BACWA BAY AREA CLEAN WATER AGENCIES

Executive Board Meeting
AGENDA
Friday, August 19, 2016, 9:00 a.m. – 12:30 p.m.
EBMUD Treatment Plant, Lab Library
2020 Wake Ave, Oakland, CA

Agenda Item		Time	Pages
ROLL CALL AND INTRODUCTIONS		**9:00 AM**	
PUBLIC COMMENT		**9:03 AM**	
CONSIDERATION TO TAKE AGENDA ITEMS OUT OF ORDER		**9:04 AM**	
CONSENT CALENDAR		**9:05 AM**	
1 July 15, BACWA Executive Board Meeting Minutes			**3-9**
2 June, 2016 Treasurer's Reports			
APPROVALS & AUTHORIZATIONS		**9:06 AM**	
3 Approval: AXYS Agreement for Pharmaceutical Studies			**10-21**
4 Approval: BACWA Representative for State Recycled Water Policy			**22-25**
5 Executive Director Authorization: Agreement with Hunton & Williams on Analyses of Anti-Degradation			**26-35**
OTHER BUSINESS - POLICY/STRATEGIC		**9:10 AM**	
6 Discussion: Nutrients			
a. Regulatory			
i. Optimization/Upgrade Schedule Update			**36**
ii. No Net Loading Increase Assumptions			
iii. Annual Report Update			
iv. Nutrient Management Strategy Update			**37-44**
v. Watershed Permit Next Steps			
b. Technical Work			
i. Technical Document Review Update			**45-65**
c. Governance Structure			
i. Steering Committee Meeting #10 Agenda			**66-67**
7 Discussion: Water Board Joint Meeting Debrief		**10:20 AM**	**68-70**
8 Discussion: Pardee Technical Seminar Draft Agenda & Schedule		**10:30 AM**	**71-73**
9 Discussion: Selenium Criteria Meeting with Regulators	LINK	**10:45 AM**	**74-75**
10 Discussion: EPA NPDES Rule Update		**11:00 AM**	**76-106**
11 Discussion: EPA Enforcement Policy	LINK	**11:05 AM**	**107-108**
OTHER BUSINESS - OPERATIONAL			
12 Discussion: RMP Update		**11:10 AM**	**109-133**
13 Discussion: Microplastics		**11:40 AM**	**134-137**
14 Discussion: Drought/Recycling		**11:45 AM**	
a. Proposition 1			**138-152**
15 Discussion: Risk Reduction Update		**12:00 PM**	

16	Discussion: POTW Budget Survey		**12:05 PM**	**153-154**
17	Discussion: Summit Partners WW Information Sharing Program		**12:10 PM**	
REPORTS			**12:15 PM**	
18	Committee Reports			**155-161**
19	Member Highlights			
20	Executive Director Report			**162-171**
21	Regulatory Program Manager Report			**172**
22	Other BACWA Representative Reports			
	a. RMP TRC	Rod Miller		
	b. RMP Steering Committee	Karin North; Jim Ervin		
	c. Summit Partners	Dave Williams		**173**
	d. ASC/SFEI	Laura Pagano; Dave Williams		**174-177**
	e. Nutrient Governance Steering Committee	Ben Horenstein; Jim Ervin		
	f. SWRCB Nutrient SAG	Dave Williams		
	g. SWRCB Focus Group – Bacterial Objectives	Lorien Fono; Amy Chastain		
	h. SWRCB Focus Group – Mercury Amendments to the State Plan	Tim Potter		
	i. Nutrient Technical Workgroup	Eric Dunlavey		
	j. NACWA Taskforce on Dental Amalgam	Tim Potter		
	k. BAIRWMP	Cheryl Munoz; Linda Hu; Dave Williams		
	l. NACWA Emerging Contaminants	Karin North; Melody LaBella		
	m. CASA Statewide Pesticide Steering Committee	Melody LaBella		
	n. CASA State Legislative Committee	Lori Schectel		
	o. CASA Regulatory Workgroup	Lorien Fono		
	p. ReNUWIt	Mike Connor; Ben Horenstein		
	q. RMP Microplastics Liaison	Nirmela Arsem		
	r. AWT Certification Committee	Maura Bonnarens		
	s. Bay Area Regional Reliability Project	Roger Bailey; Mike Connor		
23	**SUGGESTIONS FOR FUTURE AGENDA ITEMS**		**12:27 p.m.**	
NEXT MEETING **The next regular meeting of the Board is scheduled for September 16, 2016 from 9:00 am – 12:30 pm at the SFPUC, Hetch Hetchy Room, 13th Floor, 525 Golden Gate Ave, San Francisco,**			**12:28 p.m.**	
ADJOURNMENT			**12:30 p.m.**	

Executive Board Meeting Minutes

July 15, 2016

ROLL CALL AND INTRODUCTIONS

Executive Board Representatives: Laura Pagano (San Francisco Public Utilities Commission); Jim Ervin (San Jose); Dave Stoops (East Bay Dischargers Authority); Ben Horenstein (East Bay Municipal Utility District); Roger Bailey (Central Contra Costa Sanitary District).

Other Attendees:

Name	Agency/Company
Amanda Roa	Delta Diablo
Bhavani Yerrapotu	Sunnyvale
Doug Wallace	EBMUD
Jean-Marc Petit	CCCSD
Karin North	City of Palo Alto
Lori Schectel	CCCSD
Tom Hall	EOA
Justin Waples	CCCSD
Holly Kennedy	HDR
Alina Constantinescu	LWA
Jennifer Keeny	PME
Meg Herston	FFSD
David Williams	BACWA
Lorien Fono	BACWA
Sherry Hull	BACWA

PUBLIC COMMENT

None.

CONSIDERATION TO TAKE AGENDA ITEMS OUT OF ORDER

A Board Member requested that Item #14, Member Highlights be taken out of order.

CONSENT CALENDAR

1. June 17, 2016, BACWA Executive Board Meeting Minutes – The approved minutes will be placed on the BACWA website.

2. May, 2016 Treasurer's Reports and Financial Summary – A Financial Summary Report was included in the Packet on **Pages 12-22**. A copy of the FY16 Budget as of May 31, 2016 (92% of the fiscal year) was included. It, along with the Summary, provides the Board with a concise overview of the Fund Balances and the current status of the Annual Budget and points out any variances in the budget to date.

Consent Calendar items 1 and 2 *were approved in a motion made by Ben Horenstein and seconded by Roger Bailey. The motion carried unanimously.*

AUTHORIZATIONS & APPROVALS

3. Approval: Biennial Review of Conflict of Interest Code – A Board Action Request was included in the Packet on **Pages 21-35**. The Executive Director gave an overview of the request noting that nothing in the structure of BACWA has changed since the last review.

Item 3 *was approved in a motion made by Roger Bailey and seconded by Ben Horenstein. The motion carried unanimously.*

4. Approval: Annual Nutrient Watershed Permit Payment – A Board Action Request was included in the Packet on **Pages 36-38**. The Executive Director gave an overview of the request noting that funds should be available for the payment within two months.

Item 4 *was approved in a motion made by Ben Horenstein and seconded by Roger Bailey. The motion carried unanimously.*

OTHER BUSINESS-POLICY/STRATEGIC

Agenda **Item 5 –** Discussion: Nutrients

a. Regulatory
   i. Opt/Upgrade Workshop Debrief – The Agenda was included in the Packet on **Page 39**. Additionally a LINK to the presentations was provided. The Executive Director noted that a second workshop is being planned but there is no date yet. A Board Member commented that the first workshop was well-designed. A second workshop will be held later in the year and may include Regional Water Board staff. The consultant noted that good questions were raised, e.g. impacts to solids facilities and odor control, which will result in them being more attentive to outlining ancillary benefits and impacts in the reports.
   ii. Watershed Permit Survey – The results of the Survey on Watershed Permit Options, were included in the Packet on **Page 40-48.** The Executive Director summarized the narrative. There may be a need for a process to determine if there is a consensus on moving forward with negotiations for the next watershed permit. One additional question was suggested for future surveys: if there is a dominant agreement to move forward with more science funding, would your agency stay in or opt out? The Executive Director went on to discuss the projected schedule and the consensus was for internal discussions to continue regarding additional funding for earmarked projects on beneficial uses. The Executive Director will also convene the Nutrient Strategy Team to begin a compilation of earmarked projects.

iii. No Net Loading Increase (NNLI) – HDR gave a presentation LINK on the estimated costs of NNLI in the next Watershed Permit. Criteria included an effluent target set to 2015 Group Annual Report loads and with a time horizon of 2025. There was a discussion that the time horizon may need to be longer, which will be discussed by the CMG. Assumptions included a 10% increase to both flow and load designed for reliability to meet NNLI. One outcome of the analysis is that some agencies will have stranded assets from projects to achieve NNLI if they are then required to fully upgrade for nutrient removal. Additionally, an item on the relevance of phosphorous removal will be added to the Agenda for the next Joint Water Board meeting. The Board asked the Executive Director to obtain legal advice on the application of anti-degradation to inform ongoing discussions on the no net loading increase concept and to request more information from the Water Board on their thinking on the subject.

b. Technical Work
   i. Technical Document Review Update –The Executive Director gave an overview of the status of the review. The consultant will produce a report by July 22nd. The consultant has requested an additional $5,000 for work that was out of the scope of the original contract, and the Board concurred. The Executive Director will prepare a transmittal letter to the Regional Water Board to address next steps of the "test drive".

c. Governance Structure -
   i. Planning Subcommittee Meeting # 20 – A Meeting Summary, along with a Science Program Update, were included in the Packet on **Pages 49-75**. The Executive Director gave an overview of the minutes. Key issues were funding and the long term picture of nutrients. There was a discussion on sources for additional funding, particularly federal sources. The Board asked the Executive Director to put the issue on a future Board Agenda and identified agency contacts who might provide insight into lobbying for federal funding.

Agenda **Item 6** – Discussion: Proposed Selenium Water Quality Criteria – An email from the Regional Water Board, an email from the EPA, and a copy of the EPA proposal were included in the Packet on **Pages 76-78**. The Executive Director gave an overview, including how the proposed selenium water column criterion is higher than the water concentration in the South Bay and Lower South Bay. The issue is on the Agenda for the next Joint Meeting with the Water Board. All stakeholders are concerned about compliance if the criterion is applied as an end-of-pipe objective, although the North Bay TMDL will likely provide protection for agencies that are covered (from EBMUD north). A strategy will be developed following the Joint Meeting with the Water Board.

Agenda **Item 7** – Discussion: Water Board Joint Meeting Agenda – A copy of the Draft Agenda for the July 18, 2016 Joint Meeting with the Water Board was included in the Packet on **Page 79**. The Executive Director gave an overview of the Agenda and asked the Board to provide

feedback. There were no comments.

Agenda **Item 8** – Discussion: Pardee Technical Seminar Key Topics – A list of potential topics for the 2016 BACWA Technical Seminar at Pardee was included in the Packet on **Pages 80-81**. The Executive Director gave an overview of the list and asked the Board to provide feedback on issues that do not rise to the level of priority. The Executive Director will provide a Draft Agenda at the August Board meeting. There was discussion of how much time is need for the seminar. It was suggested that the Board hold a workshop several weeks in advance to reduce the time needed at the Pardee site.

OTHER BUSINESS-OPERATIONAL

Agenda **Item 9** – Discussion: Microplastics Workshop Debrief – A copy of the Agenda and supporting documents and a LINK to a Fact Sheet, were included in the Packet on **Pages 82-100**. There was consensus that visual analysis is not sufficient to positively identify plastic particles, and that reliable analysis is expensive. Concern was expressed about the continuing availability of incorrect data. The Board asked that the issue be added to the next Board meeting Agenda and it will also be addressed at the next RMP Steering Committee meeting.

Agenda **Item 10.a** – Discussion: Proposition 1 Proposal – A draft pre-proposal was included in the Packet on **Pages 101-108**. The Regulatory Program Manager gave a description of the two proposed phases for the research. The first phase will be funded by the Santa Clara Valley Water District irrespectively of whether they get supplemental funding from Proposition 1, and includes a pilot treatment wetland and advanced oxidation process to be built at the Water District. The second phase will look at full scale implementation and impacts on the Bay.

Agenda **Item 10.b** – Discussion: State General Order on Recycled Water – A list of 96-011 enrollees was included in the Packet on **Page 109**. The Board supports the BACWA Recycled Water Committee in developing a proposal for how the Regional Water Board should enroll 96-011 permittees into the State General Order. The enrollment must be completed by June 7 2019.

Agenda **Item 10.c** – Discussion: Hertzberg Bill Update – A letter from Senator Hertzberg was included in the Packet on **Pages 110-111**. This issue will continue to be an issue for wastewater agencies in the future since the Senator plans to reintroduce the Bill next year.

Agenda **Item 10.d** – Discussion: Expert panel research recommendations on DPR – A letter from the National Water Research Institute on Expert Panel Draft Key Research Recommendations Related to the Development of Uniform Water Recycling Criteria for Direct Potable Reuse in the State of California was included in the Packet on **Pages 112-114**. The panel found there was no need for additional research but there are some areas of research that would enhance the

understanding and acceptability of DPR. But any additional research should not hold up the regulations.

Agenda **Item 11** – Discussion: Bay Area Regional Reliability Task Force – The EBMUD Environmental Affairs Officer, Doug Wallace, gave a presentation LINK to the Board. He provided some background on the study along with goals, priorities, framework, funding, participation, and next steps. There was a discussion about the lack of recycled water projects being considered by BARR. It was suggested that Doug Wallace return in six months to give an update.

Agenda **Item 12** – Discussion: Multiple Membership Requests for Information – A list of potential requests for information was included in the Packet on **Page 115**. The Regulatory Program Manager noted that BACWA is currently requesting information on Recycled Water and Capital Improvement Projects. The Biosolids Survey and the Sewer Rate Survey will be distributed later this summer. She requested input on the POTW Budget Survey and the Board supported it. There are currently no plans for another Private Sewer Lateral Survey.

REPORTS

Agenda **Item 13** – Committee Reports – BACWA Committee Reports were included in the Handout on **Pages 116-124**.

AIR Committee: A report from the June 15, 2016 meeting was included in the Packet on **Page 116.** BAPPG: No meeting.
Biosolids Committee: No meeting.
Collections Committee: The new Chair of the Committee was introduced. There was a meeting on July 14th and the report will be included in the August Packet.
InfoShare - Asset Management: No meeting.
InfoShare – Operations & Maintenance: A report from the June 29, 2016 meeting was included in the Packet on **Page 117.** The Chair of the Committee attended and noted that the Committee is working well. They are hoping for even more participation in the future.
Lab Committee: No meeting.
Permits Committee: A report from the July 12, 2016 meeting was included in the Packet on **Pages 118-119.**
Pretreatment Committee: A report on the June 22, 2016 Pretreatment Training by EED Environmental was included in the Packet on **Pages 120-124**.
Recycled Water Committee: There was a meeting on July 13th and the report will be included in the August Packet. There was a discussion on recycled water vs. Optimization/Upgrade for nutrients only.

It was noted that a member of the Regional Water Board staff is retiring and BACWA will circulate a card through committees.

Agenda **Item 14** - Discussion: Member Highlights - Executive Board Representatives (Board) were given an opportunity to provide updates from each of the Principal agencies. Non-principal members were also given an opportunity to report out on behalf of their agencies. No actions were taken on the report-outs.

EBDA: Oro Loma's Ecotone Project should be online by winter since they are laying pipe and connecting it to their secondary system. They are investigating the potential to discharge to the canal rather than redirecting the Ecotone effluent to the plant headworks.
EBMUD: Attended a meeting on loss of wetlands and sea level rise. There is consideration of whether biosolids can be used to support marshlands to enhance the shoreline. Will provide minutes of the meeting to the Board and a draft document on the wetland deficits in the Bay. The Summit Partners is looking to develop an online format for information sharing. EBMUD is looking at providing additional funding, along with others who may be interested, for research into the development of a nutrient trading program.
Central Contra Costa: They are celebrating their 70th anniversary on July 16th from 10 am to 12:30 pm at their plant with an Open House and Tours. They are developing their Master Plan for Energy. The residential fill station utilization has dropped in half this year. They are funding SFEI's South Bay Study for two years at $98,000 per year for two years.
San Francisco: The EPA is still very interested in the San Francisco collection system. An effluent pipe leak recently developed. There was nothing new in the reissuance of the Oceanside Permit.
San Jose: They have 90 days to shut down their dissolved air floatation (DAF) tanks due to its impact on their discharge. They are beginning their first Capital Improvement Project and are therefore closed for tours. A delegation from China has contacted them and asked for recommendations for tours of Bay area POTWs.
Delta Diablo: Board passed an MOA for a garbage hauler which will to use the hauler's feed stock in their digesters. They received a DOE grant to test a gasifier (low temp pyrolizer).
Palo Alto: Broke ground on dewatering facility. Began a feasibility study on an RO facility. There is an RMP Steering Committee meeting on July 19, 2016 and a 3% fee increase will be discussed.
Sunnyvale: They are finalizing their Master Plan this month.
Fairfield Suisun: Embarking on a biosolids to liquid fertilizer project.

