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Nutrient Strategy Meeting

September 15th, 2011
San Francisco Estuary Institute
First Floor Conference Room
7770 Pardee Lane, Oakland, CA
1:00 PM – 4:30 PM
DRAFT Meeting Summary

List of Attendees

Jim Cloern, USGS
Dick Dugdale, Romberg Tiburon Center
Tara Schraga, USGS
Martha Sutula, SCCWRP

Rachel Allen, SFEI
Jay Davis, SFEI
Lester McKee, SFEI
Meg Sedlak, SFEI
David Senn, SFEI

Amy Chastain, BACWA
Mike Connor, EBDA
Bridgette DeShields, Arcadis (WSPA)
Naomi Feger, SFBRQWCB
Tom Hall, EOA/ South Bay Dischargers
Jim Irvin, City of San Jose
Karen Taberski, SFBRWQCB
Vanessa Young, Bay Planning Coalition

Via Telephone

Maureen Downing-Kunz, USGS
Arleen Feng, ACCWP /BASMAA
Chris Foe, CVRWQCB
Anke Mueller-Solger, IEP/DSC
Dave Schoellhamer, USGS

1) Introductions

Jay Davis reviewed the agenda for the meeting. The goal of the meeting was to obtain consensus on the proposal to the RMP for funding in 2012. Jay Davis outlined the process for approving special studies (i.e., approval through the workgroup, then TRC and SC). Jay indicated that for several legitimate reasons, the nutrient proposal was a little behind in the process. A second goal for the meeting was to review and comment on the proposed Nutrients Strategy, which provides context for the 2012 proposal.

Naomi Feger clarified that the overall nutrients strategy differs from the RMP nutrients strategy. It should be a larger, collaborative effort, of which one piece should be the RMP. It is still unclear what the RMP's role in the larger strategy should be.

2) Review - strategy team and near term activities

Jay Davis introduced David Senn a new SFEI hire, who will be leading the nutrients efforts at the institute. Dr. Senn gave a brief overview of the general state of the state with regards to nutrients in the Bay. Tom Hall and Jim Cloern clarified that nutrients loading from some South Bay waste water treatment facilities, such as San Jose and Sunnyvale, have decreased; however there have been no trends in concentrations of nutrients in the Bay over the last 10-20 years.

Arleen Feng clarified that the Nutrients Strategy should be titled the "Nutrients Science Strategy" rather than the "Nutrients Management Strategy", as it will not cover regulatory activities. She also indicated that the "minutes" from the June 30th meeting be referred to as a "summary".

3) Draft Nutrient Strategy

Dave Senn reviewed the proposed Key Management Questions for the Nutrients Strategy, and asked for feedback. Lester McKee suggested that the last question, which currently reads "What are appropriate guidelines for identifying a nutrient related problem?", should say "indicators" instead of "guidelines". Martha Sutula responded that the team had chosen "guidelines" to be broader, reflecting the larger purpose of the strategy.

Mike Connor indicated that the first management question should ask "what scenarios are we most worried about that would indicate there is a problem due to nutrients?" By focusing on scenarios, the team will be able to determine how to prioritize the available funding towards the problems that need addressing. Depending on which scenarios are worrisome, such as harmful algal blooms, dissolved oxygen depletion, and ammonia, different solutions would be pursued.

Arleen Feng suggested that the first question have a sub-bullet, asking "what is the definition of a problem?"

Dick Dugdale noted that there is lack of overlap between the sections of the Bay, such as the Pelagic Organism Decline (POD) occurring in the Delta and Suisun Bay due to food limitations and the emphasis of eutrophication in the Central and South Bay.

Naomi Feger indicated that the key management questions are currently broad enough to cover most of the concerns, and that the team could provide comments and adjustments to the phrasing of the questions via email.

