



SAN FRANCISCO ESTUARY INSTITUTE

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Bay RMP Technical Review Committee Meeting
September 21, 2016 San Francisco Estuary Institute

Meeting Summary

Attendees

TRC Member	Affiliation	Representing	Present
Nirmela Arsem	EBMUD	POTWs	No
Rod Miller	SFPUC	POTWs	Yes
Tom Hall	EOA, Inc.	POTWs	Yes
Amy Chastain	SFPUC	POTWs	Yes
Eric Dunlavey	City of San Jose	POTWs	Yes
Bridgette DeShields*	Integral Consulting	Refineries	Yes
VACANT		Industry	NA
VACANT		Cooling Water	NA
Chris Sommers	BASMAA (EOA, Inc.)	Stormwater	Yes
Shannon Alford	Port of SF	Dredgers	Yes
Ian Wren	San Francisco Baykeeper	NGOs	Yes (came late)
VACANT	US Army Corps of Engineers	USACE	NA
Karen Taberski	SFB RWQCB	Water Board	Yes
Luisa Valiela	US EPA	US-EPA IX	Yes

*Chair

Guests and Staff

- Naomi Feger (SFBRWQCB)
- Paul Salop (Applied Marine Sciences)
- Phil Trowbridge (SFEI)
- Jay Davis (SFEI)
- Jennifer Sun (SFEI)
- Ila Shimabuku (SFEI)
- Lester McKee (SFEI) (by phone)
- Don Yee (SFEI)
- Phil Bresnahan (SFEI)

- Rusty Holleman (SFEI)
- David Senn (SFEI)
- Rebecca Sutton (SFEI)

1. Introductions and Review Agenda

There were no changes made to the agenda.

2. Decision: Approve Meeting Summary from June 9, 2016 and confirm/set dates for future meetings.

Karen Taberski recommended that, under section 4 (Discussion: Presentation of Special Studies Proposals Recommended by Workgroups) on page 3 of the June 9, 2016 TRC Meeting Summary, the phrase “this project” be removed from the sentence beginning “The planning budget for this project was about \$1,073k.” The budget referred to the special studies budget, not project.

Bridgette DeShields outlined the planned dates for the next couple meetings

- RMP Annual Meeting - Oct 7
- Multi-Year Planning Workshop - November 1
- The next planned TRC meeting is December 8
- The following TRC meeting was scheduled to be held on Thursday, March 9, 2017.

Items for Approval

- Chris Sommers motioned to approve the June 9, 2016, meeting summary. Eric Dunlavey seconded the motion. The motion for approval was carried by all present members.

Action Items

- Revise the June 9, 2016, meeting summary and post it on the Bay RMP website. (Ila Shimabuku)
- Schedule the first quarter 2017 TRC meeting for March 9, 2016. (Ila Shimabuku)

3. Information: Steering Committee meeting from July 19, 2016

Phil Trowbridge gave an overview of major topics that were discussed in the July 19, 2016 SC (Steering Committee) Meeting:

- Process for SEP (Supplemental Environmental Project) funding
- Results of the 2014 Sport Fish monitoring
- Approval of 2017 RMP Special Studies
- Upcoming communications deliverables and fact sheets

Phil clarified that during the special studies approval process, the Steering Committee specified that AMR funds should supplement, not replace, core budget funding or CECs project. Conversely, the Steering Committee also made it clear that the intended use of AMR funds is to fund only CEC studies,

although the Steering Committee retains the authority to use AMR funds for other projects. The table of approved Special Studies will include separate columns to show whether projects are funded using AMR or core RMP budget funds.

Jay Davis thanked Karen Taberski for all of her dedication, good nature, and great work that she's done over the years.

4. Information/Decision: Presentation of PCBs in margins sediments and recommendations for 2017 margins sampling

Phil Trowbridge provided some context for Don Yee's presentation by explaining that it provides some results and preliminary analysis to take our discussions/planning for 2017 margins sampling one step further.

Before presenting the results of the margins study, Don led a brief discussion of variability in PCB results between laboratories.

