

**Commission's Technical Advisory Group (CTAG) of the
Southern California Coastal Water Research Project (SCCWRP)
&
Regional Monitoring Program for Water Quality in San Francisco Bay Technical
Review Committee (TRC) and the San Francisco Estuary Institute (SFEI)**

**Joint Meeting
May 11, 2010
East Bay Municipal Utility District
375 11th Street, Oakland, CA**

Minutes

CTAG Representatives Present

Terry Fleming (EPA)
Joe Gully (LA County Sanitation)
Tim Stebbins (City of San Diego)
Dean Pasko (Orange County Sanitation)
Chris Crompton (OC Public Works)
Skyli McAfee (California Ocean Science Trust)
Wanda Cross (Santa Ana RWQCB)
Tamara Doan (California Coastal Commission)
Jack Gregg (California Coastal Commission)
Dominic Gregorio (California State WRCB)

TRC Representatives Present

Bridgette DeShields (Arcadis)
Mike Connor (East Bay Dischargers Authority)
Chris Sommers (Stormwater Agencies (EOA, Inc))
Francois Rodigari (EBMUD)
Tom Hall (South Bay Dischargers (EOA, Inc))
Tom Mumley (SFBRWQCB)
Naomi Feger (SFBRWQCB)
Karen Taberski (SFBRWQCB)
Mike Kellogg (City and County of San Francisco)
Trish Mulvey (SFEI Board of Directors)

SCCWRP Staff Present

Steve Weisberg
Peter Miller
Steve Bay
Martha Sutula

John Griffith
Ken Schiff
Keith Maruya

SFEI Staff Present

Rainer Hoenicke
Jay Davis
Lester McKee
Susan Klosterhaus
Sarah Lowe
Rachel Allen

Other Participants

Brian Anderson (MPSL – Granite Canyon)
Nathalie Hamel (Puget Sound Partnership)

Via telephone

Eric Stein (SCCWRP)
Karen Setty (SCCWRP)
Bruce Posthumus (CTAG, San Diego RWQCB)
Joanne Weber (CTAG, County of San Diego)
Michael Lyons (CTAG, Los Angeles RWQCB)

1) Introductions and Goals

Bridgette DeShields called the meeting to order, and initiated introductions. She presented the goals for the meeting: to share expertise and lessons, to improve efficiency, and to find opportunities for collaborations. This will enable the groups to fill data gaps, sponsor research of interest to both groups, and to look at ways to improve consistency across the state.

She mentioned that the topic on freshwater bio-objectives would be skipped, which would add time to general discussions in the meeting. Steve Weisberg added that the item was not necessary for CTAG, but that if it was of interest to the TRC, then it could be presented.

2) Highlights of RMP and SFEI 2010 Study Plan

Jay Davis presented the RMP and SFEI study plan for 2010. Recently, the RMP is putting increased emphasis on planning for the future, starting with a planning workshop to prioritize the research needs of stakeholders.

Dr. Davis outlined the organization of the RMP and its goal: to “collect data and communicate information about water quality in the San Francisco Estuary to support management decisions”. Through strategies and 5-year plans, coordinated by the Master Plan, the RMP is structuring research projects to support future management decisions.

The planning workshop, held in late April 2010, enabled the RMP to prioritize their research needs. Current priorities include

1) Small tributaries

The Municipal Regional Permit for stormwater was adopted in fall 2009, and studies focus on load monitoring and simple and dynamic modeling.

2) Emerging Contaminants (EC)

The Water Board is developing an EC strategy, with a tiered risk framework. Ongoing studies include a white paper and a broadscan screening of emerging contaminants.

Tom Mumley and Steve Weisberg discussed the implications of the tiered risk framework, the current SF Water Board version of which emanated from the SFEI-SCCWRP workshop. Originally, the fourth tier only indicated management action, however Tom Mumley indicated that if easy action is possible, it should be commenced at tier 2 or 3. The thresholds for the framework are developed by a blue ribbon task force.

3) Sediment Quality Objectives (SQO)

Sediment 303(d) listings and SQO implementation are among the top management issues.

4) Forecasting

Forecasting projects could support TMDLs and predicting recovery. RMP resources are currently being invested in a linked family of models.