Agenda **Item 15** - The **Executive Director's Report**, along with the Board Calendar, and BACWA Action Items, were included in the Packet on **Pages 125-134**. It was noted that 89 of the 97 action items from FY16 have been completed.

Agenda **Item 16** - The **Regulatory Program Manager (RPM) Report** was included in the Packet on **Page 135**.

Agenda **Item 17 - Other BACWA Representative Reports** – BACWA Representative were given an opportunity to provide updates. No actions were taken based on the reports.

a. RMP-TRC: Rod Miller; Laura Pagano – No report.
b. RMP Steering Committee: Karin North; Jim Ervin – No report.
c. **Summit Partners: Dave Williams –** The Summit Partners, with CASA as the lead, is investigating the creation of a Statewide database on a variety of topics of interest to POTWs.
d. **ASC/SFEI: Laura Pagano; Dave Williams –** there will be a Board meeting on July 22, 2016 when a new slate will be elected.
e. Nutrient Governance Steering Committee: Ben Horenstein; Jim Ervin – No report.
f. SWRCB Nutrient SAG: Dave Williams – No report.
g. SWRCB Focus Group – Bacterial Objectives: Lorien Fono; Amy Chastain – No report.
h. SWRCB Focus Group – Mercury Amendments to the State Plan: Tim Potter – No report.
i. Nutrient Technical Workgroup: Eric Dunlavey – No report.
j. NACWA Taskforce on Dental Amalgam: Tim Potter – No report.
k. **BAIRWMP: Cheryl Munoz, Linda Hu, Dave Williams** – No report.
l. NACWA Emerging Contaminants: Karin North, Melody La Bella – No report.
m. CASA Statewide Pesticide Steering Committee: Melody La Bella – No report.
n. CASA State Legislative Committee: Lori Schectel – No report.
o. CASA Regulatory Workgroup – No report.
p. RMP Microplastics Liaison: Nirmela Arsem – No report.
q. ReNUWIt: Mike Connor; Ben Horenstein – No report.
r. AWT Certification Committee: Maura Bonnarens – No report.
s. Bay Area Regional Reliability Project: Roger Bailey; Mike Connor – No report.

SUGGESTIONS FOR FUTURE AGENDA ITEMS: 1) Identify contacts or lobbyists to help with federal funding of Science Plan. 2) Microplastics.

ANNOUNCEMENTS:
The next regular meeting of the Board is scheduled for **August 19, 2016 from 9:00 am – 12:30 pm** at the **EBMUD Treatment Plant, Lab Library, 2020 Wake Ave., Oakland, CA.**

To receive a copy of any materials provided to the Board at a BACWA Executive Board meeting contact Sherry Hull at shull@bacwa.org.

The meeting adjourned at 12:44 pm.

EXECUTIVE BOARD AUTHORIZATION REQUEST

AGENDA NO.: 3

FILE NO.: 17-18

MEETING DATE: August 19, 2016

TITLE: Request for BACWA Executive Board Approval to Execute an Agreement with AXYS Analytical for POTW Emerging Contaminants Analysis not to exceed $77,550.00 for FY17.

☐ **RECEIPT** ☐ **DISCUSSION** ☐ **RESOLUTION** ☒ **APPROVAL**

RECOMMENDED ACTION

Authorize the execution of an agreement with AXYS Analytical to perform analysis of pharmaceuticals in samples provided by BACWA member agencies, in an amount not to exceed $77,550.00 for FY17.

SUMMARY

SFEI is coordinating an effort for BACWA member agencies who wish to perform sampling for pharmaceuticals. This work is part of the Regional Water Board's voluntary emerging contaminants monitoring and management strategy. Samples will be analyzed by AXYS Analytical, a company in British Colombia, Canada, for 104 pharmaceutical analytes. The samples can be wastewater influent, partially-treated effluent, or final effluent, based on agencies' interest. SFEI staff will coordinate sample collection and shipping. Results will be provided by AXYS Analytical in Fall 2017. This agreement between BACWA and AXYS Analytical will allow for a single contract with the vendor, simplifying the effort for SFEI and BACWA's participating member agencies. BACWA will invoice the member agencies for the full amount of each member agency's analytical costs.

The work under this contract will be carried out under the supervision of Lorien Fono, BACWA Regulatory Program Manager.

FISCAL IMPACT

Funds have not been allocated for this project within the BACWA FY17 Budget approved April 15, 2016. BACWA will invoice participating agencies in advance, and work under this contract will not be carried out until BACWA receives the funds and provides AXYS with a notice to proceed. This is a pass-through agreement and will have no fiscal impact.

ALTERNATIVES

1. Do not enter into this agreement and allow each agency to individually contract with AXYS Analytical. This alternative is not recommended since some of our member agencies will have difficulty contracting with an international vendor, and it will disproportionately increase the collective administrative burden on our agencies.

2. Select another consultant to conduct the work. This alternative is not recommended since SFEI has an established relationship with AXYS Analytical and is confident in the quality of their data.

Attachments:
Agreement
Scope
Budget

Approved: _____ Date: _____
Laura Pagano, Chair,
BACWA Executive Board

BAY AREA CLEAN WATER AGENCIES
PROFESSIONAL SERVICES CONTRACT

This PROFESSIONAL SERVICES CONTRACT, effective August 25, 2016, is between Bay Area Clean Water Agencies ("BACWA"), a joint powers agency which exists as a public entity separate and apart from its Member Agencies, created January 4, 1984 by a Joint Powers Agreement between Central Contra Costa Sanitary District, East Bay Dischargers Association, East Bay Municipal Utility District, the City and County of San Francisco and the City of San Jose, with a mailing address of P.O. Box 24055, MS 702, Oakland, CA 94623, and AXYS Analytical Services Ltd. ("Consultant"), a Foreign Owned Corporation doing business at 2045 Mills Road West Sidney, BC V8L 5X2, for professional services as described in any Exhibit A attached hereto.

In consideration of the mutual covenants, stipulations and agreements, the parties agree as follows:

Description and Standard of Services to be Performed

1. Consultant will perform the Services as described by and in accordance with Exhibit A in a manner acceptable to BACWA.
2. Consultant shall not contract with or otherwise use any subconsultants, subcontractors or other non-employee persons or entities ("Subconsultants") to perform the Services without the prior written approval of BACWA. If Consultant and BACWA agree that Subconsultants shall be used, Consultant shall ensure Subsconsultants' compliance with all the terms and conditions of this agreement.
3. Consultant will exercise that degree of care in performing the Services in accordance with that prevailing among firms of comparable standing in the State of California ("Professional Standard"). Consultant will promptly correct or re-perform those Services not meeting the Professional Standard without additional compensation.
4. Consultant warrants that it is fully licensed, registered and otherwise fully authorized to perform the Services in the State of California to the extent applicable law requires such licensure, registration or authorization.
5. BACWA's review, approval, acceptance, use, or payment for all or any part of the Services hereunder will not alter the Consultant's obligations or BACWA's rights hereunder, and will not excuse or diminish Consultant's responsibility for performing all Services consistent with this Contract.

Payment for Services

6. BACWA will pay Consultant based on the rates in Exhibit B, up to a maximum amount payable of $77,550.00 Consultant will not exceed the maximum amount payable without obtaining prior written approval from BACWA.
7. Consultant shall submit invoices in a timely manner. Invoices shall include the hours charged by each employee, a brief description of the work performed, and a description of costs for which Consultant seeks reimbursement and which are specified in Exhibit B.
8. Payments under this Contract will be due thirty (30) days after BACWA's receipt of invoices. BACWA may withhold from any progress or final payment any damages, backcharges or claims incurred or anticipated by BACWA to the extent caused by Consultant.

Document Ownership and Retention

9. Consultant will maintain all financial records relating to this Contract in accordance with generally accepted accounting principles and for at least three years following termination of this Contract. Consultant will grant BACWA and its representatives access upon request to all such records and all

other books, documents, papers, drawings, and writings of Consultant that refer or relate to this Contract.

10. All drawings, specifications, reports, programs, manuals, and other work product of Consultant that result from this Contract ("Work Product") will be considered the exclusive property of BACWA. Consultant agrees that it will not use, disclose, communicate, publish or otherwise make available to third parties any products, analyses, data, compilations, studies, proposals, technical or business information, and any other information related to the Services provided to BACWA without BACWA's prior written approval.

Indemnification

11. To the fullest extent allowed by law, Consultant will indemnify, hold harmless, reimburse and defend BACWA, its Member Agencies, and each of their officers, directors, employees and agents from, for and against any and all claims, demands, damages, losses, expenses, liabilities and penalties, including but not limited to reasonable attorneys' and expert witnesses' fees, arising out of or relating to the Services but only to the extent caused by the negligent or other wrongful acts or omissions of Consultant or any person or entity for whose acts or omissions any of them are responsible, or by the failure of any such party to perform as required by this Contract.

Insurance

12. Consultant will purchase and maintain, at Consultant's expense, the following types of insurance, covering Consultant, its employees and agents:

a. Workers' Compensation Insurance as required by law, subject to a waiver of subrogation in favor of BACWA;

b. Employers Liability Insurance with a per accident value at $1,000,000, Policy Limit of $1,000,000 and Each Employee of $1,000,000, subject to a waiver of subrogation in favor of BACWA.

c. Comprehensive General Liability Insurance covering personal injury and property damage with a combined single limit, or the equivalent, of not less than $1,000,000.00 each occurrence, $2,000,000.00 general aggregate.

d. Business Automobile Liability Insurance with combined single limit coverage of not less than $1,000,000.00 aggregate for each claim, incident, or occurrence.

Assignment

13. Consultant will not assign or transfer any of its interest in this Contract, in whole or in part, without the prior written consent of BACWA. BACWA may assign this Contract and any rights relating to this Contract (including but not limited to its right to assert claims and defenses against Consultant) at BACWA's discretion.

Independent Contractor

14. Consultant will perform the Services as an independent contractor. Although Consultant will perform its Services for the benefit of BACWA, and although BACWA reserves the right to determine the schedule for the Services and to evaluate the quality of the completed performance, BACWA does not control the means or methods of Consultant's performance. Consultant is solely responsible for determining the appropriate means and methods of performing the Services, and Consultant's liability will not be diminished by any review, approval, acceptance, use or payment for the same by BACWA or any other party.

Termination of Contract; Suspension of Services

15. This contract shall automatically terminate on October 31, 2017. Either party may also terminate this Contract in whole or in part at any time for its convenience. For a termination for convenience, the termination will be effective thirty (30) days following receipt of a written notice of termination by one party from the other. BACWA may terminate this Contract in whole or in part for cause, in which event the termination will be effective ten (10) days after Consultant's receipt of BACWA's written notice and Consultant's failure during that period to cure the default.

Dispute Resolution

16. Consultant will give prompt written notice to BACWA of any claim, dispute or other matter in question, but in no event will Consultant give such notice later than ten (10) days after Consultant's becoming aware of the event or circumstance giving rise to the claim, dispute or matter in question.

17. All claims, disputes and other matters in question between BACWA and Consultant arising out of or relating to this Contract will be subject to alternative dispute resolution. If both parties agree to arbitration it will be conducted in accordance with the Commercial Arbitration Rules of the American Arbitration Association then in effect. Notice of the demand for arbitration will be filed in writing with the other party to this Contract and with the American Arbitration Association. Any arbitration arising out of or relating to this Contract will include, by consolidation, joinder or joint filing, any other person or entity not a party to this Contract that is substantially involved in a common issue of law or fact and whose involvement in the consolidated arbitration is necessary to achieve a final resolution of a matter in controversy therein. This agreement to arbitrate will be specifically enforceable by any court with jurisdiction thereof.

18. A demand for dispute resolution by either party will be made within a reasonable time after the claim, dispute, or other matter in question has arisen, and in no event will it be made after the date when institution of court litigation based on such claim, dispute or other matter in question would be barred by the applicable period of limitations. For all claims by BACWA against Consultant, the applicable period of limitations will not commence to run, and any alleged cause of action will not be deemed to have accrued (whether such action is based on negligence, strict liability, indemnity, intentional tort or other tort, breach of contract, breach of implied or express warranty, or any other legal or equitable theory), unless and until BACWA is fully aware of all three of the following: (1) the identity of the party(ies) responsible, (2) the magnitude of the damage or injury and (3) the cause(s) of the damage or injury. The contractual limitations period and discovery rule provided herein applies in lieu of any otherwise applicable statute or related case law.

19. The failure of either party to enforce any provision of this Contract will not constitute a waiver by that party of that or any other provision of this Contract.

Severability

20. BACWA and Consultant agree that if any term or provision of this Contract is determined to be illegal, in conflict with any law, void or otherwise unenforceable, and if the essential terms and provisions of this Contract remain unaffected, then the validity of the remaining terms and provisions will not be affected and the offending provision will be given the fullest meaning and effect allowed by law.

Survival

21. All rights and obligations set out in this Contract and arising hereunder will survive the termination of this Contract (i) as to the parties' rights and obligations that arose prior to such termination and (ii) as is necessary to give effect to rights and obligations that arise after such termination but derive from a breach or performance failure that occurred prior to the termination.

This Contract constitutes the entire, legally binding contract between the parties regarding its subject matter. No waiver, consent, modification or change of terms of this Contract is binding unless in writing and signed by both parties.

The following documents are incorporated into and made a part of this Contract. Any conflicts between these documents and this Contract will be resolved in favor of this Contract.

Exhibit A – Scope of Work
Exhibit B – Budget

CONSULTANT: AXYS Analytical Services Ltd.

2045 Mills Road
Street Address

West Sidney, BC V8L 5X2
City, State, Zip Code

98-0164200
Tax Identification No.

Consultant Signature	Click here to enter a date. *Date*

John Cosgrove, President
Name, Title

BACWA Signature	Click here to enter a date. *Date*

Laura Pagano, Chair
Name, Title

EXHIBIT A

SCOPE OF WORK

Professional Services by AXYS Analytical Services Ltd**.**
Fiscal Year 2017

AXYS Analytical Services Ltd will provide professional services to Bay Area Clean Water Agencies (BACWA) for the following activities, the costs of which are **not to exceed $77,550.00**:

PROJECT NAME
Analysis of Pharmaceuticals in Wastewater Samples

PERIOD OF PERFORMANCE
Start Date: August 25, 2016
End Date: October 31, 2017

CONTRACTOR PRIMARY CONTACT
Mike Elliott
AXYS Analytical Services Ltd.
2045 Mills Rd
Sidney, BC Canada V8L 5X2
Tel: (530) 521-8476
Fax: (250) 655-5811
melliott@axys.com

SFEI PRIMARY CONTACT
Jennifer Sun
San Francisco Estuary Institute
4911 Central Avenue
Richmond, CA 94803
(510) 746-7334
jennifers@sfei.org

BACWA PRIMARY CONTACT
Lorien Fono, Regulatory Program Manager
Bay Area Clean Water Agencies
PO Box 24055, MS 59
Oakland, CA 94623
(510) 684-2993
lfono@bacwa.org

BACWA SECONDARY CONTACT
Sherry Hull, Assistant Executive Director
Bay Area Clean Water Agencies
PO Box 24055, MS 59
Oakland, CA 94623
(415) 404-8303
shull@bacwa.org

PROJECT DESCRIPTION

In September 2016, BACWA agencies will collect 29 wastewater samples and QA/QC samples across 7 wastewater treatment plants as part of the voluntary Pharmaceuticals in Wastewater study. Samples will include influent, partially treated effluent, fully treated effluent, recycled water, and RO concentrate samples. Additional details about the number and type of samples that will be submitted are presented in Exhibit B.

In August 2016, the CONTRACTOR will send sampling bottles to SFEI in sufficient quantity for all the samples stipulated in Exhibit B to be collected. SFEI will label the bottles and send sampling kits to each participating BACWA agency. Seven BACWA agencies will conduct a single round of sampling in September 2016 and ship samples to the CONTRACTOR for analysis. The CONTRACTOR will perform laboratory analyses as described in the Work Tasks below and provide results to BACWA no later than January 2017.

Between October 2016 and June 2017, one or two additional rounds of sampling will take place at the San Jose-Santa Clara Regional Wastewater Facility. Each round of sampling will consist of 5 wastewater samples and QA/QC samples per round. For these sampling rounds, the CONTRACTOR will coordinate with SJSCRWF directly to provide sampling bottles, receive samples, and perform laboratory analyses. The CONTRACTOR will notify SFEI and BACWA when these analyses have been completed.

CONTRACTOR WORK TASKS

Task 1: September 2016 Sampling Event

1. Provide cleaned/certified containers and supplies

   The CONTRACTOR shall coordinate with SFEI and the sampling agencies regarding sample containers, sampling supplies and sample handling instructions. The CONTRACTOR shall be responsible for supplying pre-cleaned/certified containers and supplies to SFEI. The specific number of containers and supplies to be provided are listed in the budget table in Exhibit B.

