# Leapfrog Consulting

*Spirited Visions* • *Grounded Strategies* • *Creative Leaps*

**BACWA Governance Structure**
**Interviews with BACWA Executive Board**

**Summary of Findings**

Methodology

Kayla Kirsch, President of Leapfrog Consulting, conducted telephone interviews with BACWA Executive Board members on October 11-12, 2012. The purpose of these interviews was to gather ideas about a potential governance structure for NNE and nutrient management.

Two governance approaches were shared in writing in advance and served as straw models in order to solicit recommendations and spur creative thinking among the five participants. Prepared materials and an interview protocol were developed in conjunction with Jim Kelly, BACWA Interim Executive Director and Ben Horenstein, Board Chair.

Prepared materials were provided to participants on October 10, 2012 and are included in the Appendix of this report. Materials included a cover letter by Jim Kelly with background information, and a matrix with 14 potential concepts for consideration for an oversight and management of nutrient strategy. The two potential straw-model governance approaches were defined and summarized as follows: (1) evolve the current NNE process and (2) develop a Green Field approach. The Green Field approach was defined as a process that would extend to the NNE implementation phase and entail proposing "what BACWA needs to represent its interest rather than trying to accomplish it through a transition of the current NNE effort." While not all concepts and definitions were equally clear to participants, the straw models did solicit specific feedback on key aspects of a nutrient management and oversight approach. Interview protocol is also provided in the Appendix of this report.

Participants did not give equal weight or time to questions asked during the interviews; appropriately, they focused on what was most important to them. Thus, this summary shall serve as a composite of the Board's views rather than an extensive quantitative analysis. Should further quantitative analysis prove useful as a follow up, Leapfrog Consulting has drafted an electronic survey to solicit

responses for each of the 14 concepts in the matrix and can administer this survey as part of the original contract.

Findings

*Evolve the current structure or embrace a more extensive Green Field approach?*

The majority of participants favored evolving the current RB2 process in place. The reasons for choosing this option over a "Green Field approach" were pragmatic: it seemed like the more doable option, BACWA has limited human and financial resources, and the Green Field approach might be too difficult to manifest. The range of responses fell into a typical bell-shaped curve: one participant thought that BACWA should better use the existing RB2 process and supported some changes outlined in the "evolve current system" part of the matrix, one participant strongly favored a Green Field approach, and the remaining three fell somewhere in the middle.

One participant indicated that the RB2 already has a good process in place but BACWA Principals were not sufficiently engaged as stakeholders and did not work collaboratively with RB to support this process (e.g., we take an antagonistic stance, we've separated ourselves from the other stakeholders, want to create our own process rather than join others). Others were concerned that it was difficulty for a .20 fte staff person to take on and evolve the current RB2 process.

There were mixed opinions about the efficacy of creating a Green Field "CEP-like process" since it is resource intensive. For those involved with CEP in the past (focused on mercury), participants believed that stakeholders were well heard and it led to better outcomes with CEP than if it had not been in place. Other effective efforts cited included Marine Life Protection Act (led by regulatory players) and those of the Aquatic Science Center. One member noted that while a Green Field Approach would be nice if we had the resources to do it, "it's not going to happen." One participant wondered if we could use a similar process used for getting a permit (hearings, comments, etc.).

The main rationale for a Green Field Approach is to construct a model that increases ownership by key stakeholders and improves the likeliness of a successful outcome. Those leaning towards a Green Field Approach viewed "evolving the current system" as patching together and improving a flawed process ("folksy, informal, whoever-shows-up") would not adequately address the complexity and consequential nature of the NNE and ongoing nutrient efforts. As one member noted, "It would be difficult to ensure a good outcome with a process that is so flawed and undefined; evolving it would only lead to patching together a lot of talk and disparate actions." The Clean Estuary Partnership was suggested as a possible name for the Green Field effort.

A third alternative was also posed during the interviews. Given resource constraints, it was suggested to continue with the existing RB2 process ("as is") and BACWA create Consent Decrees with the Regional Board senior leadership.

*Why a Governance Structure? What Should Be Governed?*

There is significant impetus to improve or create a viable governance structure. Four out of five participants viewed NNE and nutrient development as a high-stakes process in need of significant management and oversight improvement. There was some agreement that if an effective process was not put in place now (there is a window of time to change or improve the process), repercussions will be felt downstream, such as (1) creating unsound science due to special interests, (2) high-cost ramifications in terms of permits, nutrient removal, etc. As one participant explained, there are two elements that overwhelm: "there's so much money at stake for the fixes, and there are interests that are very powerful that have their agenda (that are antithetical to our best interests) who will force a decision that will overwhelm a good process. We are hoping for something to ameliorate those two effects."

The majority of participants sought to invest in a transparent process in which "science is driving good decisions regarding the health of the bay and we avoid political and legal blowups in which huge amounts of money is spent on non-substantive water quality issues."

Especially for those favoring a Green Field approach– or application of a Green Field approach to some of the concepts cited in the matrix – it was important that a governance structure achieve both transparency and prioritization of activities to maximize the cumulative effectiveness of efforts. Given the level of complexity involved, it was important that "everyone knows and understands what is transpiring: timeframe, funding expectations, stakeholder involvement, decision-making process." As one member noted, "Without that, everything is subject to challenges. With a transparent process, we increase the likelihood of successful outcomes: the right people at the right time are making decisions."

*Who and how should stakeholders participate?*

There was not agreement about how different stakeholders should be involved in a governance structure. The concern about the current RB2 process was that stakeholder involvement is based on "whoever shows up" rather than a thoughtful distribution of stakeholders based on vested interests. There was belief that those with the most to gain or lose should have greater voice than others. Some thought that different stakeholders could be brought in at different stages of the process. At minimum, the process should include stakeholders most affected (e.g., those listed in the Background Paper p.3 such as water, POTWs, NGO's ag).

When asked about the concept (11) to established committees to "aid developing and implementing the nutrient strategy" (Steering, Stakeholder TAC, Implementation group, Administrative Team), several participants believed it would

be worthwhile yet difficult to achieve due to time constraints. One person noted, "We have a hard time getting people to meetings as is – it would be harder with more committees." Several participants thought it was worthwhile to work with RB2 to further define the role of Technical Advisory Team and Scientific Advisory Panel (concept 10); one participant noted that it was "low difficulty and good value." Participants also noted that the work being done on permitting (Tom) and science (David) were useful.

*Responses to the 14 Concepts in the "Existing and Alternative NNE and Ongoing Nutrient Management and Oversight Approaches" matrix*

While further discussion, clarification of terms, and quantitative analysis is warranted, several concepts rose to the top in terms of importance to address in a governance structure:

1. Expand Scope to include ongoing oversight and management of nutrient management efforts
2. Provide Peer Review and Joint Fact Finding
6. Provide BACWA Appropriate Role in Resource Decisions (noted as "critical, with self-interest"?)
7. Provide BACWA Appropriate Role in Evaluation and Developing Compliance and Permitting Strategies
10. Define Role of Technical and Scientific Advisory Panel

Among the few participants leaning towards a Green Field approach, concepts 12-14 were seen as critical in that they created a transparent process – a roadmap – with clear timelines, decisions, and roles and responsibilities.

There was not clear understanding of concept 3 "Use No Regrets Action and Adaptive Management Approach" across Board members; further discussion and clarification of these ideas is warranted.

Two participants also noted that they did not necessarily have sufficient knowledge or frame of reference to propose a governance structure model best suited for this situation.

One participant raised a question that summarizes the dilemma for what was deemed as a "knotty" problem: "*For this magnitude, what process is sufficient?*"

<u>Conclusion and Possible Next Steps</u>

While the interviews did not indicate consensus across the Executive Board for a singular governance model, there is a high degree of motivation to improve and evolve the current process. Although the arguments for a Green Field Approach were compelling (build it right and avoid problems downstream), there does not appear to be sufficient understanding or confidence in what that could look like to decide on this option at this point.

It would be worthwhile for the Executive Board to further discuss and explore each of the fourteen concepts introduced in this data collection cycle, clarify the difference between "evolve current" and "Green Field" approach for each, and ascertain which concepts are most important to address. The highest priority concepts can serve as a set of criteria from which to evolve the current system and explore alternate solutions if appropriate. One participant reviewed the list of concepts using a mental model with two axes: the amount of energy needed and level of importance. These two factors could be used in an electronic follow up survey should the Board seeks further clarification of where individual Board members stand in regard to each of the 14 concepts as part of governance structure development. It could also be useful to ask participants again whether it would be best to "evolve current" or take a "Green Field" approach once everyone understands all terms used and the differences across approaches are clarified and amplified. A draft electronic survey is available for review via the following link: http://www.surveymonkey.com/s/Y5LPNTD.

It would also be useful to examine other models in which the high-priority concepts have been well addressed. The Marine Protection Act, CEP, and the Aquatic Science Center were each mentioned. This could lead to outright adoption of a model or a hybrid approach in which BACWA decides to evolve certain concepts within the current RB2 process and develop (and resource) one or more of its own initiatives to better address other concepts.

# Appendix 1

## Preparation Materials Provided to Executive Board Members

# NNE and Nutrient Management and Ongoing Management and Oversight Alternatives

## Background

RB2 staff is working with the SWRCB, the Southern California Coastal Water Research Program (SCCWRP) and the San Francisco Estuary Institute (SFEI) to develop NNEs for the San Francisco Estuary (SFE). This effort is part of a statewide initiative, supported by the U.S. EPA Region IX and the SWRCB, to address nutrient over-enrichment (eutrophication) in State waters, specifically to develop the NNE framework for streams and lakes and for California's coastal estuaries. The SFE's historic resilience to eutrophication/change due to nutrients has been showing signs of weakening. The current nutrient management efforts described herein are in response to trends in SFE, not to a 303d listing action or an identified impairment; hence there is no existing regulatory deadline other than to conduct and submit some identified studies. The current RB2 lead SFE Numeric Nutrient Endpoint (NNE) development and associated activities include:

- Developing assessment criteria
- BACWA support of development of SFEI's role in developing the Nutrient Strategy
- Model selection
- Conceptual model development
- Developing a Nutrient Strategy to guide the development of nutrient management alternatives/proposed rulemaking (as and if required)
    - Identify key technical questions to be answered by overall project scope;
    - Revise monitoring program to answer management questions and to address reduced role of USGS in monitoring the Estuary; and
- Establish a model to simulate SFE and evaluate implementation scenarios
- Suisun Bay SWAMP Studies
- CCCSD permit related nutrient investigations
- SFEI Nutrient investigations
- 13267 investigations of POTWs nutrients

The goal is to develop NNEs that can be used by the RB2 in its water quality programs. RB2 is using a stakeholder advisory group (SAG) to help guide the development of the San Francisco Bay Estuary NNE. RB2's SFE NNE Project page states that the purpose of the current SFE Stakeholder Advisory Group (SAG) is to "guide the development of the NNE for the Estuary and to advise the Water Board on the science and policy supporting NNE development and specifically to review background policy and technical information, provide stakeholder perspective and input on the NNE process and technical documents. The SAG also advises the Water Board on the selection of experts to be part of the Technical Team and the Scientific Advisory Panel." At this time, the roles of the Technical Team and Scientific Advisory Panel are not described. Also, the how the RB2 will use the developed NNEs in the water quality programs is not discribed. How the NNEs are developed and how they are used in the water quality program is of great interest to BACWA. While BACWA does meet with RB2 staff every other month to discuss matters of common concern, incuding the NNE devlopment and future ongoing nutrient management after the NNE development is completed, BACWA has a number of concepts (see attached table) that it would like to have considered. Whatever concepts and oversight structure we come up with, it will need to be flexible, as our understanding and situation will evolve. We need to recognize this is an unparalleled effort regarding the magnitude of the effort and the lack of information at hand to set a clear direction.

Consideration the concepts in the table is important to BACWA and its members because it will conduct or support significant additional studies, such as additional support of SFEI nutrient related studies and the outcome of the SFE NNE process could be the biggest part of BACWA members' capital budgets for the next one to two decades. The concepts introduced in the table would help ensure capital funds are spent on projects that would protect the SFE, have a net environmental benefit and provide regulatory certainty

The following sections discuss how the current process addresses BACWA's concepts, how the current process could be modified to address BACWA's concepts, and what a green field approach might look like. It should be noted that RB2 is sympathetic to several of BACWA's concerns and may address some of the concepts in the next draft Nutrient Strategy.

## Current Process

As shown on the attached table, the current process does not address many of BACWA's concepts for developing the NNE and providing ongoing management and oversight of the nutrient strategy. The current process cannot address BACWA's concepts without significant modifications. BACWA did introduce a number of these concepts to RB2 in its comments on the Draft Nutrient Strategy last spring; RB2 is to release revised version of the Draft Nutrient Strategy this month, perhaps some of the concepts will be introduced in the revised draft. If not, commenting on the Draft

Nutrient Strategy will be an opportunity to introduce the concepts that BACWA is interested in pursuing. A number of the concepts do not need a modification of the structure; for expample a commitment to peer review science, joint fact finding, no regrets actions, committing to adaptive management, defining the role of the Technical Team, and naming and defining the rold of the Scientific Advisory Panel could be done now.

## Evolve Current NNE Process

However, some of the concepts would require expanding the current process. Because of the magnitude and complexity of the effort to develop the NNE, the financial role of some stakeholders, the iterative implementation and long term nature of the process, and the potential for solutions other that treatment only, it is appropriate to consider expanding the current process to include implementation and ongoing oversight of the nutrient management effort. This would include involvement of those who could be impacted by the NNE, those developing the implementation framework or those implementing the NNE. For this approach to proceed, the Regional Board will have to agree to expand the scope of the nutrient management effort and share the oversight and development of nutrient management with stakeholders, as suggested below.

The SFE nutrient effort should engage parties that have an interest in the water quality, management, use of the SFE, or could be affected by the management scenarios considered. These entities may include but may not be limited to:

- NGOs
- State and Federal Water Contractors, USBR, and individual water districts
- Ag: Farm Bureaus, associations, etc
- WateReuse?
- BASMA/MS4 permit holders
- BACWA/POTWs
- Sac Regional/RB5
- WSPA/industrial NPDES permittees
- Permitting agencies: BAAQMD (GHG concerns), BCDC and others (sea level rise concerns)
- Regulatory agencies (EPA, etc.)
- Resources Agencies
- SFEI/IEP

Different Participants have different “stakes” in the nutrient management options. Some are governed by permits (Water contractors, BASMA/MS4, NPDES permit holders, Ag, WDRs, etc.), and some may be called to permit future management actions, such as BAAQMD, BCDC, etc. The following paragraphs describe how additional committees could differentiate unique roles and responsibilities of Participants and help address BACWA concepts.

SFE SAG meetings could be held for SAG Participants to receive informational updates, discuss topics, and make coordination decisions about developing the nutrient management alternatives (Publicly noticed and open to the public?). The agenda could be developed with a Steering Committee to ensure the information needs of the stakeholders are met. SAG meetings could continue to be chaired by RB2 staff (Given the magnitude of the nutrient management decisions, should engaging a neutral facilitator be reconsidered? S/he would have to be funded either by a grant or participants). The RB2 representative would work with the **Steering Committee** to review and modify SAG meeting agendas, assess the status of assignments/studies, and track Committees, and the TAC.

The purpose of the Steering Committee would be to lead the SAG and to make resource decisions. The Steering Committee would comprised of Participants that are NPDES permit holders and RB2. The current NPDES permit holders are expected to have unique responsibilities to achieve nutrient management solutions, and many are making direct and/or indirect financial and in-kind contributions to support the technical work of the NNE process. In this context, there is a reasonable hierarchy of decision-making authority for the Steering Committee to make resource decisions. Steering Committee meetings would also address items unique to Dischargers such as to address funding and in-kind support topics, or to discuss policy conditions related to regulatory actions.

Either as part of the Steering Committee or in a separate committee, representatives of RB2, BACWA, and BASMA would focus on implementation. The Subgroup could also include others, as appropriate, who will be regulated. The purpose of the Subgroup is to provide opportunities for candid discussions about SFE NNE development and implementation strategies with the Regulators. Topics of discussion could include: 1) interim / final technical outcomes, 2) credits for prior nutrient studies or reduction efforts, 3) a possible trading program, 4) role of water reuse as an nutrient management method, 5) role of wetlands treatment/wetlands restoration, 6) development of regulatory and permitting strategies, and 7) others as appropriate.

The SFE NNE Development requires administrative oversight to keep efforts efficient and effective. Currently there is no umbrella group that verifies progress toward key milestones and tracks expenditures. With the number of parties working on the SFE NNE effort, this type of coordination is needed to keep the effort on track. Administrative Oversight Committee members should include RB2, BACWA, SFEI, and others as appropriate. This committee potentially could be combined with the Steering Committee.