5) Mercury

The Mercury TMDL 2.0 is in development, and has a timeline for completion. Current studies, including DGT and isotope studies are being wrapped up, and a summary report is slated for 2011 to synthesize the knowledge to date and best inform the future management decisions.

6) Other Priority Topics

PCBs, dioxins, effects on organisms, and atmospheric deposition

7) Potential topics

Trash particle monitoring, nutrients, bacteria

8) Sport fish monitoring

The SCCWRP (Bight '08) and RMP combined effort in SWAMP coastal fish monitoring will produce a joint report in the end of 2010.

9) Information Dissemination

RMP publications include the Pulse, technical reports and journal articles, fact sheets, and the annual meeting.

All of these topics represent areas where the RMP is, or could be, focusing its resources, and possibilities for new or continued collaboration with SCCWRP.

Beyond the RMP, SFEI is doing similar work in other programs, and through the Aquatic Science Center (ASC), which is outlined in the SFEI program plan. Data from SFEI are available online, and the new SFEI website will be released soon.

Dominic Gregorio mentioned that SCCWRP has a contract with the EPA to do studies on trash pellets including a focused study in the Bay Area. Shelley Moore at the State Board is the point person for this work.

Mike Connor suggested that the state wide data base for contaminants would provide a good departure point for a comparison of contaminant trends across the state and an area of collaboration between the two organizations. Jay Davis mentioned that the fish report is a first step towards this direct comparison, and Steve Weisberg added that emerging contaminants would be a good focus for it. He suggested that the Pulse could include the Northern and Southern California EC comparison as a way to help SCCWRP begin to develop its own “glossy” type publication.

Chris Sommers clarified that the RMP is a contaminant focused monitoring program, though it does investigate effects and longer term issues such as climate change.

3) SCCWRP Director's Report and Contract Review

Steve Weisberg gave a presentation on SCCWRP's background, as well as his Director's Report and the draft of SCCWRP's 2010/2011 Research Plan.

1) Background on SCCWRP

Like the ASC, SCCWRP is a joint powers authority. SCCWRP's 14 member organizations represent the major wastewater dischargers, coastal stormwater programs, and regulatory agencies working in southern California. This balance creates an excellent forum for cross-sector dialogue and discussions about how SCCWRP science can be applied in a policy context. SCCWRP's target audience is its Commission, a governing board made up of one representative from each member agency. The Commission created their Technical Advisory Group (CTAG) in 1990, which serves to vet scientific information and brief the Commissioners before their meetings. CTAG's main roles are technical review, liaison, and technology transfer.

2) Director's report

SCCWRP recently reorganized its internal structure, and eliminated its watersheds department so that all departments are subject matter focused, rather than ecosystem focused. One overarching group, the “cross-departmental technical support” group is working with all departments to incorporate microbiology technologies in their work.

The last CTAG meeting focused on rapid microbiological measurement methods. The Commission voted to move ahead with these methods and use them in a pilot program in Orange County from July 1, 2010 through September 1, 2010, with a dry run in June

2010. The 2 hour method will be part of an early warning system for bacteria levels on beaches.

The traditional method will still be applied along side the new method, but warning decisions will be made on the new technique in July and August. It will also be a test of logistics, to see if it is possible to get the warning messages up by noon. SCCWRP is also running a large communication effort to spread this information to NGOs and labs. In response to Terry Fleming's question, Steve Weisberg confirmed that if they are unable to get the information out by noon, they would recommend that the EPA not bother with the new method.

The director's report also focused on the blue ribbon task force for Emerging Contaminants, which was put in place by the state to develop a recycled water policy. Over the past year, the group developed a draft report (Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water: Recommendations of a Science Advisory Panel), for which public comments are due by May 14, 2010. The panel will reconvene in the fall of 2010 to develop recommendations and a similar report regarding EC discharges in surface waters, as requested from the Packard Foundation. It is coordinating with SFEI on this effort.

While the Packard Foundation is funding the discharge EC advisory panel, the State Board is still involved in the process. Because half of the panel members on the discharge panel were also on the recycled water panel, there is consistency and communication between the two groups, and they are aware that there is no "one size fits all" approach to emerging contaminants. The Packard Foundation is also interested in getting EC information out on stormwater and in historical mussel samples. These analyses should be completed by the September/ October CTAG meeting.

