



RMP
Technical Review Committee
December 4th, 2012
San Francisco Estuary Institute
Meeting Summary

Attendees

Luisa Valiela, US EPA
 Karen Taberski, San Francisco Regional
 Water Quality Control Board
 Bridgette DeShields, Arcadis/WSPA
 Eric Dunlavey, City of San Jose
 Tom Hall, EOA, Inc. (South Bay
 Dischargers)
 Nirmela Arsem, EBMUD
 Chris Sommers, EOA, Inc. (BASMAA)
 Karin North, City of Palo Alto
 Mike Connor, EBDA
 David Schoellhamer, USGS

Meg Sedlak, SFEI
 Jay Davis, SFEI
 Emily Novick, SFEI
 David Senn, SFEI
 Lester McKee, SFEI
 Adam Wong, SFEI
 Meredith Williams, SFEI
 Cristina Grosso, SFEI
 Ellen Willis-Norton, SFEI

Call-In

Rob Lawrence, Army Corps of Engineers

1. Introduction and Approval of Agenda and Minutes [Bridgette DeShields]

Meg Sedlak mentioned that the group will pick the committee chair at the next meeting; therefore, please send Meg an email with suggestions. Karen Taberski motioned to approve the previous TRC meeting summary, Eric Dunlavey seconded, and the summary was unanimously approved.

2. Information: Steering Committee Report [Meg Sedlak]

Meg Sedlak relayed that at the Steering Committee came up with two workshop ideas for 2013: selenium and mercury in wetlands and restoration. There was some concern that a selenium workshop maybe somewhat pre-mature and that this should be delayed. Chris Sommers wondered if the RMP's goal is to host two to three workshops per year and Meg responded that one is a more reasonable goal and two workshops is the maximum. Chris questioned what the process was for deciding workshop topics for next year. Meg replied that the Hg workshop idea will be discussed with Naomi Feger, a proposal will then be developed and presented to the SC in January, and the proposal would be e-mailed to the TRC to make a decision on if the workshop should move forward.

Jay Davis commented that the conclusion of his mercury synthesis manuscript, published in November 2012, was that the most feasible control option for reducing methylmercury loads to the Bay is manipulating flow patterns and subhabitats in tidal marshes. Therefore, a workshop could focus on getting agencies and researchers that work on marsh restoration to coordinate so

they will have a coherent and common vision. Workshop participants could include people working on wetlands, mercury in local watersheds, and mercury in the Bay. Luisa Valiela wondered if the Bay and Delta marsh restoration projects were already coordinated. Jay responded that the Montezuma, Hamilton, South Bay Salt Pond, and other wetland restoration projects were not collaborating. Although Luisa agrees that bringing different agencies together is useful, both she and Chris Sommers concur that hosting a workshop should have a stronger purpose aimed at what wetlands managers need in addition to coordination. Chris wondered what the workshop's benefit is to the RMP. Jay responded that the RMP will gain valuable information on mercury and on the impact of marsh restoration. Chris added that the workshop also benefited managers because tidal marsh restoration is a regulatory "knob" that managers can turn relatively easily. Jay also mentioned that the Hamilton Wetland Restoration project, USGS, and the Army Corps of Engineers are about to begin a \$1 million project that includes high frequency monitoring of sediment and methylmercury loads to the Bay. Jay reasoned that the workshop may help determine if the monitoring could be used by the managers and if it will contribute to a broader picture of mercury in the Bay ecosystem.

Chris Sommers commented that it would be helpful to include a section in the agenda package about what recommendations made by the TRC were accepted by the SC. He suggested having it in a document separate from the meeting summary. The number of project proposals is increasing; and Chris predicts that in the future the SC will have to reject some proposals. Meg agreed to make clear what proposals were accepted and noted that at last SC meeting the only difference from the TRC recommendations was the SC supported the bioanalytical tools project moving forward.

Action Items

1. Meg will discuss the mercury/marsh restoration workshop idea with Naomi Feger and will develop a proposal for the SC.
2. Meg will create a document for TRC meetings that explains what suggestions from the TRC have been either approved or rejected.