As the NNE and nutrient management implementation are developed input from others could help address key topics or outstanding items, such as:

- Outreach: Ensure that all parties that might be affected by the SFE NNE processes are aware of the planning, technical activities and other activities.
- Regulatory: Updates from and about RB2, RB5, SWRCB, and U.S. EPA activities and trends.
- Permit: Update regulatory agencies (BAAQMD, etc.) on future regulatory actions that could result in projects they would permit.
- Resource Agencies: Advise SFE NNE process of actions by DWR, and the fisheries agencies that could affect the SFE NNE.

Other advisory committees may be deemed necessary by the Steering Committee, and they will be convened on an as needed basis.

## Green Field

The current NNE process provides a limited role for BACWA and does not consider implementation. A Green Field Approach would entail proposing what BACWA needs to represent its interest rather than trying to accomplish it through a transition of the current NNE effort. It would require greater engagement by BACWA and a greater commitment of resources.

Through an agreed upon Charter, Memorandum of understanding or other vehicle, the concepts that BACWA seeks to be address would be addressed. The agreement would state what the concepts are, and would establish a way to implement the concepts. As mentioned earlier, several of the concepts can be adopted now and the attached table provides a sketch of how to address the concepts. Some of the key principles are:

- Establish the scope as NNE development and development and implementation of ongoing nutrient management framework,
- Provide regulatory certainty
- Establish method to encourage and credit alternative approaches,
- Provide BACWA Appropriate Role in Resource Decisions,
- Provide BACWA Appropriate Role in Evaluation and Developing Compliance and Permitting Strategies,
- Establish Committees to provide input, develop innovative implementation methods and oversight
- Would likely be developed in conjunction with next phase on commitments for BACWA funded NNE related studies.

These principals would be part of a formal agreement.

**Existing and Alternative NNE and Ongoing Nutrient Management and Oversight Approaches**

| | Concept | CURRENT | EVOLVE CURRENT | GREEN FIELD |
|---|---|---|---|---|
| 1 | Expand Scope to include ongoing oversight and management of nutrient management efforts | RB2 lead NNE effort; No formal implementation planning | Expand existing NNE effort to formally include implementation planning and extend the horizon of the current nutrient management effort | Establish the scope as NNE development and development and implementation of ongoing nutrient management framework |
| 2 | Provide Peer Review and Joint Fact Finding | Implied, process has not been formalized | Work with RB2 to document current process and expand as appropriate | Establishes peer review and joint fact finding procedure |
| 3 | Use No Regrets Action and Adaptive Management Approach | Implied | Work with RB2 to Define what these mean and how to apply | Establishes this as part of management approach |
| 4 | Provide Method to Explore and provide credit for pursuing Nutrient Management Alternatives (Wetlands, recycling, trading, Trading, etc.) | None, other than BACWA meeting with RB2 every other month | Work with RB2 to Develop method to provide credit for non-direct treatment alternatives as the NNE process proceeds | Establishes Method to encourage and credit alternative approaches |
| 5 | Credit BACWA for Past Efforts | No Framework | Expand current NNE effort to include. | Establish method |
| 6 | Provide BACWA Appropriate Role in Resource Decisions | No Framework | Move from every other month process to one that recognizes our unique role and position | Establish Role, and expands time horizon |
| 7 | Provide BACWA Appropriate Role in Evaluation and Developing Compliance and Permitting Strategies | No Framework | Expand scope of every other month meeting | Establish formal role and process |

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| 8 | Provide Way to Recognize NNE and Impact on Permits in<br><br>Years While Being Developed. | Done on permit by permit basis | BACWA Identifies upcoming permits, issues and data needs With RB2 and develops information and an approach | Establish process/ language for permits as they are reviewed |
| 9 | Change Role/membership of SAG to aid developing and implementing ongoing nutrient strategy. | Guide the development of the NNE for the Estuary and advise RB2 on the science and policy supporting NNE development and specifically to review background policy and technical information, provide stakeholder perspective and input on the NNE process and technical documents. Advises RB2 on the selection of experts to be part of the Technical Team and the Scientific Advisory Panel." | Expand SAG's time horizon and review its role and membership. Work to ensure needed information is provided to BACWA membership | Establish process to advise RB2 and nutrient management process and inform BACWA membership through the development of the NNE and the ongoing nutrient Management process. |
| 10 | Define Role of Technical Advisory Team and Scientific Advisory Panel . | Not defined | Work with RB2 to further define these bodies role before more scientific information is developed to ensure the peer review goal is met. | Propose role of Team and Committee and a way of selecting members |
| 11 | Consider a establishing a Steering Committee, Stakeholder TAC,<br><br>Implementation group, Administrative Team, Other permitting agencies group, and/or Resource Agencies group | Not considered at this time | Work with RB2 to establish groups that will be needed to shape and implement an ongoing nutrient management effort | Establish need groups to inform the process who are not currently engaged. |

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| | to aid developing and implementing the nutrient strategy | | | |
| 12 | Establish a way to track Schedule and progress<br><br>Of NNE development and ongoing nutrient management framework | Process of tracking progress not know and may not be established | Expand scope of every other month meeting or establish a subgroup to track schedule and progress with a report out method | Establish an Administrative Group |
| 13 | Define roles and responsibilities of Parties. | Not defined, or roles are limited. | Work to define the role of the parties. | Document and establish roles of parties |
| 14 | Define process for ongoing management and oversight of implementation of Nutrient Strategy | No process defined. | Work with RB2 to develop framework agreement to broaden scope of current effort | Propose Framework agreement or charter to broaden current effort, codify understandings of current process, and establish roles and responsibilities. |

# Appendix 2

Semi-Structured Interview Protocol

**GOVERNANCE STRUCTURE INTERVIEW QUESTIONS**

BACWA Principals

*Preface: It is my understanding that BACWA has proposed to establish a governance structure. In this first phase, I am interviewing all of the BACWA Principals to gather ideas, tap your creatively about a oversight or management model, and see where we have areas of agreement and areas for further exploration across BACWA Principals. I would like to first ask you some general questions, and then use two straw models (Evolve Current and Green Field) as a springboard to get your input on what this structure could look like in more detail. I am not sure that we have agreed with the term governance structure. I have used the term oversight (or steering committee) too. We are looking at a number of alternatives, including expanding the scope of the existing effort, and/or adding a governance/oversight role and/or considering a different regional approach that is distinct from the efforts to-date.*

**General Questions**

WHAT

- In thinking about outcomes, I'd like you to imagine that we have fast-forwarded a few years out and the governance structure we put in place was wildly successful and used as a model in other places. What did we accomplish? What did we do that we couldn't do as well without the governance structure?

- What should we be "governing"?

WHY (if needed)

- Why is a governance structure important at this time?

WHO

- Who should be part of this structure? Could the parties be added as time goes on? Should there be any nonvoting members? (e.g., SFWCA, NGO's, etc.)

- How could we provide a voice to other stakeholders in this process? (such as , water contractors, ag, urban runoff, NGOs, sport fishing coalition in the Delta, BayKeeper, NRDC, recognized 3rd parties, etc.?

- What would be the role of the regulators (EPA, SWRCB, etc.)

- How should technical input and feedback be provided from other stakeholders? (e.g. The RMP has both a stakeholder committee and a technical review committee.) The NNE has both a stakeholder group and a technical review committee ; the TRC does not have a defined role.

HOW & WHEN (*Note: this was not talked about during the interviews*)

- For how long – at minimum – is the governance structure needed?
- What are the critical milestones in our timeline to consider? How does this influence when we should begin the governance structure?

OTHER GENERAL

- What other ideas or concerns do you have about a governance structure? How could we be preventive to alleviate or reduce your concerns? How would we proceed without a governance structure?
- What thoughts do you have regarding how we would go about setting up a governance/oversight structure?

Straw Model Questions

*Here are two straw models of a structure that BACWA could adopt. The first evolves the current RB process. The second Green Field approach would seek to establish the scope, expansion, and oversight structure in a formal process.*

*Using the matrix that Jim sent, let's go through the specifics of both of these models and I ask that you provide concrete feedback so that we can create and fine-tune a structure that will work well for the stakeholders involved.*

- WHAT & WHY
  - Review & get feedback on evolving the current process, Green Field approach and key concepts.
  - The matrix lists a number of concepts that BACWA may want to have addressed by a new governance/ oversight structure. Are there concepts that should be added or dropped? This is a general question for both alternatives.
- OTHER
  - What ideas or concerns do you have about this governance structure? How could we be preventive to alleviate or reduce your concerns?
  - Additional suggestions? Comments? Insights?

Questions after Reviewing Models (as time permits)

- In your opinion, which model would work best for the players involved? Which model would be more likely to have a successful implementation? Why?
- How important is creating an oversight structure for your organization?
- Regardless of which model we choose, what values or guiding principles should guide the development of any governance structure?
- What would you name this group? (e.g., Governance Group, Oversight Committee, etc.) What is a good working title?
- What other concepts should we explore in any model?
- What role might the ASC play in this effort?

# RMP Steering Committee Meeting

**October 29th, 2012**
**San Francisco Estuary Institute**
**First Floor Conference Room**
**4911 Central Avenue**
**1:00 PM – 3:00 PM**
**(The SC meeting will follow the Multi-year Planning Meeting scheduled for the morning)**
**http://www.sfei.org/calendar_events/SC10_29_2012**

# AGENDA

| | | |
|---|---|---|
| **1.** | **Approval of Agenda and Minutes** (Attachment) | 1:00<br>Tom Mumley |
| **2.** | **Action: Annual Decision on Committee Chair and Vice Chair** | 1:05 |
| **3.** | **Information: TRC Meeting Summary** (Attachment)<br>Topics of discussion at the September TRC meeting included: a sneak peek of two Annual Meeting talks and updates on the status of the nutrients and modeling efforts. | 1:20<br>Meg Sedlak |
| **4.** | **Information: Budget Status and Confirmation of 2014 fees** (Attachment)<br>An update on the status of 2012 budget will be given. We are generally on track with regard to expenditures. At the January 24th, 2012 SC meeting, the SC approved a 2% increase to the RMP budget. We are seeking confirmation of the increase to begin planning for 2014. | 1:30<br>Lawrence Leung |
| **5.** | **Action: Approval of the 2013 Program Plan and 2013 Line-Item Budget** (Attachments: Program Plan and Budget)<br>The special study elements were approved in August. The Program Plan for all of the elements has been developed.<br>**Desired Outcome**: Approval of the 2013 Program Plan and Budget | 1:45<br>Meg Sedlak |

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| **6.** | **Action: 2013 Pulse and Annual Meeting** (Attachment: Draft outline for Pulse)<br>A draft outline for the 2013 Pulse on CECs will be presented. An update on planning for the 2013 joint SOE/RMP session on CECs will be provided. The Annual Meeting will be on October 29th / October 30th 2013 at the Oakland Marriot.<br>**Desired Outcome:** Approval of outline for the 2013 Pulse so that preparation of the articles can begin. | 2:20<br>Jay Davis<br>Meg Sedlak |
| **7.** | **Information: Deliverables and Workgroup Update** (Attachment)<br>An update on the status of deliverables and workgroup activities will be given. Jay will give a brief overview of the Bioaccumulation Conceptual Model report. | 2:40<br>Meg Sedlak |
| **8.** | **Plus/Delta, set next meeting date and agenda topics** | 3:10<br>Thomas Mumley |

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# RMP Steering Committee Meeting

**August 6th, 2012**
**San Francisco Estuary Institute**

## Draft Meeting Summary

**Attendees:**
Adam Olivieri, BASMAA (EOA)
Peter Carroll, Refineries (Tesoro Golden Eagle Refinery)
Mike Connor, EBDA
Karin North, Small POTWs (City of Palo Alto)
Tom Mumley, SFB RWQCB
Todd McHugh, Industry (USS POSCO) (for Dave Allen)

Jay Davis, SFEI
Meg Sedlak, SFEI
Lawrence Leung, SFEI
Emily Novick, SFEI

**1. Approval of SC Agenda and minutes**
Tom Mumley asked for any changes or questions on the agenda. He noticed that there are several absences from the meeting, and suggested that there should be discussion later in the meeting about the procedure for decision making with so few members. Otherwise, he has no changes. Adam Olivieri motioned to approve and Karin North seconded.

**2. Committee member updates**
First, Meg Sedlak reviewed the action items from the previous SC meeting.

- Action item #2: Training for SFEI on meeting management. Rainer Hoenicke and Meredith Williams are looking it and SFEI was the funds to spend on it.
- Action item #4: Benthic Index report. Based on the comments received on the draft, this project will not happen, especially given the Benthic Assessment report scheduled for 2013.
- Action item #6: Bird Egg report. Meg Sedlak said it is moving forward, and Tom Mumley asked if it will be on today's agenda since the action items indicated it would be. Meg said it will not be discussed in length today but she just wanted to update people on its status. The task is moving forward as agreed at the last meeting: an outline has been prepared, and a draft report will be distributed in October, and a final report in January.

- Action item #8: Data formatting for POTW data. Cristina Grosso is in touch with the group and the Water Board to make sure the data are submitted in a useful way. Karin North said BACWA made a template for all its dischargers in Excel format, and agreed to forward it to Cristina to take a look at. Peter Carroll said Tesoro uses the same template as BACWA.
- Action item #12: Communications survey. Tom Mumley asked about this action item in particular, and Jay Davis said it will be discussed later in the meeting.

*Discussion*

Mike Connor mentioned an upcoming State Water Board hearing on August 21st on the State's Toxicity Policy. A hearing on flows is also being planned - he suggested David Senn as a speaker on nutrients. Peter Carroll said that toxicity is also an issue of concern to him. Karin North asked about filling the position recently vacated by Susan Klosterhaus. Meg Sedlak said she is currently advertising that position through a number of outlets including academic institutions, a posting on SETAC, and a green chemistry newsletter. She has received about 25 resumes so far, 1 or 2 that are of interest. She emphasized that filling this position is a high priority and she wants to get someone of a high caliber on organic chemistry, and as soon as possible.

*Action Items*

1. Karin North to forward out BACWA template for effluent data

**3. Confirmation of the Vice-chair**

Tom Mumley motioned that Karin North be named vice-chair of the RMP steering committee and Adam Olivieri seconded. All members voted in favor.

**4. TRC meeting summary**

Meg Sedlak summarized the June 29th, 2012 TRC meeting. She said that David Senn gave a progress report on the nutrients project. In his summary, he touch on modeling efforts, and there will be a draft of the Conceptual Model in September 2012 and a final in December 2012. Work on quantifying nutrient loads is moving forward, especially with incoming data from the WB 13267 request, and a draft of that report is due in February 2013. Stormwater monitoring for nutrients also was completed, and there is a proposal to continue this work in 2013. Next, Meg mentioned a presentation that Rachel Allen gave on a 2011 sampling campaign for mercury in small fish and also that there are 3 manuscripts in progress on small fish. One manuscript was sent to Chemosphere and came back as accepted with revisions, one on temporal trends is planned for completion by Summer 2012 and one on spatial trends could be completed in Fall 2012 or later. Ben Greenfield is the lead author on both of the latter two manuscripts.

*Discussion*

Karin North noticed that there were comments from Chris Sommers at 6/29/2012 TRC meeting about the balance between nutrients and contaminants in the modeling proposal. Tom Mumley said the CFWG and the modeling team is the forum to address that issue and it is already being dealt with adequately. Karin North then asked if the minutes could be clearer that the issues will be addressed by the CFWG, and Adam Olivieri said that the SC and the TRC should still be informed about that issue being addressed by the CFWG. Jay Davis mentioned this item is on the

agenda as a special study so there is time allotted for feedback on this under agenda item 7. Mike Connor said this is a difficult decision and the discussion should be pushed off until agenda item #7.

**5. Budget status**

Lawrence Leung said that the website that he and Jeff Mueller developed for calculation of fees is up and running. Mike Connor pointed out clients who had not yet paid and Lawrence said they are mainly dredgers. Meg Sedlak wanted to recognize the efforts of Naomi Feger and Karen Taberski for getting in touch with one of the smaller dredgers regarding payment. Mike Connor asked if there was a better way to manage these smaller dredgers, like if there was some information on their permit form. Meg Sedlak said there is a letter sent out with each invoice, but it is worth following up with Beth Christian. Mike suggested asking them to pay up front so that it is accounted for in their project budgets. Tom Mumley agreed that it mostly works but the smaller dredgers are a challenge. He asked to be included on any e-mail communication regarding this issue.

*Discussion*

Tom had a few clarifications on some of the items in the budget. He first pointed out $35,000 of unused funds from Jim Cloern at USGS. He noted that there is a recommendation for that money that will be discussed later in the agenda, but for now it could be considered as $35,000 of unencumbered funds. Next, he asked if the $50,000 of carryover from 2011 contingency funds was already included in the 2012 budget, and Meg Sedlak said it was. Lastly, Tom asked if windfalls from dredgers are added into the dredger reserve. Lawrence Leung said yes, and Tom said the dredger reserve table shows where the reserves come from. Adam Olivieri said that the budget summary handout and the budget memo don't seem to add up and the two pages need to be connected. Mike Connor said it might be worth redoing the accounting strategy, such as closing out the books every year and then reinitiating the contracts for work that carries over. He suggested that Lawrence Leung look into ways that other companies do their budgets. Adam said that his company closes out contracts every year, carries them over and reinitiates them, and puts a footnote in the budget explaining the source of the funds. Any unencumbered funds from the previous year move into the unencumbered column for the next year and there are footnotes explaining the original source. Meg Sedlak said SFEI's current method is easier because only a few contracts stay open every year. Tom said he agrees that it is hard to see how the numbers add up. Mike said it wasn't necessary to make any decisions now, but that Lawrence will look into it.

