 Jackson Street
Oakland, CA 94612

Subject: **Review of Memorandum of Agreement**

HF&H Consultants, LLC, is pleased to submit this draft report to the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). This report is the third Memorandum of Agreement (MOA) review produced by HF&H. Like the previous reviews in 2005 and 2016, the present review compares SCVURPPP with the practices of the three other Bay Area countywide stormwater programs (i.e., those for Santa Clara, San Mateo, Contra Costa, and Alameda Counties). SCVURPPP requested updated information that will allow SCVURPPP's Management Committee to determine whether changes to the existing MOA are desirable.

Very truly yours,

HILTON FARNKOPF & HOBSON, LLC

John W. Farnkopf, P.E., Senior Vice President
Geoff Michalczyk, Senior Associate

TABLE OF CONTENTS

TABLES AND FIGURES

ACRONYMS

ACCWP – Alameda Countywide Clean Water Program
ACFCWCD – Alameda County Flood Control and Water Conservation District
C/CAG – City/County Association of Governments (San Mateo)
CCCWP – Contra Costa Clean Water Program
MHI – Median Household Income
MOA – Memorandum of Agreement, which in some cases may be a Memoranda of Understanding
NPDES – National Pollution Discharge Elimination System
SCVURPPP – Santa Clara Valley Urban Runoff Pollution Prevention Program
SMCWPPP – San Mateo County Water Pollution Prevention Program

ACKNOWLEDGEMENTS

This report was prepared by the following HF&H Project Staff:

John Farnkopf, P.E., Senior Vice President
Geoffrey Michalczyk, Senior Associate

HF&H gratefully acknowledges the assistance of the following agency representatives:

Reid Bogert, San Mateo Clean Water Pollution Prevention Program
Sharon Gosselin, Alameda Countywide Clean Water Program
Karin Graves, Contra Costa Clean Water Program
Chris Sommers, Santa Clara Valley Urban Runoff Pollution Prevention Program

REVIEW OF MEMORANDUM OF AGREEMENT

Executive Summary
Cost Allocations
Term of Memorandum of Agreement
Scope of Program
Cost of Program

EXECUTIVE SUMMARY

PURPOSE AND SCOPE

In 2005, HF&H conducted an MOA review for the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) that included the four Bay Area stormwater programs and two southern California stormwater programs. In 2016, SCVURPPP subsequently requested HF&H to update the review, including only the four primary Bay Area programs, which became regulated by a single regional NPDES municipal stormwater permit in 2009. The current review presented in this report is similar in scope to the 2016 review and occurs after the release of the latest regional permit (i.e., MRP 3.0).

The purpose of this review is to provide technical assistance to the Management Committee of SCVURPPP. The scope of services called for collecting data to compare the four Bay Area programs across four areas:

1. The formulas used for allocating the program costs among the co-permittees.
2. The terms of the Memorandum of Agreement that binds the co-permittees.
3. The scopes of the programs.
4. The costs of the programs.

This review consists primarily of comparisons of the four programs. Differences among the programs exist in part because of the approaches each program has taken to assigning the responsibility for meeting the permit requirements between the stormwater programs and their co-permittees. The resulting differences should not be interpreted to indicate that one program is superior to another. The differences are indicative of how much work has been delegated by the co-permittees to their respective programs.

The present review is the third review since the first review in 2005. Since that time, the regional permit has been updated and expanded, and the programs have evolved to achieve compliance. Hence, the general trend in the scopes and budgets for most programs reflects the regional permit updates and expansions. Although this review does not include an analysis of the regional permit updates, it is important to remember that the succession of updated regional permits has a significant effect on how the programs have evolved to address new and expanded requirements.

GENERAL CHARACTERISTICS

Table 1 summarizes the general characteristics of the programs. All programs include at least one county agency in addition to cities/town, which are the majority of the program co-permittees. All programs also include flood control districts for their respective counties. SCVURPPP has the fewest number of co-permittees of the four programs (i.e., 15). Since 2015, the composition of the co-permittees for each program has remained the same.

Budget comparisons are difficult between the programs because of differences in the breadths/scopes of the programs, the levels of service they provided to co-permittees, and the extent to which tasks/projects are funded via the programs as opposed to directly by the co-permittees. The annual budgets in **Table 1** have increased an average of 15% since the last review (i.e., FY 2015-16).

Table 1. Characteristics of Countywide Programs

Santa Clara Valley Urban Runoff Pollution Prevention Program	Alameda Countywide Clean Water Program	Contra Costa Clean Water Program	San Mateo County Water Pollution Prevention Program
Permittees [a]			
15 total: 13 cities, County, Valley Water	17 total: 14 cities, County, ACFCWCD, Zone 7	21 total: 19 cities, County, Flood Control District	22 total: 20 cities, County, Flood Control District
Annual Budget - FY 2022-23 [b]			
$5,162,964	$2,485,000	$4,250,124	$3,195,441
Population [c]			
1,843,512	1,682,353	1,165,927	764,442
Surface Area - Program Only (Square Miles)			
951	664	720	427
Persons Per Gross Surface Area (Square Miles)			
1,938	2,534	1,619	1,790

[a] Source: Program Agreements
[b] Program Budgets & Discussions with Managers
[c] Source: California Dept of Finance; SCVURPPP population adjusted 95.21% to reflect actual area of program

SUMMARY OF FINDINGS

Our findings for each of the four areas examined are as follows:

Cost Allocation Formulae. ACCWP, SCVURPPP, and CCCWP did not change their allocation formulae. SMCWPPP has no allocation formula.

Duration of Memorandum of Agreement. The ACCWP and CCCWP agreements expire June 30, 2027 and June 30, 2025, respectively. SMCWPPP appears to have an open-ended term. SCVURPPP's current agreement expires June 30, 2023.

Scope of the Program. The program scopes, budget development, and Management Committee and Program Manager reviews have not changed significantly. Committees, Sub-committees, and work groups have been added to address new or expanded requirements in the regional permit.

Cost of the Program. The current costs of the SCVURPPP Program are in line or less than most of the other Bay Area program budgets, based on comparisons made using various benchmarks.

COST ALLOCATIONS

TYPES OF COST ALLOCATIONS

Stormwater programs allocate the costs of their programs to member agencies. Costs can be allocated using different methods. Cost allocations methods can be generally categorized into four types:

- **Proportionate allocations –** Costs that are related to each member in proportion to some measure of size that can be allocated proportionately. Common examples related to stormwater allocations are population, which is related to pollutant production, and impervious surface area, which is related to the quantity of stormwater.
- **Assigned allocations –** Members can receive minimum, maximum, or other allocations that are deemed reasonable. Such assignments typically have very little, if any, formulaic or quantitative basis and are the result of negotiations that were intended to balance qualitative factors that are not reflected in other types of allocations.
- **Direct allocations –** Specific costs that correspond to the needs of individual members that are only allocated to those members and not pooled for allocation

among all members. An example is a study concerned with a specific member or subset of members that would be allocated to only that member or subset of members.

- **Equal allocations** – Costs that benefit all members equally (regardless of measures of size such as population or surface area) that can be allocated in equal amounts. An example is legal expenses, of which 1/*nth* share would be allocated to each member of a group of *n* members.

Table 2 shows what portion of the total costs are allocated by each type of allocation for each Program.

COMPARISON OF COST ALLOCATIONS

The cost allocation formulae are summarized in **Table 2** and described as follows:

- SCVURPPP – Allocates 30% to SCVWD and 30% to San José. The remaining co-permittee allocations are based on a combination of population, area, and runoff factors (see 2005 MOA Review).
- ACCWP – Allocates 22% of the budget (1.3% per co-permittee) equally among all co-permittees and 78% among the members with population (excluding ACFCWCD and the district).
- CCCWP – Continues to allocate all costs based on population.
- SMCWPPP – Has no cost allocation formula. Instead, SMCWPPP receives a portion of its funding from its members in the form of NPDES fees, which are billed on the tax rolls for each parcel. The remainder of its funding comes from a portion of vehicle license fees authorized by voters.

Table 2. Types of Allocation Formulae

Allocation Type	SCVURPPP	ACCWP	CCCWP	SMCWPPP
Proportionate:				
Population	-	78% [d]	100%	
Surface Area	-	-	-	-
Average of Both Pop & Area	40% [a]	-	-	-
Other	-			
Assigned	60% [b]	22% [e]	-	-
None	-	-	-	100% [c]
	100%	100%	100%	100%

[a] SCVURPPP's allocation is based on runoff factors that approximate the average of population and surface area.
[b] 30% assigned to SCVWD and 30% to San Jose
[c] No Allocation formula - funds come from various taxes and fees
[d] Total budget less the baseline amount is allocated only among members with population
[e] 1.3% per all members

Table 3 provides additional detail on the adjustments, excluded land, and update frequency. **Table 3** also shows the highest three allocations, which gives a quick means of comparing the overall results of each program's allocations and adjustments.

Table 3. Cost Allocation Formula Details

Santa Clara Valley Urban Runoff Pollution Prevention Program	Alameda Countywide Clean Water Program	Contra Costa Clean Water Program	San Mateo County Water Pollution Prevention Program
Cost Allocation Formula			
Valley Water share based on weighted parameters (general benefits, potential noncompliance groundwater protection, informational benefits). San Jose and Valley Water shares set roughly equal. Remaining Co-permittees' share formula (see previous MOA review report).	Average of population and area.	Population for all Co-permittees.	None. Costs are not allocated to Co-permittees. Revenue comes from Co-permittees from taxes in proportion to property type and area.
Cost Allocations			
Total Program costs allocated among Co-permittees based on allocation formula.	General Program costs allocated among Co-permittees based on formula. Individual Program costs are directly charged to individual members.	Total Program costs allocated among Co-permittees based on allocation formula.	Not applicable.
Adjustments			
Not applicable.	Dublin, Livermore, and Pleasanton shares are reduced by Zone 7's 1% share; Fremont, Hayward, Newark, Oakland, San Leandro, and Union City shares are reduced by ACFCWCD's 1% share.	County population is based on unincorporated area.	Brisbane, Woodside, Colma, and San Mateo cover costs for their constituents. The rest pay via tax rolls.
Excluded Land			
Not applicable.	Open water and Bay wetlands; nonurbanized County land.	Not applicable.	Tax exempt properties.
Assigned Allocations			
~30% to Valley Water and ~30% to San José.	Minimum 1.3% allocation across all 17 co-permittees (applies to Zone 7 and ACFCWCD), remaining allocated based on average of population and area	None. All allocations are based on formula.	Not applicable.
Highest Allocations or Funding Sources			
30.02% - Valley Water	18.51% - Oakland	15.11% - County	12.15% - San Mateo
30.01% - San José	14.03% - Fremont	11.28% - Concord	10.50% - County
7.25% - Sunnyvale	10.76% - County	9.75% - Antioch	10.26% - Daly City
Update Frequency			
Specified by MOA (1 FY after the re-issuance of the NPDES permit).	Set for term of the MOA	Annual	Not applicable.

TERMS OF MEMORANDUM OF AGREEMENT

COMPARISON OF MOA TERMS

Table 4 summarizes the terms of the MOAs.

Table 4. Term of MOAs

Santa Clara Valley Urban Runoff Pollution Prevention Program	Alameda Countywide Clean Water Program	Contra Costa Clean Water Program	San Mateo County Water Pollution Prevention Program
Agreement Effective Date			
19-Dec-16	1-Jul-12	1-Jul-10	1-Jul-11
Agreement Duration			
Ending June 30, 2023	Ending June 30, 2027	15 years, ending June 30, 2025	None specified.
Agreement Renewal			
One year after NPDES termination date	None specified.	As directed by Management Committee	Requires County and at least eleven members representing 50% of population.

SCOPE OF PROGRAMS

COMPARISON OF SCOPES

All of the programs reflect single-purpose, independent organizations devoted to stormwater pollution prevention and related objectives with the exception of San Mateo's Program, which is part of other programs managed by the City/County Association of Governments. As a result, the management of San Mateo's Program is part of a larger administrative organization.

Table 5 summarizes the program scopes and management procedures that are specified in their current MOAs. **Table 6** notes the changes in the scopes of the programs since 2016, which consists of slight changes in the committees and subcommittees/task groups.

Voting policies are a part of program management and are summarized in **Table 7**. Most of the program members' votes are weighted using their allocation shares. A majority, and in some cases a supermajority, is required for quorum and/or passage of action items.

It is important to note that although not addressed in **Table 5**, the scope of the services provided by each program to their respective co-permittees varies drastically between the four programs. As discussed in the next section, these differences have significant effects on the budgets of the programs. For some programs, their governing bodies have requested that certain tasks/projects be conducted by their respective program, as opposed to each individual co-permittee taking the lead on the task/project. Examples of task/project scope of services that differ between the programs include pollutant (e.g., trash) reduction assessment programs, control measure implementation planning and tracking, information management, and annual reporting. Additional information is described in the next section, where the differences in scopes of service are evident in the costs reported by each program.

Table 5. Program Scopes

Santa Clara Valley Urban Runoff Pollution Prevention Program	Alameda Countywide Clean Water Program	Contra Costa Clean Water Program	San Mateo County Water Pollution Prevention Program
Program Scope			
Main Categories: Operational, Projects, Collaborative. Subcategories: Program, Permit and Technical Management, Legal Services, Fiscal Agent, Monitoring, C3/HMP, PIP/WE&O, Pollutants of Concern, Collaborative fees (RMP, CEP, CASQA) and Permit Fees (historical, since 2007-2008 FY paid by co-permittees).	Planning and Regulatory Compliance, C.3 & Hydromodification Management, Watershed Assessment, Monitoring and Special Studies, Public Information and Participation, Municipal Maintenance Activities, New Development and Construction Controls, Illicit Discharge Controls, and Industrial/Commercial Discharge Controls.	Administrative/personnel, Permit Compliance Fees/Contributions, General Consultant Services/Projects, New Development, Public Information and Participation, Water Quality Monitoring, Pesticide Outreach, Pollutants of Concern, East Contra Costa County Projects.	Ratify permit application; prepare management plans; identify alternative revenue programs; enter into contracts with members to implement management plans and revenue programs; perform activities prescribed in management plan; coordinate with members. (C/CAG also handles transit, traffic, airport, solid and hazardous waste programs.)
Budget Development, Tracking and Review			
MC Annual Work plan and Budget Development and Approval; quarterly budget reports include twice yearly budget reconciliations; annual budget review and compilation report.	The Management Committee shall review and adopt an annual budget.	Unspecified.	Board adopts annual budget for City/County Association of Governments (C/CAG) showing expenses, funding sources, and service levels.
Management Committee Members			
One representative from each Co-permittee. Alternates are allowed.	One primary representative from each Co-permittee and alternates are allowed.	One voting representative and one alternate from each Co-permittee.	The County's Stormwater Committee is effectively the Management Committee for the program. The Stormwater Committee is made up of the Public Works Directors for the respective members.
Annual Program Manager Review			
Annual Program Manager "Self-Audit Report" submitted to MC for review and approval (draft submitted at end of third quarter and final submitted after FY is completed)	None specified.	Annually	None specified.
Other Committees			
10 Ad Hoc Task Groups: Budget, Monitoring, Pollutants of Concern, C3PO, PIP/ WEO, Trash, Municipal, Industrial, Water Utility and Construction. 5 Workgroups: Scripts Review, Pesticide Users, Mercury, Schools Outreach, Alviso Watershed Watch.	8 Subcommittees: Policy, Monitoring POC, Public Information and Participation, Municipal Maintenance, New Development and Construction Site Controls, Illicit and Industrial/Commercial Discharge Control, Trash, GIS & Data Management. 3 Workgroups: Planning and Budget, Homelessness and Unsheltered, Asset Management	5 Subcommittees: Administrative, Development, Public Information/Participation, Municipal Operations, and Monitoring. 2 Ad Hoc Committees: GIS, and Select.	2 Committees: Stormwater Committee and Technical Advisory Committee. 6 Subcommittees New Development, Public Information/Participation, Municipal Maintenance, Trash, Commercial/Industrial/Illicit Discharge Control, Watershed Assessment and Monitoring. 1 Workgroup: Parks Maintenance and IPM

Table 6. Significant Scope Changes Since 2016

Santa Clara Valley Urban Runoff Pollution Prevention Program	Alameda Countywide Clean Water Program	Contra Costa Clean Water Program	San Mateo County Water Pollution Prevention Program
Program Scope			
No Changes	No Changes	No Changes	No Changes
Budget Development, Tracking and Review			
No Changes	No Changes	No Changes	No Changes
Management Committee Members			
No Changes	No Changes	No Changes	No Changes
Annual Program Manager Review			
No Changes	No Changes	No Changes	No Changes
Other Committees			
From 9 AHTGs and 3 Work Groups to 10 AHTGs and 5 Work Groups	From 6 Subcommittees to 8 Subcommittees and 3 Work Groups	No Changes	Green Infrastructure Subcommittee integrated into New Development Subcommittee

Table 7. Voting

Santa Clara Valley Urban Runoff Pollution Prevention Program	Alameda Countywide Clean Water Program	Contra Costa Clean Water Program	San Mateo County Water Pollution Prevention Program
Voting Representation			
Each Co-permittee has one weighted vote based on allocated shares.	Each party to the agreement is assigned one proportional vote in proportion to the cost allocation formula	Each Co-permittee has one vote	Each member has one vote.
Voting			
At least 8 affirmative votes that represent at least 50% of allocated shares, which are described in the original MOA.	Majority vote for decisions requiring a vote; Majority vote & majority proportional vote for approval of annual budgets and any expenditures	Majority plus one for all Management Committee decisions	Majority vote. Special votes require majority of members representing of population.
Quorum			
9 voting reps, including 1 rep from the City of San Jose and 1 rep from Valley Water	Majority of Voting Parties	Majority plus one of Co-permittees.	Majority of voting members.