SCCWRP has five proposals (some of which are joint with SFEI) for sessions at the upcoming California and the World Ocean Conference in September 2010 in San Francisco. As they are the only proposed water quality sessions, he predicts that they will be accepted, and will be a productive way to communicate with other organizations.

SCCWRP has also been working on shellfish issues, such as work on redefining beneficial uses of shellfish in coordination with the Department of Public Health. It is developing a harmful algal bloom (HAB) monitoring program and sponsored workshops for people with interests in HAB data. A meeting is scheduled for July 22, 2010, which CTAG members are invited to, to discuss what shellfish managers are doing with the better quality data that are now available. Another workshop will focus on how ocean acidification will affect the shellfish industry, which will unite NOAA, academic researchers, and the shellfish industry.

Steve Weisberg clarified the Marine Mammal Center is engaged in the HAB network, rather than SFEI because of its coastal focus.

4) Highlights of the 2010 SCCWRP Research Plan

Steve Weisberg presented highlights from the 2010-2011 SCCWRP Research Plan. The planning cycle begins in November, and as of 2009 includes Rainer Hoenicke presenting SFEI's priorities at the November meeting. This year, all projects are multi-year projects, and 97% are collaborations.

Areas for growth and potential collaboration with SFEI include:

1) Bio-objectives (Eric Stein and Ken Schiff)

The state desires bio-objectives within three years because biota provide better indications of overall health than a chemical-specific approach. Of the three classes of biota, marine benthic infauna, stream benthos, and stream algae, the group is collaborating with SFEI on marine benthos. They are focusing on diagnostic tools, including the relationship between hydrology and quality of biology, and CADDIS, the Causal Analysis/ Diagnostic Decision Information System.

2) Emerging Contaminants (Keith Maruya)

The details of this collaboration will be presented by Susan Klosterhaus and Keith Maruya.

3) Nutrient Criteria (Martha Sutula)

The EPA is developing national criteria for nutrients, but SCCWRP has five ongoing projects investigating nutrient transport. SFEI is currently working with SCCWRP on development of nutrient numeric endpoints for San Francisco Bay. Further interaction with SFEI would be beneficial on this topic because the San Francisco Estuary is a very complex system for nutrients.

4) Molecular Methods (Peter Miller)

The ultimate goal is to develop molecular methods as improvements on traditional methods. Beach monitoring is one of the first examples of this, and work is underway to develop a fully automated method, hopefully within 2-3 years. Another example is genetic barcoding for species identification, which has been started for marine benthos. The group is working with SFEI on Toxicity Identification Evaluations (TIEs), and hoping for further collaboration on moving QPCR to northern California beaches in the fall and expanding genetic barcoding.

Mike Connor asked about using molecular methods in shellfish bacteria. Steve Weisberg noted that the same technology applies to shellfish as beaches, so the current work introducing the methods to commercial labs will become more relevant as the specific shellfish methods are developed.

Steve Weisberg noted that work on brine plumes had been removed from the research plan, but that SCCWRP will likely be involved in toxicological questions from those working towards decreasing the output of desalination plants. They are currently looking for external funding for this work.

Dominic Gregorio suggested that the Bight Program could work towards bio-objectives at rocky inter-tidal areas.

Karen Taberski asked about the focus of the nutrient work, and Steve Weisberg clarified that it is primarily looking at sources of nutrients for HABs, such as natural upwelling, stormwater, WWTP outfalls, and atmospheric deposition. A system dominated by WWTP outfall would have a very different management scenario from one dominated by natural upwelling.

Terry Fleming motioned to approve the 2010-2011 SCCWRP Research Plan, which Joe Gully seconded. The plan was approved unanimously.

Chris Crompton mentioned that he liked the layout of SFEI's Director's report, and suggested that some of the presentation elements be incorporated with those of SCCWRP in the future. Steve Weisberg agreed that other areas such as this were also open for collaboration.