Meg Sedlak talked next about the request for $3,000 to contribute to a seal workshop organized by Moss Landing scientists. She said she believes given that the Marine Mammal Center (MMC) has been such a great partner for the RMP, it is appropriate for the RMP to fund this. Mike Connor asked if there was a procedure for deciding how to fund smaller things like this, since he didn't think it was a high enough priority. Karin North asked if there was a certain amount of money that the RMP manager could decide how to spend, and if not, whether this discussion could be added to the October 2012 SC meeting. Mike said that if this fits into the budget, then he supports it. Karin North added that the MMC has given more the $3,000 in in-kind labor and samples, and that she also supports this. Mike asked where the money should come from, and Adam Olivieri suggested the communications budget. Peter Carroll noted that the MMC says the cost of this could range from $3,000 to $10,000. Meg said she was thinking of contributing

$3,000. Mike asked if it is normal for the SC to approve every aspect of the budget, and Meg said that even small things come before the SC to inform them, although she may not be seeking approval for proposals under $5,000.

As a sidenote to this discussion, it was noted by Tom Mumley and Karin North, among others, that the procedure for sending out the agenda package was confusing. It was requested that any additional agenda package items, sent out after the original, be included as part of an updated master agenda package, rather than as individual documents. It was also requested that a link to the website, where items are posted individually and as a complete package, be included in any e-mail about the agenda package.

*Action Items*

1. Meg Sedlak to follow up with Beth Christian about how intermittent dredgers factor the permit into the budget. CC Tom Mumley on any e-mails regarding this
2. Meg and Lawrence connect the two pages of the budget so the numbers add up. Lawrence will look at the way other companies do it (i.e. close out every year)
3. Meg and Emily send master pdf for agenda package items (everytime there is an update), include link to meeting web page in e-mails about agenda package

**6. Workgroup update – Emerging Contaminants**

Meg Sedlak said that at each SC meeting, there would be an update on an RMP workgroup, and today would be Emerging Contaminants. She said there is a wide universe of chemicals that we could be monitoring for, and the RMP only does 107. Challenges include lack of analytical methods, proprietary information about chemicals in commerce, and lack of relevant toxicity information (especially information specifically applicable to San Francisco Bay). In response to these challenges, the ECWG has taken a 3-pronged approach. First, they use existing information for chemicals with known toxicity or produced in high volumes that have been detected in other regions and look for these chemicals in San Francisco Bay. As an example, the ECWG sampled for triclosan, a chemical with known toxicity that is present in other regions. Fortunately, it was not found in high concentrations in San Francisco Bay and it is not necessary to monitor for it at the present time. The second approach is to use biological samples or chemical fate predictions to evaluate the occurrence of emerging contaminants in the environment. As an example, a recent study of Harbor seals and mussels in San Francisco Bay, analyzed with a non-targeted analysis, indicated the occurrence of many identified chemicals but also many unidentified chemicals, whose overall concentrations were low. Meg added that Derek Muir at Environment Canada has created a list of 600 chemicals that he believes should be targeted because their chemical properties and uses indicate they are likely to be present in the environment. The third approach is to use bioanalytic tools to screen for biologically active classes of chemicals. This links exposure to the common mode of action and is great for evaluating mixtures and synergistic effects. Meg followed this presentation with a discussion of special study proposal #4, for the development of a bioanalytical tool for estrogenic compounds per the recommendation by the state CEC panel. The proposal is for a 2-year study with a $42,000 match from SCCWRP. Four chemicals would be studied in year 1 of the study, looking at early life stage and juvenile development and linking 5 biomarkers to response endpoints. Meg said

there are many commercially available bioassays for measuring estrogenic compounds in water, but this project links bioassay results to cellular endpoints. Next, Meg compared the RMP approach to CECs to the CEC panel recommendations. She said SFEI is in Phase 3, "Reassessment of monitoring efforts and updating the list of target CECs", and gives the RMP CEC Synthesis and Strategy Report as an example. Tom Mumley commented that we are also in Phase 4, "Develop Action Plans to Minimize Impacts", because there have been management actions from RMP participants. Meg then shared a slide of CECs identified by the State Panel for monitoring in coastal embayments, and she said the ECWG has put these chemicals in Tiers (I-V, V being the greatest concern). The next steps of the CEC strategy are looking at the CECs in these upper tiers, evaluating advisory panel recommendations for estuaries, and identifying new CECs. Lastly, the PFC Special Study is currently underway to sample seals, small fish, bird eggs and sediment. Meg concluded by saying the new organic chemist hired by SFEI could be a session chair for SETAC's upcoming CEC conference in Long Beach.

*Discussion*

Mike Connor asked why the bioassay project wasn't fully supported by the ECWG or TRC, referring to previous meetings where there was lack of consensus on this project. Meg Sedlak said those groups were very supportive of the science, but thought the project was too research-focused and would take too long to yield a usable tool. However, since Nancy Denslow, the principal investigator, will be doing San Francisco Bay sites and an estuarine fish, we lose the chance to control some of the work if we choose not to support it. Meg said she views it as another tool to determine if a sample is estrogenic and to determine what the effects will be in the Bay. Adam Olivieri said that the recommendations from the CEC are to the State Board, not to SFEI or to any particular discharger. He said that these decisions have been sent up to the state, and there is a balance that has to occur - deciding to fund at the same time that the State Board is deciding if they agree. Tom Mumley said it is always better to be the lead on these issues, as this region often does, since we are the main estuary in the state. He said we need a project that gives us tools to detect CECs but we have to keep in mind we want smart analytical tools. Karin North asked if Nancy has looked to the EPA for funding, and Meg said they have looked at WERF and at EPA. Adam said he believes Nancy is capable of doing this and it is worth funding, but he wonders what the timeline is. He wondered if the project could be put off for a while to try to get SWAMP funds or wait for a decision from the State Board.

Tom Mumley commented on the ECWG's tiering exercise, saying that he and Naomi Feger think there is no need for the "very high concern" tier. Pyrethroids are the only thing in this tier, and although they are in the Bay, we have no indication that they are a problem in the Bay itself. Chemicals in this tier should have corrective actions and go on 303(d) list, and he doesn't see this happening for pyrethroids. He also thinks the lowest tier should be differentiated between chemicals of low concern vs. chemicals with little information. Karin North asked how we use these data to make management decisions. She suggested a subgroup of the ECWG that is responsible for communicating information on CECs to management groups and pollution prevention groups. Tom recommended that the next Pulse on CECs should capture past and continuing efforts to manage CECs, including public education efforts. Adam Olivieri wanted to make clear that a lot of these things are precautionary and you don't want to unnecessarily alarm people.

**7. Special Study Proposals**
Meg Sedlak began by informing the SC that there is a $95,000 shortfall for funding the special studies projects. She said there are unencumbered funds, and Tom Mumley clarified there were $305,000 of unencumbered funds. Meg gave a brief overview of each of the 12 proposals. Tom Mumley noted that the RMP could afford to fund all projects, if the SC decides they are all worth doing.

I. PDBE Summary Report
This project is proposed for $35,000 and has been ECWG reviewed and approved. The objective is to summarize 2002-2012 PDBE data for sediment, water, bivalves and birds eggs, and provide context by comparing to OEHHA and tern thresholds. This work will be completed by March 2013.

II. Update EC strategy
This project is proposed for $20,000 and is ECWG workgroup reviewed and approved. The purpose is to provide billable time for SFEI staff to track new EC information and revise/update the EC strategy by reading current literature, updated tiered risk-management table and adding/removing chemicals from the "unmonitored CEC list"

*Discussion*
Peter Carroll asked if there as a deliverable for this project. Meg Sedlak said there wasn't, and that this proposal was in order to update the group. Previously, this work had been done using unbillable hours, and the RMP and SFEI can't sustain this. Mike Connor asked if we could make a few-page Pulse piece as the deliverable, and Meg said she wasn't sure if this was appropriate for the Pulse. Tom Mumley then suggested an annual memo to the group, something that isn't high cost, and Meg said she would get feedback from the group on this idea.

III. Current Use Pesticides (CUPs)
This project is proposed for $15,000 and is ECWG reviewed and approved. The purpose is to evaluate and organize a focus meeting with key individuals in the field because a number for CUPs are not being monitored and there is a recommendation from the state CEC panel to monitor (i.e., bifenthrin and permethrin in surface water)

IV. Bioanalytical Tools
This project is proposed for $70,000 in 2013 and $56,000 in 2014, pending acceptable progress in 2013. The project is EEWG and ECWG reviewed, but there were concerns about the timeline and the research orientation of the project. The objective is to identify CECs through common cellular modes of action. There are no studies to date on estuarine organisms. This project would evaluate four endocrine disrupters (estrone, BPA, 4NP and galaxolide) in inland silversides, an estuarine fish species.

V. Development of a Mesohaline Index
This project is proposed for $75,800 in 2013 and $50,000 was already allocated in 2012. This project is EEWG reviewed and approved. The objective is to develop and calibrate a mesohaline index for San Francisco Bay, similar to the polyhaline index already developed for Central Bay.

*Discussion*
Karin North noted that this was only for Lower South Bay and San Pablo Bay, and Jay Davis clarified this work wasn't for Suisun Bay. Mike Connor asked how this index would be used and how useful it is. Tom Mumley added that he didn't think that this will produce something that will help us manage the Bay. He said the index for the Central Bay hasn't been used, and wonders if this will really trigger management decsions. Meg Sedlak said the point of this project is that there are currently data being collected but there are not funds to interpret them. She said an SQO number assessment is being required for EBMUD, and SFEI has collected data for EBMUD. Jay Davis added that on the one hand SQOs are enforceable state policy, so we should continue with this project, but if managers really won't change anything based on this information, then we shouldn't waste the money. Tom responded that there have been resources invested thus far in collecting data, and this project will allow us to interpret them. Dropping the project now would leave a question mark on the data. Even though he doesn't see a regulatory consequence, Tom doesn't think the project can be dropped. Jay said that while the benthic data are hard to interpret, the toxicity data are more compelling. Tom asked about whether the project was supposed to begin in 2012 or 2013. Jay said $50,000 was allocated in 2012, but then Eric Stein wrote a larger proposal so it is being proposed for more money this year. Tom asked if it will get done in a timely manner, since the $50,000 allocated in 2012 has not been spent yet. Adam Olivieri asked if it had already been scoped out or whether the project will require more money in 2014. Mike asked who the local biological players are who are involved, such as Mike Kellogg. Meg said that Don Weston supports it, and Jay Davis added that the EEWG approved it. Karin North asked if we had talked to Jan Thompson at USGS, and if we could link this to the research she is doing in the South Bay.

VI. Follow up to Moderate Toxicity Workshop
This is a placeholder for a project to be developed following a workshop in November in 2012. It is believed that a study idea will come out of that meeting, so there is a $50,000 placeholder to fund that project.

*Discussion*
Mike Connor said that given where toxicity is going, it might be worth it to spend more money on toxicity. He suggested exploring a toxicity database, but Tom Mumley reminded him that he was talking about an unproposed project. Mike said this proposal is undefined because we don't know what it is until the workshop occurs. Jay said it is defined in the sense that it will focus on moderate sediment toxicity, rather than other toxicity issues. Tom said that any new policy adopted by the state would be complete before any project that comes out of the workshop, so the work done by the RMP would not affect what the state does. He said that if a real need occurs and this becomes a high priority for BACWA, then there could be a special project request outside of this process. He didn't think that this money would get spent for this project.

VII. Shared Modeling Proposal
This project is proposed for $100,000 in 2013 and was already funded for $100,000 in 2012. This project is endorsed by the Nutrient Stakeholders Advisory Group and is in accordance with CFWG direction. The purpose is to develop a tactical plan for modeling nutrients and

contaminants, establish a modeling team, develop a hydrodynamic model and a phytoplankton water quality model for Suisun and South Bay.

VIII. Stormwater Monitoring
This project is proposed for $343,000 and was reviewed and approved by SPLWG/STLS. The purpose is to monitor 6 watersheds in 2013, two of them (Pulgas and Richmond) by the RMP and four by BASMAA.

IX. Update Spreadsheet Model – Year 4
This project is proposed for $25,000 and was reviewed and approved by SPLWG/STLS. The purpose is to develop and refine mass emissions of mercury and PCBs using single watersheds for calibration and verification. This builds upon prior tool development (Year 1 – Hydrology, Year 2- Additional watersheds, Year 3 – Cu test case for model).

X. Land Use/ Source Specific EMC
This project is proposed for $80,000 and was reviewed and approved by SPLWG/STLS. The purpose is to generate even meant concentration data for use in the regional watershed spreadsheet model.

XI. Managements Support for Spreadsheet Model Outreach
This project is proposed for $20,000 and the purpose is to provide project management and outreach funds for the Spreadsheet Model project.

XII. Nutrients
This project is proposed for $355,000 and is Nutrient SAG approved. There are multiple components to this proposal:

- Install, maintain and interpret data from a moored sensor
- Develop Solid Phase Adsorption Tracking as a tool for monitoring harmful algal blooms
- Monitoring nutrients in stormwater in 6 watersheds
- Continue to develop nutrient load estimates for Central and North Bay

Meg said that at the June 2012 TRC meeting, there was some discussion about how to cover the $95,000 shortfall. Some ideas were using unencumbered funds, spreading the cost of purchasing over several years, finding other funding, or shifting funds from other projects. She said there was also concern about the data management budget, and David Senn had reworked the proposal to reflect this. She said people generally supported the idea, but were concerned about the funding.

*Discussion*
Tom Mumley noticed that the stormwater projects had been split into individual proposals, whereas the nutrients had been combined into one. He added that the RMP could afford to approve them all and asked if there were any that the group didn't want to take on (to which there were no responses). He said that there is a need for institutional, rather than piecemeal, funding for nutrient work and this should be discussed at the annual planning meeting.

*Voting*

Meg Sedlak informed the group that both Rob Lawrence and Dan Tafolla approved all the studies even with the $95,000 shortfall. Adam Olivieri proposed to remove study #6 and defer the money to nutrients, leaving only $5,460 to be taken from unencumbered funds (once the $35,000 from USGS is applied). Tom Mumley said that at some point there needs to be a synthesis and there could be a review of sediment work at the multi-year planning meeting, including how much has been spent and the idea of doing a synthesis. Mike Connor agreed that could be a focus topic for the multi-year planning meeting. Adam motioned to approve his proposal, and Karin North seconded the motion. All committee members then voted in favor.

*Action Items*

1. Meg to ask the ECWG about creating a memo to the group as part of Special Study proposal #2 (Updating EC strategy)
2. Institutional Nutrient funding – need to discuss at annual planning meeting

**8. 2012 Annual Meeting**

Jay Davis said he sent out the proposed agenda a few weeks ago but didn't receive much feedback. He said some of the speakers are confirmed and some are not. Kathy Hieb has been invited to present with a focus on fish and the pelagic organism decline in the upper Estuary, and this will be followed with a talk on the effects of copper on salmon. David Senn was scheduled to talk, but he had a conflict so this slot will be filled with more discussion time. Moderators of these discussion periods will bring a management focus to the meeting.

*Discussion*

Mike Connor said it would be difficult for the moderators of the discussion to elicit and manage audience participation, and it might be better to have a panel of 3 people from the management community to direct the discussion. Jay said this could be done formally or informally, and Mike said it should be done formally because it would be hard to find those people in the audience. Tom said he liked that suggested but we didn't have to decide on that today. Mike then suggested replacing Stephen Monismith, who has a lot of projects at the moment, with Mark Stacey or Ed Gross, and Tom added that you want someone who really knows the Bay. Jay said the Mark Stacey's research is very fine-grained and you would have to direct him to speak at a larger scale and in a non-technical manner, to which Tom responded that you will probably have to ask all of these speakers to speak to a broader level. Mike also suggested getting someone from the Bay Conservation and Development Commission to speak about about biology. Karin North asked if the current agenda had a good balance between stormwater and wastewater, and Adam Olivieri said he thought it did. Mike asked if the lunchtime activity could solicit feedback from the audience about the next steps of the RMP. Jay said he liked that idea, but Tom said he wasn't sure that would add much. Jay said the main goal is to get people involved and thinking about the RMP, even if the feedback isn't scientific. Karin suggested facilitating discussions at lunch, maybe by grouping people by focus area or letting people give feedback about 2013. There was some concern that this might limit the ability of attendees to network with people who might not necessarily be within their focus group. Adam Olivieri suggested giving different color dots to different organizations (dredgers, industrial, etc), and then letting them give feedback on 2013 Special Study projects. Meg Sedlak wondered how you address that feedback, if the funding decision has already been made.