3. Information: Planning Update [Jay Davis]

Jay reviewed the multi-year plan and budget. He commented that there weren't many changes to the multi-year plan and all comments on the plan should be sent to Jay by the end of December 2012. Meg presented one possible change to the plan, possibly suspending benthic work in the Bay. The suggestion was an outcome of the November's Moderate Toxicity workshop. Within the Bay, most of the toxicity is at low to moderate levels and thus far the cause of this moderate toxicity has not been determined. At this juncture, we do not understand the cause of the toxicity and perhaps the funds would be better spent determining the cause rather than to continue to collect data that documents a known problem. Karen Taberski noted that she has supported the benthic studies for 20 years, but it might be time to pause data collection and try to understand the toxicity's cause. Karen and Tom Hall agreed that the funding currently allocated to benthic work could be shifted into studies working to determine the cause of moderate toxicity. Meg noted that the RMP is not sediment sampling in 2013, so there is time to make the decision. Meg will follow up with Tom Mumley and Karen, to confirm that the Water Board agrees with this suggestion and consequently write a memorandum summarizing a possible change to the benthic sampling that includes a summary of the workshop ideas.

Jay went over the budget and noted that the big ticket items are the Small Tributaries and Nutrients work, both are over \$400,000 by 2014. Forecasting was a mid-level budget item because it is joint nutrient and contaminant work. There is no money allocated to PCBs and mercury because the mercury synthesis is completed and the PCB synthesis is being written currently. The dioxin synthesis was moved to 2015, for which \$40,000 was allocated, to allow more time for data to be generated and made available. Meg mentioned that RMP staff were discussing the dioxin sediment monitoring and considering developing a plan for monitoring dioxin and other constituents in the margins of the Bay. A proposal for Bay margin monitoring will be brought forward in March to the TRC. Overall, Small Tributaries and Nutrients, are going to continue to be large-budget items over the next five years. Jay noted that Jim Cloern from USGS is retiring and his program under Status and Trends (Hydrography and Phytoplankton) will be winding down. He has given the RMP a proposal on the costs of continuing his work. The proposal includes a steep increase in the amount of funds contributed by the RMP; if the RMP continues to run the program in its entirety, by 2016 the cost to the RMP will rise above \$500,000.

Discussion

Chris Sommers mentioned that in March 2014, the first iteration of STLS's Integrated Monitoring Report will be available. All data collected by the RMP for the Small Tributaries work will be analyzed in the report. The report will make clear what the RMP has learned over the course of monitoring and managing POCs and will provide recommendations for next steps. Before beginning Water Year 2015, the RMP, BASMAA, the Water Board, and others will need to decide if the same level of effort for the monitoring Small Tributaries is necessary (possibly affecting future budgets).

Action Items

1. If TRC members have comments on the multi-year plan, send them to Jay Davis before the end of December 2012.
2. Meg Sedlak will discuss ending SQO work with Tom Mumley and Karen Taberski and write a short memorandum (~ 1 page) regarding the possible change.
3. Develop a margins sampling proposal for the March 2013 meeting.

4. Information: 2013 Pulse and Annual Meeting

Pulse of the Estuary

Jay began by saying the SC approved the Pulse outline and noted that the agenda package contains a slightly outdated Pulse outline. The two management articles ("Water Board Management of CECs" and "Green Chemistry to prevent Water Pollution") will be merged into one article. Additionally, Karin North should be listed as an author. Jay noted that of the four science articles three are on track (the studies are either finishing up or are already completed). The only article that Jay is slightly concerned about is "Broadscan Screening for CECs" because the final product is not completed. The articles should be completed by the end of March, but some articles will be submitted sooner.

Discussion

Karin North commented that Lorien Fono, from PM Engineers, is going to write the management article. Karin will coordinate a meeting between Lorien, the Water Board, and BACWA to solicit ideas for the article. Jay Davis suggested adding Kelly Moran and Debbie Raphael to the meeting. Karen Taberski wondered who was writing the “Microcystin in the Bay” article; Jay responded that he has not decided who will author the one page articles, but he may ask Raphe Kudela to write the article. Chris Sommers added that Raphe has done SPATT monitoring in many coastal areas and would be able to include an interesting graphic spatially comparing microcystin blooms.