5) Statewide Bays and Inland Waters Toxicity Standard Development

Steve Bay gave a presentation on stormwater toxicity standard development. Whole Effluent Toxicity (WET) tests are used to measure aggregate effects of contaminants in water samples, and are widely used in monitoring. Methods for testing are continuing to improve, and guidelines for interpretation are currently in development. The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California ("SIP") is currently under revision, and gives specifications for testing, data interpretation, and subsequent actions. SCCWRP will provide technical assistance for the SIP revisions, through three activities:

- 1) revising the chapter of supporting information on monitoring stormwater toxicity
A toxicity testing committee, formed to give guidance to stormwater testing, comprises stormwater managers, technical liaisons, Regional Water Quality Control Board, independent technical resources, and the EPA and the State Water Resource Control Board, and includes northern and southern California representation. Their meetings will generate recommendations for inclusion in EPA's toxicity training tool.

- 2) locating data for west coast WET species
A new EPA method for evaluating compliance with toxicity limits establishes a toxicity threshold and statistical error rates, and reduces drawbacks of the current statistical methods.

- 3) technical support for the implementation
Technical expertise is needed for document review and training sessions to introduce agencies to the new guidelines, which will occur in 2011.

The project is still in the early stages, and the first meeting of the toxicity test committee will be held in June 2010.

Terry Fleming noted that if the chapter of the SIP that is reviewed will include regulatory changes, then it will go through a public hearing. Joe Gully asked if SCCWRP would be the agency to respond to comments on the EPA method, and Steve Bay noted that SCCWRP does not write policy, but will respond to technical issues.

6) Stormwater Studies: RMP and SCCWRP Activities

Jay Davis kicked off the stormwater discussion by noting that stormwater is a big priority for the RMP, and that Eric Stein is on the RMPs Sources, Pathways, and Loadings Workgroup (SPLWG) and its Small Tributary Loading Strategy (STLS) team. Despite this, there are not many current projects where the two organizations are directly collaborating.

Ken Schiff, filling in for Eric Stein, presented the SCCWRP Stormwater Research Agenda. Given the similarities between SFEI and SCCWRP, the goal for the day is to define when and where the programs have similar foci regarding stormwater, and how they can collaborate in the future. Table 1 shows a comparison of statewide research priorities between SCCWRP and SFEI. Between the two organizations, most of the issues are addressed, however there is only one research area that both groups are intensively working on.

Table 1.

Comparison of Research Priorities	SCCWRP	SFEI
Bio-objectives	XX	
Hydromodification	XX	
LID Assessment/design		XX
Stormwater toxicity	X	X
Contaminant loading/modeling/BMP support	XX	XX
Design storm / Numeric sizing	X	
Emerging contaminants	X	X
Cross-media contamination	X	
Alternative floodplain management/geomorphic assessments		XX
Fire effects	X	

X = active research area

XX = priority research area

Ken Schiff outlined the foci for the discussion:

- 1) Watershed loading and modeling
- 2) Hydromodification
- 3) Regional Monitoring

- 1) Watershed loading and Modeling

Over the past 40 years, the total contaminant load from POTWs in southern California has been decreasing, while the loading from stormwater has remained constant. The relative contribution of stormwater has thus increased over the years, while the relative contribution of POTWs decreased.

Estimating loading from stormwater is not easy, however modeling can help fill gaps in space and time, identify potential sources, identify knowledge gaps, and determine the most cost efficient management scenarios. The general approach to modeling starts from understanding land use, and uses that to predict loading from sub-basins at downstream sites. Dr. Schiff presented a figure of storm size compared with exceedance rate, so that managers and policy makers can decide what percentage of storms should be allowed to exceed water quality targets, which dictates where the targets should be set.

2) Hydromodification

Hydromodification may soon be incorporated into permits, which will require evaluation tools for managers. These tools will need to address which streams are at the greatest risk of effects of hydromodification, what the effects of increases in impervious surfaces are, and what management techniques could be employed to offset the effects of hydromodification. A new screening tool would incorporate decision trees with clear endpoints and would be simple and fast to use in the field. For example, bank height and bank angle both affect the stability of the channel against erosion, and a chart can clearly present this effect to managers.

