



**RMP
Technical Review Committee
December 12th, 2013
San Francisco Estuary Institute
Meeting Summary**

Attendees

Bridgette DeShields, Arcadis/WSPA
Luisa Valiela, USEPA
Karen Taberski, SF RWQCB
Amy Chastain, AECOM/ SFPUC
Eric Dunlavey, City of San Jose
David Schoellhamer, USGS
Maureen Downing-Kunz, USGS
Meg Sedlak, SFEI
Jay Davis, SFEI
David Senn, SFEI

Lester McKee, SFEI
Jim Kelly, SFEI
Don Yee, SFEI
Ellen Willis-Norton, SFEI

Call In

Tom Hall, EOA, Inc. (South Bay Dischargers)
Chris Sommers, EOA, Inc. (BASMAA)

I. Introductions and Approval of Agenda and Minutes [Bridgette DeShields]

Item to Approve:

Bridgette DeShields asked if all members were in favor of approving the previous TRC summary, and the summary was unanimously approved.

II. Information: Steering Committee (SC) Report [Meg Sedlak]

Meg Sedlak informed the TRC that the SC approved the additional monitoring of wastewater and stormwater for alternative flame retardants and that the SC agreed with the TRC's suggestion to not proceed with nutrient stormwater modeling. Meg then introduced the TRC to Jim Kelly who replaced Meredith Williams as SFEI's interim Executive Director. Jay Davis informed the TRC that the Board will release the announcement for Executive Director in mid-December.

III. Information: Planning Update [Jay Davis]

Jay Davis passed out the multi-year planning budget summary to the TRC. He reviewed the funding allocations for special studies in 2015, noting that Nutrients work will receive the largest amount of funds (\$500,000), assuming that the level of funding for Jim Cloern's USGS work is maintained, followed by Small Tributaries (\$475,000), and Emerging Contaminants work (\$100,000). Funding for dioxin work was reserved for 2015 to wrap up the last few years of the Dioxin Strategy. Jay made clear that the funding level is a general statement of the RMP's priorities for 2015, specific studies

have not been determined. The SC is always open to workgroups coming up with new high priority study ideas. For example, Peter Carroll has become interested in the idea of creating a Selenium Strategy.

Jay then stated that the SFRWQCB is interested in completing SQO assessments for additional hotspot locations in the Bay (similar to the 2011 effort in San Leandro Creek and Mission Creek). Karen Taberski noted that completing SQOs for one hotspot with three sample sites cost around \$50,000. Luisa asked about the motivation for the work; Karen replied that the motivation is to see if the hotspots can be removed from the 303(d) list. Chris Beegan from the State Water Board indicated that completing SQO assessments for three sites at the hotspot would most likely be an acceptable approach to de-list the sites.

Jay explained that funding is allocated for PCB work in 2015 to follow through on the PCB synthesis. The plan for 2015 and beyond is to monitor margin areas where cleanup actions are being planned by BASMAA (actions are currently planned for five locations). Before monitoring occurs, conceptual models of each of the potential monitoring sites will be completed. Jay projected that two conceptual models could be completed in 2015 (\$40,000) and three more could be completed by 2016 (\$60,000). The conceptual model results would then inform a pilot monitoring study in the areas downstream of the cleanup sites.

Luisa Valiela asked about the last item on the budget summary, Trash Particle Monitoring. Meg responded that the RMP collected nurdle data with Ian Wren around four years, but the results were not surprising. Luisa noted that a recent study by Anna-Marie Cook (Region 9 EPA) found that fish with higher levels of plasticizers tend to also possess a higher concentration of organic contaminants (e.g. PBDEs). Luisa suggested bringing up the topic with the Sport Fish Workgroup.

IV. QA/QC Update [Don Yee]

Don Yee gave an update on 2013 QA/QC challenges concerning cyanide (CN) and PCBs. Don began by providing background on the method for measuring CN and listing past difficulties with CN. Don then explained the improvements made in 2013 including 1) pre-testing of reagent lots, 2) reducing the drift in the calibration signal and 3) following the drift by continuously bracketing the readings with blank and calibration point readings. Don noted that the new methodology increased the accuracy and precision of the 2013 CN results. Many of the results were ND for 2013; however, this is likely a function of the low detection limits.