COST OF PROGRAM

COMPARISON OF COSTS

Cost comparisons are difficult because of the lack of uniformity in budget formats and cost accounting, as well as differences in the scope of service provided by each program to co-permittees. The FY 2022-23 budgets for the four programs are tabulated by category in **Table 8** and graphed in **Figure 1**. The categories correspond to those that are used by SCVURPPP. Every attempt was made to map the other programs' costs into the SCVURPPP categories, but understandably this mapping process is imperfect because of the differences in the budget line items used by each program for specific tasks/projects. The budget details for each of the programs are shown in **Appendix A** to this report.

Not all costs included in **Table 8** and **Figure 1** were reported by each program in their budgets (i.e., **Appendix A**) and therefore additional costs were gathered from conversations with each program manager to supplement their budgets and create a more comprehensive accounting of FY 2022-23 costs incurred by each program. That said, some costs to implement the programs are likely still missing from those reported by co-permittee representatives and included in **Table 8** and **Figure 1**. To the extent possible, footnotes were added to **Table 8** to indicate what cost types are not included in the table.

Again, it is noted that the budgets presented in **Table 8**, **Figure 1**, or **Appendix A** are not the full extent of costs expended for permit compliance because the individual budgets of each program's co-permittees are not included. It is our understanding that effective in 2025, reporting requirements for co-permittees will begin and together with program costs, may provide a more complete picture of the combined program and co-permittee costs for each program.

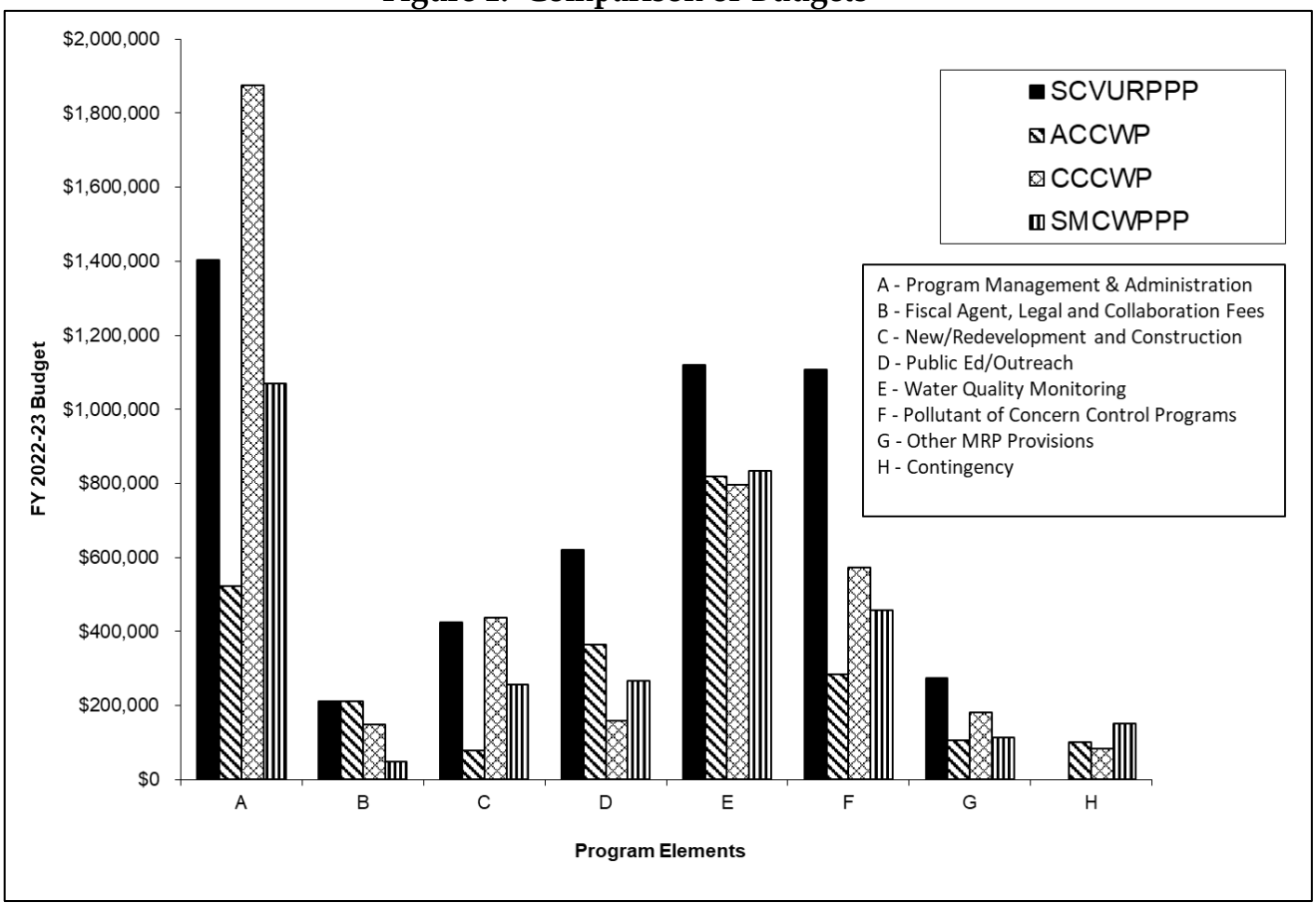
Table 8 shows the distribution of the program elements within each of the program budgets. In general, about three-quarters of the programs' budgets are related to Program Management & Administration, Water Quality Monitoring, and Pollutant of Concern Control Programs, which is consistent with 2016.

Table 8. Comparison of Budgets

	Program Elements	SCVURPPP FY 2022-23 Budget	% of Total	ACCWP FY 2022-23 Budget	% of Total	CCCWP FY 2022-23 Budget	% of Total	SMCWPPP FY 2022-23 Budget	% of Total
A	**Program Management & Administration**	**$1,404,213** [a]	27.2%	**$523,000** [b]	21.0%	**$1,874,797**	44.1%	**$1,070,288** [c]	33.5%
B	**Fiscal Agent, Legal and Collaboration Fees**	**$212,166**	4.1%	**$212,000**	8.5%	**$148,554**	3.5%	**$47,465**	1.5%
B1	Fiscal Agent	$55,000		$0 [d]		$0 [e]		$25,000 [f]	
B2	Legal Support	$120,000		$170,000		$95,000		$0 [g]	
B3	Fees to Collaborative Organizations (e.g., CASQA)	$37,166		$42,000		$53,554		$22,465	
C	**New/Redevelopment and Construction**	**$424,319**	8.2%	**$78,000**	3.1%	**$436,000**	10.3%	**$257,111**	8.0%
D	**Public Ed/Outreach**	**$620,676**	12.0%	**$364,000**	14.6%	**$159,300**	3.7%	**$266,861**	8.4%
E	**Water Quality Monitoring**	**$1,119,565**	21.7%	**$818,000**	32.9%	**$795,000**	18.7%	**$832,599**	26.1%
E1	RMP Fee (Core and CECs Monitoring)	$266,078		$260,000		$200,000		$115,000	
E2	LID, Trash, Pest/Tox and POCs Monitoring, Analysis, Data Management, and Reporting	$853,487		$558,000		$595,000		$717,599	
F	**Pollutant of Concern Control Programs**	**$1,108,310**	21.5%	**$285,000**	11.5%	**$571,937**	13.5%	**$457,864**	14.3%
F1	Pesticide Toxicity	$94,204		$14,000 [h]		$81,023		$0 [i]	
F2	Trash	$622,327		$65,000 [h] [j]		$60,000 [j]		$323,048	
F3	PCBs/Mercury	$386,287		$206,000 [h]		$430,914		$134,816	
F4	Other POCs	$5,492		$0		$0		$0 [g]	
G	**Other MRP Provisions**	**$273,715**	5.3%	**$105,000**	4.2%	**$181,200**	4.3%	**$113,253**	3.5%
G1	Core Programs (Municipal Operations, Industrial-Commercial Facilities, Illicit Discharge Detection and Elimination, Conditionally Exempt, etc.)	$88,715		$105,000		$21,200		$12,976	
G2	Unsheltered Homeless Populations	$75,000		$0 [g]		$120,000		$45,937	
G3	Cost Reporting and Asset Management	$110,000		$0 [g]		$40,000		$54,340	
H	**Contingency**	**$0**	0.0%	**$100,000**	4.0%	**$83,336**	2.0%	**$150,000**	4.7%
	Budget Total	**$5,162,964**		**$2,485,000**		**$4,250,124**		**$3,195,441**	
	FY 2015-16 Program Costs	$4,447,309		$2,233,000		$3,412,703		$2,948,099	
	7-year change since 2016	16%		11%		25%		8%	
	FY 2004-05 Program Costs	$3,117,871		$2,317,000		$2,463,727		$1,394,259	
	18-year change since 2005	66%		7%		73%		129%	

[a] Does not include $30,000 for periodic MOA reviews.
[b] Does not include Alameda County staff or Program Manager.
[c] Does not include Program Coordinator Salary nor Admin Fees for CCAG Executive Director.
[d] Does not include $69k ACFCWCD fiscal agent cost.
[e] Does not include Contra Costa County fiscal agent cost.
[f] Does not include San Mateo County fiscal agent cost.
[g] Included in A.
[h] Some costs relevant to this line item are included with other line items
[i] Included in D.
[j] Trash assessment, data management, implementation guidance, and reporting tasks not conducted by the program

Figure 1. Comparison of Budgets



BENCHMARK COMPARISONS

Table 9 compares the total budgets for each of the four Bay Area programs in terms of four benchmarks: cost per capita, cost per household, cost per gross square mile, and on the basis of median household income. Programs were ranked 1 through 4 from lowest to highest benchmark. For the first three benchmarks, normalized budgets were derived using SCVURPPP's population. The normalized budgets represent what the budget would be for each of the programs if they had the same population as SCVURPPP. In the case of the income benchmark, the benchmark was derived by dividing the cost per household by median household income for each county. The ranking was based on the resulting percentage.

Compared with the 2016 MOA review, the relative rankings have not changed.

Table 9. Benchmarks

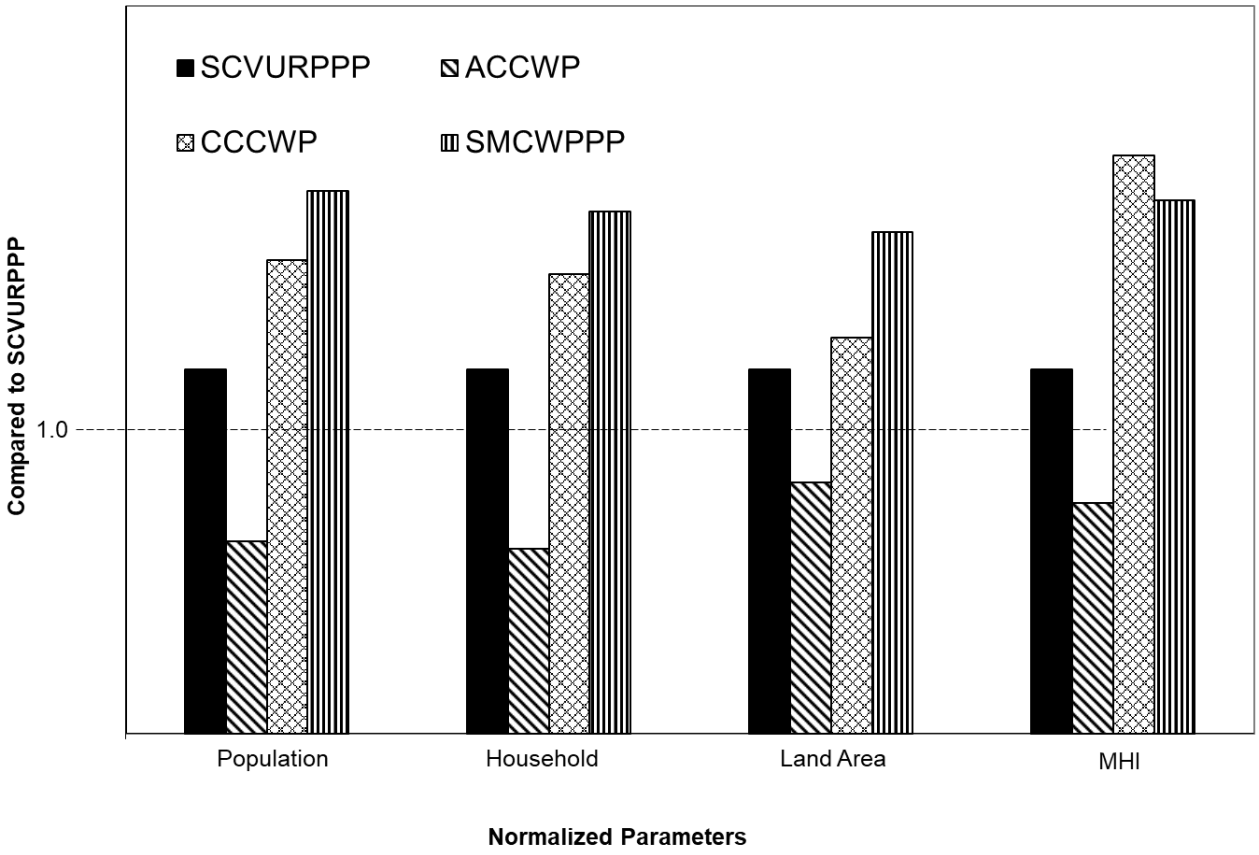
	SCVURPPP	ACCWP	CCCWP	SMCWPPP
Ranking: 1 = lowest benchmark 4 = highest benchmark				
Most Recent Budget	$5,162,964	$2,485,000	$4,250,124	$3,195,441
Population Benchmark [a]				
Population (2020)	1,843,512	1,682,353	1,165,927	764,442
Dollars per Capita	***$2.80***	***$1.48***	***$3.65***	***$4.18***
Rank	2	1	3	4
Indexed to SCVURPPP	100%	53%	130%	149%
Budget Normalized to SCVURPPP	$5,162,964	$2,723,048	$6,720,108	$7,706,058
Household Benchmark [b]				
Households (2020)	624,638	591,636	407,029	269,417
Dollars per Household	***$8.27***	***$4.20***	***$10.44***	***$11.86***
Rank	2	1	3	4
Indexed to SCVURPPP	100%	51%	126%	143%
Budget Normalized to SCVURPPP	$5,162,964	$2,623,614	$6,522,354	$7,408,562
Surface Area Benchmark [b]				
Total Area, sq. mis. (2022)	951	664	720	427
Dollars per Square Mile	***$5,429***	***$3,742***	***$5,903***	***$7,483***
Rank	2	1	3	4
Indexed to SCVURPPP	100%	69%	109%	138%
Budget Normalized to SCVURPPP	$5,162,964	$3,559,089	$5,613,705	$7,116,778
Income Benchmark [b]				
Median Household Income (2020)	$130,890	$104,888	$103,997	$128,091
Dollars per Household	$8.27	$4.20	$10.44	$11.86
Percent of MHI	***0.0063%***	***0.0040%***	***0.0100%***	***0.0093%***
Rank	2	1	4	3
Indexed to SCVURPPP	100%	63%	159%	147%
Averages				
Rank	2.0	1.0	3.3	3.8
Index	100%	59%	131%	144%

[a] California Dept of Finance RMP data; SCVURPPP population adjusted 95.21% to reflect actual area of program

[b] 2010 US Census; SCVURPPP households adjusted 95.21%

The rankings are somewhat simplistic because they do not account for relative differences. To account for the relative differences, each of the four benchmarks was also indexed to SCVURPPP. **Figure 2** shows how the indices for each benchmark compare against the SCVURPPP.

