



Bay RMP Technical Review Committee Meeting
December 12, 2019 - San Francisco Estuary Institute

Meeting Summary

Attendees

TRC Member	Affiliation	Representing	Present
Irene Lui-Wong	EBMUD	POTW	no
Yuyun Shang	EBMUD	POTW	yes
Mary Lou Esparza	Central Contra Costa Sanitary District	POTW	yes
Tom Hall	EOA, Inc.	POTW	phone
Ross Duggan	City and County of SF	CCSF	no
Anne Hansen Balis	City of San Jose	POTW	yes
Bridgette DeShields*	Integral Consulting	Refineries	yes
Chris Sommers	BASMAA (EOA, Inc.)	Stormwater	phone
Shannon Alford	Port of San Francisco	Dredgers	no
Richard Looker	SF Bay Regional WQCB	Water Board	yes
Luisa Valiela	US EPA	US EPA -IX	yes
Ian Wren	Baykeeper	NGOs	yes
Jim Mazza	US Army Corps of Engineers	USACE	no
<i>Samantha Engelage</i>	<i>Palo Alto</i>	<i>POTW</i>	<i>yes</i>

*Chair; alternates in gray and italicized

Guests and Staff

- Jay Davis - SFEI
- Melissa Foley - SFEI
- Nina Buzby - SFEI
- Paul Salop - AMS
- Jim McGrath - Region 2 WB
- Becky Sutton - SFEI
- Diana Lin (phone) - SFEI
- Liz Miller - SFEI
- Don Yee - SFEI
- Cristina Grosso - SFEI
- Adam Wong - SFEI
- Michael Weaver - SFEI
- Amy Franz - SFEI

1. Introductions and Review Agenda

Committee members and meeting attendees provided introductions and reviewed the agenda for the day.

2. Decision: Approve Meeting Summary from September 26, 2019, and confirm/set dates for future meetings

TRC members had no comments on the previous meeting summary, nor conflicts with the proposed upcoming meeting dates. Due to recent calendar issues, Melissa Foley asked the Committee members whether they are receiving meeting invites and materials. Melissa and Nina Buzby will be working with SFEI IT staff to fix the calendar issues. Additionally, Bridgette DeShields asked about the 2020 Annual Meeting date which is planned for October 6, 2020. After clearing this day with the Steering Committee, a save-the-date invitation will be sent to all TRC members.

Melissa Foley also noted that the January SC meeting would include some follow-up discussion on the topics covered at the Multi-Year Planning Workshop held in October. Bridgette and Luisa Valiela suggested these items be at the start of the SC agenda so TRC members can leave when they are complete.

Action Items

- Confirm that the Committee members who were not receiving invitations do receive them after calendar alterations are made (Nina Buzby 1/7/20)
- Schedule MYP items at the beginning of the SC agenda (Melissa Foley, 01/09/20)

Decision

- Luisa Valiela motioned to approve the September 26, 2019, meeting summary. Anne Balis seconded the motion; the motion was carried by all present members.

3. Information: MYP and SC Meeting Summary from October 23, 2019

Melissa Foley provided a more thorough summary of the previous Steering Committee meeting because the beginning of the day included the Multi-Year Planning Workshop. During the Workshop, two main topics were the focus of discussion: a status and trends monitoring redesign as well as workgroup costs and coordination. Related to status and trends work, Melissa told the group about the drivers, possible scope, and budget that would be associated with the redesign. In addition, the MYP discussions resulted in formation of a subgroup of eight representatives from all stakeholder categories. The subgroup will meet twice prior to the January Steering Committee meeting to further discuss scope and plans for the redesign.