3) Regional Monitoring

A regional monitoring program for streams should investigate the status of the streams, determine the stressors that affect stream condition, and evaluate if the conditions are getting better or worse. The southern California design incorporates monitoring from all contributing organizations, with the data pulled together by SCCWRP. For example, this regional monitoring has determined that 95% of stream miles are beneath the water quality standard for copper. This coordinated monitoring effort has many intangible benefits, including additional expertise not available “in-house” at SCCWRP, ease of add-on projects, and a larger scientific consensus on the interpretation of results.

Lester McKee presented on stormwater activities at SFEI, all of which are based on addressing impairment, loading, trends, and/or management questions, ultimately arriving at the condition of creeks in the Bay Area. A simple model has shown that as of 2000, more sediment is loaded into the Bay from small tributaries than from the Central Valley. Other projects involve tracking sources of contaminants back to facilities, known contaminated areas, landfills, and other sites, which can support Best Management Practice (BMP) decisions. Sources and BMPs for mercury and PCBs, for example, are different. SFEI is also involved in Low Impact Development (LID) assessment and design, and has preliminary results indicating considerable contaminant reduction at a green infill project in Daly City. SFEI has a few Alternative Floodplain Management and Geomorphic Assessment projects, which evaluate the sediment budget, sources, and characteristics. This information can help managers develop conceptual channel designs.

These projects have a mixture of state, regional, and watershed specific objectives, which present opportunities for collaboration on a number of fronts.

Ken Schiff asked if the TRC and CTAG approved of this list of possible projects for collaboration:

- Hydromodification
- LID Assessment/design
- Modeling
- Emerging contaminants in stormwater
- Cross-media linkages
- Stormwater toxicity

Regarding the issue of whether the collaboration is between SCCWRP and SFEI or SCCWRP and the RMP, Mike Connor suggested that the comparison be considered in terms of Southern California versus San Francisco Bay. Lester McKee clarified that the SFEI watersheds budget is about \$1.2 to 1.5 million per year, with only \$300 thousand of it coming from the RMP, however the TRC only has authority to fund projects through the RMP. Rainer Hoenicke mentioned that RMP and SCCWRP priorities can influence what sorts of projects SFEI tackles with other funding sources.

Mike Connor sees the largest issue as characterizing the drivers of biological health in freshwater streams. Ken Schiff mentioned that in Southern California, physical habitat is a primary driver of biological response, regardless of water quality. Regional monitoring, therefore, requires biology as well as chemistry for a complete assessment.

Chris Sommers mentioned that BASMAA is developing a regional monitoring coalition, similar to the extant one in Southern California.

Mike Connor mentioned that the design storm analysis has not been sufficiently used in the Bay Area. Ken Schiff noted that this technique began with the Regional Board as a method for management, enabling managers to decide how many storms they were willing to let exceed water quality standards. Lester McKee mentioned that SFEI has the necessary data to present stormwater management in this manner. Chris Crompton noted that stormwater will need to be treated in order to meet stricter water quality standards. Karen Taberski added that developing bio-objectives will ideally protect high quality creeks, but that management approaches should not limit the ability to increase the quality of streams.

7) Status of Collaborative Activities: Emerging Contaminants

Beginning the discussion on Emerging Contaminants, Jay Davis mentioned that collaboration and joint projects on this topic were extremely successful and productive in the year that passed since the last CTAG-TRC meeting in May 2009.

Keith Maruya gave a tour of the past year of collaborations on Emerging Contaminants. The NOAA Mussel Watch decided to refocus the program and concentrate its resources on CECs in California for 2010, after a workshop in April 2009. At a meeting at SFEI in October 2009, the program prioritized the CEC list to create a short list of contaminants

to measure, including BPA, PFCs, triclosan, pesticides, hormones, pharmaceuticals, flame retardants, and nanoparticles. SFEI and AXYS Analytical Services are performing a pro bono Pilot Study to analyze 120 Pharmaceuticals and Personal Care Products (PPCPs) in water, sediment, and mussel tissue as a proof of analytical capabilities for AXYS and a preliminary contaminant assessment to pare down the list of potential analytes. The data are currently being reviewed. The NOAA EC Pilot Study will retain existing mussel sites for winter sampling, and add targeted sites for summer sampling. The targeted sites will be monitored in the summer using deployed mussels, rather than harvesting, because of the convenience of piggy-backing off of the existing RMP mussel monitoring work and the ability to sample at sites that may not have mussel populations. Passive samplers will be deployed along side the mussels at the targeted sites. Three POTWs, the City of LA Terminal Island WRP, City of Palo Alto RWQCB, and San Jose/Santa Clara WPCP, will participate. Additionally, a new bioscreening technology, gene microarrays, will be used for future comparisons.