Action Items

1. Karin North will keep Jay in the loop on Jay the Pulse’s management article.

Annual Meeting

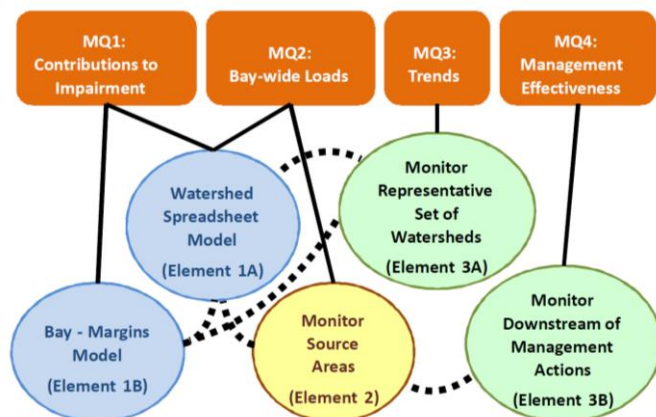
Meg Sedlak updated the TRC on the 2013 Annual Meeting planning. The meeting is a collaboration between the RMP and the Estuary Partnership. The RMP annual meeting will be a full-day session at the State of the Estuary meeting (October 29 and 30). The first planning meeting was December 7, 2012.

6. 2012 Highlights and 2013 Workplan

6a. Sources, Pathways, and Loadings [Lester McKee]

Lester McKee gave a review of Sources, Pathways, and Loadings Workgroup (SPLWG) projects completed in 2012 and projects planned for 2013. Lester stressed that SPLWG projects were integrated with other RMP research projects; data from SPLWG research helps inform other studies such as the dioxins strategy and nutrient studies. Lester reviewed Regional Watershed Spreadsheet Model (RWSM) improvements and plans for next year’s model iteration; he discussed the Water Year 2012 POC loads study and shared preliminary data; finally he went over Water Year 2013 POC loads study’s progress, he explained how the two pump stations added to the sampling site list are characterized by a unique hydrology compared to other sites.

Lester first presented the conceptual model shown below, which illustrates the Small Tributaries Loading Strategy’s framework document (a multi-year plan that is updated annually). The management questions inform the different technical aspects of the program.



Lester then described highlights from 2012 regarding the RWSM and POC loads monitoring studies. There is a living report that is updated every year explaining changes to the RWSM. The user interface has improved, there are new PCB and Hg specific source layers included in the model, and a copper test case model has been completed. This coming year a model for PBDEs and OC pesticides will be completed. Lester noted that after conducting literature reviews to determine contaminant source areas, it became clear that world data was not suitable for the model's use. Thus, he hopes that the next model runs will provide information on possible field sampling locations. Lester added that he is confident in the quality of the model outcomes on the regional scale. For example, the results from copper test case model lined up with the results from the Brake Pad Partnership's model. But, he also believes that the model will work on the sub-regional scale as well. Lester also shared an overview of sampling and preliminary data from WY 2012. San Leandro Creek is showing a high Hg signal, the source of which is unknown. He added that because last year was a dry year, there were not as many upper watershed contaminants (less of a mining influence).

Finally, Lester presented WY2013's progress and explained that the sampling for Pulgas Creek is behind because of equipment delays; he presented plans for the RWSM in 2013; and went over 2013 funding sources and management support for the Small Tributaries Loading Strategy.

Discussion

Chris Sommers commented that the more resource intensive load monitoring studies within the six watersheds are validating the results of the reconnaissance study, a more cost-effective approach. He wondered if by using the less-intensive approach the STLS team could monitor more watersheds. Lester responded that there is a lot of value in a reconnaissance study and that BASMAA and the Water Board can decide how to move forward regarding methodology.

