FINAL

REGIONAL MONITORING PROGRAM FOR WATER QUALITY IN SAN FRANCISCO BAY

sfei.org/rmp

RMP Mercury Strategy Meeting
March 13, 2026
9AM – 12PM
Meeting Summary

Strategy Team Members in attendance:	
Craig Jones (Integral Consulting)	Bridgette DeShields (Integral Consulting)
Richard Looker (SFBRWQCB)	Setenay Frucht (SFBRWQCB)
Gerardo Martinez (SFBRWQCB)	Sarah Jacobs (SFBRWQCB)
Tom Mumley	James Downing
Chris Sommers (BAMSC/EOA, Inc.)	Michelle Williams
Lisa Austin (CCCWP/ACCWP/Geosyntec Consulting)	Lisa Welsh (CCCWP/ACCWP/Geosyntec Consulting)

RMP Staff and Contractors in attendance:

- Jay Davis (SFEI)
- Martin Trinh (SFEI)
- Don Yee (SFEI)
- Pedro Avellaneda (SFEI)
- Matthew Héberger (SFEI)
- Lester McKee (SFEI)
- Kara Scheu (Integral Consulting)
- Samuel McWilliams (Integral Consulting)

1. Introductions, Meeting Goals, Agenda Review (9:00)

Jay Davis welcomed the group and led a round of introductions. The group welcomed Sarah Jacobs, who will be stepping in for the Water Board in place of Kevin Lunde. Jay reviewed the agenda which included an update from Matt and Pedro on the Watershed Dynamic Model (WDM) for mercury, updates from Jay, Don, and Lester on the mercury synthesis, and a discussion led by the Water Board on mercury TMDL wasteload allocations achievement methods.

2. Discussion: WDM Update (9:11)

Matthew Héberger provided an update on the Watershed Dynamic Model, describing it as a rainfall-runoff and pollutant loading model used to estimate flows, sediment, and future contaminant loads. He explained that earlier model versions contained significant errors that limited sediment calibration, prompting a series of technical reviews and revisions. Matt noted that the team is currently focused on recalibrating hydrology and sediment processes, with plans to incorporate mercury shortly, and aims to deliver preliminary results by mid-May and a report in June. He acknowledged the project is slightly behind schedule but expects to recover time due to substantial preparatory work already completed.

Matt described key technical issues that were identified and corrected, including unrealistic erosion rates, runaway sediment transport in channels, and physically impossible sediment delivery ratios. He also noted improvements to hydrologic inputs and reservoir modeling. He emphasized that expanding calibration datasets from five to seventeen USGS gauges, along with incorporating RMP data, has strengthened model performance in a highly variable Bay system.

Jay emphasized the importance of maintaining the June reporting deadline, noting that delays in WDM outputs could affect in-bay modeling. Chris Sommers asked about meeting scheduling, and the group confirmed the next stakeholder meeting on April 17, with discussion of aligning future meetings with the SPLWG schedule. Tom Mumley commended the work as strong model validation and emphasized the importance of physical realism for regulatory credibility. He also highlighted the model's potential to inform mercury load estimates and compliance timelines. Matt added that while full uncertainty analysis will not be ready by June, the team will provide preliminary uncertainty ranges.

Setenay Frucht asked about mercury calibration data, and Matt explained that the model relies on soil datasets collected over the past 10 to 15 years and will provide further detail at the April meeting. Chris Sommers also raised questions about temporal alignment of model outputs, and Matt clarified that simulations currently represent water years 1994 to 2020 using circa-2020 land use, with flexibility for scenario adjustments. The discussion concluded with acknowledgment that additional issues, including recovery modeling and regulatory alignment, will be addressed in future discussion.

Action Items:

- Matt Héberger will distribute model outputs and technical materials following the meeting.
- Matt Héberger and Jay Davis will finalize and communicate the stakeholder meeting schedule, including alignment with SPLWG meetings, before April 17, 2026.
- Matt Héberger will provide a detailed summary of mercury calibration datasets at the April 17 meeting.
- Matt Héberger and Pedro Avelleneda will share a table and map of calibration and validation monitoring locations.
- Matt Héberger will develop preliminary uncertainty bounds for inclusion in the June report.
- Jay Davis, Chris Sommers, and the modeling team will coordinate follow-up discussions on model timing, data alignment, and regulatory implications.

