



Joint Meeting of Emerging Contaminants Workgroup & Sources, Pathways, and Loadings Workgroup

April 20, 2023
San Francisco Estuary Institute

Meeting Summary

Science Advisors <i>(ECWG shaded in blue; SPLWG shaded in grey)</i>	Affiliation	Present
Bill Arnold	University of Minnesota	Yes
Miriam Diamond	University of Toronto	Yes
Lee Ferguson	Duke University	Yes
Derek Muir	Environment and Climate Change Canada	Yes
Heather Stapleton	Duke University	Yes
Dan Villeneuve	U.S. Environmental Protection Agency	Yes
Robert Budd	CA Department of Pesticide Regulation	Yes
Jon Butcher	Tetra Tech	Yes
Steven Corsi	US Geological Survey	Yes
Tom Jobes	Independent Consultant	Yes

Attendees

Adam Wong (SFEI)
Alicia Gilbreath (SFEI)
Amy Kleckner (SFEI)
Anne Balis (City of San Jose)
Anne Cooper Doherty (DTSC)
Autumn Ross (SFPUC)
Ben Priest (CIL)
Blake Brown (CCCSO)
Bonnie de Berry (EOA)

Bushra Khan (UC Davis MPSTL)
Craig Jones (Integral)
Daniel Lee (Geosyntec)
David Peterson (SFEI)
Diana Lin (SFEI)
Don Yee (SFEI)
Ed Kolodziej (U of Washington)
Elana Varner (DPR)
Emily Corwin (FSSD/Solano Stormwater)

Alliance)
 Eric Dunlavey (City of SJ)
 Erica Kalve (SWRCB)
 Ezra Miller (SFEI)
 Gaurav Mittal (SFBRWQCB)
 Hope Taylor (Sacramento County Water Resources Dept)
 Ian Wren (SF Baykeeper)
 Jay Davis (SFEI)
 Jaylyn Babitch (City of San Jose)
 Jennifer Dougherty (SFEI)
 Jennifer Teerlink (DPR)
 June-Soo Park (DTSC)
 Kayli Peterson (U of Charleston)
 Kelly Moran (SFEI)
 Lester McKee (SFEI)
 Lisa Austin (Geosyntec)
 Lisa Welsh (Geosyntec)
 Maggie Monahan (SFBRWQCB)
 Manoela de Orte (SWRCB)
 Martin Trinh (SFEI)
 Mary Cousins (BACWA)
 Maya McInerney (SFBRWQCB)
 Meltem Musa (OEHHA)
 Million Woudneh (SGS AXYS)
 Miguel Mendez (SFEI)

OIMA staff (SWRCB)
 Paul Salop (Applied Marine Sciences)
 Pedro Avellaneda (SFEI)
 Rachel Scholes (Univ. British Columbia)
 Rebecca Sutton (SFEI)
 Reid Bogert (C/CAG)
 Richard Grace (SGS AXYS)
 Rob Carson (Marin Countywide Stormwater)
 Robert Budd (CDPR)
 Sarabeth George (SCWRB)
 Setenay Frucht (SWRCB)
 Sami Harper (SFBRWQCB)
 Simona Balan (DTSC)
 Simret Yigzaw (City of San Jose)
 Steven Corsi (USGS)
 Tan Zi (SFEI)
 Terry Grim (independent)
 Tom Mumley (SFBRWQCB)
 Violet Renick (Orange County Sanitation)
 Xueyuan (Helen) Yu (Central Valley RWQCB)?
 Xin Xu (EBMUD)

10. Information: Summary of Day 1 and Goals for Day 2

Amy Kleckner began the day by reviewing meeting tips for live and remote attendees, highlighting important Zoom features, and allowing time for an abbreviated roll call of the day's attendees. Amy then briefly recapped the events of Day 1 of the ECWG meeting, which led into the agenda and goals for Day 2. The first half of Day 2 was a combined meeting of the SPLWG and ECWG, centering the collaboration across the groups, and the second half focused on the prioritization of special study proposals from ECWG.