The MYP Workshop also led to budget changes related to RMP Workgroups. In 2020 the overall workgroup budget was increased to prevent the overages that occurred in 2018 and 2019. In addition, each individual workgroup has been assigned an individual budget, instead of one general line item. These steps aim to constrain costs and help inform workgroups and the RMP how much time and effort it realistically takes for each workgroup to generate proposals and coordinate with stakeholders prior to workgroup meetings. After 2020, the MYP workshop participants agreed that budgeting should be standardized across workgroups and only attribute special study funds for strategy development to workgroups that use strategy funds for strategic development (e.g., updating strategy documents). Discussions of workgroups at the MYP Workshop also highlighted the increasing collaboration and cross-workgroup efforts and the need for coordinating those efforts. The TRC will be tasked in the coming year to assist with this coordination. The first step will be looking at priority studies in March to identify opportunities for coordination and how to optimize funding strategies.

Melissa Foley briefly told the TRC members about the later items covered at the Steering Committee meeting like the 2020 budget and workplan however, many of the same items would be covered later in the day.

4. Microplastics in Bivalves

Liz Miller presented work on microplastics in bivalves that was funded by the RMP as an add-on to the 3-year Moore Foundation microplastic study. These results were not covered in the Moore Microplastics report released in October 2019, and instead will be in a separate report that will be completed in early 2020.

Results of the monitoring showed that bivalves (mussels in the Bay; clams from the North Bay river stations) from all sites contained microparticles, with the vast majority of particles being fibers. Additionally, the data showed significant differences between Bay and reference samples (Bodega Head), between species (mussels and freshwater clams), as well as between resident and transplant sites. The complex nature of the study design, as well as a post-collection processing oversight, made the results difficult to compare to the other matrices studied in the Moore Project and to studies conducted in other places. For example, mussel tissues were not weighed prior to digestion and sieving, therefore, particle levels per mass could not be calculated. Instead, Liz reported the mean number of particles found per individual. TRC members were interested in seeing results displayed as the range of microparticles present per individual so the variability of the samples is conveyed.

The study also looked at the composition of a subset of particles identified in the samples. The spectroscopy data revealed a high percentage of the fibers were anthropogenic cellulosic particles (e.g., dyed natural fiber), while a large proportion of non-fiber particles were plastic. The fibers that were plastic were mainly acrylic, cellulose acetate, and polyester. The average

number of microparticles per individual ranged from 0.76 at Bodega Head to 3.8 in San Francisco Bay.

Liz also discussed the results of the work in the context of other studies, noting a number of difficulties in comparing results across studies, such as varying definitions of microplastics vs. microparticles, reporting on a per mass basis, and varying sieve sizes. Overall, the studies that also conducted polymer identification showed a lot of the same dominant materials as RMP results. The number of particles per individual found in the RMP study was also similar to others; however, the RMP study had a much larger pore size (125 μm) compared to most of the other studies (0.8-20 μm). Larger pore sizes capture fewer particles than smaller pore sizes, so it is possible that Bay levels would be higher than counts in other studies if a smaller pore size was used.

The project also included a comparison of microplastic levels to PAH concentrations in bivalves, which showed no clear trend between the two analytes. Liz proposed some ideas that would explain the lack of relationship like the different sources from which the contaminants originate and a possible effect of PAH sorption occurring during particle digestion.

Related to microplastic pathways, meeting participants discussed the difference in particle makeup in wastewater and stormwater. Chris Sommers brought up the Moore report conceptual model that indicated the transport of microplastics has a lot to do with density. Stormwater fragments are likely to sink (e.g., tire particles) and therefore bivalves filtering the water column or collected from the side of structures would not be exposed to fragments for a significant amount of time before they sink to the sediment.

When explaining the final conclusions of the work, Liz referenced a 2019 study that found mussels had an easier time rejecting sphere-shaped plastic particles compared to fibers. With this knowledge that bivalves are selective about particle filtering, using results from bivalves as an indicator of ambient levels may be an inaccurate representation. This, in addition to the variability and uncertainty in polymer identification, make bivalves a less than ideal bioindicator. However, they are sampling a portion of the water column that was not captured in surface samples, and suggest that fiber and non-fiber microplastics are present throughout the water column. Melissa Foley asked whether the goal of the study was to use mussels as a bioindicator, or instead to evaluate possible exposure to humans via consumption. Luisa Valiela and Paul Salop noted additional aspects that would be interesting to assess, including differences in microplastics abundance in different tissue types (e.g., gill, digestive tract) and pre/post depuration replicates.