Don explained that the current PCB results from AXYS are about 15-20% higher than EBMUD results, but this variance is considered acceptable because it is within the noise of variation typically seen across different laboratories and methods.

Chris Sommers asked if there's a level of guidance for how to interpret current results in the context of historical data, particularly with the differences highlighted by the intercalibration study. Collectively, how should the comparison between PCB-40 and PCB-208 sums be dealt with?

Don responded that the current plan is for AXYS to regularly reanalyze past samples previously analyzed by EBMUD. With any given pair of labs, it is unlikely that any net biases can be totally eliminated, so one possibility is to make a note of it and say "this is our long time bias vs our old lab" (i.e., not requiring absolute agreement).

Chris said it would be helpful to have a future discussion at the TRC about this topic. The discussion would be relevant not just to RMP data but also to data collected for the Prop 13 study (samples also analyzed by EBMUD) and Clean Watersheds Study (samples analyzed by ALS). It was agreed to put this item on the agenda for a future TRC meeting.

Don then presented the results of the margins study. Simple maps were used to show the following observations:

- Mercury (total): Concentrations are higher in the Alameda channel than anything in the open bay but the rest of the sites show similar concentrations to the open bay.
- Methyl Mercury: Margins samples show a hot spot in the San Leandro Bay where there's a wetland and not a lot of turnover.

- PCB-40 raw: Besides the usual suspects, there is a very large hotspot at the Brisbane site (north of Oyster Point). Naomi Feger noted that Oyster Point was a clean -up site (maybe metals) inside of the harbor. Don explained the low concentrations in the Emeryville Crescent and said it's somewhat expected because the grabs were a little away from Ettie St. Pump Station so there may be a little more dilution.
- PCB-40 with grain size normalization: TOC was not used for normalization because it was often so much higher in the margins than in open bay. The grain size normalization showed the greatest difference from the raw data in the Oakland Harbor channel site because it was a sandy site, whereas most other sites were fine-grained.
- PCB Bubble Plot + Heat Map: The PCB heat map superimposed RMP S&T data with the margin data. The South SF heat map shows suggestions of sources which is consistent with the Brisbane hotspot.

Naomi Feger and other members agreed that the color map for the open bay PCB concentrations is misleading. The concentrations shown in red were not very high. Chris Sommers asked if the margins data will be added to ambient data in future kriging maps. Don said maybe but either the influence of the margins would have to be more discrete with shorter gradients to not overextend their influence on the open bay.

- Total Organic Carbon: The open bay TOC was significantly higher (5 times) than in the margins though still relatively small compared to other estuaries. One factor may be from reporting TOC using grain size normalization (some open Bay data will have coarse grain size, but relatively few margins will). Lester McKee noted that the non anthropogenic items (TOC, Aluminum, Manganese, Iron) are all bay dominant and proposed that the difference is due to productivity. Jay recommended using a multivariate approach to investigate this possibility.

Jay Davis mentioned that the sum of PCB-40s are 50% or less than the sum of PCB-208s and said to check if there are some mis-labeled congeners. Bridgette DeShields proposed that there might be a difference in the mix of congeners that are in the margins versus the mix in open bay due to weathering or other factors.

One "hot spot" of PCBs was found near Brisbane. That area had never been sampled in previous studies. The sites that were sampled in the stormwater POC studies are mostly above the tidal range so the regional POC sampling methods might not capture the action if it's happening at the fill areas in the flatlands at the edge of the bay. Don recommended considering how to characterize and sample contaminant sources coming into the bay from these tidal areas.

Don also presented a brief calculation of the PCB inventory in Central Bay using the new data from the margins areas. Margin areas account for about 3.6% of Central Bay area but contain 9% of the PCB inventory.

- Chris Sommers proposed that inventory calculations be approached cautiously because there is apparently high variability of PCBs in the margin areas and the small sample size may not have fully characterized it.
- Jay noticed that about 25% of the sites came up with warm/hot values so the samples might be hitting the edges of hotspots which fits the conceptual model.

- Naomi pointed out that hydrodynamics is contributing and it may be cleaner on the surface for some areas.