11. Information: Stormwater CECs Screening Study Preliminary Findings

Rebecca Sutton reviewed preliminary findings from the multi-year screening study of a diverse set of CECs in SF Bay urban stormwater. This study has been a 4-year effort in sample and data collection to understand the occurrence of a broad range of CECs in urban stormwater and overall help fill data gaps for this important pathway of contaminants to the Bay. Rebecca noted that a total of 25 sites were selected based on general site selection criteria including a minimum drainage area of 1 km², leveraged legacy contaminant monitoring, and relative urban land use, with 21 sites being highly urban (>80% urban land use) and 4 less urban sites (<20% urban land usage). Sampling occurred when storms were forecast to have a minimum of 1.3 cm of rainfall within 6 hours, with some samples taken from the first event in the season. Five contaminant classes (PFAS, organophosphate esters (OPEs), bisphenols, ethoxylated surfactants, and tire & roadway contaminants) and over 240 individual compounds were analyzed via multiple academic and commercial analytical partners.

Rebecca continued by highlighting the preliminary results of PFAS, organophosphate esters, and 6PPDQ in urban stormwater. A high priority set of contaminants at both the state and federal level, PFAS are used in a plethora of consumer and industrial products and are known to be persistent, bioaccumulative, and highly toxic. PFAS were widely detected; PFOS and PFOA, two of the most well studied PFAS contaminants, along with another PFAS, PFHxA, showed the highest concentrations among those detected. She noted concentrations of PFAS in urban stormwater are comparable to those appearing in municipal wastewater, another important pathway to the Bay. She continued with discussion of OPEs, mobile and toxic chemicals used as flame retardants and plastic ingredients. Several OPEs were detected in stormwater with two OPEs (TBOEP and TCIPP) at the highest concentrations. Also observed in stormwater were two OPEs previously detected at levels exceeding toxicity thresholds in Bay water, TDCIPP and TPhP. There was some variation in the detection of OPEs across sites, with specific OPEs in the thousands of ng/L. Isopropylated and tert-butylated triphenylphosphate esters (ITPs & TBPPs), novel OPEs recently identified in commercial flame retardant mixtures, were also detected in many sites. Rebecca then talked about 6PPDQ, a contaminant derived from a common tire antiozonant ingredient (6PPD), now known to be acutely toxic to multiple fish species at low levels, and under potential regulation through the CA Department of Toxic Substances Safer Consumer Products Program (for vehicle tires containing 6PPD). Levels in the Bay may be of concern, especially with several surpassing a suggested interim PNEC of 10 ng/L for rainbow trout (an important species relevant to the Bay).

Rebecca briefly reviewed the problems with several of the “reference” sites, spotlighting the detection of many CECs in these sites. Though the current process examined watersheds with <20% urban area overall, in some cases sampling sites were located near specific urban land uses (e.g., highways) that are clearly impacting these sites. Future site selection will include more robust analysis to ensure the suitability of sites as less-urban or reference sites.

Overall, these results showed many CECs are present in stormwater, with variations within and between chemical classes. There is a continued need for data and conceptual models to inform future monitoring strategies, particularly as it pertains to supporting urban runoff modeling. Rebecca ended by summarizing the ongoing efforts in analyzing the stormwater dataset including examination of the influence of storm size, watershed and landscape features, comparison to Bay wet season data, and assessment of variability. A manuscript and summary for managers are expected to be completed by Fall 2023.

Several meeting participants asked questions and discussed this study, with Miriam Diamond recommending the creation of a foundational stormwater model across all contaminant classes that can then be crafted to emphasize different inputs for each class. Many participants emphasized the need for improved spatial analysis and understanding of the connection of sources to sampled sites. Lee Ferguson highlighted the potential for consideration of the ratio of transformation products and the freshness of the stormwater samples. Miriam Diamond and Bill Arnold noted potential complicating factors to this analysis including antecedent dry days and the limited understanding of photodegradation. Tom Jobes mentioned the importance of understanding sources and their relative contribution to best target monitoring and modeling efforts. Jon Butcher added the potential for fugacity modeling including roadway factors among

other chemical and physical properties could be useful. Tom Mumley noted a need for understanding the loadings of these contaminants into the Bay for better comparison across pathways. Derek Muir recommended consideration of rainfall sampling to understand background contamination levels. Dan Villeneuve added that comparison of data from baseline events in the dry season to large loads of stormwater could be useful. Dan also inquired if the Bay RMP considered ecological impacts of pathways and watersheds, which Tom Mumley noted was outside of the scope of current Bay RMP design focused on Bay water.