Action Item

- Get updated coordinates for Bodega Head from Paul Salop (Liz Miller, 1/6/20)

5. Decision: Review Bivalve Status & Trends Data and Monitoring Design for 2020

Jay Davis presented a review of Status and Trends data for bivalves, which was requested based on discussions about 2020 bivalve monitoring at the previous TRC meeting. Jay noted that this evaluation was a good example of the data synthesis that will be a necessary component of reviewing the Status and Trends program. Jay presented the following criteria for evaluating the bivalve monitoring: relevance to decision making; value, information, and power of existing design; overlap with other efforts; potential platform for future contaminants; and cost.

After explaining the current monitoring design and budget breakdown, Jay discussed each of the two analytes monitored (selenium and PAHs) individually. For both analytes, Jay noted the regulatory drivers and described the relative priority of all sampling elements (S&T and beyond) to inform management decisions, and gave an overview of the data. Neither analytes showed any apparent trends; in some cases, selenium concentration at the reference site was higher than impacted sites. Jay also outlined other mussel monitoring efforts in the Bay, including the NMS toxin monitoring in mussels as well as state and national Mussel Watch programs. However, the state program was discontinued 5-6 years ago and national efforts ceased in 2012. Luisa Valiela commented that it would be valuable to the RMP to know if these programs were discontinued for similar reasons we are thinking about discontinuing our monitoring (i.e., data not being used).

Based on the weaker link of S&T bivalve monitoring to management actions, Jay suggested three options for the TRC to consider. Either drop bivalve monitoring entirely, continue to monitor PAHs using the NMS program's mussel tissue (collected from wharfs and pilings in the Bay margin), or continue with the status quo. TRC members agreed that continuing to monitor for PAHs to maintain an up-to-date baseline and coordinating with NMS mussel monitoring would be worth exploring. Specifically, if the nutrient program mussels show higher concentrations (because the stations are located in Bay margins), these data could be more useful and better inform 303(d) listings. Mussel tissue from the NMS monitoring could also be archived and analyzed in the case of an oil spill.

The meeting participants also discussed the potential need for bivalve monitoring in the future, in particular for emerging contaminants. Multiple Committee members commented that this discussion should be continued with the S&T redesign subcommittee. The subcommittee will need to prioritize this decision in order to prepare for field work in 2020, if needed.

Action Items

- Determine whether NOAA or NMFS would find bivalve data useful and if they used it to inform the baseline after the Cosco Busan oil spill (Jay Davis, 3/12/20)

- Explore NOAA's current coastal monitoring (Jay Davis, 3/12/20)
- Discuss bivalve sampling at the S&T redesign subcommittee meeting (Melissa Foley, 1/7/19)

6. Decision: Review Design for North Bay Margins Sampling

Following up on the previous TRC meeting, Don Yee presented an updated set of random draw sampling stations located in the North Bay margins. Going through the sequence of stations for San Pablo Bay, Carquinez Strait, and Suisun Bay, Don identified what he considered his ideal sequence selection for each area that resulted in good coverage of most of the margins area with minimal clustering of sampling locations. The TRC members were in agreement with Don's suggestions for San Pablo and Suisun Bays. For Carquinez Strait, however, they identified sequence points 5-6 (yellow) as better choices, given the location of one of the stations in the largest portion of the margin area and the second station in the south margins area. The meeting participants agreed that if the desktop exercise by Moss Landing Marine Labs identifies any inaccessible stations, the replacement stations should just be the next option in the sequence.

Following the TRC meeting, Don realized that he had mapped non-sequential points for Carquinez Strait. He sent a new map to the TRC to get feedback on which of the new locations are preferred. The feedback resulted in selection of sequence points 7-8, with backup sites of 9-10 if the desktop phase of site selection reveals any logistic issues.