Mike Connor wondered if a nutrient version of the RWSM will be built because BACWA wants to determine how nutrient point-source loads compare to non-point source loads. Emily Novick noted that the nutrients team is already making use of the RWSM. Currently, only runoff volumes are being used to calculate nutrient loads into the Bay, but the next iteration will look into land use specific concentrations to provide a more accurate estimate of overall nutrient loading to the Bay. Chris Sommers commented that funding could be made available to consider nutrients for the RWSM. Currently, BASMAA has a contract with SFEI to manage all POC loading data. Meredith Williams commented that SFEI may be able to provide matching funds to help monitor nutrients loading. Lester noted that it will be important to include the North Bay watersheds with large agricultural influences in a nutrients model. He also said local data collection could be used to verify that values cited in the literature match Bay Area loads for land-use specific concentrations. For example, local data shows that the Bay has relatively high P concentrations because of the marine cretaceous geology and because of release from WWTPs. Solely examining literature values would not elucidate unique Bay Area source signals.

Mike Connor asked if BASMAA was endorsing the RWSM; Chris Sommers responded that BASMAA has been helping with source-area mapping for PCBs; source area concentrations are correct if the model outcomes match the bottom-of-the watershed concentrations. Once the source areas are mapped, management actions can be discussed.

6b. Mercury and PCB Strategies and Syntheses [Jay Davis]Mercury Synthesis

Jay Davis discussed the recent publication of the mercury synthesis, "Reducing methylmercury accumulation in the food webs of San Francisco Bay and its local watersheds." Richard Looker was a co-author of the paper; therefore, the potential management actions were well-documented. The paper was completed as an article in a special issue of Environmental Research, in collaboration with the Coastal and Marine Mercury Ecosystem Research Collaborative (C-MERC), a group from Dartmouth University. Jay stated that the team effort and large number of reviewers added value to the effort. In addition to the series of papers, C-MERC published a summary report titled "Sources to Seafood" and invested effort in making the findings available to the public (http://www.sfei.org/news_items/cmerc).

Discussion

Chris Sommers wondered if anyone else outside of the Bay Area has the perspective of managing Hg inputs from wastewater and stormwater. Jay Davis responded that most of the attention is focused on atmospheric deposition, specifically coal-fired power plants. It is difficult to accomplish anything locally regarding atmospheric deposition in the Bay Area as much is coming from Asia. The mercury synthesis was unique because of its discussion of other inputs, such as stormwater loads, and ways to reduce methylmercury in the ecosystem.

PCB Synthesis

Jay Davis told the SC that a draft of the PCB synthesis will be ready by January 2013. The budget for this effort is \$53,000. The synthesis will address and examine the status of our knowledge for the nine questions regarding PCBs as articulated in the multi-year plan. Discussions with the SC and with the modeling team have made clear which questions to focus on. Not all of the questions will be answered due to limited funds.

Mike Connor questioned what the error bars were for PCB load estimates; Jay responded that the synthesis will include qualitative error bars. Chris Sommers added that quantitative loading estimates are a part of the RWSM. Chris mentioned he would like the synthesis to include where the sediments that contain PCBs are actually being stored (e.g. storm drains, streets, yards, etc.). Chris would be interested in how understanding PCBs from the open Bay perspective help BASMAA's current efforts. Mike Connor added that he would like the synthesis to address how probable it was for PCBs to change over time; and thus how often they should be sampled.

6c. USGS Water Quality Monitoring [David Schoellhamer]

Dave Schoellhamer presented to the TRC about USGS Water Quality Monitoring, with a focus on the Sediment Transport Research Project. Dave presented an update on SSC, DO, and salinity. He described how the USGS is attempting to install a deep station in Central Bay in 2013 (possibly partnering with the Exploratorium) and that DO sensors were deployed at three stations in 2012. Regarding SSC, he discussed the clearing trend that is occurring despite a wet 2011 and explained the Dumbarton Bridge sediment flux. Dave also described how he is seeing lower DO in sloughs than in the Bay and explained the theory behind why periods of low DO occur. Finally, Dave discussed suspended-sediment outflow at the Golden Gate and described the method behind using Alcatraz SSC as a surrogate to estimate the outflow (using January 2008 data collected via depth-integrated sampling transects across the Golden Gate).

Discussion

The TRC focused on discussing the physics behind the Dumbarton sediment flux and the reason behind lower DO in sloughs and how tides influence DO levels. The committee also briefly discussed the Golden Gate sediment flux.