2. Perform laboratory analyses on wastewater samples

   The CONTRACTOR shall analyze the number and type of wastewater and quality assurance/quality control samples as specified in the budget table in Exhibit B and approved by BACWA prior to analysis. The number of analyses may be less than the number in Exhibit B if an agency ultimately decides not to pay to have their frozen samples analyzed. The CONTRACTOR shall hold samples frozen until the CONTRACTOR receives a notice to proceed from BACWA with a list of the samples to be analyzed. The number of samples analyzed will be contingent upon the payment of BACWA invoices by the sampling agencies. The Contractor will be responsible for holding the frozen samples until January 31, 2017 or until BACWA notifies CONTRACTOR that the agency providing the samples has decide not to go forward with the analyses. After the hold date has passed or the CONTRACTOR has been notified by BACWA that the samples will not analyzed, the CONTRACTOR will be free to dispose of the frozen samples.

3. Follow quality assurance and quality control, storage/archiving, and waste disposal procedures

   The CONTRACTOR shall follow all quality assurance/quality control, storage/archiving and waste disposal protocols that are specified for the analytical methods used and applicable regulations. After receipt of samples, CONTRACTOR will be responsible for proper storage of samples during the project, and disposal of samples after the project is complete. To the extent that any samples collected, or other materials used, are considered hazardous waste, CONTRACTOR will be responsible for disposing of these materials in accordance with all applicable Federal, State and/or Local laws.

4. Report results using California Environmental Data Exchange Network templates

   The CONTRACTOR shall report field collection information and analytical results, including associated quality control sample results and associated metadata in the appropriate CEDEN Electronic Data Deliverable (EDD) template. The results shall be reported to BACWA no later than January 31, 2017.

Task 2: October 2016 – June 2017 Sampling Events

1. Provide cleaned/certified containers and supplies

   The CONTRACTOR shall coordinate with SJSCRWF regarding sample containers, sampling supplies and sample handling instructions. The CONTRACTOR shall be responsible for supplying pre-cleaned/certified containers and supplies to the sampling agency. The specific number of containers and supplies to be provided are listed in the budget table in Exhibit B.

2. Perform laboratory analyses on wastewater samples

   The CONTRACTOR shall analyze the number and type of wastewater and quality assurance/quality control samples as specified in the budget table in Exhibit B and approved by BACWA prior to analysis. The number of analyses may be less than the number in Exhibit B if an agency ultimately decides not to pay to have their frozen samples analyzed. The CONTRACTOR shall hold samples frozen until the CONTRACTOR receives a notice to proceed from BACWA with a list of the samples to be analyzed. The number of samples analyzed will be contingent upon the payment of BACWA invoices by the sampling agency.

3. Follow quality assurance and quality control, storage/archiving, and waste disposal procedures

   The CONTRACTOR shall follow all the field sampling, quality assurance/quality control, storage/archiving and waste disposal protocols that are specified for the analytical methods used and applicable regulations. After receipt of samples, CONTRACTOR will be responsible for proper storage of samples during the project, and disposal of samples after the project is complete. To the extent that any samples collected, or other materials used, are considered hazardous waste, CONTRACTOR will be responsible for disposing of these materials in accordance with all applicable Federal, State and/or Local laws.

4. Report results using California Environmental Data Exchange Network templates

   The CONTRACTOR shall report field collection information and analytical results, including associated quality control sample results and associated metadata in the appropriate CEDEN

Electronic Data Deliverable (EDD) template. The results shall be reported to BACWA no later than September 30, 2017.

EXHIBIT B: BUDGET

Service	Sample Type	Number of Samples or Supplies[1]	Number of Billable QA/QC Samples[2]	Unit Cost	Cost
Laboratory Analyses - Task 1					
PPCPs (Lists 1, 3 4 and 5 of EPA 1694, AXYS MLA-075)[4]	Water – Total	29	4	$1,600	$52,800
Laboratory Analyses – Task 2					
PPCPs (Lists 1, 3 4 and 5 of EPA 1694, AXYS MLA-075)[4]	Water – Total	10	4	$1,600	$22,400
Supplies					
Sample bottles[3]		94		0	$0
Ascorbic acid / preservatives[3]				0	$0
Services					
Preparation of Level IV Data package, including QA narrative		47		$35	$1,645
Preparation of EDDs		47		$15	$705
Grand Total					**$77,550**

Notes:

1. Wastewater samples will include influent, partially treated effluent, fully treated effluent, recycled water, and reverse osmosis concentrate collected from 7 wastewater treatment plants. For influent samples, analyses will be run separately on solids and aqueous phases, but results will be reported as a single value.
    a. Task 1 will include 7 influent, 3 partially treated effluent, 14 fully treated effluent, 4 recycled water, and 1 reverse osmosis concentrate samples collected from 7 wastewater treatment plants. 1 influent and 1 fully treated effluent replicate and 1 influent and 1 fully treated effluent blank will also be collected.
    b. Task 2 will include 1 influent, 2 partially treated effluent, 1 fully treated effluent, and 1 reverse osmosis concentrate sample collected during each of one or two sampling rounds. 1 fully treated effluent replicate and 1 fully treated effluent blank will be collected during each sampling round.
2. The QA/QC tests to be performed are:
    a. For Task 1 and Task 2, the billable QA/QC samples will be the field duplicates and field blanks listed in note 1.
    b. Task 1 will include 2 laboratory method blanks and Task 2 will include 1 laboratory method blank per sampling round, at no additional cost.
    c. Task 1 will include 2 laboratory control samples and Task 2 will include 1 laboratory control sample per sampling round, at no additional cost.
    d. No matrix spikes, matrix spike duplicates, or certified reference material QC samples are required.
3. Sample bottles and ascorbic acid units will be provided as needed. The CONTRACTOR will coordinate with SFEI and the sampling agencies to prepare and ship supplies.
4. Compounds included in PPCP Lists 1, 3, 4 and 5 are listed in Table 1 below. Superscripts indicate analytes for which only estimates of concentration are available.

Table 1. Pharmaceutical Compounds in Lists 1, 3, 4 and 5 (EPA 1694, AXYS MLA-075)

List 1 – Acid Extraction in Positive Ionization	**List 3 – Acid Extraction in Negative Ionization**	**List 4 – Basic Extraction in Positive Ionization**	**List 5 – Acid Extraction in Positive Ionization**
Acetaminophen	Bisphenol A	Albuterol	Alprazolam
Azithromycin	Furosemide	Amphetamine	Amitriptyline
Caffeine	Gemfibrozil	Atenolol	Amlodipine
Carbadox	Glipizide	Atorvastatin	Benzoylecgonine
Carbamazapine	Glyburide	Cimetidine	Benztropine
Cefotaxime	Hydroclorothiazide	Clonidine	Betamethasone
Ciprofloxacin	2-hydroxy-ibuprofen	Codeine	Cocaine
Clarithromycin	Ibuprofen	Cotinine	DEET
Clinafloxacin	Naproxen	Enalapril	Desmethyldiltiazem
Cloxacillin [1]	Triclocarban	Hydrocodone	Diazepam
Dehydronifedipine	Triclosan	Metformin	Fluocinonide
Digoxigenin	Warfarin	Oxycodone	Fluticasone propionate
Digoxin		Ranitidine	Hydrocortisone
Diltiazem		Triamterene	10-hydroxy-amitriptyline
1,7-Dimethylxanthine			Meprobamate
Diphenhydramine			Methylprednisolone
Enrofloxacin			Metoprolol
Erythromycin-H20			Norfluoxetine
Flumequine			Norverapamil
Fluoxetine			Paroxetine
Lincomycin			Prednisolone
Lomefloxacin			Prednisone
Miconazole			Promethazine
Norfloxacin			Propoxyphene
Norgestimate			Propranolol
Ofloxacin			Sertraline
Ormetoprim			Simvastatin
Oxacillin [1]			Theophylline
Oxolinic acid			Trenbolone
Penicillin G [1]			Trenbolone acetate
Penicillin V			Valsartan
Roxithromycin			Verapamil
Sarafloxacin			
Sulfachloropyridazine			
Sulfadiazine			
Sulfadimethoxine	**List 1 (continued)**		
Sulfamerazine	Sulfathiazole		
Sulfamethazine	Thiabendazole		
Sulfamethizole	Trimethoprim		
Sulfamethoxazole	Tylosin		
Sulfanilamide	Virginiamycin		

BACWA EXECUTIVE BOARD ACTION REQUEST

AGENDA NO.: 4

FILE NO.: 17-20

MEETING DATE: August 19, 2016

TITLE: BACWA Representative for State Recycled Water Policy

☐**RECEIPT** ☐**DISCUSSION** ☐**RESOLUTION** ☒**APPROVAL**

RECOMMENDED ACTION

Confirm the appointment of Cheryl Munoz as BACWA Representative on the WateReuse Working Group for revising the State Recycled Water Policy.

SUMMARY

BACWA accomplishes much of it mission through the hard work and efforts of its volunteers. As the governing body of the BACWA organization, the Board demonstrates its support of the individuals who volunteer to lead committee activities or represent BACWA in a variety of local, regional, state and national initiatives by confirming the appointment of these individuals to their respective positions within the BACWA organization. Confirmation of this appointment will allow Cheryl Munoz to serve as the BACWA Representative on the WateReuse Working Group that will be participating in the SWRCB's effort to update and revise the State Recycled Water Policy.

FISCAL IMPACT

This action has no fiscal impact.

ALTERNATIVES

This action does not require consideration of alternatives.

Approved: _____ Date: _____

Laura Pagano, Chair
BACWA

Sherry Hull

From: Munoz, Cheryl <cmunoz@sfwater.org>
Sent: Tuesday, August 16, 2016 5:02 PM
To: Sherry Hull
Subject: FW: BACWA RW Committee Conference Call - Potential Updates to Recycled Water Policy
Attachments: SWRCB meeting update on RW policy

Follow Up Flag: Follow up
Flag Status: Flagged

FYI - Cheryl

Cheryl Muñoz
San Francisco Public Utilities Commission
Water Resources Division
Office: (415) 934-5711 | Fax: (415) 934-5770
cmunoz@sfwater.org

From: bacwa-recycled-water@googlegroups.com [mailto:bacwa-recycled-water@googlegroups.com] **On Behalf Of** Rhodora Biagtan
Sent: Monday, August 15, 2016 8:16 AM
To: 'bacwa-recycled-water@googlegroups.com'
Subject: FW: BACWA RW Committee Conference Call - Potential Updates to Recycled Water Policy

Hello BACWA Recycled Water Committee Members:

We will be hosting a conference call next week to discuss potential revisions to the Recycled Water Policy. If you would like to participate, the call-in information is as follows:

Date: August 18, 2016
Time: 2:00 pm – 3:00 pm
Phone Number: 888-273-3658
Participant Code: 970289

As a number of you are aware the new general recycled water order 2016-0068 DDW was adopted on 6/7/16. There were a few caveats: 1) Update the Recycled Water Policy and include updates in the new order; then 2) Convert all existing recycled water orders to the new order; 3) Include a stakeholder process. The Recycled Water Policy was adopted in 2009 and last updated in 2013. The 2013 update was made to include the 2010 Expert Panel report on CECs.

SWRCB staff are planning on bringing a resolution before their Board before the end of the year outlining the major issues they would like updated in the policy and indicating there will be a stakeholder process. In addition, staff plans to incorporate a statement of support for the continued development of Salt Nutrient Management Plans (SNMPs). They explained that during a SNMP forum, there was discussion that the Policy included a 2016 date for the completion of all SNMPs. The Board members wanted to reaffirm their support and the continued momentum for the development of SNMPs. This was the genesis of the decision to update the RW policy.

For your reference are links to the Recycled Water Policy and the adopted new general recycled water order 2016-0068 DDW:

BLOCKEDswrcb.ca.gov/water_issues/programs/water_recycling_policy/docs/rwp_revtoc.pdfBLOCKED

BLOCKEDwaterboards.ca.gov/board_decisions/adopted_orders/water_quality/2016/wqo2016_0068_ddw.pdfBLOCKED

As you know, Cheryl Munoz has been representing our BACWA group in these discussions and I greatly appreciate her volunteering for this effort. Please let me or Cheryl Munoz know if you have any questions or need additional information. Our contact information is listed below.

Regards,
Rhodora

Cheryl Muñoz
San Francisco Public Utilities Commission
Water Resources Division
Office: (415) 934-5711 | Fax: (415) 934-5770
cmunoz@sfwater.org

Rhodora N. Biagtan, PE
Principal Engineer-Supervisory
Dublin San Ramon Services District
7051 Dublin Blvd.
Dublin, CA 94582
(925) 875-2255
BIAGTAN@DSRSD.COM

Sherry Hull

From: Jennifer West <JWest@watereuse.org>
Sent: Tuesday, August 9, 2016 2:58 PM
To: Melanie Schumacher; Raymond Jay; Martha Davis; Christine Compton; Dunkin, Alicia; Roberta Larson; Ann Heil; Sharon Green; Sarah Rhodes; Munoz, Cheryl; Dobalian, Lesley; Toby Roy
Subject: SWRCB meeting update on RW policy

TO: WRCA Recycled Water Policy Working Group

Today Bobbi Larson and I met with Claire Waggoner, Laura McLellan and Shahal Farahnak on the update of the Recycled Water Policy. This was a scoping meeting to learn about timelines and issues they have identified thus far.

Before the end of the year they intend to bring a resolution to the Board outlining the major issues they would like updated in the policy and indicate that there will be a stakeholder process. In addition, they will incorporate a statement of support for the continued development of SNMPs. They explained that during a SNMP forum there was discussion that the policy included a 2016 date for the completion of all SNMPs. The Board members wanted to reaffirm their support and the continued momentum for the development of SNMPs. This was the genesis of the decision to update the RW policy.

Once they have cleared a draft of the resolution with Jonathan Bishop, they will give us an opportunity for early comments. The policy will be developed with stakeholders in 2017.

Items they indicated they may include in the resolution:

- Reaffirmation of SNMPs and possibly consequences for failure to prepare one.
- Some type of pass for low priority basins (Similar to a memo prepared some time ago by Dorothy Rice, former Ex Dir, of SWRCB)
- Examination of the RW goals and storm water goals. We discussed that these need to take into account conservation, environmental flows and graywater-onsite reuse.
- Role of DDW
- Inclusion of potable reuse (SWA and DPR)
- Promotion of ag reuse, including agronomic rates, since there is little in the policy now on this topic
- Potentially looking at priority pollutant monitoring

I told them if they made changes to the CEC language we would want that to be consistent with a new Blue Ribbon Panel report. They acknowledged this and said the report was intended to be updated every five years (2015). The resolution may include language asking that they reconvene the panel or they may decide not to address CECs. (I think it is likely that the Board will want to address CECs in some way.)

Please let me know if you have any questions and Bobbi please add on if I have missed something.

Jennifer West
Managing Director
WateReuse California
(916) 669-8401 main
(916) 496-1470 cell
Jwest@watereuse.org

@watereuseca

EXECUTIVE DIRECTOR AUTHORIZATION

AGENDA NO.: 5
FILE NO.: 17-19
MEETING DATE: August 19, 2016

TITLE: Executive Director Authorization for Agreement with Hunton & Williams for Analyses of Anti-Degradation.

ACTION

BACWA Executive Director authorization for an agreement with Hunton & Williams, in an amount not to exceed $5,000.00, to provide a white paper on anti-degradation for the period of August 15, 2016 – September 30, 2016, 2016.

SUMMARY

This Agreement covers professional services to be performed by Hunton & Williams to provide and assessment of the use of anti-degradation to support inclusion of nutrient load caps in the next watershed permit. The work will include describing potential rationales that could be used for load caps, citing regulatory and/or legal references and the strengths and weaknesses of each rationale. The intent is to provide an objective analysis which BACWA can use to assess future options once the next watershed permit is issues.

FISCAL IMPACT

This agreement will be funded by the BACWA FY17 Budget Line Item Tech Support/Additional Work Under Permit.

ALTERNATIVES

1. Do not complete this work. This is not recommended since Executive Board requested the work and it will provide important information regarding the next watershed permit
2. Select another consultant to conduct the work. This is not recommended since Hunton and Williams was selected following a request for qualifications from three firms. Two qualification statement were received and Hutton and Williams was judged to have the best expertise to complete the work.

Attachments:
1. Contract
2. Hunton and Williams Engagement Letter

Approved: David R. Williams Date: August 15, 2016

David R. Williams,
BACWA Executive Director

FILE # 17-19 Date: August 12, 2016

BAY AREA CLEAN WATER AGENCIES

CONSULTING AGREEMENT

TO: Samuel Brown
Hunton & Williams
575 Market Street, Suite 3700
San Francisco, CA 94105
slbrown@hunton.com
Phone: 415-975-3714

FROM: David Williams, Executive Director
BACWA
PO Box 24055, MS702
Oakland, CA 94623
dwilliams@bacwa.org
Phone: 925-765-9616
FAX: (510) 287-1351

RE: BACWA Agreement for FY17 with Hunton & Williams to provide a white paper on anti-degradation.