12. Discussion: Stormwater CECs Groundwork - Management Level Review

Kelly Moran presented a management level review of the important groundwork needed to best develop and establish the stormwater CECs approach centered on integrated modeling and monitoring. She noted a subgroup of RMP stakeholders and science advisors, including a mix of experts in CECs and watershed monitoring and modeling, known as the Stormwater CECs Stakeholder Science Advisor Team (SST), are providing guidance on the development of the overall approach. Kelly continued by discussing the relevant management context and actions related to stormwater in the Bay. At present, there are no immediate regulatory drivers for stormwater (CECs) monitoring and management, though that could change in the near future. There is a general regulatory goal of protection of the Bay's beneficial uses. Kelly highlighted PFAS as a contaminant class that has garnered increasing regulatory and stakeholder interest in the past few years. Currently, there are several relevant actions for emerging contaminants across regional, state, and federal agencies including California State and Regional Water Board efforts on CECs, the DTSC Safer Consumer Products Program, the Municipal Regional Stormwater Permit (MRP), and voluntary early management interventions by local agencies. Notably, there is potential for PFAS in the Bay to be added to the §303(d) list of impaired waters in a future Clean Water Act §305(b) Integrated Report. . There are currently no CECs on the 303d listing, but any inclusion would merit reexamination and likely elevation under the RMP tiered risk-based framework. Richard noted that microplastics are on the "watchlist" for the Bay and pesticides are not included here since we are working with DPR on related monitoring projects.

Kelly then reviewed the current budget planning guidance for stormwater CECs modeling and monitoring provided by the SST, which recommended a planning budget of \$400k/year for the next three years. This budget includes \$300k from the RMP per year (which includes \$100k from BAMSC for CECs monitoring) as well as \$100k from an EPA Water Quality Improvement Fund Grant. As a note, costs related to remote samplers will be funded separately (e.g., as a separate special study).

Kelly summarized the near term priority management guidance developed in consultations with the SST, which includes three near-term priority topics: loads, changes, and sources of CECs. The SST recommended that the stormwater CECs monitoring design also address two additional considerations. First, it should support addressing the RMP's overarching Management Questions through linkage to the ECWG Management Questions and wet season

elements of the Bay Status and Trends monitoring design. Second, it should provide the ability to determine if previously unmonitored CECs are present in local watershed runoff.

With general agreement on the summarized management guidance from participants, Kelly went through the specific suggested near-term priority stormwater CECs management questions for any comments or recommendations. The management question regarding load estimates (*How does the local watershed runoff load to San Francisco Bay compare to loads from other pathways?*) was the first examined, with Miriam Diamond noting its importance and the need to examine temporal variability, particularly through calibration with S&T redesign (with monitoring in dry and wet seasons). Lee Ferguson commented on current sampling design, specifically if selected sites provide enough coverage to accurately estimate/understand contaminant loads to the Bay, and what criteria would tell us that we have enough information for estimates. Tom Mumley similarly remarked on the scope of analysis for load estimates, with Kelly noting these are important needs to identify and continue to think about further within the context of the finalized question.

The next management question presented focuses on change of concentrations/trends (*a. Are presence or concentration in local watershed runoff changing over time? b. Are presence, concentration, or load expected to change in the future?*) following a “trends light concept” where datasets would provide multi-year insights without a requirement for statistically significant trends. This question groups past, current, and future concentrations together, which after some discussion the group agreed was appropriate. Richard Looker commented on the connection between this question and discussion of a similar approach to trends analysis related to the S&T redesign, with potential for a special study to incorporate relevant Bay data, watershed, and source data into a more comprehensive approach.

The third management question reviewed centered on sources (*a. What are the likely sources? b. What land features correlate with presence, concentration, and load in runoff?*), with focus on true sources including products and contaminated sites with consideration of all pathways between source and stormwater runoff. Lee Ferguson inquired about the land features under consideration and inclusion of specific chemicals related to industries. Tan Zi noted many land features, such as land use, land cover, road density, and population, would be included, with Kelly Moran highlighting the availability of data that could provide further analysis and connection to sources as determined per contaminant class. All participants reached a unanimous consensus on moving forward with the current management questions.