**9. 2013 Annual Meeting**

Meg Sedlak informed the group that the focus for the 2013 Annual Meeting would be on CECs. She also said there was an opportunity for the RMP meeting to combine with the biannual State of the Estuary (SOE) meeting hosted by the San Francisco Estuary Partnership (SFEP). Meg said there were three options:

- Option 1: have concurrent session with the SOE which would result in some savings for the RMP
- Option 2: be the third day of the SOE meeting, which wouldn't really result in any savings
- Option 3: have an entirely separate meeting

At this point, two representatives from SFEP joined the meeting, Judy Kelly (Director) and Karen McDowell (Environmental Planner), as did Rainer Hoenicke (Executive Director for SFEI). Judy said this would the the 11th biannual SOE meeting. No date has been set yet, but it would likely be October 2013 at the Oakland Marriott. The purpose of partnering with the RMP is that these two events usually compete for audience and for speakers. Karen proposed that there could be a plenary session in the morning (which all attendees would attend) and a concurrent session in the afternoon (which attendees would have the choice of attending).

*Discussion*

Peter Carroll asked if the SFEP and SFEI have similar visions. Tom said SFEI is like the science arm to support SFEP. Judy added that she and Rainer Hoenicke have been talking for several years about how to better integrate the two organizations, and Rainer added that he thought the two organizations have complementary skill sets. Mike Connor asked Tom Mumley if, as the chair of both meetings, he supported this idea. Tom said he does, but that there were some logistical issues. The top focus of the RMP meeting is CECs, and he didn't think the SOE meeting would support a full day for that. He didn't think all of the water quality time at the SOE meeting could be devoted to CECs, but that there maybe 2 sessions on the topic. Jay Davis said that he thinks the RMP could fill a full day with CECs, if they were doing the meeting on their own. Jay said there are three things he would like to still include in the RMP portion (1) getting workgroup advisors involved in the meeting, similar to the 2012 meeting, (2) reporting on RMP projects wrapping up at that time, and (3) having a meaningful discussion of policy issues. Karin North said that if there was a concurrent session in the afternoon on CECs you could be competing with other sessions for attendees. She thought it was feasible if there was a plenary session on water quality. Tom said you have to respect the planning committee of SFEP and that we can't lock in programming right now. He said the win-win situation is making water quality a theme and focus of the plenary, and added there were some money challenges to be aware of. Karen McDowell said that the amount that people usually pay to register for the RMP meeting would only cover one day of their attendance to the meeting, not two. Meg Sedlak said the SFEI budget is usually about $15,000 for the facility with about 160 people attending (10-20 of which are non-RMP members), and Karen said that the SFEP budget is about $200,000 with about 750-850 people attending. Karen suggested that 1-day of registration could be free for RMP members, and then they could pay if they chose to attend both days. Tom asked if there was a recommendation from the group to merge the two meetings, knowing there are logistical details to work out. Karin North motioned to merge the meetings and Adam Olivieri seconded. Karin noted it should be considered how to keep these meetings merged if Tom stops being on the committee for both. Meg Sedlak asked if there were any dates they should avoid, and Mike

Connor said the BACWA annual conference is usually the 3rd week of September. Judy asked if the group has talked about collaborating on the 2015 State of the Bay report, and Jay Davis said that hadn't been discussed yet. Tom said that in light of that the potential integrated State of the Bay report, combining the meetings makes even more sense. All members voted in favor.

**10. Pulse Lite 2012**

Jay took input he received on the draft and made revisions. Mike Connor said that it needs to be completed by the annual meeting in October. Jay then moved on to discuss the communications survey, which will be sent to Pulse readers for feedback on the Pulse. The current survey has already undergone revisions. He asked the group for help deciding who the survey should be distributed to by revising a contact list he distributed to the group.

*Discussion*

Karin North asked where the list of contacts came from because some of the names are outdated. Jay said it started with the Annual Meeting mailing list and names he and Meg Sedlak thought of. Meg said they are open to suggestion of how to change the contact list. Karin said BACWA has newsletter and they could link to the survey from there. Meg said she wanted the survey to go out to a few people whom she could actually follow up with. People don't always respond to survey e-mail blasts. Mike Connor said he could give Meg BACWA's full mailing list, and Adam Olivieri said he could give the same thing for BASMAA. Jay Davis said he should also follow up with dredgers for a similar list from them. Mike Connor these lists should be sent by August 15th. Jay asked Tom Mumley about the new e-mail addresses for state employees (Firstname.Lastname or FLastname), and Tom didn't think they had changed. Mike said when the survey goes out, it should be advertised as a 2-3 minute survey in an easy format, and Jay said it would be Survey Monkey.

*Action Items*

1. Contact lists (by Aug 15th)
    a. Mike Connor – BACWA list
    b. Adam – BASMAA list
    c. Need to follow up with dredgers to get their list

**11. Oct 29th Multi-Year Planning Meeting**

They date of the meeting was set for October 29th. The SC discussed several issues which could be on the agenda:

I. Toxicity

Meg Sedlak revisited the idea of adding toxicity to the agenda, an idea discussed previously in the meeting. Tom Mumley said that there is a lot of money being spent on this and toxicity might not even exist. Peter Carroll thought it was important to have increased frequency and number of sampling locations for aquatic toxicity. Right now, there are data collected every 5 years (through the RMP) at 9 locations. Peter said that depending on how the state policy comes out, they might have to monitor anyway, but would like to know if the data and science shows that there isn't a toxicity problem. Tom says that testing for ambient toxicity is tricky because it might end up hurting you if it shows you have a problem. Mike Connor said if we believe it's a real issue, we should spend the money. If not, we shouldn't. However, if it comes up in his

permits, then they are going to ask how BACWA is dealing with it. Mike said its hard for him to think the RMP should be involved, but Tom says it is a little off task but maybe worth scoping out a toxicity project for the RMP.

II. Nutrients

Peter Carroll asked where the algal biotoxins fit into the multi-year plan, and Karin North said it was nutrients. Mike Connor said there needs to be a link between RMP science and policy decisions. There is some lack of correlation between RMP funding and what we are demanding out of it. Tom Mumley thought the nutrient-related monitoring projects are huge, but the effort needed to answer nutrient questions is beyond what we have been doing so far. Karin North asked what the tipping point is for nutrients where management actions need to occur. Tom stated that the efforts to develop the Nutrient Strategy are addressing that exact question. Mike Connor commented that the Suisun Bay issue is taking a lot of money.

III. STLS

Tom Mumley thinks that STLS is a continuing need for the RMP.

IV. EC

Tom Mumley thinks that EC is a growing need in the RMP.

V. Legacy Pollutants

Tom Mumley asked what efforts are needed for legacy pollutants like mercury, PCBs and dioxins. How much effort should the RMP continue to put into effects work, since it seems to be driven by EC and nutrients. Meg Sedlak said that the issue with the legacy pollutants is to continue to evaluate if management is focusing on the right thresholds.

Mike Connor summarized that the dilemma for everyone is that money is getting tighter and we need to make sure we are using resources appropriately. Mike said that participating organizations could spend more money on issues they are concerned with, rather than the RMP. Tom Mumley said it seems like the group agrees with the structure of the meeting, that most of the detailed discussion occurs in the 3-hour block of agenda item #5. Mike suggested skipping #2 or combining it with #3. Karin North asked if when a Special Study is discussed, whether it could include a summary of the project, including the amount of money that has been spent in the past and outcomes. Jay Davis said this is included in the multi-year plan, but it could be a good idea to include it as a refresher. Tom said that an update of the Multi-Year Plan should be sent out in advance, and Mike recommended that people new to the SC could be briefed ahead of time, maybe even with a phone call. He added that you could even call everyone prior to the meeting to get feedback on the agenda package and pass that feedback along to Tom and Karin. Karin asked about the procedure for voting on decisions when members are absence. Jay said the procedure is that you need at least 5 members for a quorum, and if you have less, than all decisions are tentative until additional input is received from absent members. Karin asked about who should be included in the meeting who might not be on the SC. Mike mentioned Ian Wren, Meg added Amy Chastain, and Adam Olivieri suggested Chris Sommers. Mike suggested someone from BCDC and Karin suggested someone from USGS, and Tom responded that this wouldn't be a good meeting for scientist. Jay added that you don't want to invite people who

aren't familiar with the RMP and you don't want the meeting to be too large. Jay agreed to revise the agenda and send it to Tom and Karin.

*Action Items*

1. At next SC meeting, when we talk about each of the special study projects, give a little bit of history and the budget spent in the past
2. Meg and Jay brief new people prior to the meeting
3. Jay revise next SC meeting agenda and send to Tom and Karin
4. Meg and Emily send save-the-date for next SC meeting with additional invites – follow up with Jay/Meg

**12. Program Updates**

Meg Sedlak began with the CFWG. She said the Bioaccumulation Conceptual model is complete, and Jay Davis said he could update the group about this at the next meeting. Meg continued that the Margins Conceptual Model report is in progress, and that Don Yee will addresses Jim Hunt's comments in mid August. David Senn is working on a modeling plan. With regards to the SPLWG, Meg said that there is a meeting set for October 24th. Lester McKee will bring the complete 16 Watersheds report to that meeting. With regards to the ECWG, Meg said the Alternate Flame Retardants paper was accepted, the APE report has been submitted to Environment International and she had completed a draft of the PFC sources paper. She said there were some other special topics of interest. With regards to the Delta RMP, Meg said Thomas Jabusch has put together a draft monitoring program design and there is a planning meeting on October 15th. Tom Mumley commented that he doesn't think the Delta RMP has enough money, but they are doing well with limited resources. He asked what IEP was doing, and Mike Connor said they are doing well and spending at $30M a year. Tom asked how the Delta RMP can get some of that money, and Mike Connor said Rainer Hoenicke and Thomas are working to do so.

*Action Items*

1. Jay will give brief BCM update at the next meeting during the Program Update.

**13. Planning next SC meeting**

Tom Mumley repeated that the next meeting is on October 29th with the multi-year planning meeting in the morning and a brief SC meeting in the afternoon. Karin North added that if additional topics for discussion occur to anyone, they should e-mail Tom or hers. The meeting was adjourned.

*Action Items*

1. Make next SC meeting the second half of the planning meeting

Item 1: SC Action Items Updated: Monday, October 22, 2012

**Action Items - August 2012**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 1 | Karin North to forward out BACWA template for effluent data | Karin North | | Completed |
| 2 | Meg follow up with Beth Christian about how intermittent dredgers factor the permit into the budget. CC Tom Mumley on any e-mails regarding this | Meg Sedlak | | Completed. The RMP fee schedule is included with the dredging certification. But, Beth is unaware of when dredgers decide to dredge, making it difficult to be proactive on the issue. |
| 3 | Meg and Lawrence connect the two pages of the budget so the numbers add up. Lawrence will look at the way other companies do it (i.e. close out every year) | Lawrence Leung | | Completed |
| 4 | Meg and Emily send master pdf for agenda package items (everytime there is an update), include link to meeting web page in e-mails about agenda package | Emily Novick | | On-going |
| 5 | Meg ask the ECWG about creating a memo to the group as deliverable for Special Study proposal #2 (Updating EC strategy) | Meg Sedlak | | Completed |
| 6 | Ins6tu6onal Nutrient funding – need to discuss at multi-year planning meeting | David Senn | Oct SC Meeting | On the agenda. |
| 7 | Updated contact lists from Mike Connor (BACWA), Adam Olivieri (BASMAA) and dredgers (Jay to follow up) | Jay Davis | August 15th | Completed. Updates to be made to RMP mailing lists |

Item 1: SC Action Items Updated: Monday, October 22, 2012

**Action Items - August 2012**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 10 | Jay revise next SC meeting agenda and send to Tom and Karin | Jay Davis | | Completed |
| 11 | Meg and Emily send save-the-date for next SC meeting with additional invites | Emily Novick | | Completed |
| 12 | Jay will give brief BCM update next meeting as part of the Program Update | Jay Davis | Oct SC Meeting | On the agenda. |
| 13 | Make next regular SC meeting the second half of the planning meeting | Jay Davis | Oct SC Meeting | Completed |

**Action Items - April 2012**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 2 | Organize meeting facilitation training for RMP staff and open to stakeholders | Meredith Williams | | SFEI working to develop training program |
| 3 | Compile a list of relevant projects to the RMP that are important for the SC and TRC to be aware of, and include it in the workgroup update and Multi-Year Plan | Jay Davis | | On-going |

**Action Items - January 2012**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 3 | Keep the SC up to date regarding the status of projects pertaining to permit requirements | Meg Sedlak | ongoing | On-going |

**Action Items - November 2011**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 8 | Include an annual set aside for storing archives with the National Institute of Standards and Technology (NIST), which bills every 2 years | Meg Sedlak | | |

Item 1: SC Action Items Updated: Monday, October 22, 2012

**Action Items - August 2011**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 7 | Initiate discussions with SFEP to more broadly distribute technical information generated by the RMP | Tom Mumley | | |

**Action Items - June 2011**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 2 | Discuss developing a plan for monitoring after a catastrophic event to the Bay | Meg Sedlak | September 2011 TRC meeting | |
| 4 | Discuss the management questions and frequency of sampling at Mallard Island at the next SPLWG meeting. | Tom Mumley | October 2012 SPLWG meeting | Discussed at May SPLWG. Final decision to be made at Oct 2012 SPLWG meeting |

**Action Items - February 2011**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 9 | Have the SPLWG make recommendations for Central Valley loads monitoring (Mallard Island) and the need for follow-up atmospheric deposition work | SPLWG | May 12-13, 2011 SPLWG meeting | Discussed at May 2011 SPLWG. Final decision to be made at Oct 2012 SPLWG meeting |

**RMP**
**Technical Review Committee**
**September 18th, 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)
Rod Miller, San Francisco Public Utilities Commission
Ian Wren, San Francisco Baykeeper

Meg Sedlak, SFEI
Jay Davis, SFEI
David Senn, SFEI
Don Yee, SFEI
Ellen Willis-Norton, SFEI
Emily Novick, SFEI
Alicia Gilbreath, SFEI

**1. Introduction and Approval of Agenda and Minutes [Meg Sedlak]**
Meg Sedlak introduced the newest RMP hire, Ellen Willis-Norton, who recently graduated from Wellesley College with a double degree in Biology and Environmental Studies. Ellen will be an active member of the RMP team. Bridgette DeShields asked for approval of the June 29th TRC meeting minutes. Karen Taberski noted that on page 9 of the June 29th TRC minutes, under the Bioassays discussion that the minutes indicate that the bioassay pilot study will be 10% of the RMP budget, which is not correct. Pending this correction, Karen Taberski motioned to approve, Luisa Valiela seconded the motion, and the minutes were unanimously approved.

**2. Information: Steering Committee Minutes [Meg Sedlak]**
Meg Sedlak shared updates from August 6th Steering Committee (SC) meeting. The SC approved the special studies that the TRC approved. One exception was the follow up work for the 2013 Moderate Toxicity Workshop that will be held on November 16th, 2012. (There was no proposal for this work; the TRC approved the set aside of funds.) The SC did not approve this set aside for 2013. The SC committee also discussed the 2012 Annual Meeting and plans for integrating the 2013 RMP Annual Meeting with the State of the Estuary Meeting. Eric Dunleavy indicated that the SC meeting minutes from August 6th did not elucidate the Bioassay study discussion and the rationale for proceeding with this study. Meg noted that the TRC and SC both

had concerns with the research aspect of the study as well as how long it might take to develop a tool that could be used in the RMP. Although it might take a while, the SC was supportive of developing new tools to measure contaminant effects on biota. In addition, the SC acknowledged that the State Panel report recommended developing bioanalytical tools. Jay Davis mentioned that the SC chair Tom Mumley endorsed this study and that was a factor in the approval of the proposal.

**3. Update: RMP Annual Meeting 2012 [Jay Davis]**

The 2012 RMP Annual Meeting will focus on the workgroups starting with efforts to model the Bay (Nutrients and Contaminant Fate). Work on watershed modeling (Sources Pathways and Loading) will follow this discussion and then on to two talks on effects of contaminants on fish (Exposure and Effects). The meeting will end with two talks on Emerging Contaminants. After each block of presentations, there will be a facilitated discussion led by the moderator of the session. The interactive lunch activity needs to be decided.

*Discussion*

Karen Taberski noted that Bruce Herbold's presentation did not seem to fit into the Exposure & Effects Workgroup presentation block based on the title "Fish Habitats in Suisun Bay and What Degrades it." Jay Davis agreed and said that he needs to talk to Bruce about how he should talk about the effect of ammonia and other pollutants in fish populations as a fish biologist.

*Action Items*

1. Jay Davis will talk to Bruce Herbold about his annual meeting presentation to ensure it focuses on the effect of ammonia and other pollutants in fish populations.