3. Discussion: Recovery Trajectory Modeling Update (9:37)

Kara Scheu provided an update on the in-Bay mercury modeling effort, explaining that the team is advancing from a simple TMDL box model to a spatially explicit hydrodynamic and sediment transport model that better captures variability across the Bay. She described how the model incorporates multiple sediment classes, watershed inputs, and representative water years to simulate transport and evaluate recovery under different management scenarios. Kara noted that watershed inputs from the Watershed Dynamic Model are critical, but delays in WDM outputs may affect the timeline.

Kara outlined two key decisions for the group: whether to wait for WDM-derived sediment inputs or proceed with interim empirical estimates, and how to define the biologically active sediment layer. Jay facilitated discussion, and the group agreed to retain a 15-centimeter active layer with sensitivity analysis. Tom emphasized the need to incorporate updated loading estimates, particularly for bed erosion and stormwater sources, and to ensure the modeling addresses management-relevant questions such as recovery timelines. The group ultimately agreed to wait for WDM outputs to maintain consistency, despite a short delay.

Chris emphasized the importance of defining clear recovery scenarios, including baseline and extended timelines, and aligning assumptions with existing PCB frameworks. The group discussed scenario ranges from near-term targets to longer-term horizons and agreed to keep scenarios simple while capturing variability. Additional discussion noted the model's high spatial resolution and the potential need to consider subsidence in interpreting results. The agenda item concluded with agreement to refine assumptions and continue coordination as modeling progresses.

Action Items

- Kara Scheu will confirm use of a 15-centimeter active sediment layer and include sensitivity analysis.
- Kara Scheu and the modeling team will incorporate updated mercury loading estimates, including bed erosion and watershed sources.
- Kara Scheu will maintain comparisons with the original box model to validate results.
- Jay Davis, Chris Sommers, and the modeling team will define and finalize recovery scenarios and timelines.
- The team will coordinate to align watershed inputs with WDM outputs and regulatory frameworks.
- Kara Scheu will evaluate potential subsidence effects in interpreting sediment accretion results.

4. Discussion: Mercury Synthesis Update (10:15)

Jay opened the agenda item by noting that the biota presentation would be deferred due to time constraints and shared later as annotated slides. He summarized that 2024 fish data, including striped bass, showed no meaningful change compared to 2019 and remained consistent with long-term trends. He also reported that wetland restoration monitoring in both the South Bay and North Bay showed no measurable impact on mercury levels in fish or bird eggs, indicating that restoration activities have not adversely affected biota.

Lester McKee then presented a synthesis of mercury loading from the Guadalupe River, explaining that his work compiles datasets from multiple sources spanning 2003 to 2023. He emphasized that mercury loads are highly variable and strongly influenced by large storm events, such as the 2017 storm, and that rolling five-year averages provide a more stable and representative metric of long-term conditions. Lester described the use of multiple estimation methods, including regression and sediment-based approaches, noting that while results vary at annual scales, they converge over longer timeframes, increasing confidence in overall load estimates.

Lester addressed questions from Gerardo and Richard by explaining that variability in mercury loads is much greater than variability in particle concentrations, reinforcing that monitoring design remains appropriate but interpretation remains challenging. He outlined remaining work, including completing rolling averages, trend analysis, and additional data compilation, and raised key questions about whether rolling averages should rely solely on observed data or incorporate modeled estimates. He also noted that trend interpretation remains unresolved and will require careful analysis.

Setenay and Gerardo responded that the Water Board would review the materials and emphasized that current Basin Plan language relies on measured flow and concentration data, which may not align with more interpretive or hybrid approaches. Gerardo suggested that updates to the Basin Plan or adoption of hybrid methods may be necessary to better evaluate progress. James Downing agreed that variability complicates demonstrating progress and expressed interest in further analysis, while Lester clarified that prior claims of trends had been removed to avoid misinterpretation and that trend evaluation remains an open question for the group.

Don Yee then presented a synthesis of atmospheric mercury inputs, sediment mixing, and in-Bay processes. He explained that atmospheric deposition remains a relatively small and largely uncontrollable component of the mercury budget, despite global emission trends. He supported the continued use of a 15-centimeter active sediment mixed layer based on multiple lines of evidence, while acknowledging spatial variability. Don also demonstrated that bed sediment is not a reliable proxy for suspended sediment due to weak correlations and measurement limitations, and noted that suspended sediment largely reflects resuspension of legacy contamination rather than new watershed inputs.