13. Information: Stormwater Groundwork Project Update

Kelly Moran kicked off the update on the stormwater CECs groundwork project, beginning with an overview of the three groundwork project elements and their relationships to the five other stormwater CECs-related projects currently underway. The overall stormwater CECs approach aims to integrate modeling and monitoring together to help inform management actions. This is a holistic process meant to examine all aspects of both monitoring and modeling, with the current groundwork project providing critical pieces in the group of related projects that together form the basis for the RMP develop the best monitoring approach possible for

stormwater CECs. Kelly introduced the project updates, first an update by Tan Zi on the stormwater CECs loads modeling exploration project and groundwork project stormwater CECs data analysis task, an update from Alicia Gilbreath on the groundwork project stormwater sampling locations database development task, and an update from Don Yee on the groundwork project task to develop a remote stormwater sampler.

Tan Zi continued by updating the group on the progress related to stormwater CECs loads modeling exploration and obtaining insights on monitoring design through stormwater CECs data analysis. The outcomes of these efforts will feed into, the development of a stormwater CECs modeling plan, the next step that is planned for early fall.. An examination of the literature revealed few relevant studies and no existing stormwater CECs modeling template ready to adapt to the Bay Area. Tan continued by reviewing some models used by others for CECs load estimation, beginning with a statistical/regression model, LOADEST, used to evaluate single watershed downstream from a known CEC (PFAS) production facility. This particular model is hard to adapt to the Bay area due to the complexity of the region's watersheds. A second approach uses a simplified process/relation to correlate chemical load relations to land, storm, and other features and extrapolates these to the whole region to estimate loads. The third model is more advanced, with consideration of the different fate and transport processes occurring within the watershed. Previously, this advanced approach has been applied to single watershed with identified discharges and a large monitoring network of a variety of matrices within the watershed. The second approach appears most viable for the RMP's near-term stormwater CECs watershed modeling needs. There remain further knowledge and data gaps to help bridge with findings. The model exploration outcome and recommended approach are expected in a report this summer.

Tan then presented a preliminary stormwater data analysis for OPEs and bisphenols. The goal of this effort is to inform development of design recommendations for CECs stormwater monitoring and to identify factors that may be useful in load modeling. There are variations of total chemical concentrations across the individual chemicals in the two noted classes, with OPEs concentration variation generally nearly an order of magnitude higher than bisphenols. There were clear spatial variations of total sum of bisphenols, with several sites showing levels well above the average/median concentration, and some sites showing differences based on the storm event. bisphenols A, F, and S (BPA, BPF, BPS) appear to be major contributors of bisphenols concentrations, while OPEs have a more diverse fingerprint across sites. In addition, consideration of partitioning behavior could be important for certain chemical classes, with sites showing variance in partitioning for bisphenols. Moving forward, watershed and storm characteristics will be examined to elucidate any relationships from the stormwater CEC screening project data and to develop recommendations for the stormwater CECs monitoring and modeling approach.

Alicia Gilbreath reviewed the progress of the sampling locations database, which she is setting up with the help of David Peterson. They identified an initial candidate list of 225 locations in the Bay Area with flow gauges (in collaboration with the RWB). From these, 70 sites with flow gauges were identified for site reconnaissance to understand feasibility of monitoring based on

location within key areas of interest, estimated urban area >33%, and no tidal influences. So far, Alicia (and the stormwater team) have visited 19 sites with the rest to be completed this summer. Alicia notes the importance of this work as valuable for all RMP stormwater monitoring (not just CECs) and to support the first region in the world to establish an ongoing regional stormwater monitoring program.

Don Yee then presented on the development of a remote sampler, highlighting the current challenges facing stormwater monitoring including staffing difficulties, hazardous conditions, and imperfect prediction of rain events as well as several other issues. Commercial autosamplers (e.g., ISCO) are available, though they are bulky, expensive, require proprietary parts, and are limited in programming flexibility. Based on an initial autosampler model from USEPA, Don created an SFEI variant fit to meet our specific needs for stormwater monitoring. With the prototype complete, several mounting configurations were considered and tested, including fixed mountings and a semi-fixed pendant mounting using a PVC pipe and 50 lb weight plate to provide suitable collection and stability during a storm. Future work to examine the feasibility of using this sampler for CECs will focus on blank testing the remote sampler for four CECs classes, refining the tidal site adjustment to best determine set-up times, and adding remote programming to change capabilities. Several participants were excited about the progress with Richard Looker wondering about the cost. Don roughly estimated that it would be roughly \$6k of total cost per sampler, including about \$1500 in raw parts. Compared to an ISCO sampler, Don noted the cost was above \$3k though it is actually upwards of \$6k as a base cost and not any additional add-on features.