**4. Preview: Annual Meeting Presentations**

**"The Regional Watershed Spreadsheet Model: A Tool for Estimating Regional Loads" [Alicia Gilbreath]**

Alicia's talk will follow several other talks on modeling work within the Bay, which will provide an introduction for the Regional Watershed Spreadsheet Model (RWSM). The RWSM is a team effort with oversight from the Small Tributaries Loading Strategy (STLS). Michelle Lent developed the hydrology work for the model and now the STLS group is applying her work to the whole RWSM. Alicia's presentation was organized by listing the top 10 reasons to be excited about the RWSM.

*Summary of Alicia's Presentation:*

- #10: The RWSM is a tool for estimating loads from small tributaries in urban areas. The model improves prior load estimates. TMDL studies have estimated some Hg and PCB concentrations based on small watersheds. The RWSM is advantageous because it provides load estimates on the regional scale.
- #9: The RWSM model is simple to understand. The inputs include watersheds, soil type, and land-use. For each of the parameters, a digital elevation model was used to obtain an average slope. A runoff coefficient is produced based on the soil type, land-use, and slope. The model then adds a precipitation layer; the area of each unit is determined and

then the units are multiplied together to obtain the total runoff volume. To determine contaminant load for the various land uses (e.g. industrial, open space, etc.), the mean concentration of the contaminant is plugged into the model which then calculates contaminant load. The model is complex because the runoff volume and consequently the contaminant load is calculated for a 9,000 $km^2$ area; the model is preforming computations on millions of intersected units.

- #8: A large amount of data has already been developed outside of SFEI: The PRISM dataset is available for precipitation values, the ABAG dataset is used for land-use, and the National Land Cover Dataset (NLCD) records imperviousness.
- #7: RWSM allows the creation of spatial data source layers that are correlated with particular contaminants (e.g. electrical transformers, military areas, drum recycling, cement production, crematoria, oil refineries/petrochemicals, metals manufacture, rail transport, shipping transport, metals recycling, auto recycling, old industrial areas, and power plants). For each new spatial data source, the project team wants to apply a specific concentration lookup table; therefore, input concentrations are needed.
- #6: SFEI and others have developed a solid base of stormwater concentration data, which allows concentration inputs for calibrating the model. The RMP has funded three multi-year intensive loading studies in the Sacramento-San Joaquin Rivers, the Guadalupe River, and the Zone 4 watershed. Additionally, several samples were collected at Coyote Creek and a reconnaissance study was completed in 17 watersheds. Finally, samples collected during the 2012-2013 pollutants of concern (POC) and low impact development (LID) work will be available for use in the model.
- #5: The model is a cost-effective approach for determining contaminant loads; monitoring cannot happen in every watershed. Although similar, more sophisticated models exist, we cannot apply those models at the scale the STLS team is interested in. Michelle Lent is working on creating a back calculation that inputs bottom-of-the-watershed concentration values and will output land-use-specific runoff concentrations.
- #4: The RWSM model will have a simple user interface. Jamie Kass (SFEI GIS specialist) is using Python to develop the user interface. The user interface is flexible, for example the lookup tables can change; anyone who considers themselves slightly above beginner level in GIS will be able to use the model.
- #3: "The RWSM has a plan." The model will be packaged and a user manual will be created for outside use.
- #2: The RWSM's plan is already being carried out; a module for hydrology, sediment, copper, mercury, etc. has been developed.
- #1: The RWSM complies with several Municipal Regional Permit (MRP) provisions which makes for happy BASMAA Representatives and Water Board Regulators.

*Discussion*

Karen Taberski thought the explanation of the model was very clear, but wondered if the RWSM was going to include SWAMP's concentration data. Karen thinks using SWAMP's data may be useful for validating concentrations. Alicia Gilbreath responded that she will look into using the SWAMP data. Bridgette DeShields wondered if land use or percent imperviousness was used in the model because both we're mentioned in the presentation. Alicia agreed that mentioning both

was confusing and that she will take out percent imperviousness from the presentation. Michelle Lent determined that land use performed better than the impervious surface approach in model calibration; however, percent imperviousness may be used for a sub-model architecture (it may be an important explanatory variable for a specific contaminant). Bridgette mentioned sensitivity analyses and Alicia made clear that sensitivity analyses will be run to determine which variable is having the largest influence on the total runoff volume and contaminant load. Ian Wren wondered how the mean concentration values were obtained (e.g., literature values or empirically derived). Alicia responded that the RWSM is mainly using local data to define input concentrations and to calibrate the model, but some data is being pulled from the literature to constrain the concentration bounds and to fill in data gaps. Rod Miller suggested that one of the contaminant models (e.g., PCBs) should be used as an example and expanded to show the real data, data source, etc. Tom Hall thought that the last slide about MRP compliance should be moved earlier in the presentation as well. The connection to the MRP will make clear the target audience/user before the model's details are described. Ian asked how the model would be packaged, he wondered if the model would be an ESRI add-on. Alicia was not sure how the model will be packaged, but is hopeful that it will be separate of ESRI. However, the model will need ArcGIS to run.

Eric Dunlavey and Luisa Valiela then suggested ways to reduce the presentation's length. Eric warned that there might be some questions on how Alicia narrowed down 150 land uses to seven land uses during the discussion period. Luisa added that the audience would most likely question why the model doesn't include San Francisco and Coastal Marin; Alicia may want to explain the absences during the presentation. Luisa suggested explaining the data sources for the lookup table and explaining how many contaminants will have a unique lookup table.

**Contaminants of Emerging Concern: Synthesis and Strategy" [Meg Sedlak]**

The main goal of Meg Sedlak's presentation is to show the contaminants the ECWG has detected in the Bay and the process by which contaminants are prioritized.

*Summary of Meg's Presentation*

There are 100,000 chemicals in use today; the Clean Water Act requires 126 of those to be monitored, and the RMP is currently evaluates 107. The RMP has developed a risk-based approach to prioritizing Chemicals of Emerging Concern (CECs). The approach includes: occurrence, usage/volume; toxicity; and determining the chemical's fate (bioavailability and persistence); and obtaining RMP workgroups, TRC, and SC advice and opinions. This work is somewhat challenged by lack of information (e.g., chronic toxicity data for organisms of interest, fate of a chemical in the environment) and lack of methods to analyze compounds. Howard and Muir (2009) used a similar risk-based approach to prioritize emerging contaminates. They evaluated 22,000 high production chemicals to determine which chemicals were likely to be persistent in the environment. Based on this assessment, they developed a priority monitoring list of 610 chemicals. The RMP has monitored pharmaceuticals and personal care products, alkylphenols, flame retardants, perfluorinated chemicals, current use pesticides, and chlorinated paraffins. The State Board put together a national panel of scientists to make recommendations for monitoring CECs. The RMP is monitoring most of the CECs listed. The RMP recently put

together a synthesis document that prioritizes CEC's on a tiered system based on their level of concern. Currently there are no chemicals that are Tier IV, chemicals of high concern.

Meg selected chemicals from each Tier I, II, and III to explain in more detail to illustrate how chemicals are classified in the tiered system. The chemicals she described in the presentation include:

- PFOS (Tier III)
- PBDEs (Tier III)
- Fipronil (Tier II)
- Pyrethroids (Tier I for the Bay)

*Tier III (Moderate Concern)*
PFOS are used commercially and residentially as a stain repellent, pesticide, and for metal finishing. They are carcinogenic, developmentally toxic, immunotoxic, and are an endocrine disruptor. PFOS were phased out in 2002 when they were detected in the American blood supply, but the prior high production resulted in a large environmental reservoir. Additionally, there are a number of precursors still used that can degrade to the perfluorinated compounds. In South Bay, high concentrations of PFOS were found in seals and cormorant eggs, above the predicted no effects concentration. PFOS at the Richmond Bridge sample site were not as high, but were considerably higher than in Tomales Bay, the reference site. PFOS remain a contaminant of moderate concern (Tier III) because they were detected in apex predators, at concentrations above a threshold value at one location; there is no sign of declining concentrations in bird eggs; precursors continued to be use; and there is potentially a large environmental reservoir. To continue PFOS monitoring in the Bay, the RMP is sampling seals in South Bay and correlating concentrations with small fish (that seals eat), sediment, and water samples.

PBDEs are slowly being phased out with penta and octa phased out in 2006 and a voluntary phase-out of all PBDEs in December 2013. PBDEs are endocrine disruptors that impair the nervous system and the RMP has been monitoring PBDEs since 2002. Since monitoring began, the RMP has seen a dramatic decline in PBDE concentrations in cormorant eggs, bivalves, and sportfish. The advisory concentration level for sportfish consumption is 100 ppb, and concentrations in sportfish are currently around 15 ppb. Some of the highest detected concentrations of PBDE in tern eggs were detected in Bay terns; however, in 2009, samples were well below the 63 ppm that was previously detected and substantially below 20,000 ng/g effects threshold.

*Tier II (Unknown Concern)*
Fipronil is an urban pest control and is used in consumer products such as Frontline. The RMP monitored fipronil levels in sediment in 2010 and 2011 and found that concentrations were not far below the LC-50 (150 ng/g org C). Fipronil concentrations in water were not analyzed; therefore, back calculations were performed to estimate pore water concentrations. Fipronil is listed as Tier II because the sediment concentrations are close to the LC-50 threshold and the concentration in water is unknown. Additionally, Gan et al. 2012 found evidence of fipronil toxicity in runoff from urban areas in Sacramento and Orange County.

*Tier I (Minimal Concern for the Bay)*
Pyrethroid usage has surged with the phase out of the organophosphate pesticides in the mid-1990s however, there have only been sporadic detections of one pyrethroid, the least toxic pyrethroid, permethrin. In stormwater, 14 pyrethroids have been detected and monitoring in six bay area sites will continue in 2012-2013. Pyrethroids continue to be of concern in Bay tributaries.

New techniques for identifying CECs are being developed. NIST is using gas chromatography and mass spectrometry to identify chemicals. NIST has incorporated the 610 chemicals identified by Howard and Muir into the library of chemicals used to identify CECs. Using this technique, approximately 35 new chemicals have been identified in Bay biota. Bioanalytical tools are also being used to detect CECs, which integrates the EEWG and ECWG workgroups. Bioassays link cellular effects to organism effects. Bioassays may allow the RMP to analyze estrogenic compounds and PPCP chemicals that the state panel recommended. Next steps for evaluating CECs would be to evaluate the CECs that are in the higher tiers, review the state's CEC advisory panel recommendations, and identify new CECs with the techniques described in the presentation.

*Discussion:*
Karen Taberski was surprised by the placement of pyrethroids, she thought they would have a higher ranking. She wonders how much feedback SFEI has received regarding their tiered CEC classification system. Meg Sedlak has received feedback from the ECWG and SC regarding the tiered approach. Additionally, a synthesis document explaining tiers is currently out for the workgroup's review. According to Tom Mumley, pyrethroids are not a concern for the Bay, although they may be a concern for the watersheds. Meg will clarify in her presentation that she is only referencing pyrethroid concentrations in the Bay. Luisa Valiela noted that on the risk chart, there are no CECs that are of "High Concern." She wonders what it takes to be Tier IV if there are no CECs that are currently reaching this ranking. Meg responded that concentration risk and management priorities are driving the tier levels. Jay Davis argues that the lack of Tier IV CEC's is a success story. Eric Dunlavey wanted a longer explanation about the tier system; Karen suggested presenting four or five criteria that would place a CEC in each tier. Tom Hall wanted Meg to explain how a chemical could move up or down on the ranking system, maybe by showing a CEC's historical concentrations and comparing it to current concentrations, which reduced its tier level. Meg liked Tom's suggestion and during the presentation she will explain rankings are subject to change as new information is acquired, using PBDEs as an example. However, Jay Davis noted that PBDEs would have been in Tier II, not Tier IV, because thresholds were not available. The success story would be that thresholds were acquired and PBDEs moved from unknown concern to moderate concern. Karen Taberski stated that discussing a switch from Tier II into another tier highlights the need for developing thresholds. Meg agreed and noted that one of the challenges is the lack of toxicity data. Luisa wondered why there were generally higher concentrations of PFOS in South Bay. Meg responded that she does not know the reason, but theorizes it could be less dilution in South Bay (most RMP contaminants are higher in the South Bay) or a particular source in the South Bay. Ian Wren was confused about why CECs of unknown concern were above CECs of minimal concern. The figure makes it seem as though Tier II CECs would be downgraded to Tier I, which not always

true. Ian suggested removing "unknown concern" from the hierarchical chart and placing it off to the side.

*Action Items*

1. Meg Sedlak and Alicia Gilbreath will revise their presentations and send the new version to Chris Sommers by September 24th.

**5. Update: Pulse 2012 and 2013 [Jay Davis]**

The Pulse Lite is going to the printer tomorrow. Comments and edits were received from both SC and TRC members. Jay Davis enjoyed having a shorter Pulse this year, he now feels refreshed and ready to start on the next Pulse of the Estuary. This coming year the RMP Annual Meeting will be integrated with the State of the Estuary Meeting so the Pulse has to be out on time. Therefore, Jay wants to start writing articles a quarter earlier than normal. Jay passed out a preliminary Pulse outline for 2013. The focus of the 2013 Pulse will be Contaminants of Emerging Concern. Below is a description of the articles that Jay is planning on featuring in the 2013 Pulse.

The articles will be divided into a management and a science section. In the management section Jay would like to have an article on the Water Board's management of CECs since Tom Mumley has mentioned that the Board is developing a policy statement on CECs. The second article will feature Green Chemistry because it can be linked with managing water quality in the Bay. SFEI is in the process of developing a green chemistry strategic plan, and it is one of the institute's top priorities. Chris Werme can serve as an author on these articles, as well as Debbie Raphael and Meg Sedlak.

The tiered framework for identifying CECs of concern will serve as the science section's theme/unifying principle. The first article will feature highlights from the RMP CEC synthesis with a sidebar on the strategy for ranking CECs (the synthesis figure illustrating the tiered structure). Other sidebars for the article will focus on specific pollutants that fit within the tiered framework (nonylphenol, PBDEs, and brominated dioxins). The second article will be a review of the National Mussel Watch CEC Study, which Keith Maruya will present at the annual meeting. Jay predicts that SCCWRP will be able to take a lead role in writing this article. The sidebars will include: 1) an explanation of the pro bono AXYS Bivalve Study 2) a statewide north to south comparison 3) and an examination of PAHs in NOAA mussels after the oil spill. The final two articles in the science section will be on PFOS in San Francisco Bay written by Meg Sedlak and an article on Broadscan Screening for CECs.

The "Latest Monitoring Results" section will include mercury and nutrient data. Although nutrients are not a CEC, they will be featured in many reports and publications as the RMP moves forward. Therefore, nutrients will be included in the 2013 Pulse.

*Discussion*

Bridgette DeShields suggested including a fipronil sidebar and Rod Miller thought pharmaceuticals should also be a sidebar. Jay agreed with both ideas, especially pharmaceuticals because they generate public interest even if they are not of high concern. Similarly, Luisa Valiela wondered if pyrethroids were not included because they are a watershed rather than a

Bay issue. Jay confirmed that they were not included for that reason, but that they could still be featured in a small sidebar. Luisa also mentioned that Chris Werme is writing a lot of articles and wondered if Susan Klosterhaus could help write some articles even though she has left SFEI. Luisa reasoned that Susan may be interested because she can provide an NGO's perspective to the Pulse.

*Action Items*

1. Jay Davis will run the idea of an article about Water Board management of CECs past Tom Mumley and Naomi Feger.

**6. Information: Annual Meeting 2013 [Meg Sedlak]**

In 2013, the RMP Annual Meeting will be integrated with the SFEP's State of the Estuary meeting. The date for the meeting is not set yet, but it will most likely occur in late October. Meg Sedlak is working with the SFEP to make sure the dates will work for the RMP. Meg noted that combining the meetings will result in attendees not having to travel twice to the region for conferences that are within three weeks of each other. The RMP will be one of three concurrent sessions at the State of the Estuary meeting, which will increase the RMP's exposure. The meeting's advisory committee is stellar. Financially, hosting the meeting in conjunction with State of the Estuary is almost equivalent to hosting the RMP Annual Meeting. The meeting will be hosted at the Oakland Marriott, which is more expensive than the David Brower Center.

Jay Davis mentioned that he is in the process of preparing an insert for the State of the Estuary report. The insert is on flame retardants and was written by Chris Werme. Jay is planning on internally reviewing the article this week and then sending the article to TRC members to edit and review by next week.

**7. Modeling Strategy Update [Don Yee, Jay Davis, and Dave Senn]**

Don Yee, Jay Davis, and Dave Senn presented an update on the "Conceptual Model of Contaminant Fate on the Margins of San Francisco Bay" and the "Conceptual Foundations for Modeling Bioaccumulation in San Francisco Bay" reports. During the presentation, Don provided an explanation for the rationale for creating the contaminant fate on the margins model; Jay described how a model can link contamination sources to bioaccumulation in species of interest; and Dave described the plan and timeline for developing a flexible contaminant and nutrients model.