Don then described the dip in PCB sediment concentrations from 2004-2006 that was identified as part of the PCB synthesis effort. He explained that the dip was mysterious because there were no QA/QC issues identified by the lab or by SFEI staff (e.g., issues with certified reference materials (CRMs) or matrix spike (MS) recoveries). The organics lab, EBMUD, subsequently reviewed all of the data and found that the 2004-2006 samples were analyzed prior to the re-analysis of 2002-2003 samples, which were analyzed alongside the 2010 samples. EBMUD determined that the most likely cause of

the change was a more thorough sample-drying methodology in 2007. Don noted that the drying modification disproportionately affected the field samples, compared to the CRMs and MSs. Thus, typical QC samples may not show inter-lab and inter-year differences. In the future, unaltered local samples should be used to compare concentrations; EBMUD will use older field samples for inter-year verification. Don provided the TRC with three options for handling the 2004-2006 PCB data:

1. flag data as estimated with a likely low bias;
2. censor/remove the data;
3. or reanalyze 2005 data to make the gap in the data consistent (sediment is currently being analyzed on a two-year cycle).

Discussion:

Don Yee clarified that the 2002-2003 data was originally analyzed on a low resolution mass spectrophotometer and EBMUD reanalyzed the data with a high resolution mass spectrophotometer after 2006. Bridgette DeShields asked whether the dredged material testing thresholds were biased low because of the dip. Meg responded that when the 2004-2006 data was removed the threshold became slightly higher.

Bridgette indicated she was uncomfortable simply flagging the data because the flag would not be transparent for the user. The user would need to know to look at the qualifiers to determine whether the data was biased. Bridgette supported censoring the 2004 and 2006 data and reanalyzing the 2005 data. Meg estimated that each sample would cost approximately \$700/ sample to reanalyze and there were 47 sites sampled in 2005. Bridgette responded that the samples could be analyzed over multiple years. Meg also recommended removing the PCB data from the CD3 website. Luisa added that if someone was interested in the 2004-2006 data, they could contact the RMP and ask for it. Meg noted that the data might be useful if someone was conducting a congener fingerprinting analysis. Meg ensured that the CD3 would indicate that the 2004-2006 PCB data is available if requested. Bridgette suggested preparing a proposal that describes options for the reanalysis of 2005 data.

Amy Chastain recommended the proposal for the reanalysis of 2005 data include whether certain sites or regions should be prioritized in the reanalysis process. Amy added that there should be a discussion of how the 2004-2006 PCB data will be presented in the Pulse of the Bay. She suggested that the data could be included in the figures, but the transparency increased for the 2004-2006 data points.

Don noted that the change in sample drying may have affected all of the organics concentrations (biased low from 2004-2006), not just PCBs. A similar dip in concentration was observed for organochlorine pesticides; however, it appears that PBDEs and PAHs were not affected (a pronounced dip was not observed). Don asked if all organic contaminant concentrations should be censored for 2004 and 2006 and reanalyzed for 2005; Bridgette responded affirmatively. However, both Luisa Valiela and Karen Taberski agreed that there is no evidence that the change in drying method affected the PBDE and PAH concentrations; therefore, the data should not be removed,

but rather flagged as estimated values. Meg stated that the internal RMP team will discuss whether all of the organic contaminant concentration data from 2004-2005 should be removed from the CD3 and CEDEN and will send the TRC an email with the final decision.

Jay Davis Jay asked if changes in analytical methodologies are tracked annually. Meg replied that SFEI's Data Management team retains all RMP SOPs. Jay then said that a super composite of striped bass was generated during the sport fish survey and he wondered if creating super composites of sediment would be useful for field comparisons. Don responded that it could be useful if homogeneity was ensured. Bridgette then asked if a correlation could be created between the original and reanalyzed samples; if so, a correction could be applied to the original results. Don responded that there would most likely be too much variation because of the difference in moisture content.