This Agreement covers professional services to be performed by Hunton & Williams in order to:

1. Prepare a white paper discussing the use of anti-degradation as a basis for load caps in the next nutrient watershed permit. Describe potential rationales that could be used citing regulatory and/or legal references and the strengths and weaknesses of each rationale. Provide an objective assessment of the likelihood of success if the load caps are challenged.
2. Meet with the BACWA Board to discuss the white paper.

The work under this contract will be carried out under the supervision of David R. Williams, Executive Director of BACWA. The total cost of professional services to be performed by Hunton & Williams is a flat fee of $5,000.00 This contract will be funded by the BACWA Budget under the Tech Support/Additional Work Under Permit line item.

This Agreement may be terminated by either party at any time for convenience with 30 days' notice. In the event of termination by BACWA, BACWA shall pay Hunton & Williams for professional and competent services rendered to the date of termination upon delivery of assigned work products to BACWA.

Hunton & Williams shall submit an invoice to the BACWA Assistant Executive Director via e-mail. Invoice will be paid within thirty (30) days of receipt.

Attachment: Hunton & Williams Engagement Letter

BACWA AED E-mail: Sherry Hull shulll@bacwa.org

Approved:

By David R. Williams
David R. Williams, P.E.
BACWA Executive Director

Date: August 15, 2016

EIN: 94-3389334

By
Samuel Brown
Hunton & Williams

Date: August 15, 2016

EIN/TIN: 54-0572269

HUNTON& WILLIAMS

HUNTON & WILLIAMS LLP
575 MARKET STREET, SUITE 3700
SAN FRANCISCO, CA 94105

TEL 415 • 975 • 3700
FAX 415 • 975 • 3777

SAMUEL L. BROWN
DIRECT DIAL: 415 • 975 • 3714
EMAIL: slbrown@hunton

August 15, 2016

PRIVILEGED AND CONFIDENTIAL
ATTORNEY-CLIENT COMMUNICATION

David Williams
Executive Director
BACWA
PO Box 24055, MS702
Oakland, CA 94623
(925) 765-9616
dwilliams@bacwa.org

Engagement of Hunton & Williams LLP

Dear Mr. Williams:

Hunton & Williams LLP thanks you for the opportunity to represent the Bay Area Clean Water Agencies ("BACWA"). This letter and the accompanying Standard Terms of Engagement will establish the terms of our representation of BACWA. If we fail to address any issues about which you have questions, please let us know. Good communication is critical to the success of our relationship and we want you to be happy with our services.

The Client

We will represent BACWA. You will be our primary contact, but you understand that we do not represent you individually, nor do we represent the members, subsidiaries, or affiliates of BACWA. If you want us to represent any other persons or entities in this or any future matters, please advise us and we will determine whether we can undertake that additional representation. If we agree to undertake the additional representation of another entity or person, we will confirm the additional representation in writing. Unless we expressly agree to undertake such additional representation, we may represent other clients adverse to persons or entities that may be affiliated with BACWA, including but not limited to litigation against such persons or entities.

Scope of Engagement

You have asked Hunton & Williams to represent BACWA to prepare a white paper discussing the use of anti-degradation under the Clean Water Act and Porter-Cologne Water Quality Control Act as a basis for load caps for nutrients in the next watershed permit. The white paper will describe potential rationales that could be used citing regulatory and/or legal references and the strengths and weaknesses of each rationale and provide an objective assessment of the likelihood of success, if the load caps are challenged. Representation will also include meeting with BACWA's Board of Directors to discuss the white paper. If this does not accurately reflect your understanding about the scope of the legal services we will provide, please let us know. We will perform all services normally and reasonably associated with this type of engagement that are consistent with our ethical and professional obligations. The terms of this letter will also cover any future work that we may mutually agree to undertake, unless governed by another writing signed by Hunton & Williams.

Staffing, Fees, and Billing Arrangements

I will coordinate the legal services for this representation. I will call upon other partners, associates, paralegals and employees, as necessary, to assist me. The total cost of representation is a fixed fee of $5,000.00. Any additional work and associated fees must be agreed to in writing. I will coordinate closely with BACWA to monitor the costs and fees incurred I this matter to accomplish the tasks outlined above. We will bill you for fees and expenses on a monthly basis. Our bills will be due and payable upon receipt.

Conflicts of Interest

The Firm currently represents the Waters Advocacy Coalition ("WAC") and the Utility Water Act Group ("UWAG") with respect to Clean Water Act ("CWA") policy matters. The interests of the WAC and the UWAG members currently align with the interests of BACWA members, and therefore we believe that the scope of work for BACWA presents no conflict of interest relative to our scope of work for WAC and UWAG, and vice versa. Please let me know if you disagree.

In addition, we depend on you to help us identify, now and as the representation progresses, persons, or entities that may be in a position directly adverse to BACWA's interests in this representation. We will also alert you should we learn of a potential conflict. We know of no

other interests, including our own, that will materially and adversely affect our ability to exercise independent professional judgment on your behalf.

Future Conflicts

From time to time the Firm may be asked to represent someone whose interests differ from the interests of BACWA. We are accepting this engagement with the mutual understanding that our representation of BACWA will not preclude my Firm from accepting an engagement from a new or existing client, including litigation or other matters that involve, and may be adverse to BACWA. However, we will not accept an engagement that is directly adverse to BACWA if the matter is substantially related to the subject matter of the Firm's representation of it or would impair the confidentiality of proprietary, sensitive or otherwise confidential information communications made to us by it. It is understood that firm attorneys representing BACWA will not represent other clients adverse to it while it is an active client of the Firm. Please indicate your agreement to this understanding by signing this letter below.

Permission to List BACWA As Client of Hunton & Williams

We take pride in the clients that have selected us to represent them. Unless you direct otherwise, you agree that we may list BACWA as a client of the firm at our discretion in marketing, business development or public relations materials. We will not disclose your confidential information.

Communications

Unless you tell us otherwise, we will send all correspondence and statements for services related to this representation to BACWA. We will depend on you to let us know if BACWA is not receiving information or responses in a timely manner. We understand unless advised otherwise that we may communicate concerning this matter by fax, cell phone, e-mail, or letter. As additional protection for e-mail communications, the firm can work with you to encrypt e-mail messages using TLS/SSL and/or opportunistic TLS protocols. If you wish to pursue this option, please let us know in writing.

Privilege Applicable to Internal Legal Consultation

BACWA acknowledges that communications between Firm attorneys and its internal or outside legal counsel for the purpose of obtaining or receiving legal advice are confidential

pursuant to the attorney-client privilege. This means that should Firm lawyers consult with in-house or outside counsel about matters pertaining to our representation of BACWA, BACWA agrees that such consultations are confidential attorney-client privileged communications between Firm lawyers and their in-house or outside counsel and, accordingly, such communications will not be disclosed to BACWA.

Complete Terms of Engagement

This letter and the attached Standard Terms of Engagement constitute the entire terms of our engagement. They may not be amended except in writing. Unless we agree otherwise, our representation of BACWA on this matter will end upon our sending a final statement for fees and services in this matter.

We appreciate the opportunity to represent BACWA.

Sincerely,

Samuel L. Brown
Senior Attorney

STATEMENT TO BE SIGNED BY BAY AREA CLEAN WATER AGENCIES

I have read this letter and Hunton & Williams LLP Standard Terms of Engagement. I understand their content. I am authorized to engage Hunton & Williams LLP in accordance with the terms and conditions described above on behalf of BACWA, which includes consent to identify BACWA as a client of Hunton & Williams.

Agreed:

Bay Area Clean Water Agencies

By: David R. Williams

Title: Executive Director

Date: August 15, 2016

Enclosures:
Hunton & Williams "Standard Terms of Engagement"

HUNTON & WILLIAMS LLP
STANDARD TERMS OF ENGAGEMENT

FEES. Unless we agree in the engagement letter to alternate fee arrangements, we will bill for our services at the firm's applicable published hourly rates in effect at the time we render the services. Those rates are based on the fair value for the services we render after taking into consideration many factors, including but not limited to: the complexity or novelty of the work performed; the seniority, experience, practice area and location of the lawyers, paralegals or law clerks performing the work; the time period within which the work is required to be completed; the likelihood that the engagement will preclude our acceptance of other employment; the number of hours required to perform the work; the nature and length of our professional relationship with the client; the results obtained; and the fees charged for similar services in the relevant geographic or subject matter market. We have established hourly rates (using the foregoing factors) for lawyers, paralegals, law clerks, and other staff timekeepers. We adjust those base rates periodically, in light of the factors enumerated above, as well as cost of living and market considerations.

BILLS AND STATEMENTS. Unless other arrangements are made, we render monthly bills for fees, expenses and charges. We typically prepare bills for each legal matter we handle. We may also send a monthly statement of account, which details any unpaid bills.

PAYMENT. Our bills are due and payable upon receipt. Failure to pay bills promptly may result in temporary or permanent cessation of service. Payment of bills should be made in U.S. dollars or other agreed upon foreign currency, by wire transfer or in checks or drafts payable to Hunton & Williams LLP. Please note the date and identification number of the bill being paid, and return the remittance copy of our bill with your payment.

If our bills are not paid within 30 days of the invoice date the client agrees to pay an interest charge on outstanding balances at an interest rate of one and one-half percent (1.5%) per month, or the maximum interest rate allowed by law, whichever is less, from the date due until paid. The client agrees to pay such interest on the outstanding balance in addition to the balance of fees and expenses due.

In the event the client fails to pay when due all amounts owed us, we will have the right to retain settlement proceeds received on behalf of client or recover the outstanding balance of fees and expenses and interest, as provided above, and all attorneys' fees incurred to collect these amounts. Such attorneys' fees will include payment for the time and expenses of any firm lawyers incurred in collection effort as well as fees and expenses of any outside counsel hired to collect the amounts due.

RESPONSES TO AUDITORS' INQUIRIES. We are frequently asked to provide information to auditing firms regarding legal matters of our clients. We respond to those inquiries with the same level of care and professionalism that we use to handle the client's other legal work and will charge for these services at the same rates. When an auditing firm requests information on the client's behalf, that request will be deemed to be the client's consent for us to disclose that information to that firm.

DISBURSEMENTS AND CHARGES. In addition to payment of our fees, the client agrees to pay expenses incurred by us in connection with the representation. Such expenses may include long distance telephone calls, photocopying charges, travel expenses, couriers, filing fees, costs of subpoenas and depositions, and other costs and expenses advanced on our client's behalf. We manage our own telephone network, printing and document duplication services. We generally use our in-house printing and document duplicating services rather than third party services, due to timing and confidentiality concerns, unless the client requests otherwise. We set our charges for these services based upon our fully burdened cost of providing them to the client.

Before proceeding to incur expenses from an outside vendor in excess of $1,500 we will seek your approval. We do not intend to make any profit on such expenses and we will pass them on to you based as closely on our costs as possible. We may, however, receive certain benefits from having incurred certain costs, such as benefits accorded in connection with travel expenditures (i.e., frequent flyer points). Those benefits will be retained by the firm or the individual to whom they were awarded without credit to the client.

In certain instances, we may employ the services of affiliated entities on behalf of our clients. Cognicion LLC is a wholly-owned subsidiary of Hunton & Williams LLP. The work performed by Cognicion LLC on behalf of the firm's clients is billed at competitive rates that may not reflect our cost. When engaged, Cognicion LLC services will be appear as a disbursement on client bills. The same apples to services rendered by other entities affiliated with Hunton & Williams such as Turnstone Investigative Services.

TRAVEL. We generally record the time spent traveling while performing work in furtherance of the client's engagement. Time spent in travel on behalf of one client while working on a matter for another client, will be billed to the other client; we do not double-bill time. We book air travel at coach rates unless otherwise previously approved by the client or unless the air travel is transoceanic or overnight, in which case we generally book business or comparable class. Bookings for travel arrangements are generally made through an in-house travel service and the expenses charged to the client for travel include a transaction fee for each booking. Discounts applicable to particular travel purchases may be available through use of this in-house travel service and we pass them on to the client in our charges.

TERMS OF ENGAGEMENT. The client or Hunton & Williams may terminate the representation for any reason by written notice, subject on our part to applicable rules of professional conduct. In the event we terminate the engagement, we will take such steps as are reasonably practicable to protect the client's interests in this matter and, if the client so requests, we will suggest possible successor counsel and provide such counsel with material the client has provided us.

Upon the termination of our engagement, the client will pay within 30 days for all services rendered and disbursements and other charges paid or incurred in connection with our engagement. If the client terminates our engagement or if Hunton & Williams terminates the engagement in accordance with the following paragraph, the client will also pay our fees and expenses in connection with any transition of the client's work to successor counsel.

If the client fails to honor the terms of the engagement, to cooperate, or to follow our advice on a material matter that would or could, in our view, render our continued representation unlawful or unethical, Hunton & Williams may withdraw from the representation. If we elect to withdraw, the client will take all steps necessary to free us of any obligation to perform further services, including the execution of any documents or pleadings necessary to complete our withdrawal.

Unless previously terminated or other arrangements are made, Hunton & Williams' representation will terminate upon our sending the client our final invoice for services rendered. Unless we agree otherwise, we will have no continuing obligation to advise the client with respect to future legal developments once this matter concludes.

RECORD RETENTION. We will maintain necessary documents relating to this matter in our client files. If we receive no guidance from the client, we will employ the following procedure when a matter concludes:

1. Upon closure of the matter, any original documents that the client has provided to us will be returned.

2. Upon expiration of our normal retention period for this kind of matter, we will notify the client by mail at the client's last known address that the retention period has run, and seek the client's guidance on disposition of the file.

3. If we receive a response from the client within 2 months, we will follow the client's instructions for disposition of the file. If those instructions require substantial handling of the file, or continued retention of it, we will charge our normal fees for such procedures.

4. If we do not receive a response from the client within 2 months, the file will be destroyed pursuant to our normal procedure.

At the conclusion of a matter, it is the client's obligation to tell us which, if any, documents in our files that it wishes to receive. Electronic records relating to this matter will be made available to the client, if requested, and to the extent they are still easily accessible.

Tentative schedule for delivery of draft Facility reports to agencies, 2016

Wave 1 May 2016 (Complete)	Wave 2 Late August	Wave 3 Early October	Wave 4 Unscheduled
CCCSD	City of Palo Alto	SFPUC Southeast Plant	City of Millbrae
City American Canyon	City of San Jose	City of Petaluma	City of Richmond
City of Benicia	EBMUD	City of Sunnyvale	City of San Leandro
City of Burlingame	FSSD	CMSA	Pinole/ Hercules
City of Livermore	Mt. View Sanitary District	Union San	Sausalito/Marin City Sanitary
Delta Diablo	Novato Sanitary District	LGVSD	SASM
DSRSD	Treasure Island	Napa Sanitation District	Silicon Valley Clean Water
City of Hayward	Vallejo	Rodeo	Sonoma County Water Agency
Oro Loma		SF Airport	West County Wastewater District
		San Mateo	
		South San Francisco	

Scenario Planning of Nutrient Management Strategies for San Francisco Bay: Background and Proposed Approach

August 2016 // Prepared for BACWA's August 19, 2016 Board Meeting

WHERE ARE WE GOING? – THE CASE FOR SCENARIO PLANNING

The Bay Area Clean Water Agencies (BACWA) recognize the need for advanced planning to address likely nutrient reduction standards. This reflects recognition in the wastewater industry that more stringent nutrient standards are generally the rule, rather than the exception, consistent with trends seen across the nation and internationally. In the Bay Area, population growth and economic expansion will increase nutrient loads to the point where treatment is inevitable. Regional planners expect a 30% increase in Bay Area population between 2010 and 2040. Assuming nutrient loading tracks population growth, a 30% increase in nitrogen load would override much of the improvements seen in the late 1990s, when biological nutrient removal was introduced at the San José-Santa Clara Regional Wastewater Facility.

At the same time, the region is expected to increase water recycling rates to meet local needs, as well as statewide mandates. Compared to Central and Southern California, wastewater recycling in the Bay Area is lagging – facing increased pressure to make major contributions toward statewide objectives. As of 2009, when the last comprehensive statewide recycling survey was conducted, the Bay Area generated only 6% of the state's recycled water, despite representing 16% of the state population (Fig. 1).