Currently, sampling at the winter sites is nearing completion, and the summer deployment will occur between June and September 2010. Tom Mumley confirmed his support for the project, as a great way to approach emerging contaminants.

Susan Klosterhaus presented the broadscan screening of biological tissues for CECs project, which is also a collaboration with NIST. The technique aims to identify non-targeted chemicals in biological tissues by identifying peaks in two-dimensional gas chromatography mass time-of-flight spectrometry (GC X GC TOF). The project aims to investigate the impacts these contaminants could have on humans and aquatic life. The first year will apply time of flight techniques to harbor seal, bottlenose dolphin, and mussel tissue, and continue method development and the construction of the broadscan library. Keith Maruya added that this project will help in prioritizing emerging contaminants for California, and may help in the development of a framework for prioritizing compounds.

Dr. Klosterhaus updated the groups on the status of the Wastewater Contaminants “White Paper”, which should properly not be known as a white paper because it will be a living document. It will focus on chemicals to consider for future monitoring, and will become a communication tool for the general public. A draft chapter on triclosan and triclocarban is complete, and alkylphenol, chlorinated OP flame retardant, and carbamazepine drafts are scheduled for fall 2010.

Skyli McAfee mentioned that prioritizing emerging contaminants is a high priority with the Ocean Protection Council.

Joe Gully mentioned that according to a recent document from Australia, caffeine was listed as an emerging contaminant based on a risk evaluation framework. He also added that for many of these chemicals, the basic toxicology of them is unknown, and that the organizations should place emphasis on collecting this information. Dominic Gregorio mentioned that there is no guarantee that NOAA will get refunded for the Mussel Watch.

Mike Connor suggested that this EC work would make a relevant Pulse article, especially if it were focused on the geographical comparison. Jay Davis noted that ECs are the planned theme for the 2011 Pulse. ECs are a high priority for the RMP, which is planning on pausing its EC work in 2011 to synthesize summaries of work to date and make informed plans for future projects.

Steve Weisberg summarized the outcomes of the emerging contaminant discussions.

Positive results so far:

- 1) As of the last joint meeting, both groups decided to collaborate on EC, and the work to date has been a big success, in part because of this collaboration.
- 2) Lots of effort has been put into prioritizing emerging contaminants, and we now have a list that everyone agrees on. The list will be further refined with the results of the AXYS pro bono study.
- 3) Technique development and research beyond monitoring have progressed.

Necessary for future work

- 1) If we don't have information on EC toxicity, we will not know how to interpret the occurrence data that we have. SCCWRP and SFEI should leverage their positions to encourage other organizations to do these tests.
- 2) The work needs to be communicated beyond the regional water boards to the state as a whole. For example, the Ocean Protection Council and the Green Chemistry Initiative could both benefit from Emerging Contaminant work done in the SF Bay and the Southern California Coastal region.

Susan Klosterhaus mentioned that the Green Chemistry workshop was held on May 10, and that their toxicity endpoints are focused on human health, rather than ecological health. The Green Chemistry list of contaminants is limited to the Proposition 65 list, so having SFEI and SCCWRP involvement in the project to expand its scope would be worthwhile.

In order to improve communication on Emerging Contaminants, Steve Weisberg suggested that the 2011 Pulse, slated to focus on EC, be a statewide document. Mike Connor added that the RMP white paper could also become a collaborative effort. Collaborative work on emerging contaminants needs to broaden from simply scientific work to communication of scientific information.

8) Status of Collaborative Activities: Sediment Quality Assessment

Sarah Lowe updated the group on two recent collaborations in sediment quality assessment: developing benthic indices and improving tools for understanding sediment toxicity using Toxicity Identification and Evaluation procedures (TIEs).