Figure 2. Benchmark Indices



The benchmarks are derived from budgets, which vary from program to program based on their breadth and how much is funded by the co-permittees.

HISTORICAL TRENDS

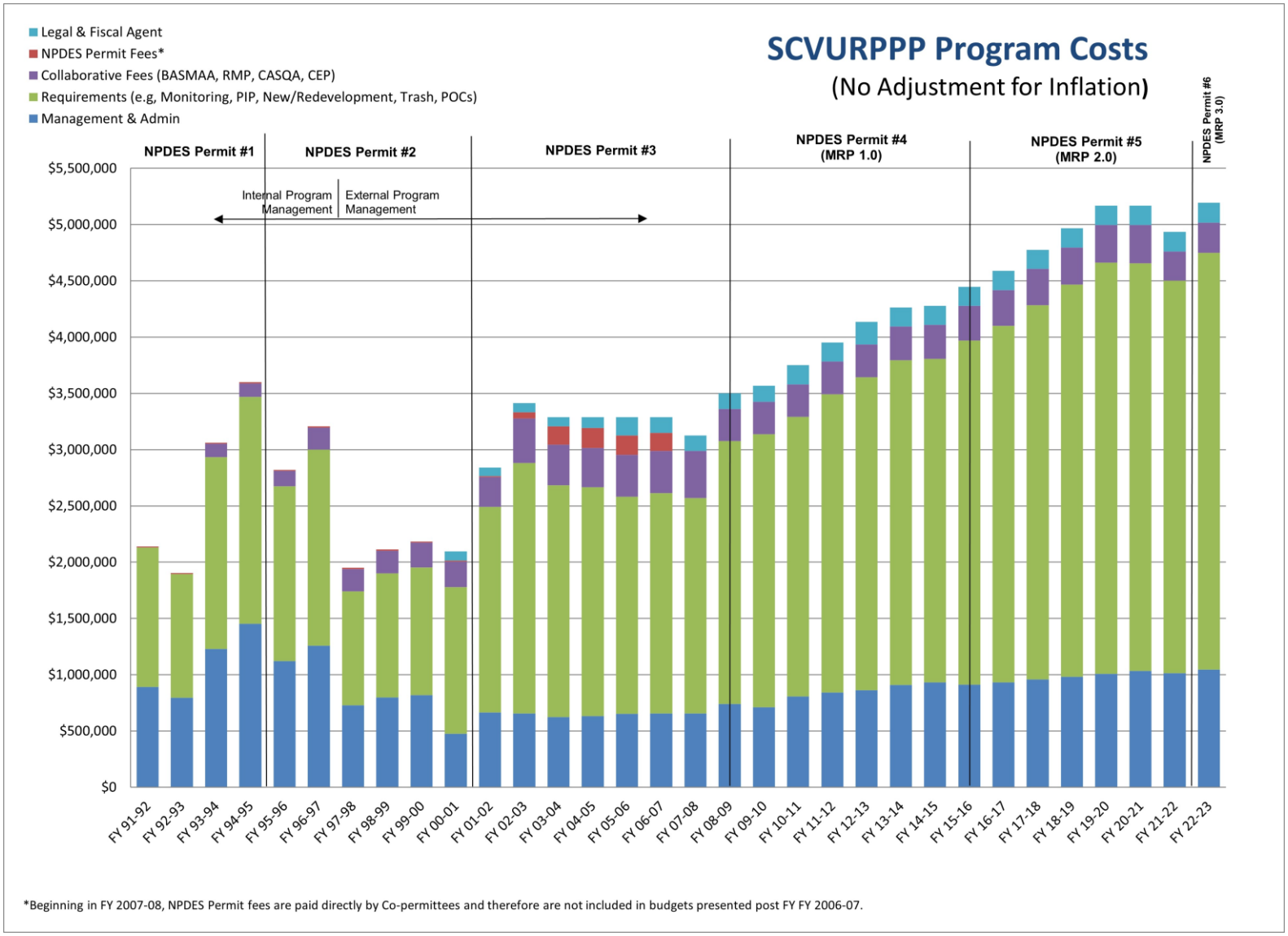
SCVURPPP maintains historical program cost data by budget category. **Figures 3, 4,** and **5** are excerpted from SCVURPPP reports. In addition to showing the historical costs, the graphs show the permit terms.

The figures show cost trends by category. After a fairly stable period during NPDES Permit No. 3, costs increased in the Requirements category started climbing during NPDES Permit No. 4. The other cost categories remained fairly stable.

Figure 4 shows the costs presented in **Figure 3,** adjusted for inflation so that the costs are in 2022 dollars. The costs in FY 2002-03 are comparable to the costs in FY 2022-23; during the intervening period, the costs steadily increased until slightly decreasing in FY 2021-22 and FY 2022-23. The increases in the Requirements cost category accounts for the increase in costs between NPDES Permit No. 4 and NPDES Permit No. 5.

Figure 5 shows trends in how much each cost is of the total costs, adjusted for inflation. Although costs trended upward during the fourth and fifth NPDES permit terms, the costs associated with the other categories stayed relatively constant as a percentage of the whole budget, with the exception of costs in the Requirements category.

Figure 3. Historic SCVURPPP Costs



Source: SCVURPPP Budget

Figure 4. Historic SCVURPPP Costs Adjusted for Inflation

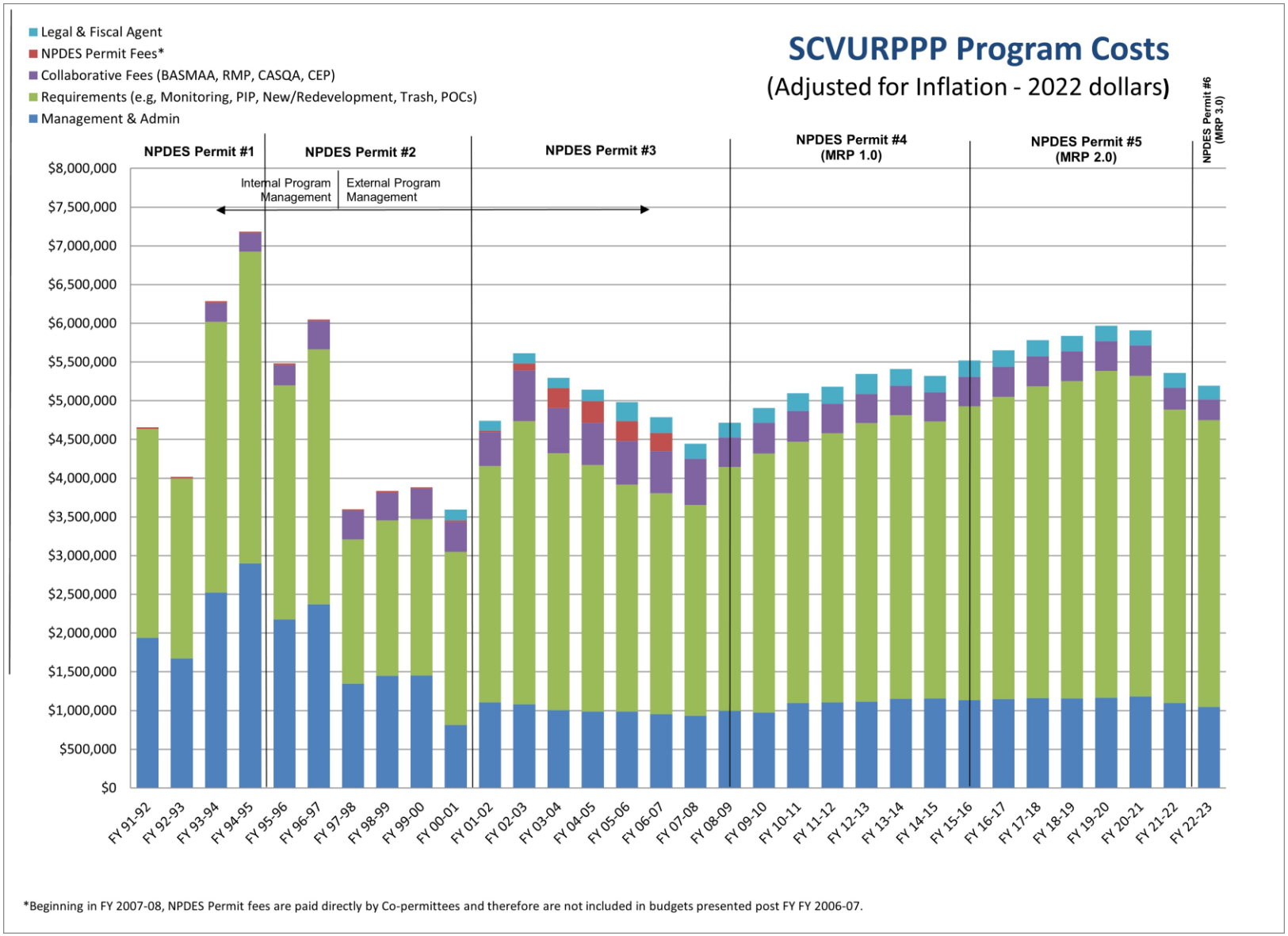
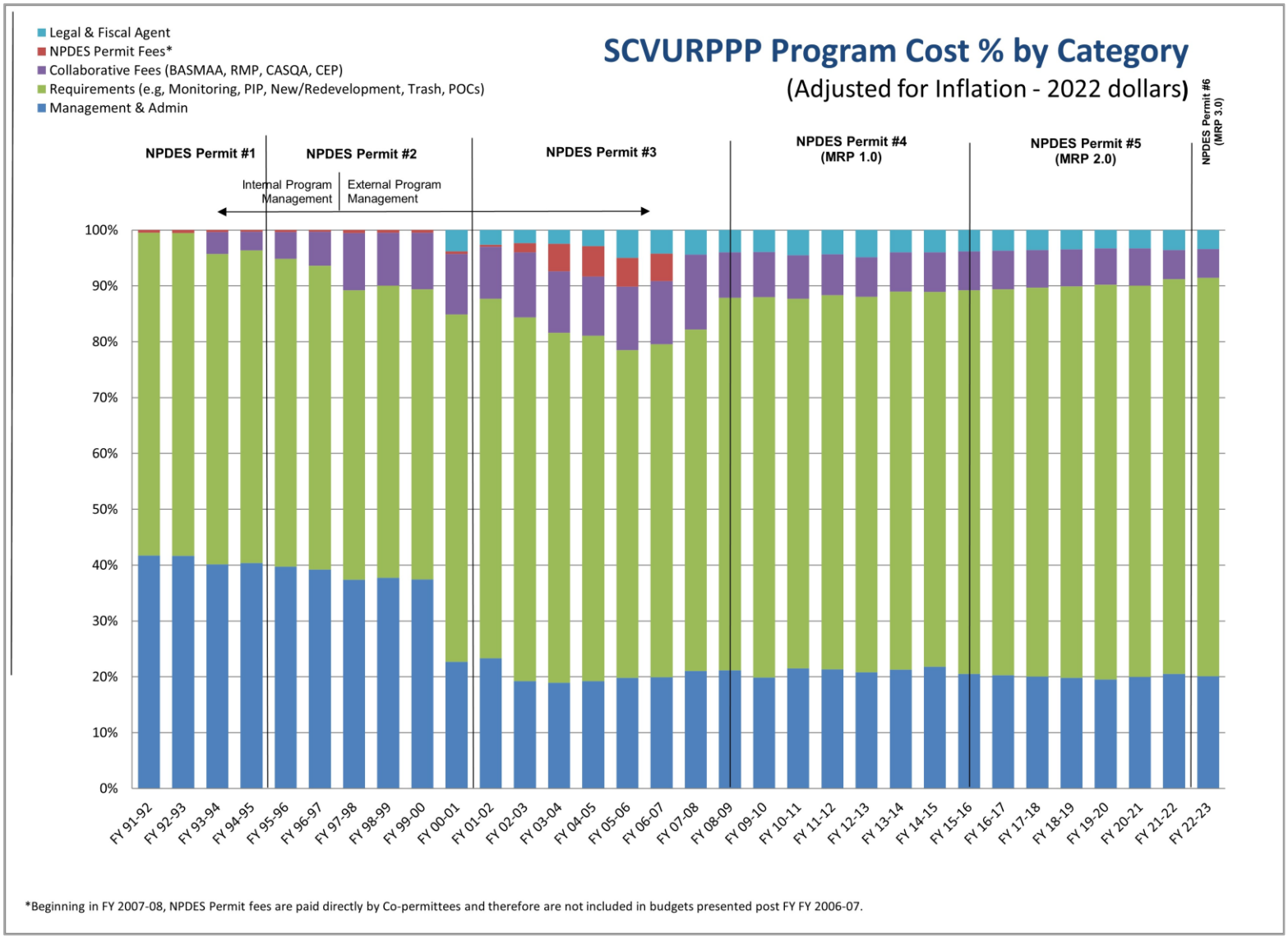


Figure 5. Historic SCVURPPP Costs as a Percent of Total



San Francisco Bay Regional Water Quality Control Board

February 21, 2023

[via email only]

Philip G. Wyels
Assistant Chief Counsel
Office of Chief Counsel
State Water Resources Control Board
1001 I Street, 22nd Floor
Sacramento, CA 95814
Philip.Wyels@waterboards.ca.gov

Dear Mr. Wyels:

We are writing to respond to the State Water Resources Control Board's ("State Water Board") consideration of whether to initiate its own motion review, pursuant to Water Code section 13320, subdivision (a), of the appropriateness of the alternative compliance provisions of the Municipal Regional Stormwater NPDES Permit, Order No. R2-2022-0018 ("MRP" or "the permit"), issued by the San Francisco Bay Regional Water Quality Control Board ("Regional Water Board") on May 11, 2022. We appreciate the opportunity to provide the Regional Water Board's perspective that the State Water Board's review the MRP's alternative compliance provisions (Provisions C.1, C.9 through C.12, C.14, C.18, and C.19.c-f) is unnecessary, because the provisions comply with the State Water Board Orders WQ 2015-0075 (Los Angeles County), as amended by Order WQ 2021-0052-EXEC, (the "2015 Order") and WQ 2020-0038 (Los Angeles Water Board) (the "2020 Order"; the 2015 Order and 2020 Order are hereinafter jointly referred to as "State Water Board Orders").

The MRP's alternative compliance provisions include ambitious, rigorous, and transparent requirements targeted to attaining water quality objectives in receiving waters as soon as is technically feasible. They reflect decades of the Regional Water Board's knowledge and experience regulating the region's municipal stormwater pollutant discharges into San Francisco Bay and its tributaries, including knowledge and experience with pollutant sources and control measures from years of robust monitoring, accumulated data, and numerous studies. The alternative compliance provisions also follow the explicit water quality attainment strategies, wasteload allocations, implementation plans, and compliance schedules set forth in total maximum daily loads ("TMDLs") in water quality control plans, which the Regional Water Board is required to implement in permits.