Don also outlined the planned analytes for margins sampling, as well as the labs that would be conducting the analysis. Don noted a need to find a new lab to do TN, TOC, and grain size analysis. Committee members also suggested adding PAHs to the analyte list, as well as analyzing archived samples from the other regions of the Bay, after identifying sediment as a suitable matrix to monitor for these contaminants.

A long-term resampling schedule for the margins after all three areas are complete will be discussed by the S&T redesign subcommittee.

Action Items

- Plan for San Pablo stations 26-52, Carquinez stations 7-8, and Suisun stations 16-26 and share with Moss Landing Marine Labs for desktop exercise. (Don Yee, 3/12/20).
- Add PAHs to margins sediment analyte list and identify lab for analysis (Don Yee, 3/12/20)
- Find new lab for TN, TOC, and grain size analyses (Don Yee, 3/12/20)

7. Decision: Data Exploration Challenge Judging Criteria

Cristina Grosso provided an update to the TRC on the status of the RMP Data Exploration Challenge. After Cristina reminded the Committee members of the scenario, submission requirements, and contest timeline, the group was asked to review the evaluation criteria for submissions. The scoring criteria previously discussed by the Committee were: quality of the graphic, the scope of data used, and quality of the written summary.

The group agreed that these categories should be scored on a 1-5 scale as was done the year before, but Ian Wren brought up the question of whether the scores should be weighted equally. Chris Sommers also brought up a wording conflict; the scope of data criteria includes the breadth of test material, however, the high school students are only asked to look at fish tissue data. The group agreed to remove this for the high school judging but keep it for the university judging. Cristina also asked the group for any other outreach strategies; Richard Looker suggested sending a message on the Lyris listserve.

Cristina also informed the Committee members about the CD3 updates that have been accomplished in the past year. Of note, the USEPA's chemistry dashboard now links to RMP data. Special thanks were given to Richard Looker who helped with the new addition of filtering data by Basin Plan segments. Cristina also presented the planned updates for the coming year, including making QA data accessible and being able to add regulatory guidelines to charts that the tool produces.

Richard Looker expressed interest in being able to track what users are doing while visiting CD3, specifically to see whether people are using the tool to look at data related to the Exploration Challenge. Cristina brought up that EI is working to have more analytics on the tool.

Action Item

- Share RMP newsletter message on Data Exploration Challenge with Lyris (Cristina Grosso, 1/6/20)

8. Information: Microplastics Strategy Update

Becky Sutton presented the updated Microplastic Strategy to the TRC members. A first update was related to staffing. Meg Sedlak left SFEI in October, so Diana Lin will now be the lead for the Microplastics Workgroup. Additionally, science advisor Kara Lavender Law will be rotated out of the MPWG panel as the group looks for a new advisor that focuses on upstream sources and transport of microplastics.

Becky noted that the new strategy document contains information on recent findings, but due to the extensive coverage of these findings at the Microplastic Symposium, she skipped over this

information. Two key points from the report that were presented to the group included the listing and rationale for moving microplastics to a contaminant of “moderate concern” from “possible concern” as well as identification of new work on a stormwater conceptual model. The microplastics team is currently seeking external funding to contribute additional funds to the \$30,000 from the RMP. Becky also reviewed the high priority studies for 2021 from the Multi-Year Plan, highlighting that the proposed \$150,000 for microplastics effects work led to a lot of discussion at the previous Steering Committee meeting. After follow-up conversations with RMP stakeholders and funding discussions with SCCWRP, who are also involved in microplastic monitoring efforts, Becky suggested the group will likely hold off on this allocation until the following year (2022). Instead, Becky proposed the use of funds to continue further stormwater monitoring based on the findings from the conceptual model.

SCCWRP plans to hold a workshop on the ecological impacts of microplastics in July in conjunction with their methods evaluation study. TRC members agreed that the RMP should contribute to and be involved in the workshop. Becky noted that collaboration has already begun, with the intention that SFEI staff will help with workshop organization and contribute to the reports that result from the workshop. Committee members brought up the idea to contribute 2020 funds to the workshop, which participants agreed would be a useful proposal to bring to the Steering Committee.