For next steps, Don proposed extending characterization to south and lower south bay where sediment reuse and restoration actions are more likely and using results for a baseline to evaluating PMU severity. Don proposed the idea of doing a hybrid of sampling in south bay and lower south bay. Brian Ross told Don they found high PCB concentrations below the surface in areas of the Port of Redwood City. From a practicality standpoint, it may make sense to cover both areas. The RMP has looked at watershed loadings for PCBs in San Jose and Santa Clara. Both areas also have planned restoration projects.

Chris suggested that margins data be combined with STLS data to consider the compilation from a management perspective. He noted the importance of focusing on these sites, where pollutants are being deposited and maintained, and their connection with the watersheds. The next step is to look at regional water predictions and BASMAA work to predict where loads are coming from. Those watersheds should be the focus for management.

Phil Trowbridge mentioned that he needs to present a budget for 2017 in November and asked if the RMP should continue margins work and, if yes, how the RMP should budget it. The optimization of S&T study design freed up about \$120k for margins studies. How should the RMP pay for upcoming margins work?

Options:

- Budget \$120k to do some monitoring in 2017
- Double funding by combining 2017 and 2018 into one field sampling effort, which was more cost-efficient when the 2015 sampling was done
- Discontinue margins and use funding elsewhere

The TRC Members agreed that the margins data are useful and that margins studies should be continued. The members also liked the idea of combining 2017 and 2018 funds in order to maintain momentum for 2017 margins sampling. TRC members requested that Don use the data from the first margins study and previous studies in the margins (CEP, EMAP, etc.) to estimate the variability in margins areas and to determine the optimal sampling design to characterize contaminant concentrations in the margins sufficiently.

Action Items:

- Track down CEP Near-Shore and EMAP data for comparison to RMP margins data and minimum sample size calculations in the final report (Don Yee)
- Add discussions of PCB interlab calibrations studies, updating the kriging maps for sediment in the Bay, and definitions of Bay segments to a future TRC agenda (Phil Trowbridge)

5. Information: Results from Spring Water Cruises Looking for Algae Blooms during El Niño Conditions in early 2016

The RMP provided extra funding to the RTC for extra cruises during spring 2016 to look for algae blooms in a nontraditional way (not just looking in the spine of the bay but also looking in the margins/shoals) and to look at sediment fluxes with data from USGS. Rusty Holleman presented the results of this study.

Goals of this study: Consider how wet weather can increase flushing and create stratification (which has implications for phytoplankton and nutrients) and alter the terrestrial sources of nutrients and sediments into the bay. Can El Niño trigger an algae bloom? Try to understand lateral and longitudinal variability in South Bay. What are the nutrient distributions at these rarely sampled locations? Is there increased productivity? Where are unknown nutrient sources? What information gaps exist in the way of determining more about the nutrient fluxes into and out of the bay?

Phil Trowbridge explained that the timing of sample collection was not intended to be coincident with storm events. The goal was to characterize “wet season” conditions.

Rusty showed that, at a site slightly south of Oakland Airport, there was relatively higher Chlorophyll where there was higher temperature with low salinity, dissolved oxygen, and nitrate. The lower DO could have indicated that the water recently came out of the marshes or creeks. Naomi Feger asked if there are enough sources at the Oakland Airport site to generate a bloom and what any additional sources could be if conditions are right. David Senn answered that there are plenty of nutrients in the water column to support a bloom. Potentially, the correspondence between % saturation of dissolved oxygen and chlorophyll and then drop in nitrate suggests coupling between those different parameters.

Rusty presented preliminary model results that also predict higher chlorophyll-a in the shoal areas. The correspondence of the monitoring and modeling results supports a conceptual model of bloom generation in the shoal areas.

Phil Bresnahan reiterated that there’s a lack in data showing spatial scales, especially in the shoals, so Rusty’s results are really important for model validation. He said there is no future work planned for nutrient sampling on shoals and that the flow-through samplers worked well in the estuary. Discrete grab sample data were also collected to calibrate the in-situ sensors. Forthcoming isotope data will provide more leverage in determining nutrient transformation rates.

