RMP Sources, Pathways and Loadings Workgroup Meeting

May 20, 2024 09:00 AM – 3:00 PM

MEETING SUMMARY

Agenda

1. **Introductions and Meeting Goals**
2. **Information: SPLWG Stakeholder Perspectives**
3. **Information: Strategy Update**
4. **Project Update: Watershed Dynamic Model (WDM) Development to Estimate Watershed Loads**
5. **Project Update: Stormwater Monitoring Activities**
6. **Overview and Discussion of Recommended Studies for 2025**
7. **Closed Session - Decision: Recommendations for 2025 Special Studies Funding**
8. **Report Out on Recommendations**

Attendees (Name, *Affiliation)*

Alicia Gilbreath, *SFEI*

Amy Kleckner, *SFEI*

Bonnie de Berry, *SMCWPPP*

Bridgette DeShields, *Integral Consulting*

Bryan Frueh, *City of San Jose*

Chris Sommers, *SCVURPPP, EOA*

Craig Jones, *Integral*

Daewon Rojas-Mickelson, *EPA R9*

David Peterson, *SFEI*

Diana Lin, *SFEI*

Don Yee, *SFEI*

Gerardo Martinez, *SFBRWQCB*

Jay Davis, *SFEI*

Jeniffer Dougherty, *SFEI*

Jim Limbruner, *Tufts University, Technical Advisor*

Jon Butcher, *Tetra Tech, Technical Advisor*

Kayli Patterson, *SFEI*

Kyle Stark, *SFEI*

Lester McKee, *SFEI*

Lisa Sabin, *EOA*

Luisa Valiela, *EPA R9*

Martin Trinh, *SFEI*

Matthew Heberger, *SFEI*

Richard Looker, *SFBRWQCB*

Robert Budd, *CDPR, Technical Advisor*

Robert Carson, *MCSTOPPP*

Setenay Bozkurt-Frucht, *SFBRWQCB*

Steve Corsi, *USGS, Technical Advisor*

Pedro Avellaneda, *SFEI*

Tom Mumley, *SFBRWQCB*

1. Introductions and Meeting Goals

Jay Davis welcomed attendees to the 2024 San Francisco Bay Regional Monitoring Program (RMP) Sources Pathways and Loadings Workgroup (SPLWG or WG) annual meeting. He provided an indigenous land acknowledgement and introduced the goals for meeting, which were to:

- Hear Water Board and Permittee perspectives
- Discuss SPLWG Strategy update
- Get updates from recent and ongoing SPLWG modeling and monitoring studies
- Discuss and rank 2025 Special Study proposals

2. Information: SPLWG Stakeholder Perspectives

Richard Looker provided the Water Board's perspective on the current role of the SPLWG. His points were emailed to the WG as an agenda package addendum from Amy Kleckner (amyk@sfei.org) on May 20th, and a summary is included here.

He noted that the SPLWG supports other RMP Workgroups, the Municipal Regional Permit (MRP), and will support TMDL reconsideration for polychlorinated biphenyls (PCBs) and mercury (Hg). This presents an ongoing challenge for coordination and workflow. Watershed modeling is important for information needs for TMDL redevelopment, including how to model control measures that have been and will be put into place. There are complex needs, so stakeholder and technical advisors should work together to inform needs, done at a high level through the RMP. Questions to consider: how do we treat control measures in the model? How might we collect data to support that modeling? How do we treat land use change? Also, the Water Board is looking at studies in air deposition going into the future.

Richard then provided comments on the PCB TMDL revision, intended to make the TMDL more effective and accelerate recovery. There will be information gathering and a presentation of scientific advancements since 2008. The revision may rethink the baseline load, as well as current load via an ongoing modeling exercise. For the implementation strategy, the Water Board is thinking about a "geographically tiered" strategy that focuses on control measures for drainages known to impact the Bay or relevant Priority Management Units (PMUs). There will also be a more intense focus on our cleanup program. There may be a need to extend timelines for achievement of load allocations for stormwater, provided TMDL conditions from the first TMDL are met. Extension timeframes will be based on modeled estimated rates of recovery. The Water Board will need a commitment to control implementation consistent with the identified timeline and consistent with the TMDL requirement to implement all technically and economically feasible measures via a sufficiently robust program of implementation by municipalities.

Chris Sommers, representing the Permittee perspective, gave background on the TMDLs. The timeline to meet wasteload allocations for Hg is 2028 and 2030 for PCBs. Phase 1 communities are covered by the MRP, the North Bay is under a separate NPDES permit issued by the state.

Collectively, we've been working on this for over 20 years, and legacy contaminants are the driver of the NPDES arena.