Mike Connor asked David Schoellhamer to re-explain the physics behind sediment flux in Lower South Bay. Dave responded the conventional wisdom was that only tides flush the Bay and that freshwater flows do not cleanse the bay. However, when there are high fresh water flows from the Delta, Central Bay contains higher volumes of fresh water than South Bay. The saline water in South Bay is denser and the higher density drives South Bay flows underneath the freshwater and into Central Bay. The movement along the bottom transports sediments into Central Bay. The later the freshwater flow into Central Bay occurs, the greater the sediment outflow from South Bay. A significant density gradient is key for flushing the lower South Bay. Dave ended by saying that an article in a special issue of Marine Geology will explain the sediment flux and that overall this process shows that the Bay cannot be looked at separately, but should be examined as one entity. He indicated that Greg Schellenbarger was revising the factsheet on sediment flux in Lower South Bay. Chris Sommers wondered what size of freshwater flows need to enter the Bay to instigate the mixing mechanism; Dave responded that they have not quantified the flows necessary, only that the flows must be large enough to make Central Bay less saline than South Bay. Mike Connor suggested explaining to the Central Valley water district's that higher flows are needed from the Delta in order to clean the South Bay. Eric Dunlavey wondered if sediments exiting South Bay was typical. Dave responded that it is not typical now that the snow melt peaks that traditionally occur later in the season are now captured for drinking water. Jay Davis wondered if historic salinity data could be used to hindcast sediment export from South Bay; Dave responded that there is 20-25 years of detailed salinity data, so hindcasting is possible. Mike Connor suggested predicting sediment residence time in South Bay using salinity data. Karin North noted that Mark Marvin-DiPasquale has sediment core data from Alviso and Jay responded that the deposition rate could be compared in the cores. Chris Sommers asked if bathymetry data was available to examine sediment flux; Dave replied that bathymetry data was collected for salt ponds, but there are gaps in the data set.

The TRC then discussed DO levels in Alviso Slough, where DO levels vary over the year. The periods of low DO occur due to less tidal mixing and the transport of low DO water to the mouth of the Bay from upstream. Minimum DO levels are found during the neap tides at the slack tide after a weak ebb. Mike Connor confirmed that the minimum DO levels occur for around 1-2 hours. Chris Sommers commented that as you move into freshwater; the DO level increases. Additionally, when organic matter is washed into the Bay during a warm storm event (early season rains), the minimum DO drops even further in the sloughs. In Guadalupe, the downstream transport of organic matter is associated with fish kills. Chris commented that the "greening" movement in urban areas (decreasing imperviousness) is adding organic material to the system, which creates a new management challenge. Jay Davis wondered why the DO level increases so quickly after the minimum DO. Dave responded that Bay water with higher DO begins flowing in during the subsequent flood tide. Chris added that as the tide goes up, the low DO is pushed upstream. Dave Senn wondered if the issue being discussed was the sediment oxygen demand or the water column oxygen demand. Chris Sommers replied it was the sediment oxygen demand

and Dave Senn responded that sediment oxygen demand has a high baseline that varies based on the introduction of organic matter.

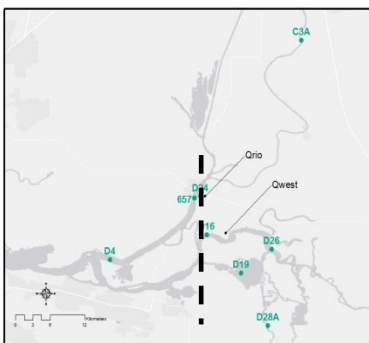
Following the DO discussion, the group discussed the sediment flux out of the Golden Gate. Jay Davis asked if there are times when the flux is negative. Dave Schoellhamer responded that there are times when the flux is slightly negative. Chris Sommers asked what the error bars were for the estimates of sediment outflow. Dave replied the error bars are most likely between 30 and 40 percent, with a maximum of 50 percent. Dave noted that he expected the sediment flux to be decreasing since the Bay is becoming clearer; therefore, he wonders if normalizing by the mean Delta outflow is not appropriate. Dave wants to conduct field validation to determine if the methods are working. Dave Senn asked if the sediment samples were archived so we could perform a mass balance of contaminants in the Bay by analyzing contaminant loads on sediments leaving the bay; but, the samples were not archived.