Phil Trowbridge mentioned that the budget for the El Niño nutrients study was ~\$30,000.

6. Information: 2015 Water Cruise Quality Assurance Report, Data Upload, and CTR Parameters Report

The Water Cruise Quality Assurance Report and the CTR Parameters Reports are both in the agenda package. All 2015 RMP Water Cruise data has been uploaded to CEDEN.

Chris Sommers asked to separate large reports and add them as a separate attachment to future agenda packages.

Don Yee summarized the QA/QC issues with the Water Cruise data:

- The method used for cyanide and sediment samples analyzed at ALS didn't match the contract. Following through with ALS to check procedures against the contract should fix this problem. The results were still usable, however.
- Field contamination in TOC samples due to using another lab's possibly contaminated DI water.
- The mean copper concentration from this year was a little over 4µ/L and the past mean was less than 4µ/L. It could have been a strange year or it could be something long term.

Phil Trowbridge mentioned that 100% of the samples passed the quality assurance protocol.

Tom Hall mentioned that there wasn't major toxicity in the bay (which is consistent with previous observations) and asked a question about the chronic toxicity results: was the heightened amounts of toxicity at the river stations and Suisun Bay statistically significant compared to the controls, or were they hits? Phil answered that they were statistically significant but a TIE was not performed. Phil Trowbridge will send the toxicity data set out to the group members.

Action Items

- Include large reports as attachments to future agenda packages
- Send out toxicity data from the 2015 Water Cruise to TRC members (Phil Trowbridge)

7. Decision: Recommendations for SEP eligible RMP Projects

Phil Trowbridge gave some background and explained that the RMP is now an authorized SEP funds administrator. If a discharger has a violation, they can give the penalty money to the RMP to take advantage of the RMP's strong governance process for developing high quality, relevant science projects. The agenda package contained a proposed list of eligible projects. The desired outcome of the discussion was edits to the list and a discussion of the process that should be used for updating the list.

Comments on the proposed list:

- Ian Wren mentioned that SEP projects are usually of the restoration type and asks if working with restoration groups to quantify the benefits of their projects could be possible projects. Chris Sommers seconded Ian's idea and wanted to see if SEP funds could also help with underfunded monitoring components of restoration projects.
- Bridgette DeShields said the CUP project seems outdated. Rebecca Sutton explained that the project is still a priority.
- Bridgette DeShields noted that the stream gauge needs assessment and feasibility analysis project has a large timeline. Phil Trowbridge explained that Jing Wu has identified a lack of stream gauge data in the bay and there is a need to identify where the data gaps are and where to place these gauges to improve the watershed model. Jay Davis mentioned that, in a stakeholder meeting with the Water Board, this project came up as a data gap that could help link sediment in the bay and

sediment inputs from watersheds. Meeting members agreed that the timeline is too long and only stage 1 of the stream gauge project should be listed. Only one to two year studies should be included on the list. For larger projects, the field work and analysis could be funded separately.

- Jay Davis provided more details about the San Leandro Bay PCB study. Two rounds of penalty funds have been direct to this project. The penalty was for a discharger to Oakland Harbor where the PCB work group had underfunded plans. Rusty Fairey at Moss Landing collected and analyzed the two rounds of sampling. The proposed phase 3 of the study includes sampling benthos and guts to understand how PCBs are moving through the foodweb.
- Amy Chastain asked if there is interest in expanding the topic areas to project areas that may not be a high priority in the RMP but are still a RMP issue and/or are outside of the multi-year plan. The members of the TRC liked the idea but brought up concerns of how to prioritize these ideas against existing RMP ideas, who would serve as the workgroup for these (the TRC), and whether it's worth it to invest time in scoping ideas that the Water Board may not be interested in. It was decided to table this discussion until the multi-year planning meeting.
- Tom Hall questioned the description of the bioanalytical tool project and asks if project focused on tool/technology development fit with SEP funding. Phil Trowbridge responded by saying yes because it was vetted by the RMP but has not been funded.
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With the suggested edits listed above, the TRC was supportive of the proposed list going to the SC for approval.