The alternative compliance provisions do not rely on permittees' self-determined paths to comply with receiving water limitations—rather they specify explicit, enforceable requirements that reflect the best technical judgment of the Regional Water Board, based on the best information available on pollutant sources and controls, that the requirements will lead to timely compliance with water quality objectives in receiving waters. This included use of models if available and appropriate to account for pollutant sources and pollutant load reductions from required controls. For all pollutants, including bacteria and pesticides, with unpredictable and random pollutant sources that are not amenable to modeling, the Regional Water Board is requiring all possible actions and controls that can be implemented within the permit term and to advance source identification and control science along with reporting and review opportunities to ensure actions and controls are being or will be implemented to comply with receiving water limitations.

The Regional Water Board worked extremely hard with stakeholders for three years prior to release of the draft permit to craft permit requirements that fulfill the board's mandate to protect the region's waters. Since the MRP was adopted last May, the Regional Water Board has been working diligently to oversee the implementation of the MRP. The Regional Water Board would like to continue to focus on implementation of MRP to ensure real progress can be made.

As we will discuss, the alternative compliance provisions of the MRP are appropriate and comply with the State Water Board Orders. Therefore, the Regional Water Board respectfully requests that the State Water Board not review these provisions. The following sections of this response include a summary of the State Water Board Orders' principles, identification of the provisions that are subject to the alternative path to compliance and their general background, and a discussion of how the provisions comply with the State Water Board Orders.

I. Summary of the Main Principles of the State Water Board Orders

As you know, in the precedential 2015 Order, the State Water Board set forth principles under which municipal stormwater permittees may be deemed in compliance with receiving water limitations while they take ambitious, rigorous, and transparent actions to come into compliance. It stated that it "can support an alternative approach to compliance with receiving water limitations only to the extent that that approach requires clear and concrete milestones and deadlines toward achievement of receiving water limitations and a rigorous and transparent process to ensure that those milestones and deadlines are in fact met. Conversely, we cannot accept a process that leads to a continuous loop of iterative . . . implementation [of best management practices] without ultimate achievement of receiving water limitations. ."[1] Without constraining the ability of regional water boards to provide alternative paths to compliance with receiving water limitations in a manner that varies from the Los Angeles Regional Water Quality Control Board's ("LA Water Board") watershed management plan/enhanced watershed management plan ("WMP/EWMP") approach, the State Water Board set out the following principles for the regional water boards to follow when providing such

[1] 2015 Order, p. 41 (all page references to the 2015 Order herein are to the amended order).

alternative paths to compliance, unless the regional water board makes a showing that a given principle is not appropriate for region-specific or permit-specific reasons:

1. The receiving water limitations provisions of Phase I [municipal separate storm sewer system or "MS4"] permits should continue to require compliance with water quality standards in the receiving water and should not deem good faith engagement in the iterative process to constitute such compliance. The Phase I MS4 permits should therefore continue to use the receiving water limitations provisions as directed by State Water Board Order WQ 99-05.

2. The Phase I MS4 permits should include a provision stating that, for water body-pollutant combinations with a TMDL, full compliance with the requirements of the TMDL constitutes compliance with the receiving water limitations for that water body-pollutant combination.

3. The Phase I MS4 permits should incorporate an ambitious, rigorous, and transparent alternative compliance path that allows permittees appropriate time to come into compliance with receiving water limitations without being in violation of the receiving water limitations during full implementation of the compliance alternative.

4. The alternative compliance path should encourage watershed-based approaches, address multiple contaminants, and incorporate TMDL requirements.

5. The alternative compliance path should encourage the use of green infrastructure and the adoption of low impact development principles.

6. The alternative compliance path should encourage multi-benefit regional projects that capture, infiltrate, and reuse storm water and support a local sustainable water supply.

7. The alternative compliance path should have rigor and accountability. Permittees should be required, through a transparent process, to show that they have analyzed the water quality issues in the watershed, prioritized those issues, and proposed appropriate solutions. Permittees should be further required, again through a transparent process, to monitor the results and return to their analysis to verify assumptions and update the solutions. Permittees should be required to conduct this type of adaptive management on their own initiative without waiting for direction from the regional water board.[2]

[2] 2015 Order, pp. 65-66.

In the 2020 Order, the State Water Board reviewed the WMPs/EWMPs prepared pursuant to the LA Water Board's municipal stormwater permit for consistency with the principles of the 2015 Order, among other issues. While it acknowledged that sections of the 2020 Order related to alternative compliance are less directly applicable to other regional water boards' programs, it expected that alternative compliance approaches consistent with the 2015 Order will share similar features and thus the principles in the 2020 Order "will have precedential value outside of the Los Angeles region in some circumstances."[3] The State Water Board stated that permittees involved in the development or implementation of alternative compliance paths should reference the following sections of the 2020 Order:

> section II.B.2's discussion on the need to gather relevant, available data for use in the development of the alternative compliance plan and to explain how that data was used or why it was not used and, conversely, what to do when pertinent data is not available; that same section's discussion on how to appropriately justify the use of a limiting or representative pollutant; and
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> section II.B.3's discussions on the need for regular, clearly presented, enforceable, non-contingent milestones and deadlines and on the need for Permittees to demonstrate actual compliance with milestones and deadlines not generated through reliance on the relevant permit's required analytical process.[4]

Importantly and applicable to the MRP, the State Water Board stated it is not intending to restrain the evolution of the regional water boards' approaches to alternative compliance, reiterating from the 2015 Order that the regional water boards may make a specific showing that a principle is not appropriate for region- or permit-specific reasons.

II. The Alternative Compliance Provisions and Their General Background

Provision C.1 of the MRP provides a Regional Water Board-directed path to compliance with receiving water limitations for certain pollutants (pesticides, trash, mercury, polychlorinated biphenyls [PCBs], bacteria, sediment, and methylmercury) through the timely implementation of Provisions C.9 through C.12, C.14, C.18, and C.19.c-f. These pollutant-specific provisions go beyond requiring an open-ended iterative approach to compliance with water quality standards by including ambitious, rigorous, and transparent requirements to implement specific actions, along with milestones and deadlines. These provisions—other than C.10 (trash) and C.14.a (bacteria)—implement the requirements of duly adopted total maximum daily loads ("TMDLs") in the Water Quality Control Plan for the San Francisco Basin ("Basin Plan") and the Water Quality Control Plan for the Sacramento and San Joaquin Basins ("Sacramento-San Joaquin Basin Plan"). Provision C.10 requires trash controls deemed to comply with the trash water quality objectives and prohibitions in the Inland Surface Waters, Enclosed Bays, and Estuaries ("ISWEBE") Plan and the California Ocean Plan. The controls further compliance with the Basin Plan's prohibition on trash discharges. Provision C.14.a

[3] 2020 Order, p. 163.
[4] 2020 Order, pp. 163-164.

requires controls to meet bacteria water quality objectives in Stevens Creek, Calabazas Creek, and Sunnyvale East Channel/Guadalupe Slough. While provision C.19.c implements the Sacramento-San Joaquin Basin Plan's pyrethroids TMDL's conditional prohibition, the waters covered by the provision are not pyrethroids impaired and thus not subject to the pyrethroids TMDL allocations.

The pollutant-specific provisions are based on thorough updated assessments and consideration of technically and economically feasible control measures to reduce pollutants in stormwater discharges. They are a direct outgrowth of the knowledge of and the Regional Water Board's experience with the presence of these pollutants in receiving waters (e.g., San Francisco Bay segments and urban tributaries), the sources of these pollutants, and control measures based on years of monitoring and special studies conducted by the San Francisco Bay Regional Monitoring Program, required monitoring from previous permits, studies conducted by municipalities, and other studies conducted by the San Francisco Estuary Institute, one of California's premier aquatic and ecosystem science institutes.

The allowed paths to compliance are also founded on and in accordance with implementation plans in the Basin Plan adopted by the Regional Water Board and approved by the State Water Board with the applicable TMDLs. All Regional Water Board-adopted TMDLs with wasteload allocations for municipal stormwater include implementation plans with explicit requirements for implementation of the wasteload allocations in MS4 permits. Due to inherent challenges and uncertainties associated with pollutant control measures, these implementation plans allow for phased, adaptive implementation[5] via enforceable permit-term requirements in the ensuing MS4 permits and subsequent reissuances.

The Fact Sheet for the MRP, and previous versions, accounts for the updated information and thorough assessment of best management practices and control measures that provide the basis of the explicit, enforceable permit-term requirements. The pollutant specific requirements in each MRP are based on the culmination of Regional Water Board's knowledge and expertise gained over many years on effective ways to control stormwater pollutant discharges and achieve associated water quality objectives in receiving waters. The requirements reflect the Board's judgment and expertise, and appropriate use of discretion, in determining what can and must be accomplished within each permit term to attain water quality objectives. They are informed by information provided by permittees, but they are more stringent than self-determined actions proposed by permittees.

In the case of bacteria in Stevens Creek, Calabazas Creek, and Sunnyvale East Channel/Guadalupe Slough, which are not on the 303(d) list of impaired water and for which the Regional Water Board has not adopted TMDLs, the allowed path to compliance with receiving water limitations is consistent with phased, adaptative implementation requirements for municipal stormwater adopted with bacteria TMDLs for

[5] Adaptive implementation entails taking actions commensurate with the existing, available information, reviewing new information as it becomes available, and modifying actions as necessary based on the new information. Taking action allows progress to occur while more and better information is collected, and the effectiveness of current actions is evaluated.

other water bodies. The associated permit requirements are equivalent to or more stringent than requirements for discharges to other water bodies impaired by bacteria.

The State Water Board in the 2015 Order approved the LA Water Board's WMP/EWMP approach, but also acknowledged, as noted above, regional differences may dictate different approaches to compliance with receiving water limitations that best fit the region. That is the case in our region. The WMP/EWMP approach relies on permittees' self-determined plans, which makes having sufficient specificity, accountability, and assurance of implementation to meet end goals particularly critical. Also, review and approval by a regional water board is an extensive and time-consuming workload and can be very contentious.

The Regional Water Board's historical MS4 permits like others in the state used to rely on stormwater management plans developed by permittees. However, the plans often lacked sufficient specificity or contained caveats and conditions that made them less rigorous, uncertain in achieving the goals of stormwater pollutant control, and difficult to track and enforce. As such, starting with first municipal regional permit ("MRP 1") in 2009,[6] the Regional Water Board chose to forego reliance on municipal stormwater management plans and instead include detailed requirements in each permit that specifies enforceable benchmarks or levels of effort or other accountability measures. These requirements are informed by, but are not reliant or dependent on, permittees' self-determined stormwater management plans. The Regional Water Board also applies this approach to implementation of TMDL wasteload allocations and compliance with receiving water limitations, and as noted above, provides a directed path to compliance with receiving water limitations for certain pollutants with specified enforceable requirements in the permit. This direct approach—which is what the Basin Plan that the Regional Water Board must follow requires[7]—is more transparent, trackable, and accountable than reliance on permittees' self-determined plans that may have a variety of shortcomings, particularly for attaining receiving water limitations, as borne out by the State Water Board Orders in the review of the LA Water Board's WMPs/EWMPs. Thus, in the MRP, the Regional Water Board deems a permittee to be in compliance with receiving water limitations during the term of the permit as long as the permittee complies with the explicit and ambitious pollutant-specific requirements, which the Regional Water Board, based on its rigorous analyses, knowledge, and expertise, has determined to be the best founded and doable actions to manage a permittee's cause and contribution to exceedances of water quality objectives in receiving waters during the term of the permit.

III. Provision C.14.a (Enhanced Bacteria Control) Complies with the State Water Board Orders

We begin demonstrating that the MRP complies with the State Water Board Orders with Provision C.14.a (Enhanced Bacteria Control), which was a focus of public comments stating that it does not meet the principles of the State Water Board Orders for alternative compliance. Provision C.14.a applies to the cities of Sunnyvale and Mountain View (jointly, the "Cities") and their stormwater discharges that may have

[6] The second municipal regional permit ("MRP 2") was issued in 2015.
[7] Wat. Code, § 13263.

caused or contributed to exceedances of the bacteria water quality objectives in Stevens Creek, Calabazas Creek, and Sunnyvale East Channel/Guadalupe Slough.

A. Ambitious, Rigorous, and Transparent Analyses and Requirements

Under the State Water Board Orders, a fundamental concept for municipal stormwater permittees to be deemed in compliance with receiving water limitations is that the alternative compliance requirements reflect a rigorous analytical process that gives assurance final receiving water limitations will be achieved. "Permittees should be required, through a transparent process, to show that they have analyzed the water quality issues in the watershed, prioritized those issues, and proposed appropriate solutions. Permittees should be further required, again through a transparent process, to monitor the results and return to their analysis to verify assumptions and update the solutions."[8]

The alternative path to compliance requirements of Provision C.14.a are based on the Regional Water Board's rigorous analyses and consideration of the state of science and understanding of sources of fecal indicator bacteria and options to control them. The Regional Water Board has adopted seven bacteria/pathogens TMDLs through which it has rigorously studied bacteria and adopted TMDL implementation requirements to ultimately meet the TMDLs and water quality objectives in impaired waters.

The prevailing bacteria TMDL implementation strategy for municipal stormwater relies on source identification and control and a phased approach toward achieving water quality objectives through implementing source-specific controls and monitoring to find sources and determine the effectiveness of controls. The compliance path in Provision C.14.a is based on the rigorous analyses done for these TMDLs and is consistent with the Regional Water Board's conclusion in these TMDLs that source control is the most effective way to control bacteria in stormwater discharges. It is also based on the Regional Water Board's consideration and analyses of the characteristics of bacteria discharges and their sources in the Cities' boundaries and the state of the science on the unique features of, and challenges posed by, bacteria, as summarized in the MRP Fact Sheet.[9]

For example, "[i]t is not possible to model sources and loading of bacteria in MS4s using watershed pollutant loading models due to the episodic and variable nature of bacteria sources. Some quantitative analysis of loading may be possible through monitoring; however, since bacteria discharge volumes are highly variable both spatially and temporally and difficult to measure, the analysis would inevitably involve a great deal of uncertainty and be unreliable for purposes of quantifying loads from drainage areas. However, mapping of potential sources areas and targeting of control efforts can be tracked and analyzed using geographic information systems."[10] "Effective control of bacteria sources and discharges requires a comprehensive surveillance and source identification and control program in drainages to creeks experiencing elevated

[8] 2015 Order, p. 65.
[9] See MRP, Attachment A, pp. A-298-A300.
[10] *Id.* at p. A-298.

bacteria."[11] "After initial source identification and control of the most likely or possible sources that contribute to segments of creeks experiencing elevated bacteria, there must be ongoing surveillance and discharge response and control actions, including outreach and enforcement, to maintain existing controls, and if necessary to identify additional sources and enhanced or additional controls."[12] "Treatment of runoff to reduce fecal indicator bacteria levels below water quality objectives is not feasible."[13]

Considering the foregoing, Provision C.14.a. requires the Cities to control all known controllable sources of bacteria in their stormwater discharges (Provision C.14.a.i-vii), consistent with the Regional Water Board's determination in the bacteria TMDLs that source control is the most effective way to control bacteria in MS4 discharges. Importantly, to optimize controls, the provision requires the Cities to conduct a rigorous and systematic surveillance and monitoring program to identify sources and focus source control efforts (Provision C.14.a.viii).