Action Items:

1. Data Management will add a footnote to the CD3 page indicating that the 2004-2006 PCB values have been removed, but are available as estimated values upon request.
2. Meg Sedlak and Jay Davis will prepare a proposal for the TRC that outlines options and associated cost estimates for reanalyzing 2005 organics data.
3. Meg Sedlak will email the TRC with the decision of whether to censor all of the organics data from 2004-2006 or just the PCB and organochlorine pesticide concentrations.

V. Action: Optimizing Status and Trends: Part 1 - Reducing Open Bay Monitoring [Jay Davis, Meg Sedlak]

Jay Davis stated that at the last TRC meeting, the group began discussing streamlining the S&T program. The goal for the day's discussion was to determine what cuts can be made to the existing program to focus the resources on high priority items.

Jay then went through the matrices and analytes currently included in the S&T program and indicated which ones were explicitly used in regulatory decision making or ones that were high priorities for consideration in decision making. For example, bird egg and sport fish monitoring for MeHg is called for the Hg TMDL (see Table 1 below). On the other hand, there are no specific regulatory targets for monitoring legacy pesticides in sport fish, but the long-term trend would still inform management decisions. For bivalves, that aren't any explicit regulatory objectives, but the PAH, CEC, PBDE, and nonylphenol bivalve data inform decision making. Selenium (Se) monitoring in bivalves is also used decision making. Robin Stewart for USGS has been conducting long-term monitoring of Se in North Bay clams, but due to federal cutbacks she may lose funding to continue this work. Jay then noted that monitoring data for many water quality analytes are explicitly used in decision making because of the water quality objectives and the California Toxics Rule. Similarly, in sediment sediment quality objectives and dredging testing thresholds are driving the monitoring of various analytes.

Table 1. Metrics explicitly used in regulatory decision-making (blue) and others that are also high priorities for consideration in decision-making.

	Sport Fish			Bird Eggs			Bivalves			Water					Sediment (Open Bay)							
	Baywide Comparison to Objective	Segment Comparison to Objective	Baywide Long-term Trend	Segment Long-term Trend	Site Long-term Trend	Baywide Long-term Trend	Segment Long-term Trend	Site Long-term Trend	Baywide Long-term Trend	Segment Long-term Trend	Site Long-term Trend	Baywide Comparison to Objective	Segment Comparison to Objective or Trigger	Baywide Long-term Trend	Segment Long-term Trend	Reasonable Potential Analysis (Comparison of Pathway to Ambient)	Baywide Comparison to Objective	Segment Comparison to Objective	Baywide Long-term Trend	Segment Long-term Trend	Dredged Material Testing Thresholds (Comparison of Pathway Particles to Ambient)	
Methylmercury	X		X			X	X	X														
Mercury																			x	x	X	
PCBs	X		X		x	x	x												x	x	X	
Selenium	X		X			x	x	x		?	?	?	X	X	X	X						
Copper													X		X				x	x		
PAHs									x	x	x	X				X			x	x	X	
DDTs			x		x							X				X					X	
Chlordanes			x		x							X				X					X	
Dieldrin			x		x							X				X					X	
Dioxins and Furans			x		x	x	x	x				X				X					X	
Toxicity												X	X					X	X	X	X	
Benthos																	X	X	X	X		
Other CTR Pollutants												X				X						
Cyanide												X				X						
CECs						x	x	x	x	x	x			x	x		x		x	x		x
PBDEs						x	x	x	x	x	x								x	x		
PFOS						x	x	x											x	x		
Current Use Pesticides														x	x		x					x
Fipronil														x	x							
Ammonia												X				X						
Other Metals												X				X						
Nonylphenol									x	x				x	x				x	x		

Jay then proposed a new S&T design that incorporates the analytes value in informing decision making. Jay based the design on three levels of monitoring frequency (A=every round, B=mid-level, C=minimal screening). An asterisk indicates declining trends expect and if observed a reduction in frequency of analyses. The table below lists the suggested monitoring frequency for the analytes in the five matrices.