6d. Nutrients [David Senn and Emily Novick]

Nutrient Loading Study

The general nutrients strategy update was presented by Dave Senn. Dave began by saying that in November a nutrients stakeholder meeting occurred and a revised nutrients strategy document was created. Two work elements were added to the nutrients strategy: program management and subembayment specific issues. Dave also noted that a decision making structure needs to be generated soon to prioritize research needs. After Dave's general update, Emily Novick and Dave presented results from the nutrient loading study; Dave went over the nutrients conceptual model and the monitoring program development; and finally, Dave discussed developing a bay-wide nutrient modeling tool.

Emily Novick listed the various sources examined in the nutrients loading study and mentioned that the POTW loads are the best constrained estimates. Data from all major Suisun dischargers (except for Fairfield because the plant uses nitrification) were analyzed to increase the confidence of loading estimates. Emily noted that for stormwater loads there is a lack of real-time monitoring data, so the RWSM was used to estimate loads. The nutrients team is interested in seasonal variation in runoff and is examining average runoff per month. Emily moved on to explain the load from Delta efflux, which is largely unknown. The team used a similar approach as Jassby and Cloern (2000), the Delta efflux load was calculated as the load across the dotted line (below), based on nearby water quality station data. In 2013, an IEP funded project will use the DSM2 model (runs sub-daily) to give a more accurate monthly estimate of Delta efflux loads.



Dave Senn expanded on the Delta's role; currently the team only has a monthly estimate of Delta efflux, and Dave wants to have a model that will respond to changes in flow (which may require

daily or sub-daily estimates). A proposal was developed to quantify the nutrient load that enters Suisun Bay from the Delta and to quantify if changes in nutrient levels has affected water quality over time. In the immediate term, Dave wants to determine how loads in Suisun Bay will respond to water diversions, changes in residence time, and other possible changes in the delta's hydrology.

Discussion

Chris Sommers noted that Lester McKee should have literature on land-use specific estimates of nutrient loads. Nirmela Arsem mentioned that EBMUD is submitting both total and dissolved data and wondered if both data sets were useful. Dave Senn responded that both data sets will be useful during the first quarter of 2013. Tom Hall similarly asked what parameters were useful; for example, is nitrite useful? Dave replied that nitrite is only expected to be high when there is intense de-nitrification and nitrification. But, the nutrients team is still determining if nitrite is solely produced as an intermediate or if there are nitrite loadings. Therefore, both Dave and Mike Connor agree it is worthwhile to collect nitrite data until it can be eliminated as a source.

Nutrient Conceptual Model and Monitoring Program

The creation of the nutrient conceptual model is on budget, but the draft will not be ready until January or February. The draft will be first sent to the technical team, who are co-authors, for review and the draft will subsequently be sent to the nutrients workgroup. Dave also mentioned that the synthesis of Suisun Bay is coming to a close. Dave is interested in facilitating a workshop on the synthesis where scientists can recommend further studies in Suisun Bay; the group's recommendations would become a chapter in the Suisun synthesis. Dave mentioned that he is planning on convening a nutrients workgroup and is still determining what the group's mission will be and who will be members.

Dave Senn also described the monitoring program development for 2013 and discussed major questions regarding the program. The RMP approved a moored sensor pilot study at Dumbarton Bridge that will be deployed next to David Schoellhamer's instruments. Dave Senn then discussed how the USGS monitoring program is going to ramping down, which will increase the cost of the program because some of the cost was adsorbed by USGS's overhead. The main question is how to transition institutionally and scientifically. The RMP does not have the money to take-on the full monitoring program; Dave noted the SWRCB will help inform the decision of how to make the institutional transition. Dave finally described the stormwater nutrient monitoring program. Thus far, stormwater data from 2012 has not been analyzed; Dave proposed combining the WY2012 and WY2013 analysis to increase the depth of the study.