**Conceptual Model of Contaminant Fate on the Margins of San Francisco Bay [Don Yee]**

After work on a numerical modeling of the Bay began, the CFWG decided that the needs and output of the model has not been sufficiently addressed. Work on the initial numerical model was suspended while the workgroup began refocusing on what the model needed to accomplish. The margins conceptual model originated from the workgroup discussions. Don began by providing a summary of conceptual models' needs. He began by stating that all models have shared elements: hydrodynamics, sediment load and transport, contaminant loads and ambient process, and bio-uptake. The timescale focus can vary between models; persistent organic pollutants have a decadal focus, biotransformed pollutants can have a decadal and seasonal focus, and shorter lived pollutants (nutrients) typically have a seasonal or even shorter focus. Spatially, models can be built to focus on the whole Bay, to concentrate on one segment of the Bay, or they can be

built on a site specific scale. System elements that should be built into a model include: hydrodynamics, sediment transport, chemical fate (incorporating loads, partitioning and transport, and degradation/transformation), and bioaccumulation. In the San Francisco Bay, the system characteristics that the model needs to capture are: 1) hydrodynamics including north versus south flows and differences between the wet and dry season; 2) sediment characteristics, such as loads history, predicted changes in sediment budget, spatial differences in sediment quality, and residence time; 3) chemical fate, which includes historic responses to treatment and bans, patchiness and persistence of contamination despite management bans, and knowledge of a uniform dispersion in the deeper Bay; and 4) bioaccumulation including the lack of a trend in POP concentrations for regionally mobile species and the awareness that there are patchy, high concentrations in margin species.

Before work on the margins conceptual model can begin, RMP staff need to understand managers' priorities in order to focus the model. Once the priorities are known, certain characteristics would be modeled in more detail. Don made clear that they will not produce one model, but will use one platform with different implementations. The model will need to be flexible so various contaminants can be examined on different scales. Previously, SUNTANS was used to build the model, but it is not a widely-used open source model. The authors are considering using EFDC or Delft3D (used by USGS for sediment fate) because they are both open source and widely-used. Finally, Don noted that upkeep on the model takes as much time as writing the code.

**Conceptual Foundations for Modeling Bioaccumulation in San Francisco Bay [Jay Davis]**
Jay Davis then focused on modeling bioaccumulation in San Francisco Bay. He described the contents of the August 2012 technical report "Conceptual Foundations for Modeling Bioaccumulation in San Francisco Bay" to the committee. Currently there is a mechanistic model for PCBs and OC pesticides at the Bay scale, but the margins need to be modeled on a finer scale. The contaminant sources need to be linked to accumulation in the food web, which can be done if the Bay's margins are modeled at a fine scale. Additionally, other pollutants besides PCBs and OC pesticides need to be modeled. The model should be able to forecast conditions under different management scenarios, allowing for adaptive management.

Jay then summarized the contents of the technical report. The first section highlights the objectives of the report, which are to summarize current data and knowledge, identify future monitoring and modeling priorities, and most importantly supporting the development of bioaccumulation models. The second section identifies pollutants of greatest concern and describes how they enter and move through the food web. The third section designates key indicator species to characterize categories of species and habitat types.. For example, a striped bass is a predator that is regionally mobile. Therefore, the fish is integrating the entire system and is representing conditions in the entire Bay. On the other hand, shiner surfperch are not high on the food web (they mainly eat invertebrates), and tend to have high site fidelity. Therefore the shiner surfperch are good indicators of site -specific contamination. Similarly, Forster's Terns forage in salt ponds, so they indicate contamination in the salt ponds. The site-specific biological indicators are where management action is most likely to occur. Section four reviews key concepts that affect bioaccumulation including: spatial distribution of contaminates, management action, seasonal variation, long-term trends, habitat types, and spatial scale and movement.

Methods of contaminants uptake and elimination, primarily dietary uptake, are also described in the report.

Jay then provided examples of how each indicator species can verify contaminant hotspots. The shiner surfperch reflect contamination occurring at the margins of the Bay. For shiner surfperch, there are two places on the California coast where PCB levels in the fish were above the no consumption limit: San Francisco Bay and San Diego Bay. Shiner surfperch in San Pablo Bay have low concentrations compared to the rest of the Bay, but in comparison to all of California, PCB levels are relatively high. In general, PCBs in small fish are reaching concentrations that are comparable to concentrations found in sport fish. Jay noted that this atypical relationship is because the small fish are in the contaminated margins; sediment contamination is also higher in the margin areas. High PCB concentrations in the margins are causing persistence in the rest of the Bay. There is a strong correlation between PCB sediment concentrations and concentrations in Topsmelt and Mississippi Silverside; indicating that once a source for sediment contamination is discovered, modeling can be used to determine how contaminants are entering the food web. Unlike PCBs, methylmercury in small fish varies at a local and regional scale and contamination is not clearly associated with sediment, making MeHg modeling difficult. But, there is isotopic evidence that MeHg contamination is coming from the sediment.

Section five of the report is a summary of the data and recommendations for moving forward. Jay suggests that the first step is developing a comprehensive plan for linking bioaccumulation in species of interest with abiotic modeling (water and sediment). While developing the plan it is important to consider the management decisions that could be made based on model outcomes. Jay noted that existing models for PCBs and pesticides could be adapted to incorporate bioaccumulation. However, more empirical work needs to be conducted before modeling begins, it is important to know about the area that will be part of the model. Additionally, empirical correlations can help determine what to model. The relationship between PCBs in sediment and small fish made clear that modeling PCB bioaccumulation would most likely be more successful than modeling MeHg.

**Modeling Plan [Dave Senn]**

Dave Senn gave a detailed schedule for creating a conceptual model of contaminant fate on the margins. In June/August, the RMP agreed to move forward on a modeling approach that will be used for multiple issues: 1) contaminants; 2) nutrients, phytoplankton, and biogeochemistry; 3) sediments; and 4) possible sea-level rise. The CFWG modeling team wants to move forward on using Delft 3D. The schedule is to develop a detailed modeling plan in 2012 after identifying key management questions. Then, in 2013-2014 develop or adopt a robust, 3D hydrodynamic model. A simple nutrient/phytoplankton model can be built on the 3D hydrodynamic model using grid aggregation (reducing spatial and temporal complexity). A simple contaminant model can also be added on to the 3D hydrodynamic model. The simple model will make the model feasible to run. Once the team is able to focus in on data and variables that are needed, a more complex model can be created for nutrients and contaminants. It is important to note that the simple nutrient model may only include Suisun and South Bay at first.

The schedule for 2012 includes assembling a modeling plan technical team in September. Jim Fitzpatrick is willing to serve as a team member and Dave has also extended invitations to Frank Gobas, Dave Schoellhamer, Ed Gross, and Mark Stacey. In October, a draft outline for the report

will be written for the technical team and managers to provide input. Finally, the CFWG and NWG will come together to produce a final report in November.

The management questions that will drive the creation of the nutrient and contaminant model are below:

Nutrients

1. Which nutrient sources, pathways, and transformation processes contribute most to concern?
2. What nutrient loads can the Bay assimilate (without impairment of beneficial uses)?
3. What future impairment is predicted for nutrients in the Bay?

Contaminants

1. What patterns of biota exposure to contaminants of concern are forecast for major segments of the Bay under various management scenarios?
2. What is the contribution of contaminated Bay margins to Bay impairment?
3. What are the projected impacts of Bay margin management actions to Bay recovery?

*Discussion*

Luisa Valiela wonders if the model is able to isolate sections of the Bay since we already know areas of the Bay where nutrients are a concern. Dave responded that the model would be able to segment the Bay during the grid aggregation step. He noted that Suisun and South Bay cannot be modeled as one well-mixed cell; the average depth is different from the photic depth. The depths will need to be modeled separately, a shallow box and a deeper box (accounting for light limitation). The modeling team will need to know how transport occurs between the two boxes. Tom Hall added that Jim Cloern from USGS is developing a two box model for South Bay. Dave said that the modeling team applied for BACWA funding to create the two box model; BACWA earmarked the funding until a clear road map for modeling nutrients was developed. Once the BACWA funding is made available, it will be merged with the RMP funding to develop the underlying 3D hydrodynamic model and biogeochemistry model. Around $100,000 is currently allocated for completing the models. Tom wondered if modeling nutrients for both Suisun and South Bay should occur at the same time. Dave thought that the team should focus on one of the two Bays initially, Suisun preferably, even though the model architecture should be the same for the two models. Eric Dunlavey asked if the modeling will be completed in-house or if it would be contracted out. Dave plans on hiring a hydrodynamic and water quality consultant to build the model and then the technical team will run simulations. However, Dave noted that there is interest in building the Regional Water Board or SFEI's capacity for building models in-house. Eric questioned whether the model would be flexible enough to include nutrients and contaminants. He was skeptical if the model could run for both because nutrients are unique (e.g. light attenuation is specific to nutrients). Don noted that the model can be tweaked to look at long term sediment accumulation or suspended sediment concentration (SSC); nutrients will be "tweaked" to look at SSC (i.e. light attenuation). Don also wondered if the model needed a vertical dimension for nutrients, then when the model is used for contaminant loads the depth can be averaged. Jay added that all management questions will be put on the table and a model will be built that addresses as many questions as possible.

**8. Nutrient Strategy Update [Dave Senn]**

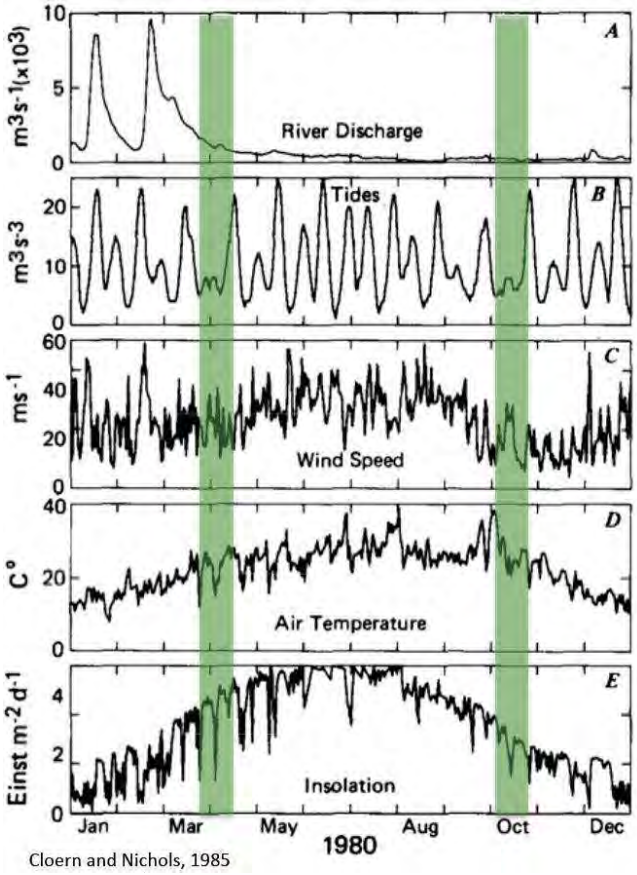
Dave presented an update on the two RMP funded nutrients projects: 1) the nutrients conceptual model and 2) the nutrient loading study.

**Nutrient Conceptual Model Update**
The conceptual model helps determine what a nutrient problem would look like in the Bay based on environmental and/or management changes. The process of developing the conceptual model is 1) defining the problem statement and 2) identifying what changes would bring about the problem. The conceptual model will inform regulatory decisions and lead to management actions.

In May, the main modules of the conceptual model were agreed upon, sketches of a conceptual model for some of the modules were completed, themes for the problem statement and future scenarios were discussed, and data gaps and priorities were identified. The main modules for the conceptual model are as follows: 1) phytoplankton biomass 2) phytoplankton community composition (including HABs and algal toxins included) 3) dissolved oxygen 4) nitrogen, phosphorous, and silica and 5) physics. On September 14th, the team discussed what product would be most informative to managers and stakeholders and subsequently began refining the conceptual model. It is envisioned that the report will be a 15-20 page summary document with detailed appendices.

Dave then described what drives phytoplankton blooms in the Bay system. The main drivers include calm winds, high temperatures, maximum light attenuation, stratification (river discharge), the biannual low point in tidal energy mixing, and low clam abundance. Additionally,

if ammonium levels drop below a certain level a phytoplankton bloom is likely to occur.




Cloern and Nichols, 1985

Green lines indicate optimal conditions for a phytoplankton bloom.

It is key that we understand how the above drivers will change in the future. For example, the 2004 red tide bloom was because of high temperatures, the bloom followed the three warmest days on record that occurred during a weak tidal mixing cycle. Dave suggested that there could be multiple phytoplankton community compositions in different areas of the Bays that overlap with each other. The width of each community would vary as a function of different drivers (e.g. flow rate from the delta). Natural and anthropogenic factors could impact community composition (e.g. after a *Corbula* invasion total biomass was lower and the smaller phytoplankton became dominant).

The conceptual model draft was supposed to be completed by September, but an internal draft will most likely be ready in October. The final document will be ready by December and external review will occur in 2013.

*Discussion*

The TRC agreed that the report should be short, that is 30 pages (the committee agreed the report could be 15 pages longer than Dave proposed) rather than long, 150 pages. Tom Hall noted that there will be different drivers for different portions of the Bay. Dave agreed and said that an overarching conceptual model will be produced with the various drivers differing spatially. The report will most likely include different diagrams for each portion of the Bay to show how the main drivers vary. Luisa Valiela stated that the manager's will want to know how each region

specifically will be impacted; therefore it will be important to include how the drivers change in different sections of the Bay. Tom wondered if there will be interim projects or will the next document be the overall draft report. Dave responded that the next deliverable was the overall draft, but that there will be discussions and updates before the draft is released.

**Nutrient Loading Study Update**

The goal of the nutrient loading study is to quantify nutrient loads to the Bay, to determine how the loads vary spatially and seasonally, and to identify sources and major data gaps. A draft report for the study will be available in 2013. Sources include stormwater runoff, POTWs, GG, and internal loads. Emily Novick has been working on the nutrient loading study in Suisun Bay and the study will eventually focus on other locations in the Bay. Emily and Dave have looked at ammonium and nitrate loads from POTWs in Susiun Bay. Central Conta Costa Sanitary District collects ammonium data daily and Delta Diablo Sanitation District collects data on a monthly basis. Fairfield Suisun has collected nitrate data since 2003. The sanitation districts' data show that from 1990-2010 there has been a 25 percent increase in loads. During certain months there has been a 2-fold increase in ammonium concentrations.

Stormwater ammonium and nitrate loads were determined by examining land-use in Suisun Bay and then calculating weight average runoff coefficient based on rainfall patterns. During high flows, the ammonium load is about 400 kg/d and the nitrate load is about 1,500 kg/d. It is important to note that uncertainty estimates have not been performed as of yet. The study also began quantifying loads arriving at the Delta by combining IEP station data with daily flow estimates from 1975 through the present. They found that the Delta removes approximately 60 percent of ammonium loads prior to efflux to Suisun Bay; the delta ecosystem is assimilating N and converting it. There is a clear seasonality for N loads in Suisun Bay; ammonium loads in Suisun Bay varied by a factor of five. Due to the seasonality of Delta N loads, POTWs contribute a significant amount of ammonium and nitrate loads during fall, when Delta loads are low. Overall, stormwater loads are not an important N source to detail, but sediment loads appear to be higher than stormwater loads and may be an important source to study further. When creating management priorities for nutrients, it is important to realize that ammonium regulation is different than Dissolved Inorganic Nitrogen (DIN) regulation; DIN needs to be considered if regulation on ammonium moves forward. Next steps for the study include refining load estimate for Suisun and applying the same quantitation approach for other subembayments. The draft should be prepared by February 2013.

**9. Mussel CEC Pilot Study [Jay Davis]**

Jay Davis gave an update on NOAA on how the National Mussel Watch special study on CECs. In 2010, all of the funding for the National Mussel Watch study was directed to a special study of CECs in mussel in the State of California. The National Mussel Watch program has historic data from 1986 and they have been monitoring 71 sites along the coast.

Jay Davis presented some of the Mussel Watch's historic data, including DDT, PCB, and PAH concentrations. DDT samples from 2007-2009 revealed that the Emeryville had one of the highest DDT concentrations in the state. In general, the Bay has experienced declining DDT concentrations; but, concentrations in Emeryville have remained consistent since 1985. Similarly, Emeryville has relatively high PCB concentrations. PCBs had either declined or no

trend had been observed at most stations; significant decreases in PCBs were observed at San Mateo Bridge and at Palos Verdes Royal Palms State Park. Jay pointed out that PAH concentrations were interesting because of the 2008 Costco Buson oil spill. There was a large spike in PAH concentrations at the Yerba Buena sampling site after the oil spill. The Emeryville site also high PAH concentrations. Unlike DDT and PCBs, there were more sites with increases in PAH concentrations than decreases, 21 out of 35 sites showed upward trends (even though only five sites were statistically significant).