	Sport Fish	Bird Eggs	Bivalves (reduced number of sites?)	Water	Sediment - Open Bay
Methylmercury	A	A		?	C
Mercury	A	A		C	C
PCBs	A	A		C	C
Selenium	A	A	?	A	C
Copper				A	C
PAHs			A	C	B
DDTs				C	C
Chlordanes				C	C
Dieldrin				C	C
Dioxins and Furans	A	A		C	C
Toxicity				B	C
Benthos (dry only)					C
Other CTR Pollutants				C	
Cyanide				C	
CECs		B	C	B	B
PBDEs	A*	A*	A*		B*
PFOS	A	A			B
Current Use Pesticides				B	
Fipronil				A	
Ammonia				A	
Other Metals				A	C
Nonylphenol			A*	A*	B*

Jay reviewed the recommended monitoring frequency for analytes in water. The analytes that will continue to be monitored biennially include MeHg because of the risk to biota; copper (Cu) because a three-year rolling average is calculated; other metals that are analyzed for no additional cost alongside Cu; CECs that were listed as of moderate concern in the CEC strategy (fipronil and nonylphenol); and ammonia. The new design recommends monitoring CECs that are not of moderate concern every four years. Jay suggested monitoring mercury, PCBs, PAHs, pesticides, dioxins and furans, and other California Toxic Rule pollutants every 10 years to provide a semi-quantitative long-term trend. Finally, Jay maintained that water is not the appropriate matrix for monitoring PBDEs and PFOS and the analytes should not be monitored during S&T water cruises.

Jay then discussed possible changes in the sediment S&T monitoring plan. The monitoring frequency for all of the analytes is either every four years or every eight years (biennial sampling is not recommended). The new design includes monitoring for CECs, PBDEs, PFOS, nonylphenol, and PAHs every four years and monitoring every eight years for all other analytes, including toxicity and benthic community condition. Jay made clear that the cost savings from reducing the sediment monitoring frequency would be considerable.

The proposed plan includes eliminating monitoring of organochlorine pesticides in sport fish and legacy pesticides in bird eggs because there is no indication that concentrations are increasing. Jay noted that the SFB RWQCB does not find the bivalve data valuable, but the RMP still supports monitoring bivalves at a smaller number of sites (six versus 11). PCBs would be monitored infrequently, every eight years, to establish a long-term trend. The new design also includes the continuation of biennial monitoring of PAHs and

PBDEs; however, the design eliminates monitoring of legacy and organochlorine pesticides. Nonylphenol would also be monitored biennially, while other CECs would be measured every 10 years.

Discussion:

Luisa Valiela asked whether pathogens are being monitored in bivalves; Jay responded that they were not. Karen Taberski noted that the SFB RWQCB was monitoring pathogens in edible clams, but the population of edible clams declined to the point where monitoring became unnecessary. Luisa then asked if there were nine water toxicity sites; Meg affirmed that there were only nine stations with at least one site in each embayment. She indicated that water toxicity is infrequently observed and that the last round it was only seen in the river stations, not in the open Bay.

Chris Sommers stated that regulatory decisions are made on a shorter time frame than eight or 10 years (the monitoring frequency for “C” analytes). Jay responded that there are no clear temporal trends for the analytes that the new design calls for monitoring infrequently. Bridgette DeShields asked if there were any management actions that are anticipated on a shorter time frame than eight to 10 years. Eric Dunlavey responded that Hg and PCB permits are on a five-year cycle. He added that monitoring that infrequently would not provide information about whether management actions are having an effect. Luisa and Jay agreed that the cutbacks in the current S&T program would allow the RMP to create a monitoring program in the Bay margins, where the effect of management actions would be more apparent.

Bridgette stated that she does not expect the dioxin levels in bird eggs and sport fish to change temporally, but the monitoring frequency is listed as “A.” Jay responded that the RMP Dioxin Strategy called for the contaminant’s analysis in the two matrices. Bridgette thought that only one more round of sampling may be necessary. Karen asked why CECs were still being monitored infrequently in bivalves (every 10 years). Jay replied that specific CECs may be monitored more frequently, but the broad screening that is in collaboration with NOAA will occur every 10 years.