14. Summary of Proposed ECWG Special Studies for 2024

Rebecca Sutton gave an overview of all proposed special studies, highlighting the motivation and approach for each study, as well as associated budgets and deliverables. Meeting participants were allowed a few clarifying questions after the presentation of each proposal, though it was noted that more time would be available for discussion in the next agenda item. The focus of discussion was on seven high-priority proposals, one of which is already expected to be funded through RMP S&T, with a brief review of two special study proposals relevant to ECWG from other RMP workgroups: SPLWG and PCBWG.

The proposal for Stormwater CECs Monitoring and Modeling in 2024 is a placeholder for completing and implementing the novel integrated monitoring and modeling plan in the upcoming wet season (2023/24). This project continues the work of the Stormwater CECs Stakeholder-Science Advisor Team (SST) and will be developed together with the Stormwater CECs Approach. The proposal also requests early release of funds for this project to begin in this summer (2023).

Next, the PFAS Synthesis & Strategy proposal highlights an important updated review of the current state of the science of PFAS in the Bay, the development of a conceptual model framework for sources to the Bay, and an updated strategy for RMP monitoring of PFAS. This proposal would include a concise literature review to inform interpretation of current PFAS data and help further identify priority information gaps to best inform future monitoring. Several

members had questions about the scope of the project, specifically on the definition of PFAS to be used in the project, and whether sub-categories such as pharmaceuticals and pesticides will be included. Kelly Moran noted this project would use elementary concepts to first develop a conceptual model as a base of understanding PFAS in the Bay. Tom Mumley indicated that if this project could potentially be spread over two years due to on-going projects, that would be important to include.

PFAS and non-targeted analysis of marine mammal tissues, the second of a two-year study, was showcased next. This study aims to inform S&T study design by determining if it is appropriate to add routine monitoring of marine mammal tissues while monitoring PFAS, a contaminant of high priority. In addition, improved analytical methods, particularly for non-targeted analysis, are likely to provide new insights into the presence of CECs in marine mammal tissues. The first year of this study has been funded as a part of S&T efforts.

The next proposal discussed would expand on current S&T efforts to monitor PFAS with additional analysis using the total oxidizable precursors (TOP) assay in Bay water and sediment. The use of the TOP assay provides a means to indirectly quantify presence of a broader suite of PFAS precursors that break down to detectable compounds, providing a greater scope of PFAS present beyond a targeted method alone. The study could be spread across both wet and dry seasons, with three different funding levels available, and would require early release of funds to begin in summer 2023. A few meeting participants asked for clarification on the TOP sites, which will be correlated with S&T sites for targeted PFAS analysis. Others also asked about archiving samples, which Rebecca Sutton noted is also an option.

The next study was the third and final year in a multi-year monitoring effort to examine tire contaminants in Bay water during the wet season. A small number of samples have indicated the presence of the tire contaminant 6PPD-quinone and others in Bay water, with further results needed to classify these contaminants under the tiered risk-based framework. In addition, these findings can help evaluate the pilot wet season monitoring effort.

A proposal to examine OPEs, bisphenols, and other plastic additives in wastewater effluent was introduced to build our understanding of the fate and transport of these contaminants in the Bay. Limited previous findings of OPEs and bisphenols in wastewater, stormwater, and ambient Bay water merit further review to assess the importance of the effluent pathway while expanding analysis to additional classes of plastic additives potentially reaching the Bay. This study is presented in two tiers based on interest to examine only OPEs, which are expected to be of High Concern under the revised tiered risk-based framework, and the full suite of contaminant classes.

The final project presented was the first year of a two-year study on non-targeted analysis (NTA) of SF Bay fish. This study would leverage 2024 S&T sport fish monitoring to collect samples for NTA. This type of analysis will provide a means to identify unanticipated contaminants, including unknown PFAS and halogenated hydrophobic (bioaccumulative) compounds, that may merit follow-up targeted monitoring, and would provide the means to compare San Francisco Bay fish

contaminant profiles to those of fish in the Great Lakes, where this type of study has already occurred. Derek Muir noted that the analytical lab partner uses advanced analytical equipment, which may be able to detect additional contaminants like chlorinated paraffins. Heather Stapleton inquired if the sportfish study would be more human or ecologically focused, with Rebecca noting the study is on consumable fish tissues (e.g., fillets) and is meant to inform human and ecological health.