Discussion

Tom Hall mentioned that he would like the nutrient workshop to include primary production inhabitation and enhancement; he is interested in eutrophication in the South Bay. Regarding the ramping down of USGS's monitoring program, Chris Sommers asked if anyone had broken down the full cost and determined the cost of each program element. Jay Davis responded that Jim Cloern provided the RMP with a cost summary. Mike Connor stated that it would be more cost-efficient to partner with an organization other than USGS. Chris mentioned that the graphic Dave Senn presented regarding the estimated cost of the monitoring program

was incorrect. The cost should stay constant, the only reason the cost appears to be increasing over time is because the USGS overhead costs are included.

Chris Sommers asked how the stormwater data will be used in comparison to the RWSM. Mike Connor and Dave Senn responded that it will be used to calibrate the model. Chris replied that the local watersheds are heterogeneous and two years' worth of data will not tease out land-use specific concentrations. He suggests communicating with Alicia and Lester and obtaining land-use specific concentrations from literature reviews. Mike Connor said he would like Emily Novick to present a strategy and a time frame for how the nutrients team will determine stormwater loads.

Karen Taberski wondered if the Water Board should re-think purchasing probes for the moored sensor study and re-direct funding to add sensors to existing moored stations. Dave Senn responded that the plan is to stick with the original proposal of deploying a moored sensor system at Dumbarton Bridge. He will update the TRC next year on the study's progress and will address whether the plan should change.

Finally, TRC members volunteered to join the Nutrients Workgroup. Tom Hall thought that until the workgroup gets off the ground, only TRC members should be part of the group. Karen Taberski, Chris Sommers, Tom Hall, Eric Dunlavey, and Karin North volunteered to be workgroup members.

Action Items

1. Emily Novick will present to the TRC a strategy and a time frame for how the nutrients team will determine stormwater loads.
2. Dave Senn will present an update to the TRC on the moored sensor pilot study in 2013.

6e. Modeling [David Senn]

Dave Senn briefly described updates regarding developing a bay-wide modeling tool. He stated that there needs to be a modeling workshop with 3-7 people to make sure they agree with the selected platform (Delft3d). In October, a small technical team met (including Jay Davis, Emily Novick, Dave Senn, Jim Fitzpatrick, and Craig Jones) and approved the modeling approach.

Discussion

Karen Taberski noted that the budget Dave Senn distributed has a different allocation for nutrients than the 2013 Budget. Dave Senn responded that his budget includes nutrients work and forecasting as one line item, while the 2013 budget separates the two programs.

6f. Effects Studies [Meg Sedlak]

Meg Sedlak presented an update on the Exposure and Effects Workgroup (EEWG). She briefly explained the workgroup goals and then described current EEWG projects. David Baldwin (NOAA) has begun examining Cu's effect on salmon's olfactory nerve in high salinity environments for the RMP; David will produce a report synthesizing the results for managers to include in their permits. Meg then briefly discussed the results of the small fish study and noted

that three manuscripts will have resulted from the study. Finally, Meg described the outcomes of the 2012 Moderate Toxicity Workshop. The workgroup came together to determine the source of persistent, moderate toxicity in the Bay. Based on their expertise, the workgroup members considered possible factors influencing the toxicity and then spent the majority of the time discussing next steps. The group suggested: 1) examining existing data to look at possible correlations 2) reviewing the statistics 3) refining TIEs 4) determining if there is metal toxicity from cations not previously examined, such as bioavailable forms of iron. Meg then briefly went over studies that are monitoring contaminants' impacts in the Bay including the 2012 Hotspot Study, the 2013 bioanalytical tool study that is just beginning, and the development of the mesohaline benthic indices. She also listed the remaining EEWG deliverables.

6g. Contaminants of Emerging Concern [Meg Sedlak]

In the interest of time, this item was tabled for a later date.

6h. Status and Trends [Meg Sedlak and Adam Wong]

Adam Wong presented the Status and Trends (S&T) update including the S&T 2012 sediment and bivalve cruise; the 2012 sediment piggyback study run by a Stanford University student (who will present to the TRC when results are available); the 2013 S&T monitoring program; and the 2011 Annual Monitoring Report, which will be released in January 2013.

Discussion

Chris Sommers asked what siloxanes are; Meg responded that they are a stabilizer that is pervasive in common household items including shampoo and deodorant. Derek Muir is running siloxane samples pro bono. Similarly, Raphe Kudela's UCSC lab is running microcystin samples from the S&T 2012 bivalve cruise pro bono. Karen Taberski confirmed that the next sediment cruise is in 2014 during the dry season.