Jay asked for opinions on the significant reductions to the water and sediment component of the S&T program. Amy Chastain asked if it was necessary to continue monitoring legacy pesticides in sediment, even infrequently. Karen responded that the pesticides were included in the SQO analysis. Amy asked why copper was monitored biennially in water, while cyanide was only monitored every 10 years when both have a site-specific objective. Eric Dunlavey replied that a three-year rolling average is calculated for Cu, unlike CN. Amy wondered if the monitoring frequency of CN should be “A” or “B”, not “C.”

Chris asked about the total cost savings if all of the proposed changes were approved. Meg and Bridgette estimated around \$70,000 to \$100,000 in savings. Bridgette suggesting providing the TRC and SC a full cost breakdown for the new S&T design as well as the full monitoring plan for the next 10 years. Chris noted that the laboratory and labor costs for the cruises where only the “A” (2-year analytes) are sampled will be

relatively high compared to the cruises where both the 4-year and 2-year analytes are sampled. He stated that only seven analytes will be sampled every other biennial water cruise and wondered whether those analytes could be moved to a 4-year monitoring frequency. Jay stated that the driver for conducting a biennial water cruise was the Cu three-year rolling average, but Cu concentrations are expected to decrease and asked Karen to talk to Richard Looker about whether Cu can be moved to a 4-year cycle. (*Richard waiting for the results of a power analysis by RMP staff.*) Karen noted that the TRC appeared to be supportive of moving all of the analytes to a 4-year cycle to reduce costs.

Action Items:

4. Jay Davis and Meg Sedlak will provide the TRC and SC a full cost breakdown for the new S&T design as well as the full monitoring plan for the next 10 years.
5. Jay Davis will change PCB monitoring frequency in bivalves to a “C” in Table 2 of the S&T monitoring design changes handout.
6. Karen Taberski will ask Richard Looker whether Cu can be moved to a 4-year monitoring cycle. (*RMP staff will conduct a power analysis to determine suitability of a reduction of sample frequency.*)

VI. 2013 Highlights and 2014 Workplan [Meg Sedlak]

Meg Sedlak briefly introduced the next agenda item; each workgroup will provide highlights from 2013 accomplishments and discuss 2014 plans.

VIA. USGS Suspended Sediment Monitoring [Dave Schoellhamer and Maureen Downing-Kunz]

Dave Schoellhamer began his presentation by stating that he runs the continuous monitoring program portion of the RMP in the Bay. He provided an update on the various suspended sediment, salinity, and dissolved oxygen (DO) continuous monitoring stations, highlighting that a new Exploratorium station is being deployed because the USGS was interested in having a monitoring station in deeper water. Additionally, the Exploratorium is interested in using data visualization tools to make the data accessible to the public in the Bay Observatory Gallery. Dave noted that the lack of funding resulted in the Corte Madera Creek station being discontinued on October 1st and the Coastal Conservancy is only funding the Alviso Slough station until April 1st.

Dave also noted that a special issue of Marine Geology was published last month that focused on sediment transport in San Francisco Bay. The following articles were published in the journal:

1. [“A sediment budget for the southern reach in San Francisco Bay, CA: Implications for habitat restoration”](#)
2. [“The use of modeling and suspended sediment concentration measurements for quantifying net suspended sediment transport through a large tidally dominated inlet”](#)
3. [“Seasonal variations in suspended-sediment dynamics in the tidal reach of an estuarine tributary”](#)

4. [“Adjustment of the San Francisco estuary and watershed to decreasing sediment supply in the 20th century”](#)

Dave then discussed the collaboration with the RMP Nutrients team. Three RMP water quality instruments were installed at the Dumbarton Bridge, San Mateo Bridge, and Alviso Slough. Dave noted that his team is also collaborating with the RMP on the Lower South Bay Synthesis report.