The Mussel Watch Pilot Study is designed to inform future monitoring efforts on what CECs should be targeted. All of NOAAs analytical resources were designated toward the Mussel Watch study, with a focus on CECs to make the National Mussel Watch more relevant. The Mussel Watch Pilot Study's collaborators include NOAA, SCCWRP, SWRCB, SFEI, and USGS. Candidate contaminant classes include: pharmaceuticals and personal care products (PPCPs), industrial and commercial CECs, current use pesticides, legacy organohalogens and butyltins, and PAHs. Additionally, a variety of land uses and sources were included in the study. When comparing both CECs and legacy pollutants, PAHs had the highest concentration, followed by OC pesticides; some PPCPs also had relatively high concentrations. However, concentrations are not particularly informative because of the pollutants differing toxicity. Most pollutants were associated with urban land use (e.g. alkylphenols), except for pesticides which were associated with agricultural areas. PPCPs concentrations are uniform across land use categories because they are also used in farm animals. When examining CECs by discharge category, alkylphenols and PBDEs are associated with stormwater discharge. Similar to land use, PPCP concentrations are uniform across discharge categories.

Jay then examined data from a pollutant of interest within each contaminant class. He noted that nonylphenols (4-nonylphenol was analyzed) are not especially high in the Bay area. BDE-47 (within the PBDE class) concentrations in the Bay were highest at Emeryville, followed by Yerba Buena, San Mateo, and Dumbarton bridge. San Francisco had the highest concentration of Sertaline (a PPCP commonly known as Zoloft) in the state, although concentrations were still near detection limits. Emeryville had the highest Diphenhydramine (another PPCP) concentrations in the state; San Mateo and Dumbarton Bridge also possessed some of the highest concentrations in the state. 4'4-DDE, an OC pesticide, had high concentrations in 1998, but concentrations are lower today. Only the Monterey Bay Salinas River 4'4-DDE concentrations remain elevated, most likely because of legacy organic pesticide pollution. The PAH Fluoranthene had exceedingly high concentrations at the Yerba Buena site compared to the rest of the state because of the 2008 oil spill. Finally, for PCB-153/152 a disconnect was observed between bivalves and sportfish/smallfish. Unlike concentrations seen in Bay fish, bivalves do not show high PCB concentrations.

Jay concluded by noting that PBDEs, alkylphenols (APs) and PPCPs were the most frequently detected CECs. Additionally, urban land use stations generally had higher concentrations for many CECs, except for current use pesticides. CECs had the highest concentrations at stations influenced by storm water discharges, which reinforces the need to monitor selected CECs (especially in heavily urbanized regions). The results of the mussel watch study is being published in the Marine Pollution Bulletin. The results will also be featured during a SETAC session.

*Discussion*
Luisa Valiela wanted to know why the Mussel Watch Study might not have funding in the future. Jay Davis responded that monitoring legacy pollutants now has a very low return, in regards to management decisions; however, Jay thinks that monitoring CECs through the Mussel Watch program is still interesting. Luisa also wanted to know how the data is informing management decisions (i.e. why is there no management action in Emeryville). Jay responded that the project leaders may not be connecting with managers effectively.

*Action Items*
1. Jay Davis will give the TRC a copy of the marine pollution bulletin that features the Mussel Watch CEC Pilot Study.
2. Meg Sedlak will send out information on the CEC session at SETAC.

**10. Information: Delta RMP [Thomas Jabusch]**
Thomas Jabusch was not at the TRC meeting. Meg Sedlak said that a steering committee for the Delta RMP is being assembled and includes POTW, stormwater, agricultural water quality, and state and federal agency representatives.

**11. Information/Discussion: Workgroup Deliverables and Workgroup Updates [Meg Sedlak]**

**Workgroup Updates**
The SPLWG is in the process of getting ready for the 2012-2013 wet weather season. The SPLWG is sampling at six sites, the RMP is in charge of two of those sites (Sunnyvale and North Richmond). Under the workgroups activities document, Meg Sedlak incorporated an "Items of Interest" section that compiles things that are related to the Bay, but are not directly RMP related. If TRC members want to add anything to the section let Meg know. Meg presented the Organization and Structure of the RMP at the California monitoring council meeting in August. She said it was gratifying that many people said the RMP serves as an example for how monitoring programs can be effectively run. Attendees were especially enthusiastic about the RMP's data visualization techniques. Robin Grossinger is working with the Oakland Museum to develop a Bay Exhibit that is timed with the opening of the Bay Bridge. Meg Sedlak and Jay Davis are providing technical content. Thomas Jabusch is currently on the agenda for the December meeting to keep the TRC updated with the Delta RMP project.

*Discussion*
Karen Taberski attended a State Board Bay Delta meeting that discussed how to coordinate monitoring programs in the Bay (e.g. increased coordination between the IEP and RMP). Meg Sedlak and Jay Davis said they were willing to be involved with increasing cooperation and thought Thomas Jabusch would be great liaison.

After discussing the PCB conceptual model, Rod Miller noted that the RMP data has blank contamination that should be resolved.

*Action Items*

1. Meg Sedlak will send the TRC the 2012 Estuary Insert for Review.

**12. Action: Set Agenda and Date for Next Meeting, Plus/Delta [Meg Sedlak]**
The next meeting will be on December 4th. Bridgette DeShields liked being able to preview the annual meeting presentations during this meeting and Eric Dunlavey enjoyed having the agenda package posted online.

Item 3: TRC Action Items Updated: Monday, October 22, 2012

**Action Items - September 2012**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 1 | Talk to Bruce Herbold about his annual meeting presentation to ensure it focuses on the effect of ammonia and other pollutants in fish populations | Jay Davis | 10/9/2012 | Completed |
| 2 | Discuss the idea of an article about Water Board management of CECs with Tom Mumley and Naomi Feger | Jay Davis | | Completed |
| 3 | Provide the TRC a copy of the Marine Pollution Bulletin journal that features the Mussel Watch CEC Pilot Study | Jay Davis | | On-going |
| 4 | Send the TRC the 2012 Estuary Insert for Review | Meg Sedlak | | Completed |

**Action Items - June 2012**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 1 | Chris Sommers offered to provide examples of good reports for managers | Chris Sommers | | |
| 2 | Complete PBDE Summary Report by early 2013 (per Chris Sommer's Request) | Jay Davis | | In progress |
| 4 | Clarify role of CFWG in providing oversight to modeling strategy | Jay Davis | | |

**Action Items - March 2012**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 2 | Convene the mercury strategy team to discuss the next steps in the process of developing plans for mercury work | Jay Davis | 3rd quarter 2012 | Synthesis article accepted |

Item 3: TRC Action Items Updated: Monday, October 22, 2012

**Action Items - March 2012**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 8 | Revise the USGS south bay sediment budget factsheet and distribute it for review by the TRC | Jay Davis | | Chris Werme revised the draft factsheet. Final version is pending publication of the 2011 results |

**Action Items - September 2011**

| # | Action Item | Who? | When? | Status |
|---|---|---|---|---|
| 8 | Determine how to get flow data from the WWTPs annually for Pulse reporting | Meg Sedlak | | BACWA potentially funding online database (CIWQS) |

# Workgroup Activities – Fourth Quarter 2012

## A. Contaminant Fate Workgroup

Purpose of Workgroup
The purpose of the workgroup is to evaluate the fate of contaminants in the Bay, to understand the contribution of Bay margins to the overall health of the Bay, and to assess the potential impacts of Bay management actions on Bay recovery.

Meetings:
The Contaminant Fate Workgroup (CFWG) will meet in the Fall/ Winter to review tactical plans developed in coordination with the nutrient monitoring and modeling efforts and to further refine modeling work for 2013.

Milestones:

- Completion of the Margins Conceptual Model. The document can be found at the following link: (http://www.sfei.org/documents/margins-conceptual-model). The margins of the Bay are teeming with important activities: industrial activities such as airports, refineries, ports, and landfills as well as biological activities such as wetlands, bird rookeries, and seal haul-out sites. It represents a complex environment where the watersheds meet the Bay. This report identifies key processes – physical, chemical and biological – and explores modeling efforts that can be used to help us better understand this complex environment.

Activities for the Fourth Quarter of 2012:

- Development of tactical plan. Drs. Jones, Yee, Senn, and Davis discussed an outline of a plan with a smaller group of RMP stakeholders and Water Board staff on May 1st and June 4th. There was support for integrating the modeling efforts as much as possible, but some differences in the spatial and temporal scales of interest and timelines for products needed for various management questions. Partnering efforts with other agencies already modeling in the Bay will be explored and developed.

For more information, see previous CFWG minutes and agendas at our website http://www.sfei.org/rmp/cfwg or contact the CFWG leader, Don Yee, at don@sfei.org.

## B. Sources Pathways and Loading Workgroup (SPLWG)

Purpose of Workgroup
The purpose of the workgroup is to monitor storm water, small tributaries, and delta outflow to understand contaminant loads to the Bay, to identify high priority tributaries for management actions, to evaluate how loads are changing over time, and to assess possible options for improving water quality.

Meetings:
The SPLWG will meet on October 24th, 2012. The Small Tributary Strategy Loading team meets almost monthly to assure that RMP activities are coordinated with the Municipal Regional Permit requirements, Regional Board staff and BASMAA staff.

Milestones:

- Completion of the draft report: Pollutants of Concern Loads Monitoring Data Water Year 2011.
- Completion of the draft Technical Memorandum: Event Mean Concentration Development for the Regional Watershed Spreadsheet Model.
- Completion of the Copper Test Case Model for the Regional Watershed Spreadsheet Model.
- All three of these reports will be discussed at the upcoming SPLWG meeting.

Activities for the Fourth Quarter of 2012:

- RMP staff are prepared for the wet weather sampling at six sites: North Richmond (new this year to RMP), Pulgas pump station (new this year), San Leandro Creek, East Sunnyvale Channel, Lower Marsh, and Guadalupe. The sites that will be covered by the RMP are North Richmond and Sunnyvale.

  These watersheds will be monitored for a variety of constituents including: PCBs, PAHs, PBDEs, pyrethroids, mercury, copper, selenium, suspended sediment, nitrate, and toxicity.

The next SPLWG meeting will be held on October 24th, 2012. For more information, see previous SPLWG minutes and agenda at our website http://www.sfei.org/rmp/splwg or contact the SPLWG lead, Lester McKee, at Lester@sfei.org.

## C. Exposure and Effects Workgroup

Purpose of Workgroup
The Exposure and Effect workgroup seeks to answer the following questions: Are pollutants individually or in combination having adverse impacts on Bay biota?; Are there spatial and temporal trends?; Which pollutants are responsible for the impacts?; Are there cost-effective tools that can be used to easily monitor these impacts?; and What are the appropriate guidelines?

Meetings:

- The workgroup met with the Emerging Contaminants workgroup to discuss bioanalytical tools and EEWG projects for 2013. The workgroup reviewed the progress on the copper and olfactory nerve project and the PAH and juvenile flatfish. Preliminary copper experiments suggest that there is relatively little toxicity to the olfactory nerve at levels that are observed in the estuary. Confirmation studies will be conducted Summer/Fall

2012. Similarly relatively few adverse outcomes were observed for juvenile flatfish at levels observed in the estuary; however, histology work remains to be completed.

Milestones:

- Completion of the draft report on effects of PAH on juvenile flatfish. A draft report was made available at the meeting; however, additional work needs to be incorporated into the report including histology.

Activities for the Fourth Quarter of 2012:

- Completion of the EEPS Summary document.
- Planning for the Mesohaline Index Development for 2012 and the Causes of Moderate Toxicity workshop at the fall National SETAC meeting.

The next workgroup meeting will be held in Spring 2013. For more information, see previous EEWG minutes and agenda at our website http://www.sfei.org/rmp/eewg or contact the EEWG lead, Meg Sedlak, at meg@sfei.org.

## D. Emerging Contaminants Workgroup

Purpose of Workgroup
The purpose of the emerging contaminant workgroup is to identify contaminants of emerging concern (CECs) that have the potential to adversely impact beneficial uses of the Bay.

Meetings:
The ECWG met on May 16th to discuss the recently completed synthesis document, a strategy for prioritizing chemicals of emerging concern in the RMP, siloxanes, and an update on the non-targeted screening of Bay Wildlife. The bioanalytical tools proposal for 2013 was discussed and will be brought forward with some caveats. Other proposals for 2013 include an update on PBDEs, a review of current use pesticides and a method for updating the CEC strategy.

Milestones:

- Preparation of an Emerging Contaminants Synthesis report.
- Manuscript on Alkylphenols and PPCPs in San Francisco Bay was accepted to the journal, Environment International.
- Completion of a draft PFC sources paper (sent to ECWG for comment).

Activities for the Fourth Quarter of 2012:

- Development of an Emerging Contaminants Strategy.
- Two manuscripts summarizing the National Mussel Watch sampling in California for chemicals of emerging concern. One paper will focus on personal care products, alkylphenols, current use pesticides and nanomaterials. The second paper will focus on

flame retardants and perfluorinated compounds. This work is being conducted by SCCWRP.
- Continuation of NIST broadscan work. Samples of harbor seals and mussels have been sent to NIST for method development and analysis.

Next ECWG meeting will be held Spring 2013.

For more information, see previous EC workgroup minutes and agenda at our website http://www.sfei.org/rmp/ecwg or contact the ECWG lead, Meg Sedlak meg@sfei.org.

## E. Nutrients

Purpose of Workgroup
The purpose of this workgroup is to evaluate nutrients, methods for monitoring nutrients/ indicators, and scenarios that may result in adverse impacts to the Bay.

Meetings
The Nutrient Conceptual Model Technical Team met on September 14th, 2012 to revise conceptual models for nitrogen, phytoplankton biomass, and phytoplankton community composition, and to discuss a problem statement (what would a nutrient problem look like in SF Bay if one were to occur?) and future scenarios (what future environmental or anthropogenic changes would have to occur in order to bring about this problem, and how could management changes mitigate this problem?)

Milestones
- A proposal was written and submitted to the Interagency Ecological Program (IEP) 2012 Call for Study Concepts. The 1-year project was proposed for $181,000 and is a collaboration between SFEI, USGS and Resource Management Associates (RMA). The project would consist several tasks, including analyzing existing nutrient data to identify seasonal and temporal nutrient trends in the Delta, extending the DSM-2 biogeochemical model through 2011 using existing concentration and stable isotope data, applying the updated DSM-2 model to characterize nutrient transformations and losses through the Delta under a range of flow conditions and quantifying nutrient loads to Suisun Bay from the Delta. A decision on the status of the project is expected by November 2012.
- A draft version of the nutrient strategy was presented to the SAG on June 22nd 2012. A revised draft strategy that addresses the feedback has been sent out for internal review, and a final strategy will be distributed in February that is intended to be a living document that will be updated on an as needed basis. [This effort is funded by BACWA through a Region 2-BACWA agreement]
- The approach for developing the nutrient conceptual model was developed in February-April, through literature review and meetings with regional scientists and stakeholders. The conceptual model technical team met on September 14, 2012 to dicsuss draft chapters on nitrogen cycling, phytoplankton biomass and phytoplankton community composition. Conceptual models on phosphorous cycling, silica cycling, dissolved oxygen and hydrodynamics are in progress. The Conceptual Model Technical Team will

reconvene in early December to discuss the remaining two chapters: problem statement and future scenarios.

- Field work for nutrient stormwater measurements was carried out in January-April 2012. Final nutrient data arrived at SFEI in late May, and the RMP data management group completed QA/QC on June 12. Analysis of data, data interpretation, and preparation of a technical has been delayed due to on-going discussion with BASMAA about data usage.
- Field work for nutrient stormwater measurements for water year 2013 is underway. This year, sampling will occur for 4 storms at each of 6 watersheds for the following analytes: total kjedhal nitrogen (TKN), total phosphorous, PO4, NH4, NO3 and NO2 (as the budget allows).
- A website for the nutrient strategy was created, with information on nutrient strategy partners, projects, documents and upcoming events, as well as links to useful science and management pages and partners. (http://bayareanutrients.aquaticscience.org/) [This effort is funded by BACWA through a Region 2-BACWA agreement]
- A draft of the Suisun Synthesis report is underway. It includes chapters on phytoplankton nutrient uptake, primary production, zooplankton ecology in and a synthesis of existing water quality data in Suisun Bay. A finalized first draft of this report will be sent our for review by the end of October. [This effort is funded by BACWA through a Region 2-BACWA agreement]

<u>Activities for the Fourth Quarter of 2012:</u>

- The Suisun Synthesis Report will be distributed for review by the end of October and will be discussed at the November 19 SAG meeting.
- Work on the Nutrient Conceptual Model Report will continue through December 2012. Chapters on phosphorous cycling, silica cycling, dissolved oxygen and hydrodynamics will be developed prior to the next technical team meeting in early December, and the final chapters on the problem statement and future scenarios will be discussed at this meeting. The technical team will review the complete draft of the report before distribution for external review in December 2012.
- The Nutrient Stakeholder Advisory Group will reconvene on November 19, 2012 to discuss the progress of several deliverables: the revised Nutrient Strategy, the Suisun Synthesis report, an Assessment Framework work plan and the nutrient conceptual model. Additionally, the SAG will receive an update on funded projects for 2013. [This effort is funded by BACWA through a Region 2-BACWA agreement]
- Nutrients stormwater monitoring for water year 2013 will continue through Winter 2012-2013.
- Work will begin on exploring potential goals, structure and costs of a Nutrient Monitoring Plan for San Francisco Bay. Currently San Francisco Bay has no regionally-funded and regionally-coordinated nutrient monitoring program. Current efforts are managed by several different partners (with different analytical techniques), some of whose funding future is uncertain. With the guidance of a technical advisory team, key goals of a monitoring plan will be identified, possible programmatic structures and institutional agreements will be explored and costs estimates will be developed. The technical advisory team will meet in early 2013, and draft report of recommendations will be completed by November 2013, with a final draft in December 2013. [This work is funded by the State Water Resources Control Board]

- Work will continue on the nutrient loading study in Winter 2012-2013. Key goals include refining POTW loads to individual Bay segments based on actual historic data (2004-2011) that will become available through a request from the Regional Board, and through individual requests by SFEI staff to POTW managers. Nutrient data from past stormwater studies data collected in the region will be used, along with a "spreadsheet" hydrological model, to calculate approximate seasonal or monthly loads from stormwater to individual Bay compartments. Effort will also be directed toward improving the estimates of seasonally- and temporally-varying loads from the Delta to Suisun Bay.