To further the task of developing benthic indices, the RMP is focusing on refining the mesohaline assemblage, and SCCWRP is leading an effort to develop SQOs in the limnetic region, which is the second phase of the SQO project (known as the SQO Delta survey). Both projects are overseen by the Benthic Workgroup, which is providing

guidance on two main tasks: cluster analysis and a best professional judgment (BPJ) assessment exercise. In the mesohaline environment, the cluster analysis confirmed the previously identified benthic assemblages, and indicated that even though the assemblages shift geographically during the wet and dry season, they are stable. The cluster analysis in the limnetic environment shows three initial assemblages, but the results are still being interpreted. The BPJ exercise is designed to develop a robust assessment scheme. The experts agreed reasonably well in the mesohaline assemblage, however there was a large amount of disagreement in the limnetic assemblage, and more work will be required.

The TIE collaboration grew out of work planned independently at both SFEI and SCCWRP, and includes three primary tasks: dose-response studies, further development of TIE procedures, and workshops in stressor ID tools. Through the collaboration the list of contaminants that could be tested for LC50 (lethal concentration that will kill 50% of the organisms) was expanded. The second study task was to further develop the solid phase and interstitial water sediment TIE procedures, and work is ongoing at both SFEI and SCCWRP. One stressor ID workshop has already been held in 2010, which focused on amphipod toxicity tests. A second is set for later in the year, though workshop participants suggested that it may be worth continuing the meetings beyond that.

Steve Bay gave an update on Sediment Quality collaboration projects led by SCCWRP:

- 1) Sediment Quality Objectives will be based on multiple lines of evidence from direct effects to benthic fauna from sediment contact, and from indirect effects to humans and wildlife through bioaccumulation and biomagnification. Phase I of the tool development is focused on technology transfer and training for assessment of direct effects, including 5 short courses designed for regulatory and stakeholder agencies. There is currently little SFEI involvement, but room for more input. Phase II focuses on direct effects in estuaries, including developing chemistry and toxicity tools, and indirect effects, involving a tiered assessment framework for PCBs and chlorinated pesticides. The phase II direct effects work is an ongoing collaboration, and the deadline for developing the tools is December of 2010. The indirect effects work also incorporates collaboration on many levels.
- 2) The Molecular TIE project was a direct result of the 2009 joint meeting, and has RMP funding through December 2010. It would be worthwhile to continue, and would provide additional collaboration opportunities in sediment toxicity stressor identification, benthic community interpretation, and SQO assessment.
- 3) Other potential areas for collaboration include regional monitoring and new methods for assessment of benthos like sediment profile imaging and DNA barcoding.

Mike Connor suggested that sediment profile imaging be tested for its applicability in the region because it is very easy to use and could quickly generate a large amount of data,

which would preferably enable distinction between impacted and non-impacted communities. Steve Weisberg mentioned that it has been used side-by-side with typical methods in the San Diego Bay and Los Angeles harbors, however the results are not yet available. It could potentially work well as a screening tool for benthic communities. Steve Weisberg mentioned that the biggest expense towards incorporating this technique would be processing the samples needed to calibrate it.

Mike Connor asked about the relevance of TIE work, noting that in general SF Bay is of average health, and that cleaning up the sediments might not have much impact on the system. Steve Weisberg asked if the RMP would consider putting the status and trends monitoring program on hiatus for a year, to focus intensively on sediment or another high priority topic. Bridgette DeShields suggested that the idea be addressed at the next TRC meeting, and that it could be considered for a few years out. Brian Anderson mentioned that it is unlikely to be able to get the best data in a one year intensive effort, and that multiple years of work is more useful.

9) General Discussion

Jay Davis summarized areas for collaboration and topics for future meetings:

Areas for Collaboration

- Emerging Contaminants
 - Communication (Pulse, Annual Meeting, Synthesis Report, maybe others)
 - Thresholds
 - Interfacing with OPC, DTSC, CWQMC
- Stormwater
 - Tech and organizational transfer
 - cross-training (hydromod, BMPs, modeling)
 - organize separate full-day meeting – include BASMAA, SMC, Water Boards, CASQA (tag on to CASQA workshop?)
- Sediment Quality
 - Workgroup meetings
 - tech transfer
 - tools (indices, stressor ID)
 - data exchange
 - extend indirect effects
 - sediment profiles
- Regional Monitoring?
 - Committees
 - Methods
 - reporting
- QA
 - SWAMP comparability (marine waters – including matrices other than chemistry) – cover this at next SWAMP meeting (perhaps in NorCal)
- Beaches and shellfish, pathogens
- 3D Modeling?