For example, since technically sound bacteria modeling is not possible,[14] the MRP requires the Cities to use geographic information analysis to map and analyze potential sources and evaluate and optimize bacteria controls, which requirement is in part drawn from the Cities' Fecal Indicator Bacteria Monitoring and Source Identification Program. Under that program and to comply with Provision C.14.a, the Cities will further develop a fecal indicator bacteria (FIB) geodatabase "to provide a repository for geospatial information on potential sources of FIB within the Cities of Mountain View and Sunnyvale. This geodatabase will be used to evaluate the importance of potential FIB sources and to visualize relationships between different variables. It includes information related to the location of potential FIB sources, how these sources may relate to existing monitoring results, and where additional information on sources may be needed."[15] The database's geographic setting data layers will provide the context within which potential bacteria sources and their fate and transport will be evaluated.[16] The Cities have already developed a GIS-based conceptual model for MS4 catchments of interest for FIB monitoring and microbial source tracking and to rank potential FIB sources.[17]

Because ongoing surveillance is important for source identification, to provide a feedback loop on the effectiveness of controls and to determine compliance with receiving water limitations, the Cities must undertake an ambitious monitoring program under Provision C.14. It must be designed and adapted to answer certain questions to identify sources and focus control efforts and determine if water quality objectives are

[11] *Id.* at p. A-299.
[12] *Id.*
[13] *Id.*
[14] For this reason, no regional water board has required or used direct modeling of bacteria controls to evaluate and control bacteria in stormwater discharges. Instead, the LA Water Board permittees employed volumetric flow-based modeling for its stormwater retention controls and used flow reduction as a surrogate for bacteria reduction.
[15] Sunnyvale and Mountain View's Fecal Indicator Bacteria Monitoring and Source Identification Program (April 22, 2022), p. 13.
[16] *Id*.
[17] *Id*. at p. 16.

being achieved in both dry and we weather.[18] In the first phase, the Cities must sample all MS4 outfalls with flow during three creek walks; conduct MS4 bacteria characterization monitoring at least monthly, at a minimum of fourteen sites each year, to identify bacteria sources using microbial source tracking techniques and to evaluate effectiveness of bacteria controls; and conduct monthly receiving water monitoring at five locations in Stevens Creek, three locations in Calaveras Creek, and one site in Sunnyvale East Channel.[19] The first phase of monitoring will have to be adapted to respond to the results. "For example, the results could show that the bacteria exceedances in the receiving waters have been resolved or are worse and more extensive than is currently understood. In either case, different monitoring will be needed to respond to the new information. Since it is not possible to prescribe new monitoring requirements until the results of the required monitoring are known, the Cities are required to include adaptive monitoring" for the remainder of the MRP term in a Mid-Permit Interpretive Report.[20] "That monitoring must be as comprehensive, systematic, and robust as what is currently required while being commensurate with the need to address and resolve bacteria exceedances in the receiving waters."[21] The Regional Water Board will subsequently amend the Permit to include adapted monitoring requirements.[22]

In addition to annual reporting, the MRP requires a Mid-Permit Interpretive Report and Final Interpretive Report to demonstrate progress, justify monitoring program revisions, and to document that bacteria receiving limitations have been or will be achieved by the end of the permit term on June 30, 2027.[23] Because the requirements in Provision C.14.a are rigorous, comprehensive, systematic, and thorough, the Regional Water Board expects compliance with bacteria receiving water limitations by June 30, 2027. "However, due to impossibilities or limitations of modeling or conducting quantitative analysis for bacteria MS4 discharges and known and unknown uncertainties associated with identifying and controlling possible sources, it is impossible to assert with certainty at the onset of the Permit term that source identification and control actions will result in compliance by the end of the Permit term. For this reason, the expectation to comply with receiving water limitations by June 30, 2027, is not expressed in the Permit as an enforceable final deadline."[24] This lack of an enforceable final compliance deadline does not mean that the problem with bacteria was not rigorously analyzed or that the solutions are insufficient to meet receiving water limitations—rather, it reflects the limitation of the science when it comes to predicting with certainty outcomes related to bacteria source identification and control actions.

While compliance by June 30, 2027, is expected, Provision C.14.a plans for the possibility of falling short. If the 2027, deadline is not met, then the Cities are required to include in the Final Interpretive Report a plan and schedule of new or enhanced controls to attain compliance "as soon as possible" during the next permit term.[25] Such additional

[18] See MRP Provision C.14.a.viii.
[19] *Id*.
[20] MRP, Attachment A, p. A-306.
[21] MRP Provision C.14.a.ix(3)(a)(iv).
[22] MRP, Attachment A, p. A-306.
[23] MRP Provision C.14.a.ix(3)(a) and (b).
[24] MRP, Attachment A, p. A-300.
[25] MRP Provision C.14.a.ix(3)(b)(v).

(or phase two) actions, if necessary, will depend on the actions taken during the permit term (phase one) and thus cannot yet be specified. Furthermore, the allowed alternative path does not automatically extend into the next permit term. The Regional Water Board may do so when it reissues the permit with consideration of whether the Cities demonstrated best efforts in compliance with the tasks and reporting requirements in this permit.

Provision C.14.a necessarily involves some planning and studying because it is unknown exactly where all the bacteria sources are. The State Water Board has held that "the 'safe harbor' in the planning phase is appropriate only if it is clearly constrained in a manner that sustains incentives to move on [from planning] to approval and implementation and is structured with clear, enforceable provisions."[26] Provision C.14.a is consistent with this because it has clear and enforceable built-in source control actions requirements that flow from the evaluations (i.e., where potential sources are determined to exist through surveillance and monitoring evaluations, they must be controlled).

In sum, Provision C.14.a is the product of rigorous analyses of the problem and solution to achieve bacteria receiving water limitations in the subject waters. The requirements are ambitious and rigorous because the Cities are required to control all controllable sources, conduct a comprehensive monitoring and surveillance program based on watershed and drainage area characteristics to systematically identify bacteria sources and implement and assess control actions in a timely manner, and subsequently conduct further monitoring to evaluate the effectiveness of controls, all of which will lead to achieving receiving water limitations. As explained above, this includes geographic information analysis to systematically find sources, understand bacteria fate and transport, and optimize control actions to attain receiving water limitations.

Provision C.14.a, like the rest of the alternative compliance path provisions in the MRP, is transparent because it explicitly sets forth the requirements for achieving receiving water limitations in the permit instead of relying on permittee-conceived plans (whose time scales are more than the five-year term for an MS4 permit) to comply. The MRP went through an extensive public review, comment, and approval process as to its requirements and the basis for them and will again go through such a process when it is reissued in five years when the Regional Water Board revisits the alternative compliance paths and whether they are justified. During implementation of the MRP's alternative compliance provisions, the Regional Water Board has committed, in a finding in the MRP, to notifying interested persons on the availability of reports, plans, and other required submittals and providing an opportunity to submit written comments, further promoting transparency.[27]

B. Clear and Concrete Milestones and Deadlines

Provision C.14.a includes clear and concrete milestones and deadlines to achieve receiving water limitations, as required under the State Water Board Orders. Controlling all controllable sources of bacteria is required immediately and all the other

[26] 2015 Order, p. 62.
[27] MRP, Finding 17.

requirements in furtherance of achieving receiving water limitations include clear and enforceable deadlines. Compliance by the end of the five-year permit term, June 30, 2027, is a key milestone and deadline. The Regional Water Board expects the Cities to meet this milestone due to the rigor of what is required, but the date is not expressed as an enforceable milestone and deadline. As explained above, the Regional Water Board cannot say with certainty that the required actions will be met by the end of the permit term due to the limitations in the science in predicting outcomes. Rather than make the deadline enforceable, the Regional Water Board allowed the possibility for phase two actions, consistent with its bacteria TMDLs. In the 2015 Order, the State Water Board recognized the need to extend deadlines when the LA Water Board was working with limited data regarding stormwater impacts and control measure performance, especially where TMDLs have not been developed.[28] The permit- and region-specific reasons for not making the 2027 date enforceable are to account for the scientific uncertainty and to be consistent with the Regional Water Board's adaptive implementation approach in its bacteria TMDLs.[29] Also, for the same reasons we discuss above for why it is not currently possible to specify an enforceable final compliance deadline a priori by 2027, it is not possible to specify interim receiving water conditions or load reduction milestones given the inherent uncertainty and variability in receiving water conditions and loads. However, the permit has enforceable prescriptive task and reporting requirements to ensure sufficient and timely implementation of actions during the permit term as part of the allowed alternative path to compliance with bacteria receiving water limitations. And as stated above, whether the alternative compliance path is extended to the next permit term depends on the Cities' actions during this permit term.

C. Other 2015 Order Principles

Provision C.14.a meets the other principles from the 2015 Order. Compliance with principles three and seven from the 2015 Order's seven principles is addressed above. An explanation of Provision C.14.a's consistency with principles one, two, and four to six is in the MRP's Fact Sheet, as well as why some principles are not applicable for region- or permit-specific reasons (please see MRP Attachment A, pages A – 300 to A – 301).

D. The 2020 Order Principles

The 2020 Order includes instructions for dischargers developing alternative compliance plans and to "show their work" and describe how source assessments were done and explain why relevant and available data were disregarded.[30] The State Water Board explained that watershed management plans are more than planning documents but are justifications for allowing a discharger to be deemed in compliance with receiving

[28] 2015 Order, pp. 44-45.
[29] The State Water Board itself has acknowledged that compliance with receiving water limitations "may not in all cases be achievable within the five-year permit cycle" when it sanctioned compliance schedules for receiving water limitations in a municipal stormwater permit. 2015 Order, p. 40. It further added "[g]enerally, permits are best structured so that enforcement actions are employed when a discharger shows some shortcoming in achieving a realistic, even if ambitious, permit condition and not under circumstances where even the most diligent and good faith effort will fail to achieve the required condition." *Ibid*.
[30] 2020 Order pp. 49-52

water limitations, and thus clear explanations of processes and justifications for decisions are needed so that the Water Boards and the public can be confident that the plans will achieve their goals.[31] The MRP does not require discharger-conceived watershed management plans where discharges have wide latitude in conducting source assessments (and fashioning compliance paths), such that the rationale for the 2020 Order's dictate on source assessment is less applicable. In any case, Provision C.14.a and the other MRP provisions with alternative compliance paths comply with this dictate. For those alternative compliance paths based on TMDLs, each of the TMDLs, which was subject to peer review, included comprehensive source assessments that were explained in the TMDLs and their supporting documents. How additional sources assessments were conducted is explained in the permit, including the Fact Sheet. The MRP requirements reflect the best available data and information on all sources.

The 2020 Order's discussion on the use of limiting pollutants is not applicable to any of the MRP's alternative path to compliance provisions, because limiting pollutants were not used, and will not be discussed further. Similarly, the MRP contains no milestones contingent on funding or other conditions.

In the 2020 Order, the State Water Board reviewed the LA Water Board WMPs' compliance schedules for achieving receiving water limitations, which plans included a combination of structural and non-structural controls to ensure they are clear and enforceable. For non-modeled controls and associated milestones, the State Water Board held that certain LA Water Board permittees "may not be deemed in compliance through a milestone based entirely on implementation of non-modeled controls . . . without additionally demonstrating actual achievement of a water quality improvement milestone."[32] "That said, in order to retain their deemed compliance, the [the LA permittee] Groups either must be able to show that the non-modeled controls resulted in the expected water quality improvements or to have submitted updates to their plans to react to a failure to achieve the anticipated reductions. This is true for any milestone in a WMP or EWMP – where the anticipated water quality improvement has not occurred despite implementation of the scheduled control measures, the WMPs or EWMPs must be updated to respond."[33] However, the State Water Board stated, "Importantly, this conclusion is based on the requirements of the current Los Angeles MS4 Order itself – the Order requires an RAA be conducted to justify the grant of deemed compliance."[34] The State Water Board then recognized it may be appropriate and feasible to quantitatively evaluate the effect of controls through non-modeling means, in which case milestones dependent on those controls would not be required to demonstrate actual water quality improvement for the LA Water Board permittee groups to retain their deemed in compliance status, but the quantitative justification has to meet the rigor, transparency, and accountability standards of the 2015 Order.[35]

For modeled controls and milestones, the State Water Board held that the compliance point is the timely implementation of those controls for the LA Water Board WMP

[31] *Id.*
[32] *Id*. at. P. 79
[33] *Id*. at p. 81.
[34] *Id*. at p. 81.
[35] *Ibid.*

permittees, adding that "[s]hould a [p]ermittee comply with the implementation requirements of its WMP but fail to meet the underlying water quality milestones, that [p]ermittee must update its schedule with new control measures and deadlines."[36]

In the case of Provision C.14.a and the control of bacteria, as we point out above, it is not possible to model bacteria controls, whether structural or non-structural, due to variability and random nature of sources. Also, while they may have some benefit, it is not possible to attain compliance with bacteria water quality objectives in receiving waters through implementation of structural controls (e.g., infiltration and retention) unless they include disinfection (chlorination/dichlorination, UV, or ozone applications), which are not feasible. Instead, Provision C.14.a requires an aggressive source assessment and control program with accounting and success demonstrated through mapping of assessed areas and elimination and/or prevention of bacteria sources. Source control through the required rigorous, systematic, and comprehensive bacteria surveillance and monitoring is the most effective way to resolve bacteria water quality objective exceedances in receiving waters due to MS4 discharges—that is the state of science and does not depend on modeling, even if it were possible.

Deemed in compliance with bacteria receiving water limitations during the permit term based on the path to compliance prescribed in C.14.a requirements is appropriate. Water quality improvements will occur through the required actions, which the Board considered the best possible actions that can be implemented within the permit term. Interim milestones or load reductions are not feasible to establish, as explained above. Any extension of deemed in compliance into the next permit term depends on the Cities' compliance with C.14.a requirements and a future Board action via reissuance of the MRP. Moreover, where attainment of the 2027 milestone is not reached, the Cities are required to submit a plan to update its controls, as required by the 2020 Order.

IV. Provision C.10 (Trash) Complies with the State Water Board Orders

Provision C.10 addresses trash to comply with trash discharge prohibitions, water quality objectives, and receiving water limitations. It implements and is consistent with the California Ocean Plan's and ISWEBE Plan's trash provisions (jointly, the "Trash Amendments"), which include a trash discharge prohibition, a narrative water quality objective for trash, implementation requirements and a time schedule for compliance, and a framework for monitoring and reporting requirements. Provision C.10 also implements the Basin Plan's discharge prohibition against trash.

Provision C.10 implements Track 2 requirements of the Trash Amendments.[37] Track 2 requires MS4 permittees to install, operate, and maintain full capture systems or a combination of controls that achieve full capture system equivalency to meet the trash prohibition and water quality objective.[38] The State Water Board has already determined the efficacy of these requirements to meet the trash water quality objective (and hence receiving water limitations) and that full compliance with Track 2 requirements

[36] *Id*. at pp. 82-83.
[37] See ISWEBE, Part 1, footnote 2.
[38] See ISWEBE, Part 1, section A.3.a(2), A.2.a, A.1.a, and the definition of "Trash Provisions."

constitutes compliance with the trash prohibition and water quality objective.[39] Thus, the Trash Amendments provide a directed path[40] to meeting the trash water quality objectives and receiving water limitations, with which Provision C.10 is consistent.

Provision C.10 complies with the State Water Board Orders because it contains ambitious, rigorous, and transparent full capture system and full capture equivalency requirements mandated by the State Water Board in the Trash Amendments. The provision includes requirements based on a comprehensive evaluation of trash generation areas; clear and enforceable milestones; and monitoring to verify assumptions and update solutions. Permittees are required to reduce trash discharges from 2009 levels by 90 percent by June 30, 2023, and by 100 percent by June 30, 2025, which are clear, enforceable milestones and deadlines no greater than five years.

Provision C.10's strategy for reducing trash involves ambitious mapping of all trash generation areas within a permittee's jurisdiction, then applying effective trash reduction actions through full capture systems or the equivalent to full capture systems to trash generating areas and assessing the effectiveness of those actions, until trash generation is reduced 100 percent from a baseline level over a permittee's entire jurisdiction.[41] The foundation and groundwork for this strategy were laid in MRP 1 and MRP 2, where permittees were required to undertake the ambitious and rigorous work of assessing baseline trash levels throughout their entire jurisdictions and producing and updating comprehensive trash generation maps.[42] Provision C.10 further builds on the data and information collected in the last two permit terms and requires, among other things, increased implementation of full trash capture devices and other trash reduction and elimination measures equivalent to full trash capture,[43] so that the enforceable milestones of 90 percent and 100 percent trash reduction by 2023 and 2025, respectively, are met.