15. Discussion of Recommended Studies for 2023 - General Q&A, Prioritization

Amy Kleckner introduced the item by reviewing the process for prioritization and recommendation of special study proposals. She also noted the overall planning budget for the special studies to prioritize for the TRC and overall scope of the budget within the RMP. Meeting attendees asked any remaining questions while proposal PIs were still in attendance.

Stormwater CECs Monitoring and Modeling

Tom Mumley mentioned the stormwater proposal has many gaps remaining in what will be done and inquired what optimum use is needed now. Kelly Moran clarified the importance of building a strong foundation for the program in concert with what is occurring in the stormwater CECs approach. Bill Arnold inquired if there is flexibility in the analytes included in the study, which Kelly noted is possible, depending on funding levels.

PFAS Synthesis & Strategy

Several attendees continued discussion of the best time to begin this project, with several noting the current value of the synthesis and development of a plan to continue updating the document. Rebecca Sutton noted this is an ideal time to start as a wide variety of our work is now centered around PFAS and it is critical to best inform our continued projects. She continued by noting this would help provide information on important data gaps and considers the document to be “living,” transforming as more data is available. Kelly Moran also noted the possibility to do a WQIF proposal for PFAS in the Bay to add more funds to this effort.

PFAS and Non-Targeted Analysis of Marine Mammal Tissues

Several attendees asked about year 1 results. Rebecca Sutton explained that no tissue analysis has happened yet, as harbor seal pup season is in the spring and we are waiting for more samples to be collected before sending them to the labs.

PFAS in Bay Water & Sediment using the TOP Assay

Several meeting attendees asked about the extraction method and its relation to sediment. Diana Lin described the solid phase extraction method, which Lee Ferguson noted could be undercounting PFAS. He also mentioned consideration of the direct-TOP method to directly oxidize the sediment and get a full understanding of PFAS present. Tom Mumley inquired about the current importance beyond intellectual interest, which Derek Muir noted is important to consider as PFAS precursors have been observed in sediment and could be degrading to relevant contaminants. Lee Ferguson also noted it could be important to consider the high loadings from wastewater and if they are degrading or partitioning to sediments. Miriam

Diamond noted consideration of doing wet and dry season monitoring for wastewater sampling to understand if there is a difference in seasonality.

Tire Contaminants in Bay Water (Year 3/3)

Some participants asked whether the dry season should be monitored as well as the wet season (only wet season was proposed). Kelly Moran explained that tire-related chemicals were non-detected or very low concentrations in the dry season of year 1, which is why only wet season monitoring is being conducted this year and has been proposed for year 3. Whether a third year of the project is necessary was also brought up; while we have two years of data, the S&T wet season pilot is for three years and a third year's data would be helpful toward informing our understanding of these chemicals and to support inclusion of tire contaminants in Bay modeling.

OPEs, Bisphenols, and Other Plastic Additives in Wastewater

Several experts, led by Derek Muir, indicated a high interest in the option to gather data on the broader list of plastic ingredients, rather than focusing exclusively on OPEs.

Non-targeted Analysis of San Francisco Bay Fish (Year 1/2)

Stakeholders indicated an initial interest in reducing the requested budget, pondering whether this might impact the overall study design, and whether a portion of the budget for the first year could be covered via S&T. Tom Mumley indicated that S&T should fund collection of extra fish tissue to archive.

16. Closed Session - Decision: Recommendations for 2023 Special Studies Funding

Study Name	Budget	Modified Budget	Priority	Comments
Stormwater Contaminants of Emerging Concern (CECs) Monitoring and Modeling 2024	\$300,000 (RMP) \$100,000 (WQIF)		1	Leveraging additional funding and in year 3
PFAS Synthesis & Strategy	\$107,000		4	When is the right time to do this? We may want to wait for more data Eventual consensus that sooner is better Maybe a lit review is necessary first, others say not as critical Could produce technical manuscript Clarify scope of PFAS to include
PFAS and Nontargeted Analysis of Marine Mammal Tissues Year 2	\$126,500			