Regarding PCB related work over the next 3-4 years, there is a focus on filling data needs and Reasonable Assurance Analysis (RAA) Modeling to show that municipalities can meet targets for the TMDL. Permittees have been documenting PCB removal amounts via different control measures. A building demolition program has been in place for five years that requires remediation of PCB-containing materials. There are trash removal implementations that remove sediment and PCBs. Tens of thousands of those structures exist now that weren't there in 2008. They have discussed new standard operating procedures related to roadway caulk. There are ongoing unknowns about electrical facilities where a lot of PCB mass still exists, is probably contained, but may be able to get into the environment.

For PCB load modeling, Chris suggested we reflect on the first data collected in 2003 and investigate how data look today. Modeling will help, but we need monitoring data for validation and verification as well as inputs to calibrate the model. In the future, there should be more emphasis on validation.

There are no TMDLs for Contaminants of Emerging Concern (CECs), and we're hoping none need to be developed. The Bay Area has the best CEC program in the nation. Initially, we need to gain monitoring data and understand where they are coming from. More nimble monitoring is required. CECs are a large group, and have many different sources and pathways. Soon we will need to start talking about them separately, rather than as a group. In the near term we will discuss the current status of monitoring in the RMP and where stormwater programs can take over from. We're all on the same page, working from the same knowledge basis and growing in the same direction. We're working to identify knowledge gaps and how to fill them in the best way.

The Hg TMDL approach was briefly discussed, with the same concept as PCB TMDL revisions. It was noted that we will need to take care to discuss differences in potency factors between Hg and PCBs. Chris informed the group that Permittees are closer to a Hg wasteload allocation than for PCBs, which matches the TMDL timelines.

3. Information: Strategy Update

Alicia Gilbreath gave an update on the SPLWG Strategy document. A draft had been sent to the WG just prior to the meeting. The scope of the WG is defined by Management Drivers and Management Questions (MQs), which then inform the Strategy, giving us a roadmap for future work. Alicia showed how the SPLWG helps address MQs of other workgroups as well. The revised SPLWG MQs includes an update to show support for other Workgroups.

The group discussed slight wording changes to the proposed new MQs, and decided to ratify the following:

- **MQ1**: What are the sources, pathways, and loadings of pollutants and sediment to the Bay?
- **MQ2**: Which are the priority sources and pathways of pollutants that adversely impact or potentially adversely impact the Bay's environmental quality?
- **MQ3**: What are the management actions that could be implemented in the region to address pollutant pathways and sources, and where would they have the greatest benefit?
- **MQ4**: Are levels of individual pollutants or pollutant classes changing over time in the sources, pathways and loadings? What factors or management interventions have contributed to the change?

Tom Mumley, Richard Looker, and Chris Sommers discussed the importance of defining the RMP's role in MQ3, informing management actions. Chris said the role is not necessarily prescribing control measures, but identifying where control measures could be most effective. The RMP doesn't have to decide this, but inform decisions. For instance, it can provide good scientific input to this new TMDL revision. Tom noted that the monitoring and study needs to answer MQ3 (and all MQs) should be reflected in the write-up.

Alicia noted that the document reflects an expectation of a decreasing focus on legacy monitoring, but that is contrary to comments made by Richard and Chris earlier. That is something to consider when reviewing the document. SFEI asked for comments by June 10th, in three weeks, with the goal to finalize the Strategy by the end of August. Other questions posed to guide the Strategy review include:

- Do you agree with the general direction of proposed work over the next 5 years?
- Does the Workplan address the MQs and Management Drivers?
- Are there elements that need modification?
- Are there efforts in other parts of the country that we should be informed about?

The group then discussed efficiencies gained in monitoring, which focuses on the SFEI Mayfly sampler, and is better informed by integrating modeling.

Regarding the 5-year Workplan, Rob Budd raised a concern that dry weather CEC monitoring was being pushed out too far to 2028. Jon mentioned that groundwater baseflow could be important for CECs, while Tom pointed out that we have years of experience showing substantially lower levels of contaminants in the dry season. The other technical advisors did not have immediate issues with the Workplan.

Copper monitoring was discussed, as there are no existing datasets for measuring the response to reduction of copper use in brake pads. DTSC has asked for copper monitoring. Tom mentioned that air pathways need to be revisited for PCBs, and considered for all CECs. Rob Budd advised considering collaboration with other agencies like DPR, even with different goals, in order to reduce redundancy. Others noted that this is being done better now than in the past.

4. Project Update: Watershed Dynamic Model (WDM) Development to Estimate Watershed Loads

Matthew Heberger gave an update on work to estimate watershed loads with the Watershed Dynamic Model (WDM). Matt is a hydrologist and modeler who joined SFEI in February this year. He is leading watershed modeling efforts with Pedro Avellaneda, Kyle Stark, and David Peterson, advised by Jay Davis, Lester McKee, and Don Yee at SFEI.