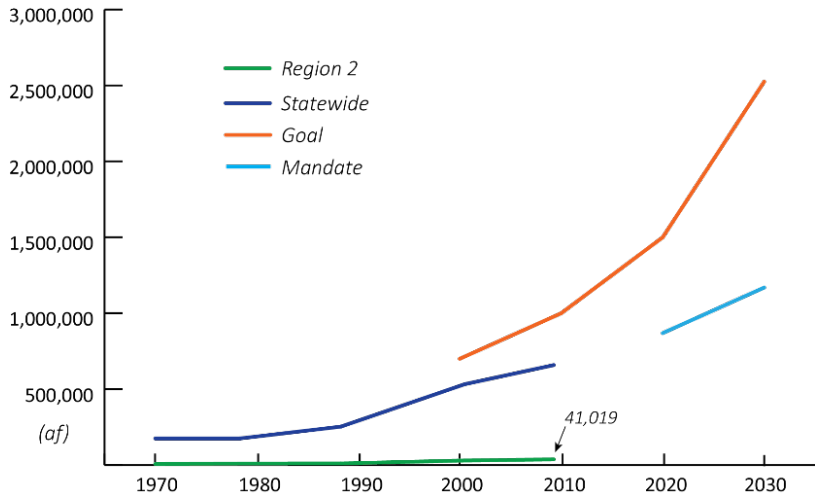


Figure 1. Wastewater recycling rates, as of 2009, and CA Recycled Water Policy goals and objectives for wastewater recycling

With increasing population and rates of water recycling, wastewater will become more concentrated with nutrients and other pollutants and pressure will increase for disposal and resource recovery options for RO concentrate. Understanding the effects of this more concentrated nutrient load on the Bay creates a nexus between the nutrient management and recycled water management decisions. Research and planning processes for these two major drivers should be coordinated to optimize resources.

The need to optimize available time and money extends to all other environmental regulations and sustainability objectives for BACWA agencies. The range of expectations and mandates placed on the wastewater community is continually expanding beyond the core mission of providing wastewater treatment (Fig. 2). Several existing or upcoming requirements will place greater expectations of the CA wastewater industry, related to air quality (i.e. AB 32 and EPA PSD and Title V permitting rules for GHGs), energy (SB 1122 - bioenergy projects and AB 1900 - pipeline biomethane), solids (AB 341 - waste diversion) and water recycling (CA Recycled water policy and SB 163 – recycling bill under consideration).

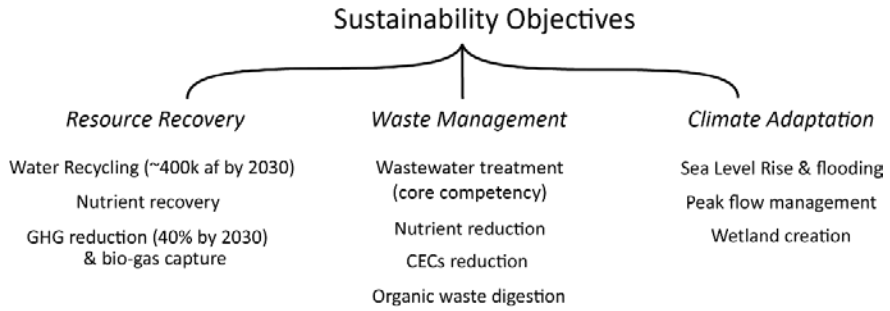


Figure 2. Some of the sustainability objectives expected or required of Bay Area wastewater facilities

The costs associated with implementing all goals, mandates and requirements clearly outnumber existing resources, so integrated assessments for maximizing the adoption of multi-benefit projects is paramount. The goal of multi-benefit strategies is to achieve nutrient reductions simultaneous with other ancillary benefits, including resource recovery (i.e. nutrients, energy and water), habitat enhancement, and climate resiliency. Nutrient removal processes can be designed to achieve multiple resource recovery goals, and perhaps even achieve cost reductions when whole-life costs are taken into account.

The realities of operating publicly-owned facilities, however, do not easily lend themselves to implementing non-regulatory initiatives, regardless of the real or perceived benefits. To make a business case to board members and rate payers, managers must have a quantitative assessment of multi-benefit scenarios to show that more comprehensive resource recovery efforts are less expensive and more sustainable in the long-run. Scenario planning is the tool for providing this type of information.

SCENARIO PLANNING – HOW WOULD IT WORK?

Scenario planning is a systematic method for thinking creatively about possible complex and uncertain futures. The central tenet of scenario planning is to consider a variety of possible futures that include many of the important uncertainties in the system, rather than to focus on the accurate prediction of a single outcome.[1] Since the uncertainties associated with nutrient management in SF Bay are numerous and hardly restricted to the scientific questions, scenario planning offers hope that critical drivers will be considered under a range of disparate yet plausible scenarios.

The range of complex and uncertain forces associated with nutrient management (including ecosystem effects, stakeholder dynamics, and other water resource management priorities) demands a measured approach, aimed at thoughtfully soliciting stakeholder feedback and generating a combination of possible futures. This process

[1] Peterson, G.D.; Cumming, G.S.; Carpenter, S.R. 2003. *Scenario Planning: A tool for conservation in an uncertain world*. Conserv. Biol., 17, 358–366.

provides flexibility in planning, by offering a range of options with various degrees of similarity and overlapping common elements. Scenario planning also serves as a productive means for maintaining engagement among stakeholders, identifying areas of agreement among highly complex and historically divisive problems, and for prioritizing amongst diverse uncertainties.[2]

Attached is a proposed outline for the scenario planning report, serving to introduce not only a report structure, but also a scenario planning-based approach, informed by other scenario planning processes for the water industry and beyond. We intend for this scenario planning approach to serve as a vehicle for meaningfully gathering stakeholder input, early identification of both potential opportunities and challenges, and revealing fundamental information or data gaps that must be addressed over the next several years.

In the fall of 2016 we intend to conduct interviews with a number of stakeholders to establish priorities, driving forces, opportunities, and constraints. In November 2016 we will hold a workshop to conduct targeted scenario planning efforts. By the end of January 2017, we will prepare a draft report with an analysis of four scenarios. Finally, the desired outcome by April 2017 is to generate a Level 1 analysis for up to four distinct scenarios and identify the critical needs for further analysis. The Level 1 analysis will make use of available modeling tools, potential regulatory decisions and Assessment Framework outcomes, and literature reviews of treatment performance for resource recovery methods and non-traditional treatment techniques not considered by HDR. Key outputs from this effort will be a general assessment of four potential scenarios and a multi-year work plan for more detailed analyses of scenarios and implementation options.

The next phase of analysis (to be completed in FY18) will involve more detailed incorporation of the quantitative results from HDR's optimization and upgrade analyses, use of hydrodynamic modeling to assess nutrient contributions and potential water quality trading options, analysis of scenarios and alternatives in light of the final Nutrient Assessment Framework for SF Bay, and integrated assessments of all future and potential environmental and sustainability requirements (i.e. nutrients, energy, biosolids, air quality). Rather than merely compiling the known implementation alternatives, the intent is to establish a strategy for planning in the event nutrient load reductions are necessary, taking into account the myriad other forces influencing urban water management in 21st century California.

QUESTIONS FOR THE BACWA BOARD:

1. Do you support the scenario planning approach for the purposes of multi-benefit alternatives analysis?

2. If so, please review the strawman scenario snapshots presented in Section 3 of the following outline and consider whether others should be considered for detailed analysis. We hope to identify a maximum of four (4) scenario snapshots for close investigation based on BACWA feedback on August 19.

3. Proposals for the IRWMP Planning Grant Solicitation are due by September 23, 2016. IRWMP could be a good match for external funding of up to approximately $125k, but would require a 1:1 match. Matching funds may be provided through the NMS, though this would erode funds available for scientific activities. Additionally, BACWA members may wish to contribute personnel time or additional funding to facilitate the match requirement. Should we submit a proposal?

[2] Scott, C.A., et al. 2012. *Scenario planning to address critical uncertainties for robust and resilient water–wastewater infrastructures under conditions of water scarcity and rapid development*. Water 4 (4), 848-868

1. INTRODUCTION

a. Current state of nutrient management for San Francisco Bay

b. Challenges to scenario planning for nutrient load reduction in the Bay Area (*summary of challenges for identifying the focal issue - in-depth discussion of challenges to follow*)

   i. Nutrient load reduction is the focal issue (*but there are others*)

   ii. Determining the appropriate planning scope (*e.g. treatment-only vs. IRWM*)

   iii. Stakeholder- and science-driven uncertainty

c. Research objectives

   i. Identify key forces

   ii. Prioritize amongst diverse uncertainties

   iii. Bring stakeholders into agreement over complex and potentially divisive issues

   iv. Produce conceptual infrastructure results under scenarios that reflect what stakeholders believe are the critical uncertainties for nutrient management, as well as sustainable urban water management.

d. Research assumptions (*i.e. point-source reduction priority, NMS-driven, stakeholder extent - who is in and who is out?*)

e. Organization of this report

2. SCENARIO DEVELOPMENT (*process for developing stakeholder-led scenarios*)

a. Scenario planning background

   i. Traditional scenario planning approaches (*brief lit review*)

   ii. Criteria for good scenarios (*brief lit review*)

   iii. Examples of scenario planning efforts in the water sector (*brief lit review*)

b. Development of driving forces and critical uncertainties (*description of approach*)

   i. Stakeholder interviews (*individual NMS stakeholders*)

   ii. Stakeholder workshops (*NMS meetings and special workshop/charrette in the Nov. 2016 time frame*)

iii. Stakeholder surveys (*web-form*)

c. Scenario selection logic

i. Classification of driving forces (*the range of factors motivating change with brief analysis of each*)

1. ***Nutrient-based forces*** (e.g. harm to beneficial uses, nutrient load caps, approach to determining impairment & implementing the AF, uncertainty and factors controlling future loading)

2. ***Other pollution-based forces*** (e.g. CECs, microplastics, pesticides)

3. ***Regulatory-based forces*** (e.g. CWA, Porter-Cologne, Antidegradation Policy, water quality trading, scope of permittees subject to regulation)

4. ***Drinking water demand-based forces*** (e.g. population increase, regional economy, variability in demand portfolio)

5. ***Drinking water supply-based forces*** (e.g. existing supplies, potential supplies)

6. ***Cost-based forces*** (e.g. treatment cost, water reclamation cost, potable costs, funding alternatives, available pricing structures)

7. ***Perception-based forces*** (e.g. value of water quality, potable reuse perceptions, resistance to change/regulatory mandates)

8. ***Engineering-based forces*** (e.g. concentrate management, recharge ability, recycled water supply distribution)

9. ***Institution-based forces*** (e.g. regionalization vs. localization, silo-ization of various water agencies, sharing financial/technical resources, governance, uncertainty of stakeholder-driven decision making)

10. ***Macro-forces*** (e.g. federal/state funding, bond ratings, long-term population, drought, climate change)

ii. Ranking of driving forces (*stakeholder-led priorities for consideration*)

3. SCENARIO SNAPSHOTS *(brief narratives to frame potential futures of nutrient management in the Bay Area)*

Nine (9) straw-man scenarios for consideration are identified below, though other scenarios may be developed through interviews with stakeholders, who will then select up to four (4) for in-depth consideration.

To the extent possible, future scenarios shall be examined at several intervals (e.g. 2030, 2050, 2170), using existing information, present-day loading rates, and knowledge of available treatment alternatives.

Response-Driven Scenarios:

i. ***Keep on Truckin':*** Regulators have not imposed load caps or required any changes in treatment processes. Nutrient loads increase according to population and other socio-economic factors. Acute degradation has not been observed, while monitoring is on-going to track signs of rapid degradation.

ii. ***Slam on the Brakes:*** Regulators pursue Scenario i, though in fall 2023 large phytoplankton blooms in Central and Lower South Bay appear, accompanied by severe HAB-related shellfish toxicity in Richardson Bay and widespread DO-driven fish kills in Lower South Bay.

iii. ***No-Response Response:*** In 2025 signs of moderate Bay-wide degradation has been observed for several years though uncertainty and indecision among stakeholders has failed to result in actionable decisions or regulations. Shortly thereafter, action by US EPA and/or citizen groups requires a 60% reduction in TIN loading by 2030.

Regulatory-Driven Scenarios:

iv. ***Across the Board Treatment***: In 2020, nutrient loading from all sources has been capped for all applicable NPDES permit holders at 2015 levels. Mandated load reductions are obtained from each individual NPDES permit holders through plant optimization and treatment only.

v. ***Share the Load: Treatment Only***: Nutrient loads capped per Scenario iv. Load reductions are attained at the sub-embayment scale, using plant optimization and treatment approaches only, among applicable dischargers. Funding and implementation is facilitated through nutrient trading approaches and/or other collaborative governance structures.

vi. ***Share the Load by Any Means Necessary***: Loads capped per Scenarios iv and v. Load reductions attained at the sub-embayment scale, using a range of alternatives, including plant optimization and treatment, wastewater recycling, green infrastructure, on-site waste management. Funding and implementation is facilitated through nutrient trading approaches and/or other collaborative governance structures.

Water Supply/Demand-Driven Scenarios:

vii. **Desperate Times, Desperate Measures:** Although California has experienced some years of average precipitation, by 2022 the state has suffered through ten years of chronic drought and is considering a mixture of mandated and voluntary fixes amounting to wholesale water rights reform and truly integrated water management for achievement of multiple benefits.

viii. **Reduced-Discharge:** In 2018 the state legislature passes SB-163, as currently drafted, requiring gradual reduction in discharge of treated wastewater. By 2033, all POTWs must beneficially reuse, to the maximum extent practicable, 50% of treated wastewater otherwise intended for discharge through ocean or bay outfalls.

ix. **No-Discharge:** In 2018 the legislature passes the original draft of SB-163, requiring gradual elimination in discharge of treated wastewater. By 2036, all POTWs must beneficially reuse 100% of treated wastewater otherwise intended for discharge through ocean or bay outfalls.

4. AVAILABLE OPTIONS (*options available to enable scenario realization*)

a. **Point-source nutrient reduction -** (*each to include summary, opportunities and constraints, treatment performance estimates, high-level cost estimates, necessary evaluations*)

   i. Nutrient Removal Technologies (synthesis of HDR analysis)

   ii. Wastewater Recycling (i.e. IPR, DPR, agricultural use)

   iii. Green Infrastructure (i.e. treatment wetlands, horizontal levee)

   iv. On-site Waste Management

   v. Others

b. **Non-point source nutrient reduction**

   i. Agriculture (i.e. runoff management, nutrient management plans)

   ii. Stormwater (i.e. recharge and infiltration, green infrastructure)

c. **Institutional/Governance strategies**

   i. Nutrient Trading

   ii. Recycled water policies

   iii. Enhanced regionalization of POTW management/financing/technology

5. SCENARIO DETAILS (*data-driven analysis of future scenarios*)

For each considered scenario, examine the following

a. Assumptions

b. Regulatory considerations

c. Technology-based options (integration of technological options suitable for this scenario)

d. Institutional strategies (integration of institutional strategies suitable for this scenario)

e. Governance changes (integration of governance changes suitable for this scenario)

f. Anticipated nutrient load reductions/ambient concentrations

g. Ancillary benefits (sustainability metrics, e.g. habitat, carbon, urban amenities)

h. Precedent for implementation (national or international examples/case studies)

   i. Driving forces

   ii. Implementation plan (how did they do it)

   iii. What was the result?

iv. Factors of success/failure & lessons learned

i. Capital costs

j. On-going costs

6. OUTCOMES AND CONCLUSIONS

Knowledge gaps and recommendations - Main conclusions and future work plan

7. NEXT STEPS

a. Examination of significant barriers to innovation and implementation (FY17-18)

i. Prepare opportunities/constraints analysis in consultation with experts

ii. Consider jurisdictional, regulatory and governance fragmentation

iii. Examine models for change (e.g. Massachusetts Water innovation Initiative)

iv. Detailed review of available funding mechanisms

b. Convene experts with experience in regional nutrient management plan implementation and wastewater innovation for multiple benefits (FY18-19)

c. Prioritize fundraising for implementation planning (FY18-19)

d. Consult experts on appropriate financing/governance models (FY18-19)

e. Develop proposals in consultation with stakeholders on alternative governance/institutional arrangements, where applicable (FY19-20)

8. APPENDICES

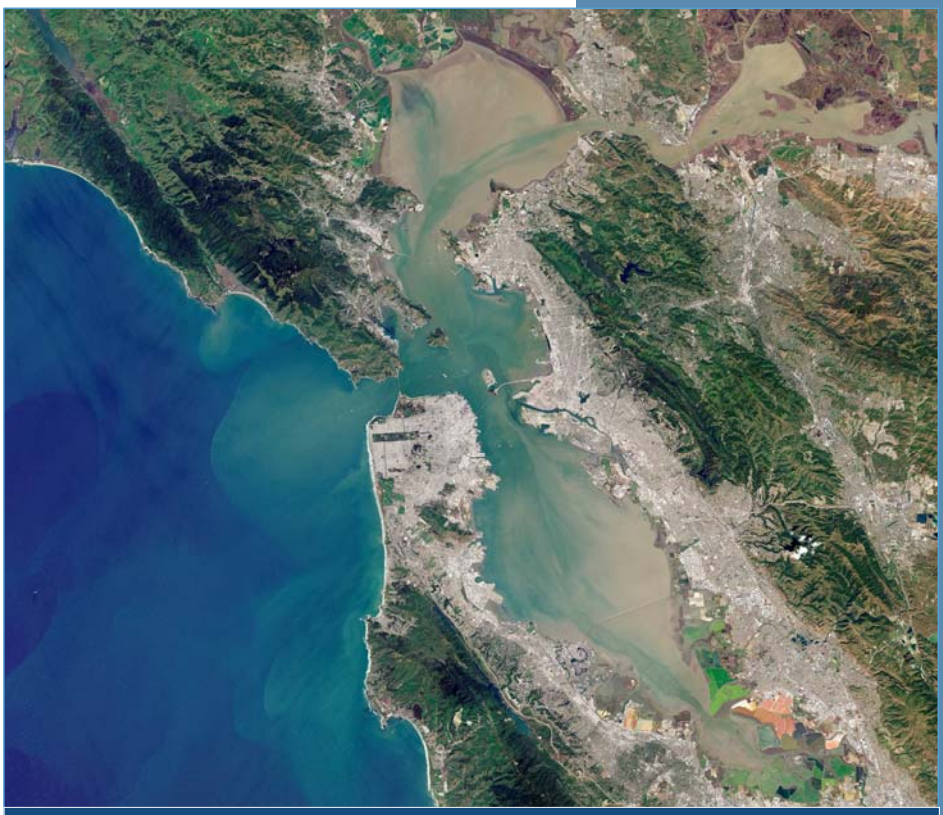
a. Acknowledgements

b. List of Acronyms

c. References

d. HDR Treatment Report (if available)

a. Technical Appendices, e.g., detailed analysis of credit trading options



Review of:
Scientific Basis to Assess the Effects of Nutrients on San Francisco Bay Beneficial Uses

Prepared for:
BACWA

Draft report submitted:
~~**July 21**~~**August 16, 2016**

LimnoTech
Water Environment | Scientists Engineers

Cover image: Landsat 8 Operational Land Imager (OLI) satellite image of the San Francisco Bay region acquired April 16, 2013 during initial satellite testing approximately two months after launch.