Chris Sommers mentioned that the tire industry could be a possible funding source and that the conceptual model development could be stretched out into multiple years and occur alongside ecological impact discussions. Mention of the tire industry brought up a conversation about a past partnership (the Brake Pad Partnership) related to copper in automobile brake pads. In this context, TRC members suggested reaching out to industry experts to generate representative samples (e.g., automobile debris) as well as Kelly Moran, who was closely involved in the Brake Pad Partnership.

Action Item

- Ask SC members to allocate funds from the 2020 budget to support SCCWRP’s workshop on the ecological impacts of microplastics (Melissa Foley, 1/22/20)

9. Information: Data Services and Informatics Update

Amy Franz presented the accomplishments of the Data Services team in 2019, as well as planned efforts for 2020. She also noted that the team needed to use the \$25,000 contingency fund in 2019 due to a number of challenges with receiving data, shipment problems, and reanalysis requirements.

Especially with the push to produce figures for the 2019 edition of The Pulse, obtaining data from labs in a timely manner was important. Amy showed the timelines for data submission from labs. There were a number of issues with labs in 2019, including lack of communication,

neglected deadlines, and incorrectly formatted data submissions. This, in turn, affected data reporting and the budget because late data causes delays in data uploads and the cost of managing labs increases. To remedy these issues, SFEI staff held a meeting with SGS-AXYS Analytical Laboratories before the water cruise and developed boilerplate contract language to address two of the main issues. The Data Services team also reviewed the cost estimate questionnaire, which will help Amy budget for future projects. The team also attempted to find a replacement for ALS, which has been a difficult lab to work with, but no replacement was found prior to the water cruise. Finding a new lab is a priority for the margins sediment monitoring.

Related to ALS replacement, Bridgette DeShields and Luisa Valiela inquired about the options that are available for these analyses given the failure to find a lab before the 2019 water cruise. Nina Buzby explained that both the crunched timing and inability to conduct TOC/POC analysis in a manner consistent with past RMP methods ultimately resulted in keeping ALS for the water cruise. Meeting participants agreed that reaching out to labs and exploring options soon would be critical to ensuring a smoother data management process for the North Bay margins work.

Action Item

- Find a replacement lab for ALS (Don Yee, 3/12/20)

10. Discussion: Communications Update

Jay Davis began the item by discussing the Annual Meeting. While attendance was lower than anticipated, likely due to some extent to the power outages, and the meeting evaluation survey got a low number of participants, the general response to the meeting was positive. Jay relayed the Steering Committee's appreciation of the pathways theme and level of coordination. The zero-waste efforts also garnered a positive response from meeting attendees, which Jay felt was important in terms of setting an example for other organizations.

Jay then extended thanks to TRC members who presented at the Annual Meeting and contributed to articles in the Pulse. Yuyun Shang highlighted that the most recent edition of The Pulse is a helpful resource, which was a positive thing to hear because that is the function the RMP hopes the publication serves.

Finally, Jay reminded the meeting participants that the TRC and SC had previously agreed to hold off on covering microplastics in the December Estuary News edition. This was because the edition was highlighting the State of the Estuary Conference and the microplastics efforts had already received a lot of coverage in other media outlets. The microplastics article will be in the March issue of Estuary News.

Action Item

- Send Pulse distribution lists to Richard Looker (WB) and Luisa Valiela (EPA) (Jay Davis, 12/20/19)

11. Information: 2020 Workplan

Melissa Foley prefaced the item with the fact that further multi-year planning discussions are planned for the January SC meeting, therefore some aspects of the Workplan are subject to change. Going through the RMP budget, Melissa noted that \$150,000 has been held back from the budget with the assumption that dredgers will not dredge as much material as anticipated and therefore their contributions will be lower than estimated. Looking closer at the programmatic costs associated with the RMP, Melissa highlighted that the large increase in the governance task was due to the increase in Workgroup funding.