PFAS in Bay Water & Sediment using the TOP Assay	\$27,200 (Wet Season; Water only) \$67,200 (Dry & Wet Seasons; Water only) \$97,700 (Dry & Wet Seasons; Water & Sed)	\$67,200 (Dry & Wet Seasons; Water only)	5	Qualms about methods for sediment TOP, Advocates for Middle Option- Will be interesting from a PFAS standpoint Interested in potential presence of precursors Think about Eurofins for analysis - Becky says Eurofins much more expensive
Tire and Roadway Contaminants in Wet Season Bay Water Year 3	\$50,000		2	
OPEs, Bisphenols, and Other Plastic Additives in Wastewater	\$48,400 (OPEs only) \$95,400 (OPEs, Bisphenols, and Other Plastic Additives)	\$95,400 (OPEs, Bisphenols, and Other Plastic Additives)	3	
Non-targeted Analysis of San Francisco Bay Fish Year 1	\$48,000 (\$110,000 for both years)	\$23,000 (\$85,000 for both years)	6	Some advisors advocate to deprioritize, but others believe this study is complementary, program could stop after one year Cover sample collection (\$25K) under the S&T fish monitoring budget (so it doesn't need to be included here) Could do lite version even if not preferred Could fund analysis of archived samples in subsequent years

17. Report out on Recommendations

After the closed door session, proposal authors were invited back to the meeting to hear the final prioritization decisions. Eric Dunlavy summarized the discussed suggestions and recommendations. The proposals for OPEs and plastic additives was of high interest due to its broad scope of analytes and prioritized. The PFAS Synthesis and Strategy was the next highest priority due to its need, though questions remained about the most appropriate time, clarification of overall scope, and potential development of a manuscript. The proposal on TOP PFAS in Bay water and sediment was next with exclusion of the sediment due to questions of the current analytical method and potential for analysis by another lab. The proposal on NTA in fish was last, with advisors noting a need to collect archived fish and fund analysis in future years.

Adjourn

About the RMP

RMP ORIGIN AND PURPOSE

In 1992 the San Francisco Bay Regional Water Board passed Resolution No. 92-043 directing the Executive Officer to send a letter to regulated dischargers requiring them to implement a regional multi-media pollutant monitoring program for water quality (RMP) in San Francisco Bay. The Water Board's regulatory authority to require such a program comes from California Water Code Sections 13267, 13383, 13268 and 13385. The Water Board offered to suspend some effluent and local receiving water monitoring requirements for individual discharges to provide cost savings to implement baseline portions of the RMP, although they recognized that additional resources would be necessary. The Resolution also included a provision that the requirement for a RMP be included in discharger permits. The RMP began in 1993, and over ensuing years has been a successful and effective partnership of regulatory agencies and the regulated community.

The goal of the RMP is to collect data and communicate information about water quality in San Francisco Bay in support of management decisions.

This goal is achieved through a cooperative effort of a wide range of regulators, dischargers, scientists, and environmental advocates. This collaboration has fostered the development of a multifaceted, sophisticated, and efficient program that has demonstrated the capacity for considerable adaptation in response to changing management priorities and advances in scientific understanding.

RMP PLANNING

This collaboration and adaptation is achieved through the participation of stakeholders and scientists in frequent committee and workgroup meetings (see Organizational Chart, next page).

The annual planning cycle begins with a workshop in October in which the Steering Committee articulates general priorities among the information needs on water quality topics of concern. In the second quarter of the following year the workgroups and strategy teams forward recommendations for study plans to the Technical Review Committee (TRC). At their June meeting, the TRC combines all of this input into a study plan for the following year that is submitted to the Steering Committee. The Steering Committee then considers this recommendation and makes the final decision on the annual workplan.

In order to fulfill the overarching goal of the RMP, the Program has to be forward-thinking and anticipate what decisions are on the horizon, so that when their time comes, the scientific knowledge needed to inform the decisions is at hand. Consequently, each of the workgroups and teams develops five-year plans for studies to address the highest priority management questions for their subject area. Collectively, the efforts of all these groups represent a substantial body of deliberation and planning.

PURPOSE OF THIS DOCUMENT

The purpose of this document is to summarize the key discussion points and outcomes of a workgroup meeting.

Governance Structure for the Regional Monitoring Program for Water Quality in San Francisco Bay

Figure 1. Collaboration and adaptation in the RMP is achieved through the engagement of stakeholders and scientists in frequent committee and workgroup meetings.