Credit: created by Jesse Allen and Robert Simmon of NASA Earth Observatory, using data provided by the U.S. Geological Survey and NASA.

LimnoTech
Water Environment | Scientists Engineers

Review of:

Scientific Basis to Assess the Effects of Nutrients on San Francisco Bay Beneficial Uses

Prepared for:

BACWA

Under Contract to:

BACWA

Draft date:

~~July 21~~August 16, 2016

Prepared at:

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El Segundo, CA and
Ann Arbor, MI

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Table of Contents

1
Executive Summary

This review of the draft *Scientific Basis to Assess the Effects of Nutrients on San Francisco Bay Beneficial Uses*, referred to hereafter as the *Assessment Framework*, is intended to highlight strengths of the document and provide comments on potential areas for improvement. The reviewers recognize the substantial expertise and effort represented by the authors of the document, and its value as a contribution to the larger San Francisco Bay Nutrient Management Strategy.

Particular strengths of the *Assessment Framework* include the overall ~~motivation and~~ goals of the effort, the conceptual approach to realizing those goals, and the clear consideration of practicality in determining the implementation of the recommended characterization. In addition, the effort represents a valuable synthesis of the current scientific understanding of nutrient-driven processes in San Francisco Bay in the context of related processes operating in other estuaries. It is an important step in advancing the Nutrient Management Strategy.

Areas for improvement of the document, many of which are acknowledged as remaining areas for refinement by the *Assessment Framework*'s authors, include: water and nutrient budgets; the role of numerical modeling; data analysis and the statistical basis for indicator thresholds; spatial and temporal resolution; linkage to beneficial uses; and consideration of other analogous estuaries and coastal systems.

Some of these suggestions will likely be addressed through companion efforts in nutrient monitoring, modeling, research, and management programs, but there is value in stating them at this early stage in the development and implementation of the planned "test drive" of the *Assessment Framework* so that they may have a greater likelihood of contributing to its eventual success.

2 Introduction

The *Assessment Framework* provides the scientific background for a program of ecological characterization of the health of San Francisco Bay's subembayments using a small set of indicators, with a special emphasis on the concentration of the phytoplankton pigment chlorophyll-*a* as a proxy for a larger set of conditions. The authors of the *Assessment Framework* propose that it be used in a "test drive" fashion to determine whether it can serve as a useful approach for determining the actual or potential impact of nutrients on beneficial uses in the bay. In this report we present an assessment of important strengths and areas for improvement in the proposed approach.

2.1 Existing planning documents for Nutrient Management Strategy development

The *Assessment Framework* was developed within the context of the larger Nutrient Management Strategy (NMS) for San Francisco Bay (Figure 1), which includes research, monitoring, modeling, and management components. Important recent documents that describe essential parts of the NMS include the following:

- Numeric Nutrient Endpoint Development for San Francisco Bay Estuary: Literature Review and Data Gaps Analysis (June 2011)
- San Francisco Bay Nutrient Management Strategy (November 2012)
- External Nutrient Loads to San Francisco Bay: Assessing the Flux of Nutrients from Ocean to Bay (December 2013 draft)
- External Nutrient Loads to San Francisco Bay (January 2014)
- Model Development Plan to Support Nutrient Management Decisions in San Francisco Bay (January 2014)
- Development Plan for the San Francisco Bay Nutrient Monitoring Program (August 2014)
- Scientific Foundation for the San Francisco Bay Nutrient Management Strategy (October 2014)
- San Francisco Bay Nutrient Management Strategy Detailed Modeling Workplan for FY15-FY21 (December 2014)
- Regional Monitoring Program for Water Quality in San Francisco Bay, Multi-Year Plan, Annual Update (January 2016)
- San Francisco Bay Nutrient Management Strategy Science Plan, and Peer Review Report (both March 2016)

Many of these documents were written by authors from the San Francisco Estuary Institute (SFEI), sometimes on behalf of larger groups of advisors and contributors, including regional and national

representatives from the academic and agency research communities, as well as by consultants and technical representatives of groups such as BACWA, the Southern California Coastal Water Research Project (SCCWRP), and the San Francisco Bay Regional Water Quality Control Board (SFRWQCB).

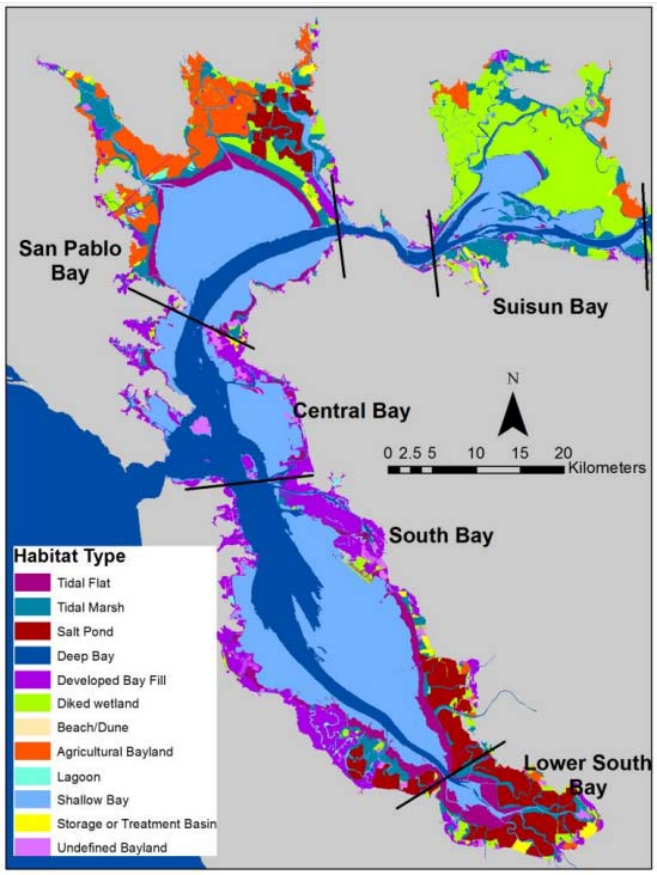

Figure 1. From: SFEI (2014). Development Plan for the San Francisco Bay Nutrient Monitoring Program. Contribution No. 724, San Francisco Estuary Institute, Richmond, CA (Fig. 5.1).

2.2 Peer-reviewed research

The *Assessment Framework* includes a comprehensive set of 73 references, approximately half of which describe research results from the primary literature of peer-reviewed journal articles. The remainder include technical reports, regional and topical reviews, agency publications, books or book chapters, methods papers, and non-journal publications of professional societies. The references are generally current, appropriate, and comprehensive, and reflect the disciplinary expertise of the *Assessment Framework* authors, including many of their own publications. Several of the most important references, as well as several other papers that were not cited in the *Assessment Framework*, are described briefly here as preparation for the discussion that follows.

2.2.1 Currently cited in *Assessment Framework* as scientific foundation

The authors refer to several documents that describe related assessment efforts in other similar systems, many of which are highly relevant to the development of an effective approach for San Francisco Bay. Complete citations to those references appear in Section 5, "Literature Cited", of the *Assessment Framework* document. Bricker et al. (2003) described a method for assessing the trophic status of estuaries, based on work done to compile the National Estuarine Eutrophication Assessment (1999) and subsequent international efforts. Sutula (2011) reviewed related efforts to use indicators to develop nutrient numeric endpoints, with intended application to California estuaries, and Harding et al. (2013 online, 2014 in print) described a similar effort that was specific to the use of chlorophyll as an indicator in Chesapeake Bay.

Publications by Cloern et al. (1996, 2005[a], ~~2005b~~, 2007, 2012, 2014[a]; Cole and Cloern, 1984; Cloern and Dufford, 2005; and in Conomos [ed.], 1979) highlight aspects of the USGS monitoring effort in San Francisco Bay that has been in place since 1969. This program documented major red tide events in 2004 and 2010, a food web shift triggered by invasive clams in the late 1980s, and a 15-year change in bay conditions resulting from a persistent ocean climate, and upwelling shift from 1999 through 2014 that followed the strong 1998 El Niño (see also Kimmerer and Thompson, 2014).

Cited papers on harmful algal blooms and their toxins included work by Lehman et al. (four total: 2003, 2005, 2008, 2013; *Microcystis* focus), and Kudela (four total: 2011; with Anderson et al., 2008 and 2009; with Lane et al., 2010; toxin occurrence and detection methods focus, especially SPATT), as well as a global review by Glibert et al. (2005).

Important nitrogen cycling papers included four by Dugdale et al. (2007, 2012; and with Parker et al., 20012a and 2012b; ammonium focus), and one by Glibert (2010; focus on nutrient ratios and food web impacts, including fish). Cloern et al. (2014[b], not cited in the *Assessment Framework*) discuss the relative merits of different viewpoints about the causes of low biomass in Suisun Bay, which is the focus of Dugdale et al. and Glibert papers.

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2.2.2 Additional peer-reviewed literature considered for this review

Although the authors did a thorough job of considering the relevant literature, we identified a few areas where additional references may be useful. These include both publications that (1) expand on topics covered by the *Assessment Framework*, and (2) were published very recently and not available to the authors.

Cloern (2001) presented a review of coastal eutrophication that emphasized the importance of "system-specific attributes", which is highly relevant to the situation in San Francisco Bay, but was not cited in the *Assessment Framework*. The paper describes the evolution of thinking about coastal eutrophication from a simpler phase of development dominated by limnologists, to a more complex understanding of how nutrients interact with a variety of other factors in estuaries and coastal waters. More recent work by European researchers (e.g., Duarte et al., 2009; Carstensen et al., 2011) builds on some of these ideas, ~~but~~ in a context of how changing nutrient conditions, both increasing and decreasing, yield unpredictable ecosystem responses due to changing baseline conditions and other factors.

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Because of the critical role that invasive species play in nutrient cycling, especially benthic grazers such as *Corbula amurensis* (previously known as *Potamocorbula amurensis*), it is important to consider the most current information available. Building upon related explanations by Cloern et al. (2007) and Kimmerer and Thompson (2014) of chlorophyll-*a* changes cited in the *Assessment Framework*, important subsequent studies include Parchaso et al. (2015), which covered benthic communities in the lower South Bay. Parchaso et al. (2015) documented complex interactions between benthic grazers and deposit feeders (clams and crustaceans), predators, phytoplankton, and water quality in the sloughs of Lower South San Francisco Bay, which may provide insight on more general seasonal and interannual patterns observed in the broader bay. In particular, this study shows how the presence or absence of grazers in sloughs may influence chlorophyll concentrations at nearby sampling stations in the main bay.

Climate variability and cycles that have strongly influenced upwelling and changes in chlorophyll-*a* values over the last two decades in the California Current as well as San Francisco Bay include the North Pacific Gyre Oscillation (DiLorenzo et al., 2008; Chenillat et al., 2012) and the Pacific Decadal Oscillation (Newman et al., 2016). Harding et al. (2016) analyzed long-term data from Chesapeake Bay to separate out the influences of climate from anthropogenic nutrient loading. This approach could also work well for San Francisco Bay. Moftakhari et al. (2015) hindcast flows and sediment inputs to San Francisco Bay back to 1849, which is important for understanding factors that influence ecosystem variability and trends over time due to watershed hydrology, climate, and land use change.

Very recent and ongoing biogeochemical modeling work by Hollowell and related efforts described in an abstract by Liu (2016) show the potential of incorporating these tools into assessment of dynamic and spatially-variable nutrient processes in San Francisco Bay ecosystems. For example, such models can be used to accurately and mechanistically simulate changes in the bay's primary productivity during wet and dry years at a spatial and temporal resolution that monitoring alone cannot capture, even using satellite data and continuous monitoring instruments. Evans and Scavia (2013) published a very relevant review of factors influencing the sensitivity of various estuaries to nutrient loading. Using a Bayesian-based process model, they concluded that chlorophyll sensitivity to nitrogen loading was closely linked with water residence time, and dissolved oxygen (DO) sensitivity was linked to relative mixing depth.

Additional references related to non-nutrient drivers of HAB occurrence and toxicity include Paerl and Huisman (2008) and Paerl and Otten (2013a and 2013b). These papers describe 26 environmental factors controlling cyanobacterial algal blooms, including climate warming and toxin production as a defense against damage by reactive oxygen species. The first one (*Blooms like it hot*) has been cited over 950 times. A paper by Cloern et al. (2005[b]) in *Geophysical Research Letters* described an unusual bloom of a non-toxic dinoflagellate in San Francisco Bay that was not driven by nutrients, expanding on the group's other article in *Eos* in the same year (2005[a]) that was cited in the *Assessment Framework*.

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3
Strengths of the *Assessment Framework*

The draft *Assessment Framework* represents a substantial contribution to the understanding of the science related to achieving the goal of protecting the bay from negative impacts of nutrient loads. Particular aspects that are noteworthy are the ~~motivation and~~clearly stated and specific goals of the effort ~~and its authors~~, the logic ~~and certain formulations~~ of the conceptual approach, and the incorporation of practical considerations in the document, including explicit exclusion of certain indicators and methods that are still in development and not yet ready for ~~full~~ operational ~~deployment~~use. The *Assessment Framework* strikes a good balance between ~~breadth and depth, and incorporates~~ both very new information (>30 percent of references are from 2012-2015), and classic review papers and reports that assess nutrient impacts on estuaries at national and global scales. The authors have advanced the thinking of the scientific community ~~on the topics covered by the document,~~ and have further strengthened the scientific basis for future decisions about nutrient management in San Francisco Bay.

3.1 ~~Motivation and g~~Goals

One strength of the existing *Assessment Framework* is the clear ~~desire of the authors to~~objective of understanding trends in bay water quality, and ~~to~~ detecting any evidence of possible degradation that may indicate a movement toward future impairment. This is a sensible approach, given that many other estuaries have not received similar attention by research and management communities until they have become quite eutrophic with substantial impairment of beneficial uses. ~~Restoration in these settings has proven challenging.~~ The goal of protecting the bay from potential impacts of nutrient overenrichment is prudent, and the use of the best available science, explicitly recognizing limitations and uncertainty, is appropriate.

3.2 Conceptual approach

The approach taken in the *Assessment Framework* is to determine key integrative indicators of ecosystem status. This is ~~logically and practically~~ sound if such indicators can be identified and developed with substantial scientific justification. The approach recognizes distinct differences among bay segments, which is critical to optimizing the associated assessment methodology. The discussion of the current status of the bay and the appropriateness of particular indicators incorporates much of the most current data available for the bay. Finally, the outlined methodology recognizes the benefit of taking a weight-of-evidence approach to determining nutrient-related conditions in the bay, rather than relying on an overly narrow set of parameters or measurements.

3.3 Practical considerations

The authors acknowledge the challenges of monitoring a ~~dynamic and~~ complex system like San Francisco Bay, including ~~both the spatial and temporal disconnect between sources of nutrients and their potential impacts,~~ high variability in flows and loading, and a variety of scaling issues. The literature review synthesizes ~~much of~~ what is known about nutrient-driven processes in San Francisco Bay and recognizes knowledge gaps. The value of modeling in data integration, interpolation, and development of mechanistic linkages to management scenarios is discussed ~~by the authors~~, even though development of these models is not at a stage where they could provide much value to the *Assessment Framework*.