Melissa explained that the Status and Trends budget includes two large chunks of funding that go to support the USGS Menlo Park and USGS Sacramento. Because of the government shutdown experienced in 2019, not all of the allocated funds given to USGS Menlo Park were used. Therefore it is possible that the support to the USGS in 2020 may not amount to the full \$250,000.

This detail prompted discussion on the status of the monthly nutrient cruises and access to the USGS vessel. Melissa explained that SFEI will be asking for a decision from the USGS in March of 2020 and if that is not received the group will actively begin pursuing other options for continuing the work. In addition to this, Melissa will be bringing together a group of boat owners and users in January to have a broader conversation about research vessel needs in the Bay. Because many of the vessels are only used a few days/weeks out of the year, it would be helpful to have a consortium for everyone involved to make the boats more accessible and their usage more efficient.

After Melissa's presentation, Jim McGrath, the Chair of the Regional Water Board raised an issue he thinks should be evaluated by the RMP: pathogens from Bay Area homeless encampments. Jim has also presented this concern to the Regional Board. Discussion amongst meeting participants identified that efforts to get involved in this sort of work would be a significant undertaking, especially because the RMP does not currently conduct bacterial monitoring. Some of the questions that arose from the conversation included what the role of the RMP could be and the geographic scope of the work (e.g., Bay-wide or site-specific). The conversation prompted two next steps, including discussing it at the upcoming SC meeting, as well as at the January STLS meeting. In addition, identifying management actions that are being done to address sanitation issues would be useful for future discussions.

Action Items

- Discuss homelessness and human waste at the January STLS meeting (Melissa Foley, 1/31/20)
- Discuss homelessness and human waste at the January SC meeting (Melissa Foley, 1/31/20)

12. Discussion: Intercalibration Studies for 2020

Don Yee provided an overview of the three intercomparison projects conducted by the RMP in 2019, as well as possible ideas on how to utilize the \$37,000 intercomparison budget in 2020. The past projects were a second round of intercomparison for selenium analysis in tissue and water, ongoing archive reanalysis of PCBs and metals in sediment, and comparing two copper methods. PCB analysis of archived fish tissue will also be completed with 2019 sport fish samples.

Don's ideas for the coming year included reanalyzing ancillary parameters in archives and intra-comparison work, either for selenium or CECs. Jay Davis proposed the idea of looking at TOC in margins sediment; both archived and to-be-collected North Bay material because we are changing labs. Don agreed that TOC would be better than grain size because of lower analytical costs and smaller mass needs. TRC committee members agreed that this would be useful, especially for samples from South and Central Bay for which the RMP already has values. Water samples for TOC could be collected during the North Bay selenium cruises for comparison to historical water samples.

Action Item

- Budget cost of doing a TOC comparison once the new TOC lab is chosen (Melissa Foley, 6/1/20)

13. Information: Status of Deliverables and Action Items

Melissa Foley first highlighted new column additions to the deliverables and action items reports. These came out of a discussion at the last SC meeting and their desire for more transparency relative to shifting due dates. The new columns provide information on the source of delays as well as how 'overdue' a deliverable may be in relation to the original due date.

The spotlight on deliverables showed a number of reports that are overdue but are in the final stages of completion. Melissa noted that many of these reports will be completed in early 2020.

14. Discussion: Plan Agenda Items for Future Meetings

Bridgette DeShields first asked about whether any workgroup meetings had been scheduled and if there were any possible delays that would hinder scheduling the rest. Melissa Foley noted that the ECWG meeting has been scheduled already and that the RMP does not foresee any issues in scheduling due to waiting for data or deliverables.

Meeting participants identified some of the items that came up throughout the course of the day including a report back on the Status and Trends redesign conversations, reviewing submissions from the data challenge, looking at coordination across workgroups in preparation for special studies, and an update on the margins desktop exercise to confirm margins sampling stations.

Melissa Foley also asked the TRC members if they wanted any particular science updates, to which Yuyun Shang and Luisa Valiela suggested PFAS and nutrients, respectively.