Phil Trowbridge said he will ask the SC for more planning funds so sampling plans can be written before the settlement happens so the RMP to hit the ground with lab contracts upon settlement completion.

Action Items

- Edit invitation list for November 1, 2016 Multi-Year Planning meeting to include Naomi Feger and TRC members. (Jennifer Sun)
- Edit the SEP project list to only include phase 1 of the RWSM stream gauge project and add a project duration criteria of < 2 years. (Phil Trowbridge)
- Add tabled discussion point to Multi-Year Plan agenda: Figuring out the process by which ideas for SEP funded projects are brainstormed, scoped out for main ideas/budgets/timelines, and finalized/approved for presentation to the Water Board. Topics include whether outside proposals will be considered and how they would be vetted. (Phil Trowbridge)
- Provide an update on San Leandro Bay PCB Study at the December TRC meeting. (Jay Davis)

8. Decision: Selenium Monitoring Proposal

Jay Davis introduced this topic: the Selenium Workgroup supported the selenium monitoring proposal and the next step is approval by the TRC and SC. USGS funding for clam sampling is running out on October 1, 2016 so the approval process needs to be fast-tracked. The Selenium Workgroup has incorporated input and improved the selenium proposal to include clam monitoring from October of 2016 to March of 2017. If it is approved, clam monitoring would continue and the RMP would schedule a

meeting to begin discussing a design for water, clam, and mussel plug monitoring in the future. USGS is writing the current, open-file report which is due in July as a draft and as final in September. Tom Hall suggested looking at gaining access to historical clam data to study long term trends. Naomi Feger followed Tom by mentioning that David Senn has measured microcystin in USGS clam samples. USGS is changing the process by which they give access to historical data. Following this discussion, the TRC recommended RMP funding to continue USGS clam monitoring as proposed.

9. Discussion: Communications Update and Theme for 2017 Pulse

Jay Davis informed the TRC that the RMP Update is being printed and will be sent out shortly. Also, an eUpdate newsletter will be sent the following week with links to the RMP Update, the RMP Annual Meeting agenda, and Estuary News.

Phil Trowbridge asked the TRC to recommend topics for fact sheets to be finished by the end of the year. Lester McKee and Tom Hall agreed on the idea for a high level, two page summary of current RMP stormwater activity that can be used for different RMP committees.

Jay Davis and the group proposed the following ideas for the 2017 Pulse of the Bay theme: Margins; Nutrients; 25th Anniversary; and PCBs. Regarding a “margins” theme, 2017 might be too early because so little data is actually available. Waiting to 2019 could make more sense but some members cautioned that the RMP needs to show that it is thinking about margins areas to show that it is current with the priorities of other agencies (e.g., Measure AA, beneficial reuse of sediment, wastewater treatment by wetlands). There was interest in a nutrients theme because the RMP has a lot of new data on nutrients. There was support for a 25th Anniversary theme because it could encompass all of the current research as well as some historical perspective on how the program has evolved. Chris Sommers noted that the timing could be right for PCB-themed Pulse in 2019 to get ready for changes to the PCB TMDL.

Jay Davis also led a discussion about ways to celebrate the RMP’s 25th Anniversary. The main objective will be to celebrate the people of the RMP. The RMP communication channels of the eUpdate newsletter, Estuary News articles the Pulse, the Annual Meeting will be used to distribute the message. The group discussed creating a video and holding a social event.

These ideas will be further discussed with the Steering Committee in November.

Action Items:

- Add discussion item of 2017 Pulse themes to Steering Committee agenda (Phil Trowbridge)

10. Discussion: RMP Annual Meeting

Registration is full but calling in is possible. Chris Sommers suggested having a lunch-time, hand-raising survey for how long people have been a part of the RMP.

11. Discussion: Passive Sampling Webinar

Rebecca Sutton gave the background for the passive sampling webinar: at the emerging contaminants workgroup meeting, a couple of experts were excited about trying quantitative forms of passive sampling to augment or eventually replace our current sampling methods. Jay mentioned that the legacy contaminants workgroups are also interested. Rebecca explained that the purpose of the webinar is to engage the audience and discuss the pros/cons of different sampling techniques.