4 General discussion of uncertainty

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We share the authors' concerns about uncertainty and the need to strengthen the *Assessment Framework* through basic research, monitoring, and modeling, including the areas for refinement described in Section 4.3 of the framework. That said, we also recognize the desire to move forward with development and implementation of an integrated nutrient management strategy for the bay, understanding that some amount of uncertainty will always exist about the bay's complex and dynamic systems and processes. Specific areas of the greatest current uncertainty, as described in the *Assessment Framework*, include translation of indicator values into meaningful or useful conclusions about the overall status and trends of dissolved oxygen, harmful algal bloom occurrence and toxicity, and their combined impacts on ecosystem health and beneficial uses.

An additional overarching area of uncertainty is the proper approach to delineation of subembayments and associated offshore and nearshore habitats (channels, sloughs, marshes, salt ponds, and tidal flats) so that monitoring and modeling resolution are matched to the appropriate ecosystem management units. As much as possible, such subdivision of the bay should optimize the matching of regions of generally homogeneous habitat conditions and species occurrence with associated sources of nutrient loading. This would make it possible to tie future management decisions about nutrient loading directly to the relevant subembayment where environmental impacts of changes in loading would be expected to be observed most strongly.

~~Our recommendations include ways to improve the current *Assessment Framework*, especially in areas where the authors highlight uncertainties, but also in some areas where uncertainties are less clearly considered.~~ We ~~also~~ recommend establishing an explicit validation and refinement process for the *Assessment Framework*, building on the authors' discussion of a "scientific test drive", which will lay out a detailed approach for improving the methodology and reducing uncertainty over time.

Finally, we strongly endorse the use of process-based modeling to help reduce uncertainty in parallel with refinement of the *Assessment Framework* and ongoing monitoring and research. Mechanistic modeling forces integration of existing data, represents the complexity of process interactions over time and space, and provides for the development and testing of multiple hypotheses and scenarios about how the system is likely to respond to a variety of perturbations. Modeling also makes it possible to perform realistic numerical experiments to test the sensitivity of the bay system to a variety of drivers (e.g., climate, nutrients, and invasive species). ~~This information can be used to determine whether any thresholds are likely to exist such that changes beyond a certain point push the system into a new and potentially undesirable environmental state.~~

5
Specific areas for improvement

~~In addition to areas of agreement with the conceptual approach and implementation details provided in the *Assessment Framework*,~~ W~~w~~e ~~have~~ identified ten areas where the draft *Assessment Framework* can be improved. Some of these areas were ~~explicitly~~ mentioned by the authors of the *Assessment Framework*, while others were not addressed directly. In many cases, the following suggestions lay out addition information or approaches that could be included or further developed in the *Assessment Framework*. We believe that incorporating these suggestions will provide a more solid scientific foundation for the *Assessment Framework*~~, and increase its likelihood of success.~~ Some suggestions will also result in an approach that is linked more closely to important complementary elements of the overall nutrient management strategy for San Francisco Bay, including research, monitoring, modeling, and habitat restoration programs.

5.1 Water and nutrient budgets for the entire bay are inadequate

Creation of detailed and balanced water and nutrient budgets is a fundamental first step in developing assessment and management plans for any water body. ~~An essential step in a comprehensive assessment, and even more critical in development of a management plan, is understanding the system inputs and outflows.~~ The 2012 San Francisco Bay Nutrient Management Strategy recognized "[c]haracterization of nutrient loads, sources and major pathways" as a major work element (cited in Line 244 of the *Assessment Framework*). This ~~indicates that such a~~ characterization is not yet complete, although recent efforts to create nutrient budgets for particular embayments (e.g., Suisun Bay) and for net ocean inputs or exports through the Golden Gate are recognized. The Nutrient Numeric Endpoint review (2011; table on p. viii) recognized numerous data gaps that need to be filled to properly constrain nutrient loads to the bay from seven different categories of sources. NOAA is in the process of developing an operational hydrodynamic model for the bay based on the FVCOM code, which will be an essential tool for improving water budgets. Current budgets, however, are incomplete, outdated, or insufficiently constrained by data or resolved over space and time to serve as the basis for planned assessments (e.g., Smith and Hollibaugh, 2006).

Accurate water budgets are needed to address average flushing times in the bay, and how they vary by subembayment, season, and climate cycle in order to assess ecological risk, system resiliency, and time to recovery after disturbance. Bay-wide water budgets are reasonably well known, but cannot fully resolve complexities of estuarine circulation, thermal and saline stratification, mixing, high-flow processes, and shallow-water processes operating in tributaries, tidal creeks, and salt ponds. ~~These uncertainties impact management decisions at the subembayment and seasonal-to-diurnal scales.~~

Validated budgets of dissolved and particulate nitrogen and phosphorus species are needed to rank nutrient sources by type, location, and subwatershed land use. Terms to better quantify and balance on a bay-wide basis and as they vary seasonally include: inputs from and losses to the Pacific Ocean, inputs from the Delta and tributaries, coastal wetland uptake, stormwater discharges and direct runoff, sediment diffusive fluxes and resuspension, sediment burial, direct atmospheric deposition and air-water nitrogen exchange, direct groundwater inputs, and wastewater discharge from municipal and industrial sources.

Knowing the magnitude and variability of water and nutrient inputs, outputs, and within-bay changes is essential for understanding the role of nutrients in trends, cycles, and seasonal variability of chlorophyll-*a* and dissolved oxygen, as well as their importance as drivers of harmful algal blooms and changes in other proposed indicators. Quantitatively constraining the water and nutrient balances and fluxes is an essential element of a comprehensive scientific understanding of cause and effect in the bay.

5.2 Process-based modeling is underemphasized

In its current form, the *Assessment Framework* focuses on ecological health classification, and not sufficiently on development of a better understanding of the cause-and-effect relationships needed to support management of ecological health and beneficial uses. Valid indicators can track progress toward desired endpoints and trigger action when thresholds are approached or exceeded; however, models are the tools of choice to develop science-based management plans, to set initial endpoints, and to guide nutrient management in complex systems. Indicators and models are collaboratively used to develop effective nutrient management plans in other large ecosystems (e.g., Great Lakes, Chesapeake Bay, Gulf of Mexico, Tampa Bay, Everglades, Neuse River Estuary). Models have become critical tools in the nutrient management process, essentially becoming part of the standards of practice (Shoemaker et al., 2005).

Models can help ~~interpret~~ determine ~~and understand~~ the relative contributions of each driver and governing process to observed indicator and ecosystem trends. Models should be used in the bay and its subembayments to develop load-response relationships linking nutrient loads to eutrophication response indicators. Mechanistic models can parameterize major nutrient ratios, nutrient bioavailability, light/extinction, temperature/stratification, salinity, hydrology/residence time, hydrodynamics, sediment oxygen demand, and biomass of major algal functional groups. We recognize that San Francisco Bay model development is ongoing, but its role is not yet sufficiently integrated or articulated into the *Assessment Framework* or the overall strategy to support effective nutrient management and provide the full potential return that could be realized from this investment.

5.3 Data analysis is insufficient to demonstrate nutrient impacts

Despite ~~the existence of~~ 40 years of data and the stated objective of a risk-based conceptual design (*Framework* Section 2.3), there is still excessive reliance on look-up thresholds (such as a Scottish "early-warning" alert level for *Alexandrium*) in the proposed classification scheme. Prior episodes of undesirable conditions (e.g., 2004 red tide event in Table 3.2, S4) are mentioned, but are not directly linked to indicators or used to develop indicator thresholds. The implication is that isolated incidents of algal blooms or low dissolved oxygen may be evidence of the more general approach of the system or embayment to a nutrient-driven tipping point, but this concept is not clearly stated, justified, or quantitatively developed. There is a general statement in Section 2.2 that "conditions may be trending toward adverse impacts due to elevated nutrient loads", but this is insufficient to scientifically support a plan.

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In general, there is an incomplete assessment of actual beneficial use states or criteria to indicate that ~~the condition of~~ the bay or its embayments ~~is~~ are either impaired or approaching impairment. Evidence of this would include not just changes in species present, but actual changes in beneficial uses and ecosystem health (e.g., fish, benthos, phytoplankton, or zooplankton abundance and diversity). An integrated ecological classification should tie more directly to something like an Index of Biological Integrity or be referenced to ~~more specific~~ desired system states or endpoints. Although more comprehensive ecological assessments have been carried out for the bay (e.g., 33 indicators used in the *State of the Estuary Report*, 2015), the approach proposed in the *Assessment Framework* is not strongly justified by the data analysis used to support it.

One particular area of concern is that the "harmfulness" of HAB species occurrence is not sufficiently demonstrated or linked to nutrients, and the methodology of selection of appropriate risk-based alert

thresholds (Framework Table 3.7) is not convincingly or consistently supported (e.g., through correlations of HAB species abundance with toxicity).

5.4 Statistical justification of chlorophyll-*a* thresholds is too simple

The basis for determining chlorophyll-*a* thresholds neglects known cofactors, and falls short of demonstrating quantitative causal relationships (i.e., from nutrients to chlorophyll-*a* to indicators); correlation does not imply causation. Unless stronger and more robust links between chlorophyll-*a* and ecological health can be established, direct measurements of dissolved oxygen and algal toxins would seem to be more reliable indicators than chlorophyll-*a*.

Quantile regression, one of the statistical techniques upon which the development of the *Assessment Framework* relies, is widely used by ecologists in situations where many of the factors thought to affect ecological processes have not been measured (Cade and Noon, 2003). In the case of San Francisco Bay, data have been collected not only for chlorophyll-*a*, but for many other variables that are understood to play important roles in affecting algal growth and related ecological health. Some of the cofactors that were either not considered or not eliminated by quantitative methods as significant drivers of chlorophyll-*a*/DO/HABs relationships were light limitation by suspended solids, ocean upwelling, ammonia, and invasive species. These cofactors are part of the conceptual model, but the statistical work neglects their causative role in the *Assessment Framework*.

Trends attributed to nutrient control on chlorophyll-*a* could be due in part to changes in other factors (e.g., temporary decline in benthic grazers; see Cloern et al., 2007; *Assessment Framework* Appendix C, Figure 4). For example, there was a documented cold period from 1999 to 2014, which might be a factor in chlorophyll-*a* increases, and in the recent stabilization and reduction in chlorophyll-*a* after the cold climate phase weakened and ended. The data are consistent with this hypothesis, but this apparent effect of temperature is not recognized as a potential factor in the *Assessment Framework* (see figures below; note that the "Cool Period" box was added to the second figure to facilitate intercomparison). The rise in chlorophyll-*a* from 1999 to 2005 is not correlated with a corresponding increase in nutrient loading from watershed or point sources to the bay. Cloern et al. (2007) proposed that the increase in chlorophyll-*a* over the cool period could be attributed to a documented increase in flat fish and crab predators of benthic grazers. If this proposed mechanism is correct, it reinforces the need to better understand direct biological drivers of changing chlorophyll-*a* concentrations in the bay, and indirect influence of ocean climate cycles on bay food webs.

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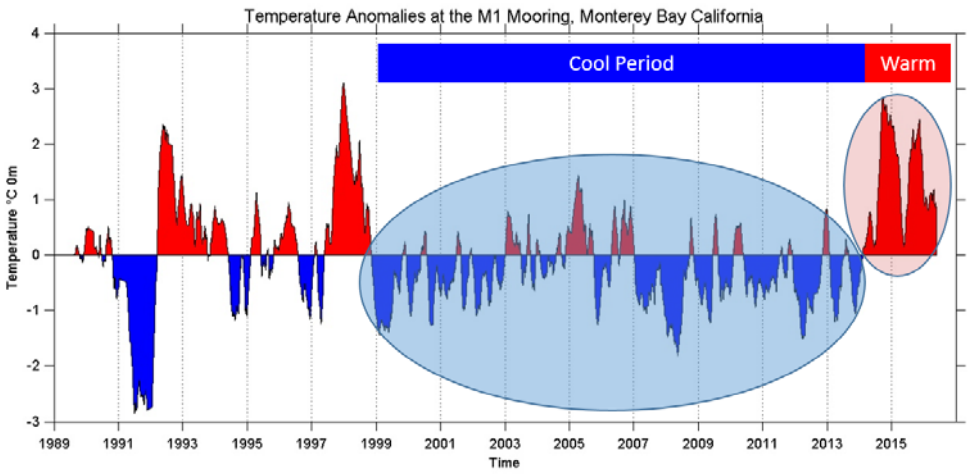
Two-dimensional parameter statistics omit the recognized cofactors listed above and risk spuriously attributing effects to chlorophyll-*a* as the included independent variable; multivariate methods could account for cofactors, using available data, and could also help quantify their relative effects on dissolved oxygen and HABs. A range of methods is available, from close inspection of the data represented in scatter diagrams (e.g., in Appendix C Figure 5, what cofactors cause data points to cluster around the low-DO lines [tau = 0.1] rather than the median-DO lines [tau = 0.5]?), to more complex multivariate regression tools. A concerted effort to identify the relative contributions of various cause-effect relationships to changes in ecosystem health should be a key element of the ongoing research program.



Note: 60 point moving average applied to daily averaged values.

Monterey Bay Aquarium Research Institute *Updated:23-May-2016*

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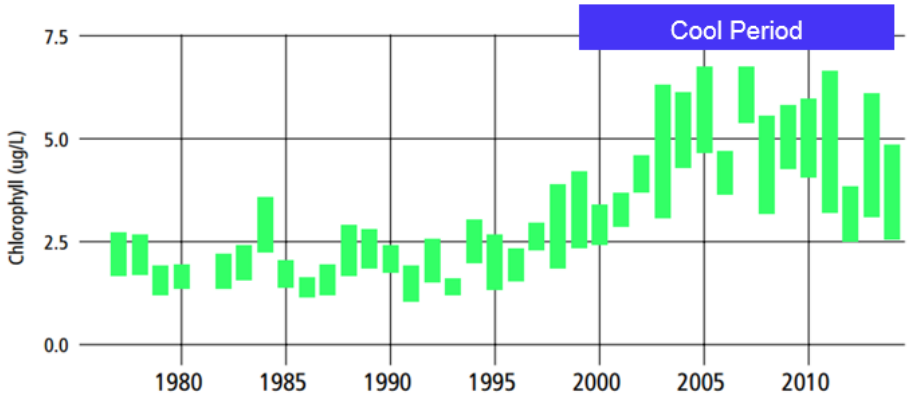
LATE SUMMER CHLOROPHYLL IN THE SOUTH BAY



The middle range (between the 25th and 75th percentiles) of annual chlorophyll concentrations in the South Bay in late summer. Historically, the South Bay had low chlorophyll production compared to other estuaries with comparable nutrient inputs. Data from USGS. Additional details on page 61.

SFEI, 2015, The Pulse of the Bay: The State of Bay Water Quality, 2015 and 2065. SFEI Contribution #759, San Francisco Estuary Institute, Richmond, CA.

5.5 Statistical basis of chlorophyll-*a* thresholds is not robust

Determination of thresholds for chlorophyll-*a* based on dissolved oxygen correlations depends on small numbers of data points and extrapolation beyond the dataset for some subembayments (e.g., see Appendix C, Figure 5, which indicates that data for most subembayments aren't rich enough in the high-chlorophyll-*a*-/low-DO range of concern to estimate reliable statistical relationships). Trial efforts to develop reliable quantile regression estimates settled on February-through-September chlorophyll-*a* as a predictor for May-through-July dissolved oxygen, although other combinations of averaging periods for chlorophyll-*a* and dissolved oxygen produced stronger correlations for some subembayments. Appendix C proposes a literature-based hypothesis related to detritus build-up and decomposition for the averaging periods chosen and used in developing chlorophyll-*a* thresholds; however the results shown in Appendix C, Table 1 are not yet definitive and reflect an element of data exploration.

HABs-based chlorophyll-*a* correlations are not clearly risk-based and rely on inappropriate use of thresholds (including the UK "early-warning" *Alexandrium* threshold noted in Section 5.3). Analysis of San Francisco Bay data, either including or excluding *Alexandrium*, does not yield a useful threshold because the risk-to-concentration relationship is quite flat up to relatively high chlorophyll-*a* concentrations, and the best estimates are shown within very wide error bounds. The identification of a 13 mg/m^3 chlorophyll-*a* threshold for HABs is not well supported by Appendix C Figure 6, which shows a higher threshold (25 mg/m^3) for all HABs and no apparent threshold when *Alexandrium* data are excluded, nor by Appendix C Figure 8, where the indication of a threshold is based on only three data points. Similar chlorophyll thresholds for use as HABs proxies have not been developed for other estuaries (e.g., Chesapeake Bay), due to scientific uncertainty.