Adam Wong noted that the RMP is working on revising the QAPP for S&T monitoring and will possibly move on to revising it for sportfish and bird egg monitoring. Chris Sommers responded that it has been a while since the QAPP was revised; because it our guiding document for S&T monitoring he would like the QAPP to be discussed at least every four years. Adam Wong noted that the only major change in the methodology was regarding pesticides. Meg Sedlak replied that even if there are not any major changes, that discussing the state of the QAPP periodically makes sense. Nirmela Arsem mentioned that \$25,000 from BACWA was approved to revise the QAPP; Meg agreed and said the money was spent creating the dioxin QAPP, which is the template for the current QAPP.

Chris Sommers stated that SCCWRP is putting effort into genetic barcoding of benthos and thinks it should be discussed if RMP benthos work continues. Meg Sedlak responded that barcoding is still a long way off and she is not sure if the Bay community is on-board. Chris replied that it would be valuable to get SCCWRP's opinion on the effort.

Action Items

1. Discuss with SCCWRP their opinion and the status of genetic barcoding of the benthos.

6i. Data Management [Cristina Grosso]

Cristina Grosso presented an update on data management and mentioned that we are in good shape for both 2011 and 2012. She also described 2013 goals. Cristina began by presenting the 2012 highlights and emphasized the time spent automating internal procedures. Updates include:

1. Updating the chain of custody (COC) tool by moving it to SQL server. Now, field crews can enter a URL and generate COCs;
2. Working on the RMP Deliverables Scorecard;
3. Creating a WWTP Metals Upload tool, a site where treatment plants can upload their data (useful for determining WWTP fees);
4. Moving the kriging tool into R so it can become another layer on the CD3.

Cristina then went over data management's performance metrics. Data management's goal is to receive data from labs 160 days after sample collection. Regarding internal timeliness, data management aims to release and upload data to CD3 45 days after they receive it from the labs.

Finally, Cristina went over examples of tools that incorporate RMP data. The Healthy Streams Portal merges data from different projects and bins the data according to the various categories that affect stream health. RMP data is also available in the EcoAtlas, a tool that provides a landscape context for the extent of aquatic resources (all toxicity data is available in EcoAtlas).

Discussion

Chris Sommers wondered if the stream bio-assessment data was being incorporated into the Healthy Streams Portal or the EcoAtlas. Cristina responded the data will be incorporated into both tools. Chris also asked if he could upload his own boundary into the EcoAtlas tool.

Meredith Williams said that the EDIT team is working on being able to delineate your own boundary. Cristina added that currently EcoAtlas allows you to create a boundary based on an auto-delineated basin produced by StreamStats, draw an area of interest, or select a pre-defined area. Cristina asked the TRC to email her with any suggestions for improving the tools.

7. Action: Approve Detailed Workplan, set date for next meeting and Plus/Delta exercise on today's meeting [Bridgette DeShields]

Karen Taberski motioned to approve the 2013 Detailed Workplan, Tom Hall seconded the motion, and the workplan was unanimously approved. The date for the next meeting is March 5, 2013.

Nirmela Arsem asked what the scope of the TRC was and if the group has been formalized. Chris Sommers responded that the committee has not run into any issues thus far, but he is in favor of formalizing voting members. Karen Taberski noted that there have been issues in the past regarding what projects to fund. Chris explained that the TRC's role is going through the details of RMP projects and studies and make recommendations regarding what projects should move forward, before they go to the SC for approval. However, the SC has taken a more active role lately, the dialogue has become more robust. Therefore, Chris suggested that the TRC assume a more technical role. Jay responded that the TRC is in charge of the technical quality of the RMP, which is now typically sorted out in the workgroups and the TRC provides an additional layer to the technical review process. Nirmela Arsem mentioned that she brought up the TRC's role because there was confusion among the POTWs regarding nutrient monitoring

and would have appreciated the TRC giving direction for how to proceed. Chris responded that asking the TRC to get involved in permit regulations is not a good fit for the committee.