Rebecca quickly ran through proposed list of speakers and noted that Lee Ferguson recommended reaching out to Robert Burgess at USEPA because he's familiar with passive sediment sampling. Bridgette DeShields suggested that Philip Gschwend would be a good person to fill Dick Luthy's time slot if he isn't available. Paul Salop will send contact information for Jamie Aderhold (C.I. Agent Storm-Water Solutions) to Jay Davis and Bridgette DeShields will send contact information for Upal Ghosh (University of Maryland Baltimore) to Rebecca Sutton.

Time conflicts for potential dates (looking at early to mid-December or mid to late January excluding MLK weekend) include the Battelle Sediment Conference on January 9-12, 2017 and the TRC meeting scheduled for December 8, 2016.

Action Items

- Send Jamie Aderhold contact info to Jay Davis & Rebecca Sutton (Paul Salop)
- Upal Ghosh contact info to Rebecca Sutton (Bridgette DeShields)

12. Information: Status of Deliverables and Action Items

Phil Trowbridge reported on the status of bathymetric datasets for San Francisco Bay. Several new acoustic bathymetric datasets will be released in the next year. No new LiDAR data are planned.

Jennifer Sun introduced Paul Salop's proposal to switch to an acoustic release system to deploy cages for bivalve monitoring. Bivalve monitoring happens every two years as part of the Status and Trends monitoring program, and includes deploying clean mussels from a reference site to several sites around the estuary for three months (summer to early fall). Some foreseen benefits of the acoustic release system include not having to rely on equipment that isn't owned by the RMP (pilings, etc.), more flexibility on where bivalves can be deployed, saving on labor costs (i.e., divers), and ease in changing the monitoring design as needed. AMS has offered to buy the equipment upfront to be paid back with labor cost savings. RMP costs will remain the same for 2018 and 2020 but will be reduced starting with the 2022 sampling event.

Luisa Valiela said she liked the flexibility of this system but wanted to know more history on how it has been used in the Bay. She expressed concern about obtaining appropriate permits for this type of sampling and potentially leaving weights in the Bay after each deployment. Paul said he's deployed these types of samplers before and they do not require additional permitting, only Coast Guard notification. USGS has

also used this system in the past. Phil noted that the RMP has been successful in obtaining permits for passive samplers in the Bay in the past (e.g. San Leandro Bay). Paul also explained that for an additional ~\$1,000, the RMP could purchase systems with retrievable weights.

Phil noted that this method could be used for multiple sampling purposes, such as deploying passive samplers. Phil suggested authorizing AMS to: (1) remove the old gear during the bivalve retrieval cruise in October; (2) research permits needed for the acoustic release equipment; and (3) research the cost of the acoustic release equipment with the retrievable weights. The TRC group members agreed on this suggestion. Before purchasing the equipment, the TRC will discuss this topic again.

Overdue smartsheet deliverables (see action items) were discussed. Smartsheet action items are all on track.

Action Items

- Change the due date for the stormwater fact sheet (Phil Trowbridge)
- Check in with the University of Florida on receiving information necessary to finishing the bioanalytical tools report (Phil Trowbridge)
- Remove the old gear during the bivalve retrieval cruise in October. (Paul Salop)
- Research permits needed for the acoustic release equipment. (Paul Salop)
- Research the cost of the acoustic release equipment with the retrievable weights. (Paul Salop)
- Schedule a future discussion of bivalve monitoring efforts using acoustic-release systems with the TRC, including identifying appropriate permitting and purchasing systems with retrievable weights (Phil Trowbridge)

13. Discussion: Plan agenda items for future meetings

Further discussion of PCB kriging methods and standardization of PCB analysis across studies is needed (see action item for agenda item #4).

14. Discussion: Plus/Delta

The TRC meeting members thanked Karen Taberski for her involvement over the past years and Karen thanked everyone in return.