David Senn then progressed to the goals of the five-year nutrients strategy. The overall strategy is intended to include, but be larger than, the goals of the RMP. For now, the RMP will not address goal # 3, regarding the establishment of water quality objectives. Arleen Feng suggested that in future iterations of the strategy, it should clearly delineate which pieces of the strategy the RMP, along with the water board, dischargers, and other organizations are intended to address and fund. Martha Sutula clarified that the strategy is still in draft stages, and is provided to give context to the RMP proposal of work. Arleen Feng also suggested that the strategy should include funding for its own management. It should outline the process for management, and clarify the differences in roles and points of coordination or hand-off between the RMP Nutrient Strategy team/workgroup and the various advisory groups associated with the SF Bay NNE development.

Mike Connor suggested that simple box models should be developed early in the process in order to determine with how much accuracy we need to determine specific indicators, and, in absence of a crucial problem, what difference will nutrient management make. Dick Dugdale agreed that the proposed timeline puts modeling development at too slow a pace, and that modeling should be done in parallel with other work. Jim Cloern agreed that box models and development of scenarios would be important first steps in the strategy. Dick Dugdale noted that there are a number of existing modeling back-bones to start from in the Bay when building a more detailed model. The nutrients work will therefore not need to start from the beginning to build a nutrients model.

Regarding work elements, Arleen Feng commented that work element 2 should be changed to "support establishment of nutrient-related water quality objectives". Mike Connor suggested that work element 2-3 should be delayed a few years; however Martha Sutula noted that this was intended to address only shallow water habitats and managed ponds, to determine if the criterion of below 5 mg/L DO applies in these habitats.

Martha Sutula clarified that assessment conceptual models (task 1-1) will be tools used to develop a monitoring program and to assist in the assessment framework. Dave Senn noted that this differs from a water quality conceptual model (task 4-2) which is focused on nutrient and other elemental cycles, and their linkages with biological processes. The conceptual model would determine the linkages between controlling factors and effects, including food chain effects of POD. Mike Connor suggested that Dave Senn talk with Wim Kimmerer in order to get advice on how to develop the conceptual model.

Mike Connor summarized the input from the group regarding the work elements: of the 19 proposed work elements, 1 box models are missing, and modeling implementation should be

started earlier. Dick Dugdale and Karen Taberski agreed with these comments. Jim Cloern asked why there was an emphasis on nutrients budgets. Martha Sutula noted that this is part of an effort to "get the loads right", per Walter Boynton's advice based on similar work in the Chesapeake Bay. A first effort at budget calculations will enable the team to determine critical data gaps. Mike Connor suggested that the budgets include carbon and oxygen as well as nutrients. He also noted that BACWA has funded a white paper to develop a modeling strategy. This task should be included in the nutrients strategy document.

Simple box models would be a logical extension of budget calculations. Jim Cloern stated that he has developed simple 2-box models of the South Bay that take into account vertical stratification. They are capable of capturing basic dynamics of nutrients and phytoplankton in the South Bay, such as a spring bloom and summer decline, and can address questions such as "what happens if the Bay continues to clear at a rate of 1% per year for the next 30 years?". Box model calculations could be performed in parallel with the exploration of scenarios. Martha Sutula suggested that work elements 3 and 4 could be combined. Mike Connor asked that each work element include a strategy (i.e. a monitoring strategy, a Water Quality Objectives strategy, and a modeling strategy).

Jim Cloern noted that the strategy does not include changes in biological communities due to nutrient inputs. Martha Sutula suggested that this would be part of the larger monitoring, and should be addressed in the bigger picture conceptual model. Jim Cloern also suggested that this broad, comprehensive conceptual model include the linkages between nutrients and external forces and an overarching ecological perspective.

Action Items:

Jay Davis summarized the recommendations from the group:

1) Make changes to wording on management questions per specific recommendations
2) Include a column in the planned tasks that indicates who will fund and perform each task
3) Include a budget and an explicit task for coordination of the strategy
4) Start modeling work sooner
5) Ensure that the conceptual models capture the big picture, and include a strategy for their development
6) Perform the DO objectives review later
7) Begin to develop regulatory, assessment, and monitoring scenarios for the Bay

4) Discussion of 2012 Proposals – RMP Proposal

Jay Davis noted that the current proposal asks for $146,000 for a 2 year proposal. The Steering Committee (SC) tentatively allocated $100,000 for nutrients work in 2012, so if the proposal is approved in its current form, it would need to tap into funding for 2013. In October, the SC will meet to discuss funding allocations for 2013 as part of the RMP Master Planning meeting. Jay Davis noted that an allocation of funds does not indicate an earmark of funding available, but rather guidelines from the SC on how much funding it would ideally spend on this sort of work.