There is accountability and monitoring to determine compliance and verify assumptions and update solutions, as required by the State Water Board Orders. The trash monitoring requirements also comply with the Trash Amendments. Trash reductions and milestones must be quantitatively demonstrated through use of a mathematical formula based on trash generation areas managed with full trach capture devices areas or other trash reduction and elimination measures equivalent to full trash capture. In addition, permittees are required to monitor trash at outfalls that drain areas managed

[39] ISWEBE, Part 1, section A.2.a.
[40] Like the ISWEBE's and Ocean Plan's trash provisions, many of the Regional Water Board's TMDLs provide a directed path to compliance with water quality objectives.
[41] See MRP Provision C.10.
[42] This work was done transparently because the Regional Water Board provided opportunity for all stakeholders to comment on informal and public noticed versions of draft permits (and all discussions with permittees occurred in workgroup meetings with meeting summaries that are part of the permits' administrative records).
[43] For each trash generation area where a permittee is implementing trash management actions or combination of actions other than full trash capture, permittees are also required to collect visual assessments data to determine or verify the effectiveness of the action or combination of actions. MRP Provision C.10.b.iii(b). This approach was prescribed starting with MRP 1 and visual assessment protocols were evaluated, with stakeholder participation, and published in a Bay Area Stormwater Agencies Association report entitled "Tracking CA's Trash: On-land Visual Assessments" that was funded in part via a California Proposition 84 grant.

with full trash capture devices or equivalent measures to determine whether control actions implemented have been effective in preventing trash from discharging to receiving waters.[44] Furthermore, although there are currently no regulatory standard methods and protocols for monitoring trash in receiving waters, and monitoring of trash from MS4 discharges in receiving waters is complicated due to discharges other than MS4 discharges, e.g., direct dumping, homeless encampments, and windblown trash, permittees are also required to augment outfall monitoring with a pilot project involving direct in-stream monitoring of receiving waters for trash.[45] The Permittees are required to use the results of trash monitoring to inform and enhance their trash management actions, consistent with the State Water Board Orders' principle to update solutions.[46]

V. The TMDLs Provisions Comply with the State Water Board Orders

The MRP requires full compliance with the TMDL requirements in C.9 (pesticide-related toxicity), C.11 (mercury), C.12 (PCBs), C.14.b-d (bacteria), C.18 (sediment), and C.19.c-f (methylmercury and pesticides) (collectively, the "TMDL Provisions") to comply with receiving water limitations.[47] This is consistent with the 2015 Order's principle 2 that "MS4 permits should include a provision stating that, for water body-pollutant combinations with a TMDL, full compliance with the requirements of the TMDL constitutes compliance with the receiving water limitations for that water body-pollutant combination."[48]

TMDLs are comprehensive, quantitative analyses of water quality limited segments aimed at resolving impairments.[49] They typically contain a problem statement of the impaired waterbody, the water quality objective not being met, the pollutant causing the impairment, numeric targets to attain the water quality objective, source identification and evaluation, loading allocations, and an implementation plan.[50] The implementation plan or program must "include a *description of actions that are necessary to achieve the objectives*, *a time schedule for these actions, and a description of surveillance to determine compliance with the objectives*."[51]

In the 2015 Order, the State Water Board recognized that TMDL development itself constituted a rigorous analysis that does not need to be repeated during permit implementation when it rejected an argument that the LA Water Board had to conduct a reasonable potential analysis during permitting, stating, "At the permitting stage, the Los Angeles Water Board's legal obligation was to develop [water quality based effluent limitations] 'consistent with the assumptions and requirements of any wasteload

[44] MRP Provisions C.10.b.iv and C.8.e.
[45] MRP Provision C.8.e.ii(2).
[46] MRP Provision C.8.e.iii(8).
[47] MRP Provision C.1.
[48] 2015 Order, p. 65.
[49] 33 U.S.C. § 1313(d)(1)(C); 40 CFR § 130.7(c); 40 CFR § 130.2(i).
[50] An implementation plan or program is required because (1) federal law requires a TMDL to be incorporated into a water quality management plan and (2) state law requires an implementation program for a water quality objective and a TMDL is an interpretation of an existing water quality objective. 40 CFR § 130.7(d)(2), Wat. Code, § 13242.
[51] Wat. Code, § 13242 (emphasis added).

allocation' in the TMDLs," not reconsider the TMDL's reasonable potential determination.[52]

Unlike the WMP/EWMP requirements and submittals reviewed in the 2015 and 2020 Orders, which allowed approved programs to deviate from a precise implementation of applicable TMDL requirements, the MRP reflects a direct implementation of applicable TMDLs through permit provisions.

Given the rigor with which TMDLs are established and specifically designed to resolve water quality impairments and attain water quality objectives, it is logical that the 2015 Order determined that full compliance with the requirements of a TMDL specific to a water body-pollutant combination constitutes compliance with receiving water limitations for that water body-pollutant combination. Here, the TMDL Provisions implement and require full compliance with TMDL implementation requirements and approaches to achieve compliance with loading allocations and applicable water quality objectives. There is, therefore, assurance that water quality objectives will ultimately be attained, which addresses a key concern of the State Water Board Orders: alternate compliance path requirements must lead to compliance with water quality objectives in receiving waters. Many of the TMDL-implementing requirements, such as for bacteria and pesticides, are source control-based best management practices ("BMPs"), which the State Water Board stated may be appropriate based on TMDL-specific reasons.[53] The TMDL Provisions are consistent with the applicable principles of the State Water Board Orders and their deadlines implement the time (i.e., compliance) schedules in the TMDLs. While the permittees are complying and undertaking the work required in these TMDLs to attain water quality objectives, they should be deemed in compliance with receiving water limitations. This is consistent with both the compliance schedules afforded to dischargers by the TMDLs to attain water quality objectives and the State Water Board Orders. To the extent the TMDL Provisions that implement the water quality attainment strategies of the TMDLs deviate from the principles in the State Water Board Orders, the TMDLs are the region-specific reason for the deviations.[54]

A. San Francisco Bay Mercury and PCBs TMDLs

We first address mercury and PCBs impairments in San Francisco Bay because they are two of the most challenging problems within the region for which there are no easy solutions. The mercury and PCBs TMDLs recognized this and called for phased actions to achieve water quality objectives within twenty years,[55] while acknowledging the potential for modifications of the deadlines based on new information and provided all technically and economically feasible control measures have been fully implemented.[56] As required by the TMDLs, the Regional Water Board has worked in a stepwise fashion through each successive MS4 permit to gain additional knowledge and expertise,

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[52] 2015 Order, pp. 74-75.
[53] *Id*. at p. 73.
[54] This is important since the Regional Water Board, in adopting the MRP, was required to implement the requirements of applicable basin plans, including TMDLs, under Water Code section 13263.
[55] The final TMDL compliance deadlines for the mercury and PCBs are 2028 and 2030, respectively.
[56] See, e.g., Basin Plan, p. 7-38

through permit requirements, monitoring data, and special studies, for controlling these pollutants.

The mercury and PCBs TMDLs' water quality attainment strategy is for requirements in each reissued MS4 permit to be based on an updated assessment of control measures to reduce mercury and PCBs in stormwater runoff.[57] Briefly, the PCBs TMDL requires the first permit to require pilot scale implementation of control measures to determine effectiveness and technical feasibility; the second permit must require implementation of effective control measures in strategic locations; and the third permit must require implementation of technically feasible, effective, and cost-efficient control measures to attain wasteload allocations.[58] Monitoring to quantify PCBs urban stormwater runoff loads and the load reductions is also required.[59] The mercury TMDL requires permits to include requirements such as:

- Evaluate and report on the spatial extent, magnitude, and cause of contamination for locations where elevated mercury concentrations exist.
- Develop and implement a mercury source control program.
- Develop and implement a monitoring system to quantify either mercury loads or loads reduced through treatment, source control, and other management efforts.
- Conduct or cause to be conducted studies aimed at better understanding mercury fate, transport, and biological uptake in San Francisco Bay and tidal areas.
- Demonstrate progress toward the interim loading milestone or attainment of wasteload allocations through specifically listed methods, like quantifying the annual average mercury load reduced by implementing pollution prevention activities and source and treatment controls.[60]

Provisions C.11 (Mercury Control) and C.12 (PCBs Control) require full compliance with the specific implementation requirements from the mercury and PCBs TMDLs, including those from the updated assessments and source identifications required by the TMDLs' implementation plans. The resulting programmatic controls in the provisions include: for PCBs, source property identification and abatement, control measure implementation in old industrial areas, controlling PCBs in stormwater infrastructure, controlling PCBs from electrical utilities, green stormwater infrastructure implementation, and managing PCBs-containing material during building demolition.[61] For mercury, they include mercury collection and recycling, source property identification and abatement, control measure implementation in old industrial areas, and green stormwater infrastructure implementation.[62]

Collectively, the control requirements, which are clearly laid out in the permit, are ambitious, rigorous, and transparent. Permittees are required to undertake numerous difficult but doable actions like finding and controlling sources of these pollutants that

[57] Basin Plan, pp. 7-29 and 7-48.
[58] *Id.* at p. 7-49.
[59] *Id.*
[60] *Id*. at p. 7-29 to 7-30.
[61] See MRP Provision C.12.
[62] See MRP Provision C.11.

are widely dispersed throughout the region and implementing controls in old industrial areas totaling thousands of acres. Moreover, the Regional Water Board is at the forefront of requiring ambitious PCB requirements like addressing contamination in old industrial areas and controlling runoff of the pollutant from building demolition materials and bridge roadway expansion joints. The requirements are based on rigorous updated assessments and analyses required by the TMDLs, providing further assurance that compliance with water quality objectives will ultimately be achieved (please see Fact Sheet for Provisions C.11 and C.12, which explain the bases for the requirements). The programmatic control requirements are the culmination of the real-world work done in MRP 1 and MRP 2 to gather all relevant data on sources of mercury and PCBs and the effectiveness of controls and to implement controls first on a pilot scale basis and then on a more focused basis, as required by the mercury and PCBs TMDLs. Provisions C.11 and C.12 in the current permit move on to requiring full scale programmatic[63] control measures determined to be effective based on the experience implementing PCBs and mercury control measures in the two prior permits, along with monitoring data, modeling, and studies.

Knowledge and experience gained through the TMDL and implementing PCBs and mercury control measures in the first two versions of the MRP along with relevant monitoring data have revealed where PCBs and mercury sources are located in the Bay Area landscape, the identity of the most significant sources of these pollutants in the landscape, and the technically feasible and effective control measures to address those sources. For example, monitoring data show that old industrial areas near the Bay's shoreline are generally where contaminated source properties and higher PCBs concentrations are found. The permit requires permittees to search for contaminated source properties (see Provisions C.11/12.b) in old industrial areas and to focus control measure implementation in the moderately and highly contaminated portions of old industrial land use (see Provisions C.11/12.c).

Over the past two decades, the Regional Water Board has compiled and analyzed a large quantity of monitoring data and other information to understand the relationship between control measure implementation and load reductions and thereby establish a solid technical foundation for mathematical relationships between a unit of control measure implementation activity (e.g., a referral of a source property or a treatment device installed in old industrial land use) and an estimated load reduction. Over 1,500 sediment samples have been taken and have provided a clear picture on how and where PCBs and mercury, which bind to sediment, are distributed, such as in old industrial lands around the Bay. Yields were estimated through the Regional Watershed Spreadsheet Model (RWSM)—a GIS-based model that estimates relative land use and source area yields, and integrates them to provide a transparent, mutually accepted, and peer-reviewed analysis of relative watershed scale yield[64]—which was calibrated and validated with the monitoring information along with hydrology and sediment

[63] The programmatic approach is consistent with the mercury and PCBs TMDLs and necessitated by the challenges in measuring mercury and PCBs loads and load reductions due to how these pollutants are distributed in watersheds and transported during storm events and the variability of the Bay Area's climate (see MRP, Attachment A, pp. A-214 to A-218).
[64] MRP, Attachment A, p. A-269.

transport information.[65] Other studies on source controls and estimated load reductions include McKee et al. 2006,[66] Geosyntec 2010,[67] and Geosyntec 2022.[68]

The permit uses these mathematical relationships to establish an aggressive level of implementation intensity for all the control measures found to be effective based on data collection, past implementation experience, and relevant technical literature. For each control measure, the permit includes enforceable and explicit performance metrics associated with the expected load reductions.

The performance metrics associated with required control measure implementation are ambitious, and implementing the control measures will require significant expenditures. Because it is known where to find the most significant pollutant sources in the urban landscape, permittees are required to focus attention in these areas where benefit may be achieved in an efficient and cost-effective manner. The Regional Water Board's control strategy as outlined in the TMDL has yielded success in that the MRP permittees have achieved the mercury TMDL's interim loading milestone in 2018.

Provisions C.11 and C.12 estimate, based on calculations, anticipated PCBs load reductions for each of the programmatic control measures consistent with an expected level of control measure implementation intensity along with trackable implementation performance metrics to be reported consistent with the estimated load reductions. As stated above, the Regional Water Board used the monitoring and other data to develop mathematical relationships between a unit of control measure implementation activity and an estimated load reduction, based on the permittees' Source Control Load Reduction Accounting for Reasonable Assurance Analysis (January 2022) produced and refined under MRP 2. (Additionally, monitoring data from this accounting system were also used to calibrate and validate a variety of watershed loading models to generate estimates of the PCBs and mercury load reductions from green stormwater infrastructure implementation as part of the Reasonable Assurance Analyses prepared by the permittees during the MRP 2.[69]) The load reduction assessment methodology is consistent with the TMDLs' requirement to quantify urban stormwater runoff loads and the load reductions achieved.

Provisions C.11 and C.12 include clear and enforceable deadlines as all control program actions must be implemented immediately to a specified performance metric and reported on annually. Expected mercury and PCBs load reduction milestones from undertaking the controls in the permit are approximately 10 kg/yr and 1.47 kg/yr, respectively, by the end of the permit term in five years. However, although these numbers are based on rigorous analyses and are well founded, their approximate nature does not warrant using them as enforceable milestones. To translate them into

[65] MRP, Attachment A, p. A-223.
[66] McKee, L., Mangarella, P., Williamson, B., Hayworth, J., and Austin, L., 2006. Review of methods used to reduce urban stormwater loads: Task 3.4. A Technical Report of the Regional Watershed Program: SFEI Contribution #429. San Francisco Estuary Institute, Oakland, CA.
[67] Geosyntec Consultants and San Francisco Estuary Institute. 2010. "Desktop Evaluation of Controls for Polychlorinated Biphenyls and Mercury Load Reduction."
[68] Source Control Load Reduction Accounting for Reasonable Assurance Analysis (January 2022). Prepared for Bay Area Storm Water Management Agencies by Geosyntec Consultants.
[69] *Id*. at p. A-224.

enforceable limits would require accounting for inherent variability in control measure effectiveness and variability in levels of mercury and PCBs in stormwater runoff and associated controllable and noncontrollable factors that affect the variability. Consequently, parsing these aggregate load reductions into individual permittee load reductions would exacerbate those uncertainties. Therefore, not using the expected load reductions as an enforceable milestone is justified for permit-specific reasons. There is, however, accountability because the permittees must implement the required controls calculated to meet these milestones and substantiate loads reduced through the accounting system to remain in compliance with Provisions C.11 and C.12 and receiving water limitations. Permittees are required to track and report on their level of implementation through enforceable control measure-specific performance metrics that are associated with the estimated load reductions (e.g., acres assessed and controlled, pollutants removed, green infrastructure acres installed, etc.). There will also be a combination of monitoring[70] and modeling to determine progress in meeting the load reductions, as well as to update prior assumptions and analyses and inform adaptive implementation, as required by the State Water Board Orders.[71]

Provisions C.11's and C.12's—and the other alternative compliance provisions'—compliance with the other applicable principles of the 2015 Order (i.e., principles one, two, and four to six) is set forth in MRP's Fact Sheet (please see MRP Attachment A, pages A – 98 to A – 103) and will not be discussed further.

The effect of the mercury and PCBs controls have been evaluated quantitatively in a rigorous and transparent manner. Accordingly, under the 2020 Order, the MRP permittees are not subject to the requirement that they show actual attainment of water quality improvement milestones to retain their deemed in compliance status with receiving water limitations.