The group discussed broader implications for management and modeling, including the limited role of bed erosion as a major mercury source and the potential contribution of dredging as a modest export pathway. Richard and others questioned whether current sediment targets effectively track progress and suggested that the framework may need to better distinguish between watershed inputs and in-Bay conditions. Jay concluded by noting that Don's synthesis provides a strong foundation and that further refinement, including evaluation of targets and metrics, will continue in future discussions.

Action Items:

- Jay Davis will share annotated biota slides following the meeting.
- Lester McKee will complete dataset integration, rolling averages, trend analysis, and develop the Central Valley synthesis section.
- Lester McKee and stakeholders will evaluate approaches for calculating rolling averages and interpreting trends.
- Water Board staff will review materials and assess implications for Basin Plan language and potential hybrid approaches.
- Lester McKee will coordinate with the modeling team to provide finalized load estimates for in-Bay modeling.
- Don Yee will share supporting analyses and refine evaluation of sediment relationships, including particulate mercury methods and dredging estimates.

- The modeling team will conduct sensitivity analysis on mixed layer depth and explore spatial variability in sediment mixing.
- Water Board staff and stakeholders will evaluate whether sediment targets should be revised and convene follow-up discussions on management-relevant metrics.

5. Discussion: Mercury Waste load Allocations Achievement Method (11:30)

Richard Looker opened the discussion by framing the need to evaluate how to demonstrate progress toward stormwater waste load allocations under the TMDL. He explained that the group reviewed three existing methods and their limitations, noting that current TMDL language does not support modeling-based approaches and would require revision to incorporate them. He described the three methods as implementation-based accounting, load-based estimation using flow and concentration data, and particle concentration approaches tied to sediment quality.

Richard noted that while load-based methods align most directly with regulatory targets, they are data-intensive and highly variable, whereas particle concentration approaches may offer more stability and clearer links to in-Bay conditions. Lester McKee emphasized that modeling could support interpretation by linking watershed inputs to in-Bay responses, but confirmed that compliance still relies on measured data. Tom added that advances in modeling create opportunities for simpler and more efficient approaches compared to when the TMDL was originally developed.

The group discussed the potential for hybrid modeling and monitoring approaches. Don Yee highlighted that particle concentration may provide a more stable indicator than loads, while Richard suggested models could be used alongside targeted monitoring to improve efficiency. Lisa Austin raised concerns about implementation, particularly challenges in attributing watershed-scale measurements to regulated urban sources, while Lester and Matt noted limitations in current model capabilities, especially for predicting particle concentrations.

Richard proposed that models could guide monitoring design rather than replace measurements, using tools like the Watershed Dynamic Model to identify key sources and prioritize sampling. Tom recommended revisiting these questions once watershed and in-Bay modeling results are available to better inform decisions. Richard concluded by outlining a path forward focused on exploring hybrid approaches and refining compliance strategies in future discussions.

Action Items:

- Water Board staff will evaluate potential revisions to TMDL language to support hybrid modeling approaches.
- Stakeholders will assess whether to prioritize load-based, particle-based, or combined compliance methods.
- The modeling team will explore development of hybrid modeling and monitoring frameworks.
- The team will design monitoring approaches informed by watershed models to target key sources.
- SFEI and partners will evaluate model capabilities and limitations, including attribution and particle concentration predictions.
- Water Board staff will assess implications for PCB TMDL frameworks.
- The group will revisit compliance approaches after initial watershed and in-Bay modeling results are available.

6. Next Steps (12:12)

Jay concluded the meeting by summarizing next steps. Meeting materials, including slides, a written summary, and a recording, will be distributed shortly after the meeting. He also noted that the biota presentation had been deferred due to time constraints and committed to annotating and sharing those slides to ensure that participants, including Richard, could review the material in full. Jay reiterated that the team remains on track to produce a draft synthesis by the end of April, explaining that Don, Lester, and he would continue developing their respective sections in the interim. He acknowledged that key components, particularly watershed and in-Bay modeling results, may not be fully complete by that deadline but emphasized that the team would compile a draft synthesis using available information while continuing to integrate modeling outputs as they become available.

Jay noted that Matt would provide updated sediment modeling results by mid-April, which would inform ongoing synthesis efforts, and confirmed that in-bay modeling would proceed in parallel. Lester added an additional action item, stating that the Water Board would review the presentation materials and provide written feedback on preferred figures, tables, and data presentation approaches for the synthesis document. Jay confirmed this request and welcomed input from all stakeholders, encouraging broader feedback to help shape the final product. He concluded by acknowledging the productive discussion, emphasizing the significant workload ahead, and confirming that the group would reconvene soon with more complete analyses.