Dave’s colleague Maureen Downing-Kunz then updated the TRC on the preliminary findings from the DO monitoring stations in the Bay. She began her presentation by stating that the stations in the main channel have considerably higher DO levels than the Alviso Slough station, on the perimeter of the Bay. From June 2012 through April 2013 the DO level in Alviso Slough was below 5 mg/L approximately half of the time. Maureen noted that the Bay is characterized by a diurnal DO pattern, with low DO at night and high DO during midday. DO levels are typically lower in the summer than the winter with the lowest DO observed during the summer neap tide. The low DO levels correlate with low suspended sediment concentrations (SSC). The low SSC indicates decreased mixing because of an intermittent stratification event. Therefore, during the summer neap tide there is an unexpected stratification event occurring.

Dave then informed the TRC of the status of the 2015 fiscal year. As mentioned previously, \$225,000 per year of external funding was eliminated for the continuous monitoring stations in Corte Madera Creek and Alviso Slough stations. Additionally, the funding for monitoring the Dumbarton sediment flux is also no longer available (\$50,000 per year). DWR and USGS only provide funding for data collection and the RMP funding has remained level since the 1990s (\$250,000 per year – interagency transfer from USACE to USGS). Therefore, the present level of work in the Bay is not sustainable. Dave ended his presentation by listing further work ideas including: 1) a reference slough study in South Bay, 2) a Golden Gate flood sampling contingency plan, 3) an Alviso Slough sediment and mercury transport study (the South Bay Salt Pond team is interested in the study), and 4) data to support modeling.

Discussion:

Lester McKee asked if the reduced funding for the Dumbarton Bridge site means that monitoring will not occur at the station. Dave responded affirmatively, beginning in 2015 there is no funding for the station so monitoring may have to stop.

VIB. Sources, Pathways, and Loadings [Lester McKee]

Lester McKee began his presentation by stating that the Municipal Regional Stormwater Permit’s (MRP) management questions are not changing with the new permit’s release this year, but the focus of the Small Tributaries Loadings (STLS) Strategy is shifting. So far, the primary focus of the STLS strategy has been on collecting monitoring data from watersheds around the Bay to identify high leverage watersheds. Lester reviewed the results from the last 12 years of monitoring, in which 24 watersheds have been monitored. Lester listed the highest leverage watersheds and highlighted that the smaller tributaries tend to have high contaminant yields (e.g., Ettie Creek Pump Station has the

highest mean annual PCB yield in ug/m²/year). He noted that these high loads from small tributaries may be locally impactful.

Lester then introduced the Regional Watershed Spreadsheet Model (RWSM) by stating that its purpose was to improve regional estimates of Hg and PCB loads in support of the TMDLs. He briefly described how the RWSM generates the annual load estimates, which are based on rainfall, land use, five geological classes, and three slope classes. Lester noted that the STLS team hosted a local sediment experts workshop and the workshop participants generally agreed on the model architecture. The experts suggested adding a climatic factor and expressed the concern that RWSM users outside of the STLS team may use the model at the incorrect scale.

Lester stated that the RWSM is currently over-predicting sediment loads, but the STLS team recommended moving forward with the Hg and PCB model while continuing to update the sediment model. Lester then described the status of the Hg and PCB model: 20 land use categories have been identified; estimates of water and particle concentration data were obtained; the calibration data was collected; an auto-calibration technique was created; and currently about 20 different runs of the initial model have been completed. Lester stated that the initial PCB RWSM calibration results are encouraging. The model fails to calibrate the extreme outliers, which is normally difficult with a simple parameterization. The STLS team will need to re-group and determine how to move forward.

Lester then explained how BASMAA is negotiating a new MRP, where the focus will be on effective management actions. He stated that POC loads monitoring studies can help identify temporal trends. A sign of management success would be if total mercury decreases in relation to stormwater discharge, or if contaminant concentrations decrease in relation to turbidity levels. Therefore, re-monitoring certain watersheds would be an effective tool to assess the impact of management actions. He ended the presentation by asking the TRC where the SPLWG should apply its monitoring resources.

