



RMP

REGIONAL MONITORING
PROGRAM FOR WATER QUALITY
IN SAN FRANCISCO BAY

sfei.org/rmp

RMP PCB Workgroup Meeting Summary May 8, 2018, 9:00am - 5:00pm

Attendee	Affiliation
Frank Gobas (Science Advisor)	Simon Fraser University
Jan O'Hara	SFB Regional Water Quality Control Board
Fred Hetzel	SFB Regional Water Quality Control Board
Bridgette DeShields	Integral Consulting
Andrew Jahn	Contractor
Luisa Valiela	EPA Region 9
Jon Konnan	EOA Inc.
Marco Sigala (Remote Access)	Moss Landing Marine Laboratory
Yeo-Myoung Cho (Remote Access)	Stanford University

SFEI/RMP Staff:

Jay Davis, Alicia Gilbreath, Don Yee, Ila Shimabuku, Lester McKee (remote access)

1. Introductions, Meeting Goals, Agenda Review

Jay Davis welcomed participants, allowed for introductions, and reviewed the agenda.

2. Information: RMP Planning Overview

Jay Davis summarized the vetting and approval process for special studies. He reminded the workgroup of the PCBWG management questions and the existing Multi-Year Plan for PCBs and Dioxins. He highlighted the discussions around San Leandro Bay as well as Emeryville Crescent as key items for this year's workgroup meeting.

Fred Hertzler aired the opinion that the PCBWG should invest in a more robust and well-rounded study at one location rather than spreading funds over several projects at several locations.

3. Information: San Leandro Bay Fish Diet Study

Andy Jahn gave a quick overview of the San Leandro Bay (SLB) gut contents study conducted during August 2016. Four species (topsmelt, shiner perch, white croaker, and northern anchovy) were collected for both PCB analysis and examination of gut contents. He found that small crustaceans, especially gammarid amphipods, and diatoms together comprised the great majority of food consumption. He concluded that shiner perch are feeding off the bottom and estimated that topsmelt are feeding mostly (~90%) off the bottom. Fred Hertzler asked Andy to clarify this conclusion in his report.

The group discussed whether Andy should do a repeat study during the night to capture shiner perch as Andy found mostly empty guts in both 20-fish samples. Andy's previous nighttime sampling experience had suggested that shiner perch had full stomachs at night, and, he mentioned that Tony Chess with Hobson did a study in the 80s in Southern California kelp beds which determined that shiner perch fed during the day and night, though more heavily at night. Marco Sigala reviewed his data from a 2001 fish diet study where fish were collected during the day and found 19 of 20 fish from SLB to have food in their stomachs as well as 16 of 20 from Oakland inner harbor.

Frank Gobas said Andy's work is crucial to understanding the movement of PCBs in the food web. The data needs to parameterize a food-web model are to identify "who's eating what." These conclusions can be drawn from either Andy's gut-content studies or identifying trophic positions through stable isotope analysis. Other advantages to stable isotope analysis include its low cost and ability to estimate uncertainty of model outputs.

Andy had several ideas for future studies, including PCB analysis in diatoms, eelgrass investigations, and repeat fish-diet studies, at the end of his report. Andy expressed willingness to conduct future related work in SLB.

4. Discussion: San Leandro Bay - Draft Final Conceptual Model Report

Jay Davis provided a brief overview of the phasing of San Leandro Bay work and additions to this year's San Leandro Bay report.

Alicia Gilbreath provided an update on the loadings to SLB and reported that most PCBs entering the Bay through stormwater are entering during smaller (<1 year) storms and that industrial areas are estimated to be contributing half the load while only covering 3% of SLB watersheds. The group discussed difficulties associated with measuring recovery in such a complicated and tidal-influenced watershed based on the current stormwater sampling design and watershed model. Fred Hetzel mentioned other ancillary studies looking at metals that have been conducted in SLB channels. They may be of use when considering alterations to the current sampling design. Fred will locate the citation to pass on to Jay and Alicia. Frank Gobas suggested using passive samplers for site-specific sampling to monitor temporal changes. However, there are limited options for where the passive samplers could be located which left the group with some skepticism about the use of these samplers in SLB.

Don Yee presented the retention and fate sections from the Draft Final Conceptual Model Report. He discussed monitoring challenges, how field data align with the conceptual model, and brainstormed options for future monitoring targeted at characterizing PCB loads. Frank Gobas commented that, due to the long half-life of PCBs in SLB and relatively unchanging loads, infrequent (every ~5 years) monitoring of fish would suffice for measuring any trends in SLB.

Jay Davis began the discussion on the new bioaccumulation section of the conceptual model report. He found that the correlation between sediment and fish concentrations suggest that topsmelt are good indicators of how PCBs bioaccumulate in food webs. He proceeded to suggest annual monitoring of PCBs in topsmelt and shiner surfperch for 5-10 years to characterize load reduction. Frank Gobas argued that, based on Don's estimated PCB half-lives and SLB being a fairly well-mixed system (as suggested by homogenous fish concentrations), monitoring of topsmelt and shiner surfperch every five years would suffice when monitoring for a rate of recovery. Don provided an idea of "cluster monitoring" whereby fish would be collected annually for 2-3 years with a 5 year gap before annual monitoring commenced for another 2-3 years, in order to capture interannual variability. Andy Jahn suggested that Jay use fish length as a covariate in his analysis to reduce the error bars on PCBs in topsmelt, especially for the Alameda Channel and Bay Farm sites.