The hydrologic and sediment modeling has been completed for the WDM, and the current phase, PCB and Hg loading, was approved for funding in 2023. Due to unanticipated complexities in the modeling of these contaminants and staff turnover, the project team has requested an additional $79k to complete this phase of modeling. A recent update is that the team has worked to create a “headless” version of the LSPC-based WDM that allows it to be run from a command line, a much more efficient method. This headless version is expected to be completed in 2-3 months. There are active discussions with a subset of this WG, including members of the Water Board and the stormwater community, regarding how to best model PCB loads. The group is seeking consensus on data and methods for this task. There have also been talks on how to make improvements to land use data. Matt gave an overview of the many projects the WDM is supporting, as well as efforts to link it to the in-Bay fate and transport model.

For $50k of model maintenance funding this year, the team proposed:

1. Training in LSPC and BASINS for modeling staff (20%)
2. Create a model webpage / dashboard (35%)
3. Update / clean up weather and climate data scripts (25%)
4. Update model simulation of evapotranspiration (20%)

Jon Butcher noted that this doesn’t cover all the necessary maintenance tasks. At some point LSPC scripts will need to be updated, and new weather data will need to be periodically assimilated. He emphasized the importance of posting scripts to a public repository like GitHub.

Tom Mumley noted that model maintenance funds are not intended to be open-ended. They are intended to fund critical needs to maintain the model, not otherwise accounted for in projects. He questioned whether the model webpage is critical, as it is for external communication, and said that other internal needs should be prioritized. He also mentioned that there should be thought on how the RMP and SFEI fund training of staff, as there is some overlap. Some accounting of activities is also needed.

The group prioritized items 1, 3, and 4, with the addition of publishing scripts to GitHub, and then if time permits, begin on webpage development. The group discussed the need for the model webpage or dashboard to be useful, and to ensure potential users are involved in decision making.

The conversation shifted to modeling PCB loading from the watersheds. Setenay Bozkurt Frucht asked for clarification on whether the model is up and running with a basic assumption of potency factors, and whether we can model some loads from tributaries now. Matt said yes, although there is uncertainty with results. They are waiting on more information and feedback before spending the budget on evaluating results.

Setenay asked if the model can replicate the loads as they were laid out in the TMDL. The first step should be to ensure the model is close to the baseline used in the 2008 TMDL report. Chris Sommers added that the WG went through that process with the Regional Watershed Spreadsheet Model (RWSM), and got in that range. Can we apply the potency factors that were used with the RWSM to the WDM and compare results? Is that a logical first step?

Then, Chris added, we can discuss the more complex topic of making decisions about applying soil and sediment sample data to a period of time. There are roughly 1,500 samples from 1996-2021. There are many factors to consider over the 25 years of sample collection, not just land use changes, but also attenuation. Making broad cutoffs of time is a simple approach, but there needs to be discussions of whether the baseline loading levels apply to current conditions. Permittees want to impress upon everyone that we feel that this is a critical and important step at getting somewhere near a right number for the baseline and current levels. The spatial and temporal element is very important.

5. Project Update: Stormwater Monitoring Activities

Alicia Gilbreath gave an update on stormwater monitoring activities from the past year. This season had a diverse array of sampling methods and project goals. 24 teams collected samples on 27 deployments. This was at the limit of staff capacity, and this was a normal rainfall year. The team has increased sampling projects and incrementally improved systems. Now to improve further and increase capacity, there is a need to improve efficiencies of the systems.

Alicia highlighted a PCB monitoring project characterizing the area around the Oakland GE site. High levels are being found, even though the GE property has been cleaned up and paved over. Luisa Valiela mentioned that this fits our conceptual model that PCBs move through the system slowly. Chris Sommers noted that storm drain infrastructure is not considered during remediation. Lisa Austin added that the site wasn’t fully remediated until a few years ago when buildings were demolished, so the recovery may be delayed. Consideration of time of contamination and changes over time is very important. Setenay Bozkurt Frucht also informed the group that clean up staff have observed elevated levels away from the GE property, indicating that it may not be the only source. Lisa Austin said a clean water program is monitoring the area this summer, collecting sediment right of way street dirt samples.

Jennifer Dougherty and Don Yee gave an update on the tidal remote sampler. They deployed at two sites in Alameda county. Sampler development and deployment was iterative, permitting was time consuming, site access can be challenging, and vandalism can be an issue.

Planned for water year 2025 is a resample of one site, and sampling of the remaining six sites slated for this pilot study. Lisa Austin noted that they see this tool as monitoring direct discharges to the Bay, while in the future it could be used for more general watershed characterization. Chris and Don set an action item to discuss priority sites in a separate meeting.