VIC. Contaminants of Emerging Concern [Meg Sedlak, Ellen Willis-Norton]

Meg Sedlak began the update on Contaminants of Emerging Concern (CEC) activities by stating that the CEC Synthesis and CEC Strategy have been completed. Rebecca Sutton is almost finished with the PBDE summary, which will be turned into a journal article once she returns from maternity leave in February. Sampling for the 2014 Alternative Flame Retardants special study is ongoing. Ten Bay water samples have already been collected, with the help of various RMP partners. The stormwater, effluent, sediment, bivalve, and seal samples will be collected in 2014.

Meg then described the status of the bioanalytical tools study, which focused on four estrogen mimicking compounds that were recommended for monitoring in the state's CEC panel report (i.e., estrone, BPA, nonylphenol, galaxolide). In 2013, ten assays were developed for biomarkers associated with growth, brain development, and reproduction. The plan for 2014 is to obtain wastewater effluent from two facilities from Northern and

Southern California; measure the concentration of the contaminants; apply bioassays to the effluent; and then characterize the effects of the contaminants to the whole fish during the early life stages and in juveniles.

The 2012 perfluorinated study is almost completed, the field sampling and analysis is finished. Meg is currently writing the article, which will be completed on February 1. Meg noted that results indicate that pelagic fish have lower PFOS concentrations than the benthic fish, which may explain why the seals in the southern portions of the Bay have higher PFOS loads.

Ellen Willis-Norton then presented the progress of Current Use Pesticide (CUP) work. She explained that the originally funds were allocated to host a CUP Meeting, but the RMP (with input from ECWG members) determined that mapping pesticide use in the Bay area was a more appropriate first step for identifying pesticides that the RMP may consider monitoring in the future. To complete the mapping exercise, the DPR provided the RMP with spatially explicit agricultural pesticide use data that was reported at the township level. Twenty pesticides were selected for the mapping exercise from DPR's initial list of 425 pesticides based on the amount of active ingredient used and the toxicity of the pesticide (lowest aquatic life benchmark). In 2014, the RMP will review the environmental fate and use pattern of the current list of 20 pesticides. Then the RMP will create GIS maps of the pesticide's use throughout the Bay area.

Discussion:

Amy Chastain asked why urban pesticides were not included in the mapping exercise. Ellen and Meg responded that the data for urban pesticide use was not as complete. Meg suggested that Amy contact Kelly Moran to learn more about the lack of urban pesticide use data.

VID. Data Management [Cristina Grosso]

Cristina Grosso presented an update on 2013 Data Technical Services (DTS) activities. In 2013, 2012 sediment and bivalve data were uploaded to the CD3. The only data set that has not been published on CD3 is 2012 grain size data, which Don Yee is currently working with the lab to resolve some issues. Cristina noted that the Data Management Team has tracked the number of external queries to CD3 and found that the number of queries increased from 2012 to 2013. Other Data Management Services updates include adopting a new tracking system for datasets and SOPs (JIRA/Confluence) and automating the generation of the Pulse's kriging maps. Cristina also briefly described updates to the RDC and CEDEN including automated uploading/checking scripts; adding time series tables to the database; and improving the accessibility of RMP data.

Cristina then listed the improvements the Data Management Team would like to see in the CD3 tool in 2013. The suggested improvements include more options for querying data; updating the mapping and user interface; refining the download for the excel spreadsheets; and including more meaningful statistics, time series visualizations, and Pulse graphics on the web interface. Cristina ended her presentation by displaying a proof of concept for a new CD3 tool, which leverages on work completed by the

EcoAtlas team. She showed the TRC how the tool provides summary statistics and how it can focus in on areas of interest.

VIE. Nutrients [Dave Senn, Emily Novick]

Dave Senn presented the Nutrient program update and began by stating that the Nutrient Conceptual Model, the Nutrient Loading Study, and the Nutrient modeling Program Development Plan will all be completed by the end of December 2013. Dave noted that the stormwater monitoring report is delayed because the Nutrients team has not received authorization from BASMAA to report on the 2013 nutrients data. Dave stated that 2014 will be an exciting year with a number of reports coming out including the Lower South Bay Synthesis, Suisun Synthesis II, the Nutrient Science Plan, the Nutrient Modeling Plan, and the DO in South Bay and Lower South Bay margins report. The Nutrient Science Plan will determine which studies, monitoring and synthesis, special studies, or modeling studies, can help inform the highest priority issues and goals.