5. Information: Dioxin Synthesis

Don Yee presented the draft Dioxin Synthesis report by providing a brief history of dioxin work in the Bay and summarizing the body of studies and databases that were integrated into the synthesis. The report includes a background on dioxins in the Bay, impairment status, location assessments, loadings, expected trends, and future data needs. Don highlighted the finding that most dioxins and dioxins hotspots are within 250 meters of the shore. Discussion focused on the following topics.

- Contributions of dioxins from fires and Don's best estimates (included in the synthesis report).
- Correlation of dioxins with PCBs and whether conclusions can be drawn about their combined sources. The group was wary of drawing these types of conclusions and agreed that PCB monitoring is being prioritized appropriately.
- Study idea: characterize decreasing trends resulting from shifts toward greener transportation.

Jay Davis solicited any additional comments and feedback on the report by May 31, 2018.

Action Items

- Address the following comments on the Dioxin Synthesis report. (Don Yee, 5/31/18)
 - Add a graphic that demonstrates how a decrease in dioxins would have little effect on the dioxin-like compounds 303(d) listing.
 - Add language about local efforts to implement green infrastructure targeted at capturing particle-bound pollutants such as PCBs and dioxins. Jon Konnan to send language.
 - Address the data skew towards ports and harbors by adding a statement about the limitations of the current dataset. Consider adding a recommendation for data collection in margin areas *excluding* ports and harbors.

6. Discussion: Steinberger Slough - Progress Report on Conceptual Model Development

Alicia Gilbreath provided an update on the Steinberger Slough conceptual model. Jon Konnan summarized a few recent studies that looked at PCBs in surface soils and storm-drain sediments at an old Delta Star transformer manufacturing site. He will send Alicia information regarding that could be helpful in designing studies in the area. Most of the remaining discussion focused on comparing three different methods used to estimate PCB loads: outputs from the Regional Watershed Spreadsheet Model, using stormwater PCB and SSC data, and using an area weighted mean concentration based on soils data. The WG agreed that using the soils data would not produce an accurate

load estimate. Don Yee continued by showing a graphic of Steinberger Slough bathymetry and discussed complications associated with modeling at such a hydrologically complicated location.

7. Decision: PCB Workgroup Proposals for 2019 and Updated Multi-Year Plan

Jay Davis set the stage for proposal prioritization by stating that the planning budget should be in the range of \$100,000-\$120,000 and summarizing the following options for PCB special studies:

1. PCB Strategy Support and Technical Coordination
2. PCB Conceptual Model for Richmond Harbor
3. PCBs in Shiner Surfperch in Priority Margin Units
4. PCBs in Emeryville Crescent Field Study
5. Continuation of the San Leandro Bay Conceptual Model
6. Continuation of the Steinberger Slough Conceptual Model

Don Yee provided a brief overview of his proposal for monitoring in the Emeryville Crescent which would involve sediment grab samples, water grab samples, sediment cores, passive sediment samplers, and passive water samplers. Jay reminded participants that the Workgroup was tasked with prioritizing studies for 2019, post-2019, as well as studies that would be good candidates to receive Supplemental Environmental Project funds.

There was discussion around the following topics.

- Whether passive samplers in the Emeryville Crescent could detect plumes of PCBs in groundwater. Luisa Valiela recommended communicating with cleanup folks to see if they have any ideas about where to place passive samplers.
- Whether monitoring sediments and benthic organisms in SLB could reveal answers about recovery. Frank Gobas recommended analyzing stable isotopes alongside future amphipod monitoring. Epibenthic sleds would be the recommended method for amphipod and mysid collection.
- Whether work from the Oakland Inner Harbor (slated to use SLB as a reference site) could have or will produce data that could be useful to the RMP.

Ultimately, the Workgroup agreed with Jay Davis' suggestion to move forward with shiner surfperch monitoring and also prioritized the Emeryville Crescent and San Leandro Bay for special studies. Richmond Harbor and Steinberger Slough were deprioritized for funding at the current time. The following table summarizes the recommendations of the PCBWG for 2019 special studies.

	Cost per round	2019	2020	2021	2022	2023	2024	2025
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PCB Strategy		10						
Multi-PMU								
Shiner surfperch survey	60	60					60	
San Leandro Bay								
Topsmelt (5 sites)	40							
Topsmelt (3 sites)	25							
Shiner surfperch	8	✓					✓	
Surface sediment survey								
Wetland cores								
Near-field monitoring								
Passive samplers								
Stormwater	15							
Amphipods								
Isotopes								
Emeryville								
Archive silverside and topsmelt from Emeryville for gut contents and PCB analysis.	51			51				
Shiner surfperch	17	✓					✓	
Surface sediment survey	40		40					
Wetland cores	25		25					
Passive samplers	43		43					
Stormwater	50	30						
Amphipods				x				
Isotopes								
Total		100	108	51	0	0	60	0

8. Adjourn