For more information, please contact David Senn at davids@sfei.org.

## F. Dioxin

The dioxin strategy team met on October 26th, 2011 to review the sediment, water, and biota samples that have been collected to date. The water samples were dominated by the octa and the hepta congeners. Sediment samples were collected in both wet and dry seasons and no significant differences were noted; similarly, concentrations remain the same as those observed in 2000. Spatial patterns suggest broad regional trends. Again sediments are dominated by octa and hepta congeners. In the sediment cores, there appears to be a peak after WWII followed by a decline. Dioxin concentrations in shiner surfperch and white croaker continue to exceed the RWQCB guidelines. It was proposed that upon completion of the dioxin studies, it would be appropriate to conduct a dioxin synthesis (2014). Some members thought mass balance and food web model products should be folded into the synthesis rather than as separate reports.

Activities for the Fourth Quarter of 2012:

- Develop a scope of work for dioxin analysis of sediment based on strategy team recommendation.

For more information, please contact Don Yee at don@sfei.org.

## G. Status and Trends Sport Fish

Purpose of Workgroup

The purpose of the workgroup is to design RMP studies relating to sport fish contamination.

Meetings

The workgroup met on July 10th for a general update and to hold initial discussions of information gaps that could be addressed in the next round of sampling. RMP sport fish monitoring has been switched from a three-year cycle to a five-year cycle to maximize cost-effectiveness and to coordinate with state-wide monitoring efforts. The next round of sampling will occur in 2014.

Milestones

For more information, please contact Jennifer Hunt at jhunt@sfei.org.

## H. Items of Interest

There are a number of interesting activities that are not RMP-related but nonetheless of interest to the RMP community.

Delta RMP

The Delta RMP has organized a Steering Committee consisting of POTWs, stormwater programs, agricultural water quality coalitions, the Interagency Ecological Program (IEP), the State and Federal Water Contracting Agencies (SFWCA), the Central Valley Regional Water Board, and the U.S. Environmental Protection Agency (USEPA). The Steering Committee will be deciding on a lead entity for the long-term implementation. A meeting summary and background materials are available at the Central Valley Regional Water Board's Delta RMP. http://www.waterboards.ca.gov/centralvalley/water_issues/delta_water_quality/comprehensive_monitoring_program/index.shtml.

- *Pulse of the Delta 2012: Linking Science & Management Through Regional Monitoring* The Pulse of the Delta 2012 has been printed and distributed. This second edition includes a key note article on the benefits of regional monitoring and management updates on the Delta RMP, U.S. EPA's Bay-Delta Action Plan, and Nutrient Numeric Endpoints for the estuary. This year's feature articles shine a spotlight on new research that may help wetland managers in the Delta reduce the methylmercury problem and showcase the history and future of the IEP in the context of the historic and future ecosystem. And new this year is a status and trends section that highlights the latest monitoring results and tracks lead indicators for water quality and ecosystem health in the Delta. For more information, contact Thomas Jabusch (thomas@aquaticsciencecenter.org, 510-746-7340)

SWAMP Bioaccumulation

Jay Davis is assisting monitoring biota at the State level. Current activities include preparing a report on contaminants in fish in California rivers and streams (due May 2013), a study of mercury effects on wildlife in California lakes (sampling summer 2012), a workshop on biotoxin monitoring on November 28th (see below), a Statewide Bioaccumulation Oversight Group meeting on December 17th (see below), a forthcoming report documenting long-term trends in bioaccumulation in mussels, and development of a statewide strategy for bioaccumulation monitoring, assessment, and communication.

- SWAMP Workshop on Cyanotoxins in Freshwater Habitats on November 28 Cyanotoxins from harmful algal blooms have been causing problems in a number of water bodies in California, and have resulted in drinking water supply concerns, wildlife and domestic animal deaths, human health risks, and restrictions on shellfish harvesting. In spite of these well-documented problems, no monitoring efforts are in place to routinely screen for harmful algal blooms or associated cyanotoxins in water or organisms in California's freshwater habitats. To begin to address this need, the State Water Resources Control Board's Surface Water Ambient Monitoring Program is holding a workshop on November 28 at the San Francisco Regional Water Quality Control Board in Oakland, CA. A series of talks by managers and scientists at the forefront of this issue

will be presented. The workshop is intended to educate managers about the potential harmful effects of cyanotoxins and factors leading to cyanotoxin production. Space is limited and attendees must register in advance through the Water Board Training Academy (http://www.trainingforce.com/6/lp/gowater.aspx?ot=9&otid=1735). Although the workshop is set up as a training session for Water Board staff, others are also welcome to attend. For more information, please see the SFEI web site for the flyer or contact Jay Davis at the San Francisco Estuary Institute (jay@sfei.org).

- **Bioaccumulation Symposium**
  The bioaccumulation symposium will be held at the Department of Public Health on December 17th in Richmond, CA. The agenda is still in draft form.

California Monitoring Council

The California Water Quality Monitoring Council invited a sizeable contingent from SFEI-ASC to provide updates on mapping and data management needs, as well as regional monitoring efforts in central and northern California. The Council operates under a Memorandum of Understanding between CalEPA and the Natural Resources Agency and is charged with developing specific recommendations to improve the coordination and cost-effectiveness of water quality and ecosystem monitoring and assessment, enhance the integration of monitoring data across departments and agencies, and increase public accessibility to monitoring data and assessment information. While the Monitoring Council may recommend new monitoring or management initiatives, it will build on existing efforts to the greatest extent possible.

- Meg Sedlak presented to the Monitoring Council an overview of the origins of the San Francisco Bay Regional Monitoring Program, why it has been successful, how it has developed tools that have benefited coordination efforts in other regions, how data are being managed and made available, and what its measures of success are. It was notable that the RMP was a model program emulated by many other regional monitoring programs.

- The Council gave the Bioaccumulation Oversight Group (chaired by Jay Davis) the charge to develop a strategy for statewide monitoring of contaminants of emerging concern (CECs) in mussels and other biota.

- Jay Davis will be a featured speaker on the Monitoring Council's webinar series on November 17th. Jay will be discussing the RMP – A collaborative effort to provide water quality managers with the information they need. Further information is located here:
  http://www.waterboards.ca.gov/mywaterquality/monitoring_council/collaboration_network/docs/agnd110812.pdf

Oakland Museum – Bay Exhibit "Above and Below"

SFEI Historical Ecology and RMP staff led by Robin Grossinger and Ruth Askevold are working with the Oakland Museum to develop a Bay Exhibit celebrating the opening of the Bay Bridge and the complex ecosystem of the Bay. The exhibit will open in the Fall of 2013.

# RMP Deliverables Scorecard

| Deliverable | Lead | Deliverable Type | Start Year | Original Due | Current Due | Stoplight | Comments | Months Overdue |
|---|---|---|---|---|---|---|---|---|
| **Contaminant Fate** | | | | | | | | |
| 1) Spatial Trends of Hg in Forage Fish | BG | Manuscript | 2010 | May-11 | | | | 17 |
| 2) Mercury Synthesis and Conceptual Model Update | JD | Report | 2011 | Aug-11 | Nov-12 | | Revised Article Submitted to Env Intl. RMP Version by Nov-12 | 14 |
| 3) 2011 Mercury Food Web Uptake (Small Fish) | RA | Presentation | 2011 | Jul-12 | | | Completed | |
| 4) PCB Conceptual Model | JD | Report | 2011 | Mar-12 | Dec-12 | | | 7 |
| 5) Contaminant Fate Modeling | JD/DS | Task | 2012 | Dec-12 | | | Need to set planning meeting for Fall 2012 | |
| **Emerging Contaminants** | | | | | | | | |
| 6) PFC Sources | MS | Manuscript | 2009 | Jun-10 | Jun-12 | | Draft completed. In review. | 28 |
| 7) Broadscan Screning of Biota for EC | MS | Report | 2012 | Mar-12 | Dec-12 | | | 7 |
| 8) EC Synthesis | SK | Report | 2012 | Mar-12 | May-12 | | Completed | 2 |
| 9) PFCs in Bay Biota | MS | Report | 2012 | Mar-13 | | | Sampling underway | |
| 10) EC Strategy | MS | Task | 2012 | Oct-12 | | | Outline presented to ECWG in June 2012 | |
| **Exposure and Effects** | | | | | | | | |
| 11) EEPS Summary Report | MS | Report | 2009 | Jun-09 | Feb-12 | | Outline presented to workgroup | 40 |
| 12) Effects of PAH on Flatfish | MS | Report | 2009 | May-10 | Oct-12 | | Draft report completed. Awaiting additional results. | 29 |
| 13) Hotspot Sediment Quality Followup Study | MS | Report | 2011 | Oct-12 | | | Sampling completed, waiting for data | |
| 14) Effects of Copper on Salmon | MS | Report | 2011 | Sep-12 | Dec-12 | | Study underway | 1 |
| 15) Benthic Assessment for Mesohaline | MS | Report | 2012 | Jul-13 | | | Contract developed | |
| 16) Moderate Toxicity Workshop | MS | Workshop | 2012 | Nov-12 | | | Planning workshop for Fall SETAC meeting. | |
| **Nutrients** | | | | | | | | |

| Deliverable | Lead | Deliverable Type | Start Year | Original Due | Current Due | Stoplight | Comments | Months Overdue |
|---|---|---|---|---|---|---|---|---|
| **Nutrients** | | | | | | | | |
| 17) Nutrients Stormwater Sampling | DS | FieldSampling | 2012 | Apr-12 | Jun-12 | ✓ | Completed | 2 |
| 18) Nutrients Conceptual Model and Scenario Building | DS | Report | 2012 | Dec-12 | | 🟢 | Draft report in progress | |
| 19) Quantifying External Nutrient Loads | DS | Report | 2013 | May-13 | | 🟢 | Load estimation in progress | |
| **Status and Trends** | | | | | | | | |
| 20) S&T Bird Egg Report (2006/2009) | JR | Report | 2009 | Oct-10 | Aug-12 | 🔴 | Writing report | 24 |
| 21) QAPP | DY/AF | Report | 2011 | Jul-12 | Dec-12 | 🟢 | | 3 |
| 22) USGS South Bay Sediment Budget Factsheet | JD | Factsheet | 2011 | Mar-13 | | 🟡 | Final draft of factsheet pending publication of data from 2011 in Marine Geology | |
| 23) Dioxins in Bird Eggs, Stormwater, and Sediment | DY | Presentation | 2012 | Dec-12 | | 🟢 | Stormwater and bird egg collection complete. Sediment locations to be decided. | |
| 24) AMR 2011 | MS | Report | 2012 | Dec-12 | | 🟢 | | |
| 25) S&T Bird Egg Report 2012 | JR | Report | 2012 | Jan-13 | | 🟢 | | |
| 26) Sediment Cruise 2012 | AF | Cruise | 2012 | Mar-12 | Apr-12 | ✓ | Completed. | 1 |
| 27) S&T Bird Egg Sampling 2012 | MS | FieldSampling | 2012 | May-12 | | ✓ | Completed | 3 |
| 28) Annual Meeting (2012) | MS | Presentation | 2012 | Oct-12 | | ✓ | Completed | |
| 29) Estuary Insert 2012 | MS | Newsletter | 2012 | Oct-12 | | ✓ | Completed | |
| 30) Pulse 2012 | JD | Report | 2012 | Oct-12 | | ✓ | Completed | |
| 31) S&T Bivalve Sampling 2012 | MS | Cruise | 2012 | Sep-12 | | ✓ | Completed | 1 |
| 32) RMP Website Update | EWN | Task | on-going | | | 🟢 | | |
| **Sources Pathways and Loadings** | | | | | | | | |
| 33) Load Monitoring in Representative Watersheds (WY 2011) | LM | Report | 2011 | May-12 | Sep-12 | ✓ | Completed | 5 |

| Deliverable | Lead | Deliverable Type | Start Year | Original Due | Current Due | Stoplight | Comments | Months Overdue |
|---|---|---|---|---|---|---|---|---|
| **Sources Pathways and Loadings** | | | | | | | | |
| 34) Load Monitoring in Representative Watersheds (WY 2012) | LM | Task | 2012 | Oct-12 | | | | |
| 35) Regional Loading Spreadsheet Model (Y3 Update) | AG | Task | 2012 | Oct-12 | | | | |
| 36) Load Monitoring - EMC Development | LM | Task | 2012 | Sep-12 | | | Cu test case completed | 1 |

# Pardee Retreat Draft agenda: November 5-7

## GOALS:

## 1. Nutrients

- **Update on status of SFEI effort and potential next steps**
- **Develop Board consensus on strategy for governance, regulatory framework, desired outcome, and necessary steps to accomplish path forward**
- **Present strategy to RB2 and begin process of accomplishing strategy with them and to have greater clarity on BACWA's role**

## 2. Budget

- **Common understanding of current finances (operating deficit)**
- **How Nutrient strategy could change current financial situation review alternatives**
- **Review other issues: Air Committee, BAPPG funding, Regulatory Program Manager and Committee support, etc.**

## 3. Update on emerging issues-Agree on level of effort

**Monday Morning (1000-1200)**
1000-1030: Review agenda and Goals: Modify as agreed upon.
1030-1100: Board, Staff, and Committee reports for October.
1100-1200: Update on Regulatory Program activities and issues likely to be faced in the next 12-18 months (Risk Reduction/1668c)-Lorien

**Monday Lunch (1200-1300)**

**Monday Afternoon (1300-1700)**
1300-1500: Update on SFEI Nutrient work-Dave Senn
-Nutrient Strategy Update
-Suisun Bay update
-Model update
-Planned/funded work
-Next Steps
1500-1515: Break
1515-1545: ASC/SFEI Board Reorganization and BACWA RMP Representation.
1545-1700: Budget/financial review- Session 1

**Monday Evening**
1700- 1830: Evening Meal
1830- ???? Ad Hoc Session

**Tuesday Breakfast (0730-0830)**

**Tuesday Morning (0830-1200)**

0830-0900: Update on Statewide Nutrient Activities-Tom G
0900-1030: Nutrient Watershed Permit Concepts-Tom/Denise
1030-1100: Break
1100-1200: Board discussion of alternates and impact of alternatives; Narrow down to one or two alternatives

**Tuesday Lunch: (1200-1300)**

**Tuesday Afternoon (1300-1700)**

1300-1430: Governance Development Facilitation Discussion: Consider what approach(s) to Pursue-Kayla
1430-1500: Board Discussion of Governance Alternatives;
1500-1600: What are the needed next steps for Nutrient investigation to support the ongoing NNE process and NPDES permit renewal over the next 12 to 18 months?
1600-1700: Budget: Session 2: How will permit framework, governance approach, and next steps be paid for?
1700-1730: Finalize agenda for RWQCB Joint meeting

**Tuesday Evening:**

1700-1830: Evening Meal
1830-???: Discuss/agree on agenda with RB2; Work on Check-in items

**Wednesday Breakfast (0730-0830)**

**Wednesday Morning/Afternoon BACWA/RWQCB PARDEE AGENDA**

0830-0900: Check in issues: What their biggest issues they you are facing; CEC/collaborating on an article for Pulse; Biological Objectives; Toxicity; Se TMDL; Dioxin-future follow-up; Triennial review items: DO, Wetlands/marshes.

0900-0945: Nutrients: CCCSD Update (Ann)
0945-1000: Break
1000-1100: Nutrient Regulatory Framework Considerations
1100-1200: Nutrient Governance Development Considerations
1200-1400? Working Lunch: Next Steps for RWQCB and BACWA
Develop an action Plan?