B. Bacteria TMDLs for San Pedro Creek and Pacifica State Beach, San Mateo Marina Lagoon, and Pillar Point Harbor and Venice Beach

Provision C.14.b, C.14.c, and C.14.d require full compliance with the requirements of the San Pedro Creek and Pacifica Beach Indicator Bacteria TMDL ("Pacifica Bacteria TMDL), the San Francisco Bay Beaches Bacteria TMDL for the Parkside Aquatic and Lakeshore Beaches on Marina Lagoon in the City of San Mateo ("Marina Lagoon Bacteria TMDL"), and Pillar Point Harbor and Venice Beach TMDL ("Pillar Point Bacteria TMDL"), respectively (collectively, the "Bacteria TMDLs"). Each of the peer-reviewed Bacteria TMDLs involved detailed bacteria source assessment studies and

[70] For further information on the monitoring approach for mercury and PCBs, please see the Fact Sheet section C.8.f in Attachment A, specifically pages A-214 to A-218.
[71] See Provision C.8.f for required monitoring for pollutants of concern. A portion of this monitoring effort is to gather data to support modeling of loads and load reductions. Provision C.11/12.a.iii(3) requires permittees to apply experience and information gained during the permit term through control measure implementation and special studies to submit refinements to the methodologies to estimate load reductions associated with control measure implementation. Provisions C.11.f and C.12.h require submission of updated Reasonable Assurance Analyses that demonstrate implementation of control measures sufficient to attain the PCBs and mercury TMDL wasteload allocations.

comprehensive analyses to resolve the bacteria impairments.[72] Based on the comprehensive and rigorous analyses completed for these TMDLs and consistent with the Basin Plan's approach for phased actions for stormwater control, the Bacteria TMDLs require attainment of the TMDL wasteload allocations through a phased approach to achieving water quality objectives through implementing source-specific controls and monitoring to find sources and determine the effectiveness of controls. Additional or enhanced actions are required if initial implementation actions do not result in attainment of the TMDL.[73] Based on its expertise and evaluation of the subject impairments, the Regional Water Board determined in the Bacteria TMDLs that source-specific control actions, combined with monitoring, is the most effective way to reduce bacteria discharges in stormwater to attain water quality objectives. Modeling or quantitative analyses of bacteria controls were not used or required in the TMDLs due to the unique characteristics of bacteria that render such analyses too uncertain and not technically sound, as explained above.

The Pacifica Bacteria and Marina Lagoon Bacteria TMDLs require the City of Pacifica, San Mateo County, and the City of San Mateo to undertake additional actions to control bacteria beyond what was required in the MS4 permit in existence at the time the TMDLs were adopted. The TMDLs require these entities to submit a plan for increased implementation source control actions to comply with bacteria wasteload allocations for stormwater, along with monitoring and reporting to sufficiently characterize bacteria contributions, determine the effectiveness of bacteria controls, and TMDL compliance.[74] If TMDL targets or allocations are not met with these initial actions, enhanced actions are required.[75]

Provision C.14.b implements and requires full compliance with the Pacifica TMDL. It includes ambitious, rigorous, and transparent requirements. For example, based on the bacteria sources identified in the TMDL, the City of Pacifica and San Mateo County must, among other requirements, ensure all sanitary sewer lines within a 2,000-foot radius of San Pedro Creek and Pacifica Beach are inspected, assessed, and repaired to prevent discharges into the MS4s; control bacteria discharges from commercial horse facilities and dog kennel into the MS4s; and comprehensively address pet waste.[76] Provision C.14.b requires extensive monitoring to assess attainment of the wasteload allocations and to further characterize bacteria sources and source control effectiveness (e.g., weekly samples plus a minimum of a 110 samples per year).[77] There are clear, enforceable milestones and deadlines as compliance with wasteload allocations must

[72] See, e.g., San Pedro Creek and Pacifica Beach Indicator Bacteria TMDL Staff Report; San Francisco Bay Beaches Bacteria TMDL Staff Report; and Pillar Point Harbor and Venice Beach TMDL Staff Report. They are available in the "Completed TMDL" tab on this webpage: https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/index.html.
[73] See, e.g., Basin Plan pp. 7-62, 7-69, and 7-111
[74] See, e.g., Basin Plan, pp. 7-62, 7-69, and 7-108 to 7-111. Prior to submitting the plan, the City of San Mateo must have first assessed their bacteria control actions and their effectiveness and submit the plan if TMDL targets are not met. It must also identify and correct illicit sewer connections.
[75] Basin Plan, pp. 7-59, 7-62, 7-69, and 7-111.
[76] MRP Provision C.14.b.i.
[77] MRP Provision C.14.b.ii and C.14.b.iii.

be achieved by August 1, 2021, for Pacifica Beach and August 1, 2028, for San Pedro Creek. Indeed, the Regional Water Board has enforced the 2021 deadline for Pacifica Beach when it issued a time schedule order (Order No. R2-2022-0026) to the City of Pacifica and County of San Mateo, because compliance could not be demonstrated due to monitoring data problems (it is possible that compliance was attained). For San Pedro Creek, due to the limitations in bacteria modeling or similar quantitative analyses, it is infeasible to provide an enforceable bacteria load reduction milestone prior to the August 1, 2028, deadline. The lack of such a milestone is justified for permit-specific reasons. However, the permit has enforceable control measure accounting, monitoring, and reporting requirements. Where monitoring shows water quality improvements are falling short, the city and county are required to update their solutions to respond to monitoring data, consistent with the State Water Board Orders.[78]

Provision C.14.c also implements and requires full compliance with the Marina Lagoon Bacteria TMDL and includes targeted requirements to control bacteria sources in a phased approach as required by the TMDL. These include requirements for the City of San Mateo to enhance its efforts to prohibit potential illicit discharges into its storm sewer system; to expand or enhance its dog waste management strategy; to take certain permit-specified actions to enhance its public outreach and education regarding proper management of pet waste management, dumpsters and garbage bins, proper outdoor washdown procedures (restaurant mats, dining areas, commercial areas, mobile cleaner operations); and to implement its goose control program. It also includes requirements to submit a report at the onset of the permit term, July 1, 2022, that describes control actions being implemented and additional actions that will be implemented to reduce discharges of bacteria to the beach and to submit a supplemental monitoring plan by September 30, 2022, to investigate remaining bacteria sources to the beach. The Regional Water Board will consider amending the permit as necessary to require additional actions and monitoring based on the report. The city already conducts weekly beach monitoring as required by Health and Safety Code section 115800, as well as weekly inlet to the lagoon monitoring and monthly monitoring at several other locations, all to refine sources and source control efforts. Collectively, the requirements are ambitious, rigorous, and transparent because they are aimed at systematically controlling all known sources of bacteria from the city's MS4. The requirements are also consistent with TMDL implementation plan's approach to resolving the bacteria impairment in a phased manner. There are clear, enforceable deadlines in the permit. The city is required to report compliance with wasteload allocations water bacteria quality objectives) by December 13, 2026 (approximately six months before the end of the permit term), or if they are not attained, the city must submit a plan for additional phase two actions to attain the water quality objectives in the next permit, which the Regional Water Board will use to determine a final compliance date. The 2026 date is not expressed as an enforceable milestone for region-specific reasons, namely, to be consistent with the phased approach in the TMDL.

[78] See, e.g., MRP Provision C.14.b.i(2)(g).

The recently adopted Pillar Point Bacteria TMDL similarly follows a phased approach to controlling bacteria in stormwater discharges. In phase one, the TMDL requires the City of Half Moon Bay and San Mateo County to report on actions they are taking to prevent or reduce bacteria discharges to storm sewer systems. They are also required to prohibit and prevent illicit discharges into storm sewers from illicit sanitary sewer connections; prevent bacteria runoff from areas inhabited by unsheltered persons; implement a pet waste visual inspection and cleanup control program that includes installing dog waste cleanup signs, waste bag dispensers, and trash bins, among other numerous detailed requirements; and target inspection and enforcement of BMPs near the beach.[79] If the phase one actions are insufficient to meet the wasteload allocation within five years of the TMDL effective date (i.e., February 8, 2027), the city and county are required to submit a plan for phase two actions with additional enhanced implementation actions, such as diverting runoff to the sanitary sewer system if appropriate.[80] The final TMDL compliance deadline is 2037.[81]

Provision C.14.d requires compliance with these TMDL requirements so that the TMDL's urban stormwater runoff wasteload allocations can be met.[82] Per the TMDL, the city and county are also required to submit an initial report at the onset of the permit of actions they are taking to prevent or reduce bacteria discharges to storm sewer systems. The Regional Water Board will consider amending the permit to require additional actions based on the city and county's report. The provision requires weekly monitoring to assess attainment of wasteload allocations, further characterize bacteria source areas with the greatest bacteria contributions, and assess effectiveness to direct adaptive implementation of source controls to reduce or eliminate bacteria discharges.[83] There are clear milestones and deadlines that are consistent with the TMDL. The deadline for the first phase of actions is within five years of the TMDL effective date, or February 8, 2027, but is not expressed as an enforceable deadline because the TMDL allows for phase two actions. This is a region-specific reason for not making the 2027 milestone enforceable. In accordance with the TMDL, the permit states that if wasteload allocations are not met by this date, then a plan for additional enhanced phase two actions is required, which will be used to inform the next permit's requirements. Where monitoring shows water quality improvements are falling short, the city and county are required update their solutions to respond to the monitoring data, consistent with the State Water Board Orders.[84]

As is the case for Provision C.14.a., it is not possible to specify enforceable receiving water conditions or load reduction milestones for Provisions C.14.b to C.14.d given the

[79] See Table 7.4.3-9 and 7.4.3-10 at p. BPA-9 to BPA-10 here: https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/PPH_TMDL/Adopted%20Resolution.pdf (The link is provided because the Pillar Point Bacteria TMDL has not yet been included in the Basin Plan.)
[80] See Table 7.4.3-10 at p. BPA-10 in the immediately preceding weblink.
[81] Pillar Point TMDL, § 7.4.3.5.
[82] MRP Provision C.14.d.i and C.14.d.iii.
[83] MRP Provision C.14.d.ii.
[84] MRP Provision C.14.d.ii and C.14.d.iii.

inherent uncertainty and variability in bacteria receiving water conditions and loads. Thus, for permit-specific reasons, they are not included in these provisions. Regardless, these permittees must ultimately comply with the TMDLs and bacteria receiving water limitations or be subject to enforcement, as occurred against the City of Pacifica and County of San Mateo.

C. Pescadero-Butano Sediment TMDL

Provision C.18 (Control of Sediment Discharges from Coastal San Mateo County Roads) implements the Pescadero-Butano Watershed Sediment TMDL and Habitat Enhancement Plan ("Pescadero Sediment TMDL"), which addresses sediment impairments to beneficial uses in Pescadero and Butano Creeks. The TMDL, based on a rigorous and quantitative assessment of the sediment impairment problem, sources, and solutions, establishes the allowable annual sediment load that can be discharged into the Pescadero-Butano watershed, expressed as a percentage of the natural background sediment delivery rate to channels. It includes an implementation plan necessary to achieve the TMDL targets, allocations, performance standards, and habitat enhancement goals within twenty years of the effective date of the Basin Plan amendment," or June 24, 2039.[85] For municipal stormwater, the TMDL implementation plan requires the County of San Mateo to inventory its roads that may be delivering sediment into streams and develop a prioritized list and schedule of actions to meet sediment delivery performance standards, which is to be implemented through its MS4 permit and waste discharge requirements depending on the mechanism of discharge.[86]

Provision C.18 requires full compliance with these TMDL requirements, which provide assurance that the TMDL and water quality objective will be attained by the TMDL deadline. The requirements are ambitious, rigorous, and transparent. It requires San Mateo County to inventory all county-maintained roads to identify and prioritize actions to reduce sediment in stormwater runoff.[87] It contains detailed specifications and criteria for the road inventory.[88] The prioritization and development of control actions are guided by the numeric sediment delivery performance standards in the Pescadero Sediment TMDL (under the TMDL analyses, compliance with the performance standards will lead to attainment of the TMDL allocations for roads).[89] The county is also required to reduce the number of unpaved roads that are hydrologically connected (i.e., roads that have continuous surface flow path to a stream during a storm runoff event) to 25% or less of all county unpaved roads, which under the TMDL analyses will lead to attainment of the TMDL allocations for roads.[90] The county must also storm-proof certain new county-maintained roads.[91] At least twenty percent of these control actions must be implemented in the Pescadero-Butano Creek watershed by June 30, 2027.[92] Thus, Provision C.18 includes clear and enforceable milestones and deadlines within five

[85] See Basin Plan, p. 7-116.
[86] See Basin Plan, p. 7-122.
[87] MRP Provision C.18.a and C.18.b.
[88] MRP Provision C.18.a.ii.
[89] MRP Provision C.18.b.i.
[90] MRP Provision C.18.b.ii(3).
[91] MRP Provision C.18.c.ii(3).
[92] MRP Provision C.18.b.ii. and C.18.c.i.

years. The final TMDL deadline of 2039 extends well beyond the term of the MRP and is, therefore, not included as an enforceable deadline.

Provision C.18 includes monitoring to measure progress and inform adaptive management. Effectiveness monitoring is required, as is implementation and forensic monitoring when an implemented control measure failed to be effective in controlling sediment.[93] Where monitoring shows efforts are falling short in preventing sediment delivery to streams, the county is required update its road erosion inventory and prioritization, consistent with the State Water Board Orders' requirement to update solutions and ensure water quality improvements.[94] With respect to instream water quality monitoring, the TMDL's linkage analysis between sediment inputs and the selected water quality targets states, "The best available science does not yet provide for a quantitative mathematical linkage between sediment inputs and instream water quality," but studies have linked instream indicators to sediment loadings through statistical regression analysis."[95] Thus, the TMDL's sediment condition targets are based on instream indicators, specifically for Residual Pool Volume (V*), a unitless measure of the fraction of a pool's volume that is filled by fine sediment, and Substrate Composition (percent fines). Neither of these targets has available standard methods, but the Regional Water Board staff have expertise and experience in measuring them and will periodically conduct instream monitoring. For this reason, the TMDL states instream monitoring should be conducted by the Regional Water Board and local partners with scientific expertise and capability in working effectively with private property owners.[96] In accordance with the TMDL, Provision C.18, therefore, does not require the County to undertake instream monitoring or, relatedly, show attainment of milestones based on instream monitoring, which are justified for permit- and region-specific reason.

D. Pesticide-Related Toxicity in Urban Creeks, Diazinon and Chlorpyrifos in the Delta, and Pyrethroids in the Sacramento and San Joaquin River Basins TMDLs

Provision C.9 (Pesticides Toxicity Control) implements the Water Quality Attainment Strategy and TMDL for Diazinon and Pesticide-related Toxicity in Urban Creeks ("Urban Creeks Pesticides TMDL"). The Urban Creeks Pesticides TMDL comprehensively studied the sources of pesticide-related toxicity in urban creeks and established a target and a concentration-based total maximum daily load to meet water quality objectives. For urban runoff, the TMDL wasteload allocations for diazinon is 100 ng/l and for pesticide-related toxicity it is 1.0 Acute Toxicity Units (TUa) and 1.0 Chronic Toxicity Units (TUc) to be met in urban creek waters. U.S. EPA phased out urban uses of diazinon in the mid-2000s, and diazinon is no longer detected in urban creeks in the region. Pesticide-related toxicity continues to occur because state and federal pesticide

[93] MRP Provision C.18.d.
[94] MRP Provision C.18.d.iii(3)(b).
[95] Pescadero Sediment TMDL Staff Report, p. 199.
[96] Basin Plan, p. 7-118 to 7-199.

regulatory programs, as currently implemented, allow pesticides to be used in ways that cause or contribute to aquatic toxicity.

The Urban Creeks Pesticides TMDL sets forth a detailed and specific implementation plan to achieve the TMDL. It states, "The cornerstone of this [implementation plan] strategy is pollution prevention. Pesticide-related toxicity in the Region's urban creeks is to be eliminated and prevented by using pest management alternatives that protect water quality and by not using pesticides that threaten water quality. This can best be accomplished through the rigorous application of integrated pest management techniques and the use of less toxic pest control methods. The term 'integrated pest management,' as used here, refers to a process that includes setting action thresholds, monitoring and identifying pests, preventing pests, and controlling pests when necessary."[97] It also states, "Urban runoff management agencies' . . . responsibilities for addressing these [TMDL] allocations and targets will be satisfied by complying with the requirements" in the implementation plan and the permit-related requirements based on them.[98]

The TMDL implementation plan requirements to be implemented in an MS4 permit for urban runoff are:

- Reduce reliance on pesticides that threaten water quality by adopting and implementing policies, procedures, or ordinances that minimize the use of pesticides that threaten water quality in the discharger's operations and on the discharger's property;
- Track progress by periodically reviewing the discharger's pesticide use and pesticide use by its hired contractors;
- Train the discharger's employees to use integrated pest management techniques and require that they rigorously adhere to integrated pest management practices;
- Require the discharger's contractors to practice integrated pest management;
- Study the effectiveness of the control measures implemented, evaluate attainment of the targets, identify effective actions to be taken in the future, and report conclusions to the Water Board.
- Undertake targeted outreach programs to encourage communities within a discharger's jurisdiction to reduce their reliance on pesticides that threaten water quality, focusing efforts on those most likely to use pesticides that threaten water quality;
- Work with the California Department of Pesticide Regulation, County Agricultural Commissioners, and the University of California Statewide Integrated Pest Management Program to coordinate education and outreach programs to minimize pesticide discharges;
- Encourage public and private landscape irrigation management that minimizes pesticide runoff;
- Facilitate appropriate pesticide waste disposal, and conduct education and outreach to promote appropriate disposal;

[97] Basin Plan, p. 7-3.
[98] Basin Plan, p. 7-8.