6. Overview and Discussion of Recommended Studies for 2025

Proposed Special Studies were briefly introduced, reviewing key points and providing clarifications on proposed budgets. Tier 1 proposals were developed in more detail because they were deemed to reflect SPLWG priorities, while Tier 2 proposals were less detailed to allow for quick development. After review, the WG could rank all proposals based on need, regardless of Tier.

Richard Looker asked Matt Heberger to give an idea of prioritization for modeling-related proposals. Matt said that if necessary, the preference is to fund the GIS land use update before the rating curve development.

Steve Corsi was in support of rating curve development, and pointed to the importance of taking into account the many details involved in creation of stage-discharge relationships. There were some questions about site selection, and it was noted that the first stage of the project would be information gathering and site selection. Regarding cost, Lester said that the USGS had quoted $26k to develop a rating curve, and Balance Hydrologic had a similar quote.

Tom Mumley commented on the proposed model uncertainty analysis, questioning conducting this task on an unfinished model. Others echoed this sentiment. Lester clarified that this work would be done next year, after agreement had been met on version 1 of the PCB and Hg model, targeted for the end of 2024. He added that the intent of the uncertainty analysis is to find the optimal monitoring effort needed for modeling accuracy, and increase our monitoring efficiency. Chris expressed the need for this to go through a stepwise approach, and Jay said that oversight can be built into the project.

Regarding the proposed GIS improvements, Tom pointed out that the RMP may have to undertake ground truthing land use data, as MTC may not complete the update. There was also discussion about the need to define catchment boundaries, and the last storm drain mapping was done by the Oakland Historical Museum in 2005, and some work in San Mateo County 10 years ago.

For the add on of other analyte monitoring to CEC stormwater work, Kelly pointed to cost savings of leveraging ongoing stormwater work, and it was noted that this project was endorsed by the Emerging Contaminants Workgroup. Commenting on the proposed Mallard Island PCB load trends monitoring, Water Board members mentioned they would support CEC and possibly Hg monitoring in Suisun Bay/Mallard Island, considering PCB concentrations are likely low

there. Rob Budd said that it makes most sense to target analytes where we believe they are an issue.

7. Closed Session - Decision: Recommendations for 2025 Special Studies Funding

Those involved with the proposed Special Studies left the room while the rest of the WG prioritized projects.

8. Report Out on Recommendations

Chris Sommers reported the results of the closed door session to the larger group. With some budget adjustments, seven studies meet the budget we think we'll have next year, and will go forward to the TRC.

The group recommended funding Tier 1 proposals at the level requested, with the exception of the proposed modeling uncertainty analysis, which they recommended funding at a lower level. That effort might need to be paced out a little, so the group proposed two thirds funding level. That would free up money to fund stormwater systems upgrades. Chris also noted that there is an operating cost to conduct monitoring at this level, and in future years, the group would like to see a row at the top of the Special Studies to show what it costs to manage the monitoring program. Similarly, the base cost for modeling should be indicated as well. Chris clarified that this is a base cost for *conducting* modeling, different from the model *maintenance* funds. Workplans could be developed on an annual basis to figure out what will be accomplished. These base costs are not Special Studies, and should be outlined separately. Going forward, there should also be discussions about what the watershed modeling effort will look like in future years for various questions and analytes. If we use SPLWG to do that work, it would be nice for the workplan and base cost of modeling to be comprehensive of all analytes and study questions being asked.

The group suggested the Mallard Island project be reconsidered in the context of CECs and possibly Hg, and postponed to future years. The proposed add-on of other analytes to CEC stormwater monitoring was recommended at $50k. It is important to be cognizant of where, why and what analytes are being targeted.

The proposed study of Guadalupe PCB load trends was not deemed time sensitive, although it would be valuable. The group would like a better sense of how the study would not only detect a trend, but also inform modeling, and how that information could be used to inform efforts in other watersheds. This proposal should be brought back for another year.

The WG recommended funding the proposed GIS improvement project at $40k, half the requested funding level. This should possibly be rescoped to make it a multi-year effort and fund it further next year. This is the level the group felt it could be supported in 2025.

For the project to develop rating curves, the WG felt that work should focus on developing a workplan, querying existing data, and thinking about developing estimates from modeling that's been done, not just full rating curve development. This could be done in 2025, or even earlier from SEP funds. Information gathering is what this group would like funded first, and funding rating curve development could be discussed next year. To fund the purchase of a flow meter,

we first need to be sure SFEI will be doing the work, and that it won't be contracted out to other organizations. It is possible to fund equipment needs from the RMP reserve if the need is made clear.

Finally, Chris reminded the group that funding levels will go up in 2026, so some things that weren't fully funded today could be funded next year. With a possible larger proposal package next year, many WG members expressed interest in a meeting format that allows more time for proposal review and ranking.