Dave then discussed the installation of the three moored sensors at the Dumbarton Bridge, San Mateo Bridge, and Alviso Slough. The data from the Dumbarton and San Mateo Bridge will eventually be available online in real time. The funding for the USGS monitoring station may end in April; therefore, the moored sensor may be moved to Coyote Creek. The goal of the moored sensor program this year was not scientific, but to develop the capacity to deploy and maintain the sensors and develop procedures for data management, processing, and presentation.

Dave then showed the moored sensor results for various parameters and time periods to illustrate how the data can be visualized. Dave showed how changes in DO and chlorophyll a levels coincide with changes in the tide. Based on the initial results, Dave is interested in conducting a DO mass balance for Lower South Bay. Dave then showed chlorophyll a data from November and December, where it is clear a bloom occurred. Dave noted without the moored sensors the bloom event would most likely not have been monitored.

Dave then discussed the priority questions regarding the sensors performance including:

1. What is typical biofouling drift for individual sensors? What biofouling prevention tools are most effective?
2. How are fluorometer results influenced by potential interferences?
3. How do fluorometer results vary due to differences in fluorescence per unit chlorophyll?
4. How variable are the chl versus fluorometer relationships in space and time?
5. How well do EXO sensors agree with other manufacturers/models?
6. What amount of ancillary data collection is necessary in order for in-situ chl-a and lab analyzed chl-a to agree within acceptable limits?

Dave noted that the sensor's performance, especially for conductivity, is affected by biofouling (question one). It may be necessary to purchase an instrument that covers the sensor when sampling is not occurring; however, the instrument costs approximately \$4,000. To help answer question five, Dave and Emily Novick placed the RMP's sensor

on the Polaris to compare the results to the USGS's fluorometer. In the majority of the Bay, there was agreement between the two instruments.

Dave then provided the TRC with a brief update on nutrient modeling activities. The Nutrient team has chosen to use Delft3D as the base model because energy has already been invested into developing the grids and hydrodynamics. Additionally, other RMP projects or RMP stakeholders may be able to use the Delft3D model.

Discussion:

Luisa Valiela asked if anyone has predicted what the new steady state of suspended sediment will be in the Bay and if the model will be able to determine how long the Bay will be impaired. Dave responded that the Nutrients team is trying to answer how different factors control the ecosystem's response to nutrients. For example, the team is asking what would happen if clams disappeared or if light levels changed. The team is also trying to understand projections of various factors including suspended sediment concentrations.

VIF. Selenium Strategy [Bridgette DeShields]

Bridgette DeShields noted that Peter Carroll and other RMP participants have been discussing how the upcoming Selenium TMDL may require the formation of a Se Strategy, similar to that of the Hg and PCB Strategy. If the Strategy is not in place before the TMDL is approved, the Strategy team can help with the implementation of the TMDL. Bridgette named some Se experts that she thought should join the Strategy team including Thomas Grieb, Harry Ohlendorf, Sam Luoma, and Robin Stewart. Bridgette then asked if the TRC agreed with the idea of a Se Strategy; The TRC generally agreed to move forward and to schedule a meeting that included Se experts and EEWG, SPLWG, and SFWG members.

Action Items:

7. Meg Sedlak and Bridgette DeShields will create a proposal to bring to the SC regarding a RMP Se Strategy.

VIII. Action: Set date for next meeting and Plus/Delta on today's meeting [Bridgette DeShields]

Item to Approve:

Before setting the new meeting date, Luisa Valiela motioned to approve the 2014 Detailed Workplan. Eric Dunlavey seconded and the Detailed Workplan was unanimously approved. The next TRC meeting was scheduled for March 25, 2014.