- Effects?
- Nutrients, algal blooms, DO, eutrophication, role of different pathways, HAB, NNEs
- Atmospheric Deposition?
- Communication in General?

Topics for Future Meetings

- Nutrients
- ECs
- Stormwater

Steve Weisberg noted that the stormwater discussion successfully compared work that is being done, and that the programs have similar goals, though different areas of expertise. SCCWRP can train SFEI on hydromodification, while SFEI can assist SCCWRP with Best Management Practices, developing LID evaluation strategies, and modeling.

Tom Mumley suggested that addressing hydromodification is beyond the scope of the RMP, but it should be incorporated in the Bay Area, in the correct context. Mike Connor suggested that tying in BASMAA work into the RMP and the Pulse better would facilitate future stormwater collaboration between the SF Bay and Southern California.

Steve Weisberg, Dominic Gregorio, Karen Taberski, Ken Schiff and Jay Davis suggested holding a joint meeting or workshop between agencies doing stormwater monitoring in Southern California and the Bay Area within the next 12 months, which could be sponsored by BASMAA and Southern California Stormwater Monitoring Coalition and the Regional Boards.

Steve Weisberg noted that SCCWRP is beginning to work with local beaches in the Bay Area to begin monitoring for pathogens, and asked if SFEI was interested in joining the projects. Naomi Feger proposed that SFEI and the RMP let the local beaches work continue in its present mode, but that it be considered for future projects.

Martha Sutula suggested holding a meeting in the next year on nutrients and HAB, because SCCWRP will have a technical framework for this issue for all California estuaries except the SF Bay. This should be a 3-hour long meeting, including eutrophication and dissolved oxygen issues.

Jay Davis suggested that a SCCWRP staff member could come to a regular TRC meeting to inform the TRC about barcoding and sediment profiling, and update on emerging contaminants.

Dominic Gregorio asked that the minutes and Powerpoint presentations be made available to CTAG and the TRC, and that the minutes be reviewed before being distributed. The minutes from the meeting will be approved at the next meetings of both groups.

Dominic Gregorio and Terry Fleming mentioned that SWAMP is moving to marine waters, and will need SCCWRP and other expertise in order to accommodate the new data. This will also increase compatibility between data management and QA/QC between SFEI and SCCWRP. Chris Crompton suggested a joint meeting to make QA measures compatible. SWAMP is using the RMP QAPP as a model in its restructuring.

10) Wrap-up and Identification of Action Items

The groups considered the general structure and purpose of the joint meeting a success, and recommended continuation of these meetings. Discussions will continue post-meeting to identify and articulate collaborative projects and topics for future meetings. A preliminary list of action items is given below.

#	Action Items	Who?	When?	Status 5/20/10
1	Discuss collaborating on the EC White Paper	Susan Klosterhaus/ Keith Maruya	June	
2	Invite a SCCWRP staff member to a TRC meeting to inform the TRC about barcoding and sediment profiling	Jay Davis	3 – 6 months	
3	Propose collaboration on the 2011 Pulse on ECs to the Steering Committee	Jay Davis	Next SC Meeting	Pending
4	Pursue a joint meeting on stormwater to promote north and south science coordination	Jay Davis, Ken Schiff, Lester McKee	Within 12 months	Pending
5	Encourage development of toxicology information for ECs	SCCWRP and SFEI	Continuing	
6	Improve sharing of EC information from SFEI and SCCWRP projects to OPC and Green Chemistry Initiative	SCCWRP and SFEI	Continuing	
7	Evaluate potential use of sediment profile imaging in SF Bay	Aroon Melwani, Steve Weisberg	June	
8	Puruse a joint meeting on	Martha	Within 12	

	nutrients and HAB	Sutula, Lester McKee	months	
9	Distribute minutes and presentations to the meeting participants, and to the TRC and CTAG for approval	Rachel Allen	June	Done