- Monitor diazinon and other pesticides discharged in urban runoff that pose potential water quality threats to urban creeks; monitor toxicity in both water and sediment; and implement alternative monitoring mechanisms, if appropriate, to indirectly evaluate water quality;
- Disseminate monitoring data to appropriate regulatory agencies;
- Contribute to studies to address critical data needs;
- Track U.S. EPA pesticide evaluation and registration activities as they relate to surface water quality and, when necessary, encourage U.S. EPA to coordinate implementation of the Federal Insecticide, Fungicide, and Rodenticide Act and the federal Clean Water Act and to accommodate water quality concerns within its pesticide registration process;
- Assemble and submit information (such as monitoring data) as needed to assist the California Department of Pesticide Regulation ("DPR") and County Agricultural Commissioners in ensuring that pesticide applications within the region comply with water quality standards; and
- Report violations of pesticide regulations (e.g., illegal handing) to County Agricultural Commissioners.

Provision C.9, together with the pesticides-toxicity monitoring requirements in C.8.g, requires full compliance with these comprehensive TMDL requirements.[99] The deadlines are clear as each requirement must be implemented immediately and reported on annually. There are no load reduction milestones because it is not possible to determine the load reduction associated with discrete actions to control urban uses of pesticides. The fundamental challenge is, due to the toxic nature of pesticides by design, it only takes a minor fraction of the amount of pesticides used in a drainage area to potentially cause in-stream toxicity. In addition, there is no discernable way for municipalities to account for uses of pesticides within their jurisdiction, particularly uses from over-the-counter sales. DPR only requires reporting of pesticides used by professional applicators on a county but not city basis. Furthermore, state law prohibits municipalities from controlling the use of pesticides even if municipalities identify specific uses that may result in discharges that could adversely impact receiving waters. They can only report those uses to DPR and County Agricultural Commissioners.

The Urban Creeks Pesticides TMDL does not include a final compliance deadline for the same reasons due to the unique circumstances related to pesticide control. Specifically, in the TMDL, the Regional Water Board recognized that (1) urban runoff agencies must control their own use of pesticides, but they are not solely responsible for attaining the allocations because their authority to regulate others' pesticide use is constrained by federal and state law and (2) because a realistic date for achieving allocations cannot be discerned given the current framework for pesticide regulation, reviewing the implementation strategy every five years, at permit reissuance, is the appropriate timeline.[100] The TMDL states that implementing all the actions in the implementation plan by all parties, not just urban runoff, is expected to ensure attainment of the allocations.[101]

[99] MRP Provisions C.9.a to C.9.g and C.8.g.
[100] See, e.g., Basin Plan, pp. 7-4, 7-14.
[101] Basin Plan, p. 7-4.

Pesticides and toxicity water quality monitoring is required through Provision C.8.g to evaluate attainment with standards and verify assumptions and update solutions, as required by the State Water Board Orders. For example, each year, the permittees are required to submit a Pesticides and Toxicity Monitoring Status Report, which is focused on not only monitoring results, but also analyzing data to evaluate effectiveness of management actions to facilitate follow-up actions and additional management actions and developing, where appropriate, hypotheses to investigate sources, trends, and BMP effectiveness.[102]

Provisions C.19.c and C.19.f apply to MS4 permittees that are in the Central Valley Regional Water Quality Control Board's ("Central Valley Water Board") geographic jurisdiction (the "East County Permittees").[103] Provision C.19.c. requires full compliance with the Sacramento-San Joaquin Delta Diazinon and Chlorpyrifos TMDL through compliance with Provision C.9 because the requirements are consistent.[104] The final TMDL compliance deadline was December 1, 2011, and the East County Permittees have demonstrated that their discharges have met the wasteload allocation or water quality objectives for diazinon and chlorpyrifos since 2008. The East County Permittees can be deemed in compliance with receiving water limitations for these pollutants in the Delta because they are in fact in compliance.

Provision C.19.f implements the Sacramento-San Joaquin Basin Plan's program to control pyrethroid discharges, which includes a TMDL for pyrethroids for impaired waters in urban areas and a conditional prohibition of the discharges of pyrethroid pesticides. While the East County Permittees are subject to the conditional prohibition and not the TMDL, the requirements under both are the same: MS4 dischargers must undertake certain specified education and outreach activities, pesticide pollution prevention activities, and support pollution prevention through the pesticide regulatory processes.[105] These requirements are based on the Central Valley Water Board's rigorous analyses in its TMDL of pyrethroid problems and solutions. The requirements are essentially the same as the implementation requirements in the San Francisco Regional Water Board's Urban Creeks Pesticides TMDL. Accordingly, the Central Valley Water Board determined that implementing the pesticide-related toxicity TMDL requirements in Provision C.9 is consistent with its pyrethroid control program requirements in its TMDL and conditional prohibition. Provision C.19.f., therefore, requires the East County Permittees to comply with Provision C.9. and the monitoring provisions in Provision C.8. Provision C.9's compliance with the State Water Board Orders is discussed above.

E. Sacramento-San Joaquin Delta Methylmercury TMDL

Provision C.19.d and C.19.e also apply to the East County Permittees. The provisions implement the Central Valley Water Board's Sacramento-San Joaquin Delta

[102] MRP Provision C.8.h.iii(3).
[103] In 2017, the San Francisco Bay Regional Water Board and the Central Valley Water Board designated the San Francisco Bay Regional Water Board to regulate MS4 discharges from the East County Permittees that are in the Central Valley Region.
[104] See Sacramento-San Joaquin Basin Plan, p. 4-134.
[105] See Sacramento-San Joaquin Basin Plan, p. 4-123, 4-125 to 4-127.

Methylmercury TMDL ("MeHg TMDL" and also known as the "Delta Mercury Control Program"), a comprehensive study of mercury sources and impairments in waters in the Delta and Yolo Bypass. It sets load and wasteload allocations for methylmercury sources (e.g., MS4s), as well as inorganic (total) mercury reduction limits to comply with the San Francisco Bay Mercury TMDL, maintain compliance with U.S. EPA's total mercury in the water column criterion, and help reduce aqueous methylmercury in the Delta. The Central Valley Water Board took a phased approach in the MeHg TMDL because "[a]dditional information about methylmercury source control methods must be developed to determine how and if Dischargers can attain load and waste load allocations set by the Board. Information is also needed about the methylmercury control methods' potential benefits and adverse impacts to humans, wildlife, and the environment. Therefore, the Delta Mercury Control Program will be implemented through a phased, adaptive management approach."[106]

Phase 1 of the MeHg TMDL requires MS4s to implement BMPs to control erosion and sediment discharges, pollution prevention measures and to minimize total mercury discharges, and conduct methylmercury control studies to evaluate the effectiveness of existing BMPs and develop and evaluate additional control methods to achieve their methylmercury allocations.[107] The MS4s must complete the methylmercury control studies by October 2018 and submit the final reports that present the results and descriptions of methylmercury control options, their preferred methylmercury controls, and proposed methylmercury management plans for achieving methylmercury allocations.[108] The MeHg TMDL further requires risk reduction measures to reduce mercury-related risks to humans, as well as compliance monitoring.[109] Phase 1 spans until the Central Valley Water Board reviews the MeHg TMDL to consider modifications (currently ongoing) and Phase 2 begins in October 2022, during which dischargers are required to implement methylmercury control programs and continue inorganic mercury reduction programs.[110] Final compliance date with the methylmercury wasteload allocation is 2030, unless the Central Valley Water Board revises the implementation schedule and deadline.[111]

Provision C.19.d to C.19.e requires full compliance with these TMDL requirements.[112] The East County Permittees completed their methylmercury control study and the permit moves to requiring a plan for the implementation of all technically and economically feasible methylmercury and total mercury control measures during the permit term to attain the methylmercury wasteload allocations by January 1, 2030.[113] Control measures must include a corresponding reasonable assurance analysis to ensure methylmercury load reductions to attain the methylmercury wasteload

[106] Sacramento-San Joaquin Basin Plan, p. 4-95 to 4-96.
[107] *Id*. at pp. 4-97 to 4-100.
[108] *Id*. at p. 4-102.
[109] *Id*. at pp. 4-103, 4-108, 5-6.
[110] *Id* at p. 4-96.
[111] *Id*. at p. 4-97.
[112] See MRP Provision C.19.d and C.19.e.
[113] MRP Provision C.19.d.ii(1).

allocation.[114] All calculation methods, models, model inputs, and modeling assumptions used in the plan must have been validated through a peer-review process.[115] Provision C.19.e also specifies minimum BMPs to control total mercury and methylmercury.[116] For example, the East County Permittees' source control study concluded bioretention cells with underdrains in areas allowing tidal inundation of the media may lead to an increase in mercury methylation and so the permit requires retrofitting of existing BMPs showing an increased potential for mercury methylation in areas not meeting the wasteload allocation.[117] Provisions C.19.d and C.19.e thus require ambitious and rigorous controls based on rigorous analyses. There is transparency because the requirements and criteria are clearly set forth in the permit and, in accordance with the permit's finding 17, the Regional Water Board will notify interested persons of the availability of reports, plans, and schedules all studies.

The permit includes clear deadlines for maintaining and enhancing control measures, monitoring their effectiveness, and reporting. There is no enforceable load reduction milestone within five years because the Central Valley Water Board is conducting a Delta Mercury Control Program Review and may likely adopt revised wasteload allocations and a new final compliance date. It is also not currently feasible to project interim load reduction until the review is completed. There is accountability, however, because the East County Permittees' mercury control measures plan must include a corresponding reasonable assurance analysis demonstrating that sufficient control measures will be implemented during the permit term to attain the methylmercury wasteload allocation by 2030.[118]

Monitoring is required to determine compliance with the MeHg TMDL, as well as answer other management questions related to reducing methylmercury production.[119] For example, monitoring is required to determine if elevated methylmercury in Marsh Creek (a targeted area for methylmercury reduction) can be controlled through controlling or preventing eutrophication conditions. Collectively, the monitoring requirements, which allow participation in the Delta Regional Monitoring Program, are aimed at strategically using monitoring to determine not only compliance but the effectiveness of controls so that targeted solutions can be updated, which is consistent with the State Water Board Orders.

VI. Conclusion

Based on the foregoing, we respectfully request that the State Water Board not exercise its own motion review authority to review the appropriateness of the MRP's alternative compliance provisions.

[114] MRP Provision C.19.d.ii(1)(f).
[115] MRP Provision C.19.d.ii(1)(g).
[116] MRP Provision C.19.e.
[117] MRP Provision C.19.e.ii(4)(c). See also MRP, Attachment A, p. A-340.
[118] MRP Provision C.19.d.ii(1).
[119] MRP Provision C.19.d.ii(2).

Sincerely,

Eileen White
Executive Officer

cc:

San Francisco Bay Regional Water Quality Control Board's Lyris List
"reg2_municipal_regional_sw_permit"

State and County Requirements

No Trash in Waterways by 2025

The San Francisco Bay Regional Water Quality Control Board has required Contra Costa County and all of the cities and towns within the County to prevent trash from entering the creeks by June 30, 2025.

This means that all property owners within the County will be required to prevent trash from entering the creek or stormdrain system from their property.

Only Rain Down the Drain

The release of anything but uncontaminated rainwater to the County stormwater system is prohibited.
[City or Jurisdiction Code Goes Here]

Please see the back page for helpful resources to keep our waterways clean.

Helpful Resources

Visit cccrecycle.org for local information on:

- Waste Disposal
- Recycling
- Hazardous Materials Disposal
- Waste Hauler Curbside Services/ Bulky Pick-up

Report Illegal Dumping or Spills in Contra Costa County:

Call 1-800-No-Dumping

Report Dumping on Private Property:

[City or Jurisdiction Contact Information Goes Here]

Report Illegal Dumping or Other Complaints in [City or Jurisdiction]:

[App Name Here]: ***AppURLHere.com***

Scan for iOS App PLACEHOLDER

Scan for Android App PLACEHOLDER

LOGO HERE

CONTRA COSTA CLEAN WATER PROGRAM

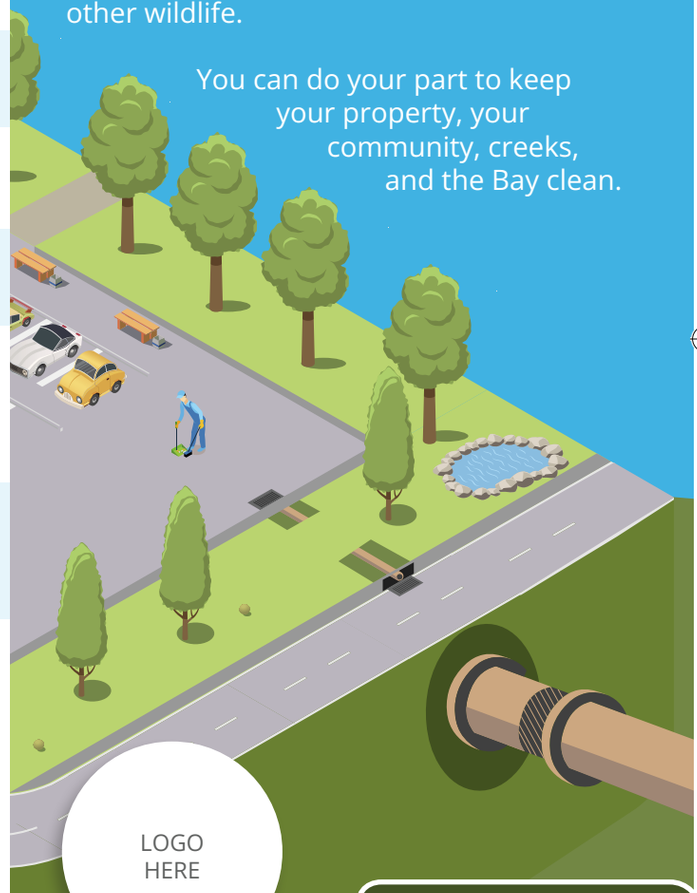
cccleanwater.org

Keep Your Property TRASH FREE

Trash and pollutants travel from our streets and properties to creeks, San Francisco Bay, and the Delta.

Trash and pollutants are dangerous to water quality and can harm birds, fish, and other wildlife.

You can do your part to keep your property, your community, creeks, and the Bay clean.



LOGO HERE

City or Jurisdiction
Street Address
State, CA, ZIP
Phone Number

URLHere.Gov

How You Can Help

Keep Litter Contained

- ❑ 1. Choose the right size and pick-up service
- ❑ 2. Keep lids on trash bins
- ❑ 3. Keep trash in trash bins
- ❑ 4. Consider locking trash bins
- ❑ 5. Consider adding cigarette butt receptacles, if appropriate

Pick It Up

- ❑ 6. Train staff to regularly inspect property for trash, pick it up, and empty receptacles
- ❑ 7. Pick up trash in vegetation and landscaped areas
- ❑ 8. Sweep up and dispose of cigarette butts
- ❑ 9. Install educational signage

Protect Storm Drains

- ❑ 10. Keep trash and pollutants out of the storm drain
- ❑ 11. Use dry cleanup methods; If using wash water, direct it to vegetation or collect it and direct it to a sanitary sewer
- ❑ 12. Consider installing and maintaining a full trash capture device

City, Jurisdiction, Department, Etc.

Street Address
State, CA, Zip

Phone Number

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