Amy Chastain noted that the RMP is looking for logical next steps to perform in 2012-2013, which should be of high priority.

David Senn and Martha Sutula outlined the draft proposal for RMP funding, consisting of 5 separate tasks.

Task 1) Lay out the management questions. Does the Bay have a problem with respect to nutrients?
Task 2) Scope out the effort required to extend the work done in Region 5 to provide a web database of Bay sampling. Naomi Feger noted that the Water Board is interested in this, and Meg Sedlak will follow up with Meredith Williams to develop a proposal for this work.
Task 3) A large collection of data, including DO, from moored sensors around the Bay will be available in 2013, and will need funding for analysis. Dave Schoelhammer clarified that this funding request is for 2013, and will require $50,000 to $100,000. He also noted that an LTMS meeting to discuss the site selection will occur on October 6th.
Task 4) Develop a conceptual model of nutrient sources and sinks in the Bay.
Task 5) Develop a budget for nutrients in the Bay. This could be expanded slightly to encompass a box model.

Dick Dugdale suggested that a full-scale model be developed immediately, rather than taking baby steps with a conceptual model or box models. Martha Sutula questioned whether spending money on models now without a strategy in place was wise, since a strategy would help clarify which questions a model is supposed to answer. Arleen Feng noted that the RMP would be reluctant to fund a full model without a conceptual model, given its earlier challenges with large-scale models.

Jim Cloern noted that these 5 projects are good options for the first year of studies, but that a more logical starting place would be to develop scenarios and determine what the potential problem could be. He cited the University of Wisconsin lakes scenario building exercise as a good example of creating visions of the future to define the problem. What are we afraid of? What needs to be measured to determine if it is happening? Dave Senn asked the group to clarify what underlying understanding of the system will be used to build scenarios – is it covered in the water quality or assessment conceptual models? The group indicated that it would fall under water quality conceptual models. Tom Hall supported the development of scenarios as the first step in the implementation of the nutrients strategy, as it will help clarify the problem statement and feed into a conceptual model. Martha Sutula indicated that this study could be expanded to include both a conceptual model and the scenario building. Naomi Feger indicated that Wim Kimmerer and the nutrients strategy team would be available to help develop the outline for the conceptual model and propose scenarios to be pursued. Dave Senn will pull together a more detailed proposal to have the nutrients team review and submit to the TRC for funding. The proposal will not include box model development.

Mike Connor noted that the scenario options should be developed in collaboration with local experts, either by interviewing them or asking them to write up a brief summary of their ideas, and Dave Senn asked that the team present help him to develop a table of potential scenarios. Mike Connor suggested:

- Clams disappearing in the South Bay
- Light penetration
- Dissolved oxygen depletion

Jim Cloern added:

- Increase of cyano bacterial blooms in the Delta and transport of toxins to the Bay
- Increased stratification due to climate change, dinoflagellate bloom
- Decrease in clam populations, increase in chlorophyll

Action Items:

- Meg Sedlak will scope out the creation of a database forinventorying monitoring and data available (similar to the effort that has been made for the Central Valley Monitoring Network)..
- Dave Senn will pull together a proposal to have the nutrients team review and submit to the TRC for funding.

5) Wrap up and Next Steps

Jay Davis indicated that the NNE and RMP processes should begin to align themselves. Martha Sutula noted that there is a NNE meeting occurring in October 2011, and any members present are welcome to attend. The NNE is the paradigm for nutrient thinking, and it would be productive to get their input on the nutrients strategy once it has been modified by the TRC and SC.

Tom Hall noted that there is no rush to develop this strategy, so it should be done correctly, and not circulated to external review until it has been thoroughly vetted internally.

In summary, the group concluded that

1) The strategy should be revised per the recommendations summarized in section 3
2) A proposal containing the work plans proposed at this meeting should be developed, reviewed by the nutrients group, and submitted to the TRC for review and potential funding in 2012.