Monitoring locations, timing, and methods of sampling on which HAB and DO-based chlorophyll criteria are developed were not optimized for this application, or with beneficial use and eutrophication assessment in mind; this may bias data that were used in framework development. As stated in the 2015 *Pulse of the Bay* report, "Although these [2012 mussel] data suggest that toxins are ubiquitous, the concentrations were low relative to existing standards". This monitoring program was more closely linked to a beneficial use (i.e., shellfish harvest and consumption), but still did not show consistent "harmfulness" of HABs species, nor did it demonstrate a causal linkage to nutrients.

5.6 Appropriate spatial resolution for assessment is not yet resolved

Classification of ecosystem status is critically dependent on the scale of assessment, as identified in the framework. It is important for delineation of distinct ecological communities and determination of their ecological condition based on appropriate comparative standards of diversity, biomass, and function. The current segmentation of the bay was inherited from programs that were not primarily ecological in their design. Questions remain about how to properly subdivide the bay into assessment bins, including the following: (1) What methods or criteria will be used to determine how many bay segments are needed for characterization?, and (2) Can Delta influences on the North Bay be distinguished more clearly from distinct Central Bay (Golden Gate) and South Bay drivers? Distinctions between open water processes and those operating in sloughs, marshes, and salt ponds are not sufficiently made, especially in areas of active restoration and related research. Finally, the importance of stratification in development of low DO is recognized (e.g., Appendix D) but is not incorporated sufficiently into the *Assessment Framework* methodology.

5.7 Temporal resolution and variability could influence annual classifications in unintended ways

In addition to proper spatial binning (ecological zones, depths), implementation of the *Assessment Framework* would require explicit specification of temporal sampling plans for indicator analytes. For example, data on algal blooms should reflect some seasonal averaging across individual subembayments,

in addition to measurements of peak concentrations. Diurnal, tidal, and seasonal variation can bias grab sample monitoring, so a plan to integrate sampling and continuous monitoring of indicator parameters may be helpful. An approach to dealing with interannual variability in assessment also needs to be articulated and incorporated. Decadal-scale variations, such as recent drought and ocean temperature shifts, and resulting salinity changes and trophic cascades (Cloern et al., 2007) have not been adequately incorporated into the existing framework.

5.8 Linkages to beneficial use impairments are not yet strongly established

Ecological conditions and human beneficial uses should be individually and specifically related to proposed indicators in more detail than what is presented in Framework Table 3.2. In the case of recreation and fishing, potential nutrient impacts are unlikely to be tightly correlated with assessment of ecological condition. In the case of ecological uses, it is unclear why the use of Index of Biological Integrity or other established integrative approaches were not proposed. The impact of many invasive species on the system, along with the role of toxins (e.g., PCBs, mercury, pesticides), are important cofactors that need explicit treatment. The current status, trends, and risk associated with each beneficial use that may be expected to show impacts of eutrophication should be tabulated in the framework for the sake of clarity.

5.9 Integration of lessons from a broader set of water bodies could be useful

As stated previously, building approaches to nutrient management based on the experience gained from other estuaries and coastal systems is a sensible way to move forward. The primary analogous system referenced in the *Assessment Framework* is Chesapeake Bay, and several of the authors have substantial professional experience with this system. Chesapeake Bay and its watershed are well studied, and this is an obvious system to compare with San Francisco Bay given its size, state of agricultural and urban development, and decades of refinement of its nutrient management policies. It is quite different from San Francisco Bay in many important aspects, however, including its bathymetry, hydrodynamics, climate, watershed land use and hydrology, nutrient loading, development history, trophic state, and ecosystem details.

The nutrient management framework is more mature in the Chesapeake Bay region. In spite of this, however, the draft San Francisco Bay *Assessment Framework* moves beyond Chesapeake approaches in its use of chlorophyll-*a* as an indicator of broader ecological condition. San Francisco Bay does not have the consistent seasonal hypoxia problems found in the axial basin and the tributary basins of Chesapeake Bay. This is because San Francisco Bay does not have the extensive bay-mouth and tributary-mouth shoals that inhibit flushing and favor summer stratification and oxygen depletion that exist in Chesapeake Bay.

Chesapeake Bay has operational monitoring, modeling, and water quality criteria for its segments, which San Francisco Bay does not, but this is due to the fact that Chesapeake Bay is considered to be impaired by nutrient impacts and is a system in recovery, unlike San Francisco Bay, where the focus is on prevention of impairment. Chesapeake Bay HABs criteria do not yet exist due to recognition of incomplete understanding of HABs occurrence there. Given these differences, it is appropriate to consider estuaries and water bodies other than Chesapeake Bay in developing nutrient management and assessment approaches for San Francisco Bay (see also the Evans and Scavia [2013] review concerning the roles of residence time and mixing). A few examples follow, none of which are perfect matches to San Francisco Bay, but which illustrate that there are research and management programs in other systems that can be reviewed and profitably applied to the bay.

Massachusetts Bay experiences harmful algal blooms of *Alexandrium spp*., but these are primarily driven by cyst density in sediments and ocean temperature, rather than nutrients (Anderson et al., 2014). These factors have not been considered for San Francisco Bay in the *Assessment Framework*. Other HAB species are similarly complex and should be treated individually. For example, *Microcystis* appears to originate in the Delta and tributary mouths, while *Pseudo-nitschia* in the bay comes from the Pacific Ocean.

Narragansett Bay in Rhode Island and Massachusetts is deep and generally well flushed like San Francisco Bay, but it experiences intermittent summer hypoxia in segments with depths of 3 to 11 meters that receive high nutrient loads and have less flushing under certain conditions, such as sustained northeast winds (Codiga et al., 2009; summarized as "different processes govern event variability in different regions, each influenced by local hydrodynamics"). Monitoring and reporting is specific to areal extent and duration of hypoxia, rather than using an indirect proxy like chlorophyll-*a*. The timing of monitoring is linked to the fish recruitment period, during which there is potentially a direct beneficial use impact.

Delaware Bay receives substantial nutrient loads from its watershed, but has generally not shown effects of nutrient over-enrichment (Sharp et al., 2009). Ongoing studies of Delaware Bay may benefit development of San Francisco Bay approaches, given that this system may be more similar than Chesapeake Bay in terms of flushing, stratification, residence time, and nutrient sensitivity.

The overall San Francisco Bay Nutrient Management Strategy effort, and the *Assessment Framework* specifically, could benefit from a more comprehensive review of publications on nutrient-driven processes in other similar estuary systems. This would include well-flushed systems with developed watersheds in the North Sea and Baltic Sea regions, as well as other settings with generally cool water such as Puget Sound, British Columbia, New England, Korea, Japan, New Zealand, southern Australia, and Chile. For reference, the average temperature near the mouth of San Francisco Bay ranges from 12°C (January) to 16°C (September) (NOAA NODC).

5.10 Scientific test drive of the *Assessment Framework*

We found the idea of a scientific test drive for the *Assessment Framework* well-founded, given the uncertainties and gaps the authors identified. The details of how such a test drive would be conducted are lacking, however. It would be valuable to spell out the protocols for exactly what will be tested;~~,~~ how its degree of success will be evaluated, including criteria for acceptance; how the results will be used; and the process by which the assessment approach will be refined based on the outcomes of initial testing. Alternatively, it may be the case that most of the components of a proposed scientific test drive are already being evaluated and incorporated into the ongoing monitoring, modeling, and research programs that are part of the Nutrient Management Strategy.

6
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San Francisco Bay Nutrient Management Strategy (NMS) Steering Committee Meeting

Date/Time: September 9, 2016, 9:00 AM to 12:30 PM

Location: SF Bay Regional Water Board, Oakland, CA

Facilitator: Phil Trowbridge

DRAFT AGENDA

	Agenda Item	Lead	Time
1	**Welcome, Introductions and Agenda Review**	PT	9:00-9:10
2	**Action items**	DW	9:10-9:20
3	**Program Update:** ● Science Program and Financial update ● Planning Subcommittee update *Materials*: TBD	IW DS	9:20-9:45
4	**Technical Update - Science Program** ● Review of Science Plan addendum ● Approve guidance document for retaining external advisors ● TBD upon DS return ● Q&A discussion *Materials*: TBD	DS and staff	9:45-10:15
5	**Discussion Item: Alternatives Analysis/Scenario Planning** ● Presentation of approach and schedule for outreach ● Proposed workshop ● Q&A/Feedback *Materials*: Draft Scenario Planning approach/outline	IW	10:15-11:00
	Break		11:00-11:15
6	**Discussion Item: Nutrient Management activities; Presentation of EBMUD WQIF project and sidestream projects (EPA WQIF grant recipients)**	Yun, EBMUD	11:15-12:15

	Materials: TBD	
7	**Other Business** ● Updates from other activities ○ Region 5 workshop ● Other	12:15-12:25
8	**Action Items and Wrap-up**	12:25-12:30
	Adjourn	12:30

PARKING LOT: Topics to add to meeting agenda when appropriate.

- Findings from Regional San's studies
- Periodic updates on Assessment Framework
- Monitoring Program Development
- Letter from USGS regarding NMS donation for USGS research vessel

NOTES:

- *Public comment periods will be accommodated at the end of each agenda item (excluding item 1). The duration of each comment period will be at the discretion of the meeting facilitator.*
- *Breaks will be taken at the discretion of the meeting facilitator and the Steering Committee.*

Joint BACWA/Regional Water Board staff Meeting Summary

July 18, 2016, 10am-12pm

Attendees:

David Williams, BACWA
Lorien Fono, BACWA
Maura Bonnarens, EBMUD
Lori Schectel, CCCSD
Jim Ervin, San Jose/Santa Clara
Mike Connor, EBDA
Amy Chastain, SFPUC
Jean Marc Petit, CCCSD
Tom Mumley, Regional Water Board
Bruce Wolfe, Regional Water Board
Bill Johnson, Regional Water Board
Robert Schlipf, Regional Water Board
Dyan Whyte, Regional Water Board

1. **Introductions**

2. **Nutrients**

a. Optimization/Upgrade Study Updates
The facility reports are being sent to agencies for review and sign-off in four waves. The first was in early May, the second will be in July, and the third and fourth will be in late summer early fall. Results have shown that there is large variability in nutrient removal opportunities and costs between agencies. There are also many plants that can't make investments in level 1 or 2 removal without stranding assets to go to higher levels. BACWA hosted a workshop on July 27 discuss the facility reports with its members, and will host another workshop, to which Regional Water Board staff will be invited, after the wave 3 or 4 facility reports have been distributed.

b. ***NTW and Steering committee meetings***
The nutrient science plan was discussed at both meetings, which focused on project prioritization. Projects on the Science Plan list up to P9 have been allocated funding. The Regional Water Board is submitting a nutrient monitoring contract package to Sacramento for approval.

c. Assessment Framework
Within the next two weeks, BACWA's consultant will have a draft document providing technical review of the Assessment Framework documents. BACWA will review and provide it to the Regional Water Board and science team.

d. ***Watershed Permit***
The Regional Water Board is keeping EPA staff updated on the progress of the nutrient management strategy. EPA would be open to an early reissuance of the Nutrient Watershed Permit, with a higher level of science funding that would better meet the needs of the Science Plan. BACWA members do not have consensus about whether they want to proceed with an early reissuance.

3. **Collection Systems Issues**
Following Lila Tang's retirement, Bill Johnson is acting collections systems lead at the Regional Water Board until Lila's replacement is hired. BACWA is working with SFEP on CCMP Action 26 that addresses Private Sewer Lateral Ordinances, at will share the results of BACWA's Private Sewer Lateral Survey. BACWA has decided not to pursue

the development of metrics for a “well-performing” collection system that would allow the Regional Water Board to quickly assign penalties for overflows. The concerns amongst the Collection Systems Committee were that it is difficult to define metrics that apply to all collection systems, and there is skepticism that penalties will provide protection against third party lawsuits.

4. **Recycled Water**
   a. ***Proposition 1 Research Proposal***
      BACWA worked with the Santa Clara Valley Water District (District), and researchers at SFEI, UC Berkeley and Stanford, to develop a proposal to study the treatment of RO concentrate via advanced oxidation processes and constructed wetlands. Regardless of possible supplementation with Proposition 1 funds, the district is prepared to fund the first phase pilot studies of this proposal. BACWA will share the proposal with Regional water Board staff prior to submitting it to the State Water Board.
   b. ***State General Order for Water Recycling***
      The State Water Board has made enrollment in the State General Order for Recycled Water mandatory for Regional Permittees. Enrollment must be complete by June 7, 2019, three years from the General Order adoption date. They plan to reopen the permit within the next three years to reduce priority pollutant monitoring requirements after the revision of the State Recycled Water Policy, which mandates that monitoring. Therefore, the current monitoring requirements should not affect current 96-011 permittees. Regional Water Board staff would like to see a seamless transition for permittees from 96-011 to the State General Order, but haven’t yet planned how to manage the enrollment process. The BACWA Recycled Water Committee plans to develop a proposal for streamlining this process. The Regional Water Board brought up the concern that the State Recycled Water Policy revision process would refocus the State Water Board on Salt/Nutrient Management Plans, which are ongoing only for priority basins in Region 2.
   c. **SB163 (Hertzberg)**
      The Bill, which would have mandated at least 50% reuse of effluent by SF Bay dischargers, has been pulled from committee by Senator Hertzberg. The Senator plans to reintroduce it next year.

5. **Shallow Discharge Prohibition**
   Several Bay Area agencies are considering projects that involve near-shore discharges to support habitat and provide sea level rise protection. The Regional Water Board can grant shallow discharge prohibition exceptions if the project provides a benefit, and protects beneficial uses. Exceptions will require study of the discharge area for and be granted on a case-by-case basis. The Regional Water Board has an EPA grant to look at near shore discharges, and is six months into its 2.5 year schedule. The Regional Water Board will give an update on this effort at the Pardee retreat in October. Measure AA, which passed in June may bring funding for Regional Monitoring to help support near shore discharges.

6. EPA Selenium Criteria

EPA is proposing to revise the current federal Clean Water Act selenium water quality criteria applicable to the salt and estuarine waters of San Francisco Bay and Delta. EPA has indicated to the Regional Water Board that they intend to approve the North Bay TMDL, which applies to all dischargers from EBMUD Northward, so it is possible that these criteria may only impact South Bay and Lower South Bay (LSB) dischargers. The proposed water column criterion of 0.2 ppb is problematic. Ambient LSB and South Bay water column concentrations are regularly above the 0.2 ppb EPA draft criterion for water. LSB averages around 0.3 ppb, South Bay averages just below 0.2 ppb but regularly goes above the 0.2 ppb at times. It is likely that all the POTWs in south bay/LSB can't meet the 0.2 ppb dissolved Se criterion at end of pipe. Regional Water Board staff are also concerned about these criteria and how they will lead to permitting problems down the line, and have met with EPA staff to discuss. BACWA intends to request a meeting with EPA management to discuss the proposed selenium criteria and possibly request additional time to file a comment letter.

7. Microplastics and Constituents of Emerging Concern (CECs)

a. Microplastic Workshop

BACWA expressed concern that all microparticles are being called microplastics, although BACWA's laboratory workgroup has shown that many particles are likely natural in origin. Regional Water Board staff are not aware of any statewide dialog about the microplastics issue.

b. State Pilot CECs Monitoring Plan

The State Pilot CECs Monitoring Plan effort is moving slowly. State Water Board staff have followed up with CASA and some Southern California POTW representatives. Regional Water Board staff continue to make the point that the State Board's proposed plan is not relevant to the Bay Area, and needs to address Regions where CECs monitoring is not already happening.

8. Risk Reduction

The Regional Water Board is interested in hosting a meeting with WSPA, BACWA and BASMAA featuring the risk reduction efforts funded by each of these agencies. Regional Water Board staff will contact BACWA with next steps. Regional Water Board staff advised BACWA to keep an eye on the new Tribal and Subsistence Fishing beneficial uses and how these could impact mercury objectives for the Bay. The Regional Water Board is not yet sure how to designate these new uses.

9. Toxicity

There is no news on the State Toxicity Plan. Regional Water Board staff suggested that BACWA monitor the State Water Board's quarterly Executive Officer report to get updates.

ADJOURNMENT

Draft Pre-Pardee Workshop Agenda
September 16, 2016
EBMUD Lab Library

Day	Topic	Issue
Friday	*Nutrients*	
		Technical
		*Science Update
		*Op/Upgrade findings and costs
		*Costs for NNLI
		*Annual Trending Report
		*Discussion with Limnotech on lessons from other estuaries
		*Future independent technical reviews
		Regulatory
		*Assessment of Anti-degradation
		*Summary of commitments to early actions and irrigation recycling
		*Agency positions on permit negotiations
		*Trading as an option
		Governance
		*Program Coordination Efforts
		*Increasing funding for science
		*Subembayment specific interests
	Drought/Water Recycling	
		*Prop 1 brine proposal
		*Permitting near shore discharges
		*Transition to General Order
		*BARR update

Draft Pardee Technical Seminar Agenda
October 13-14, 2016

Thursday

Operational

Financial
*Financial status and projections
*Nutrient Surcharge scenarios

Membership
*Classes outside Region 2
*Enhanced service to membership

Committees
*structure and effectiveness
*WOT & BAB2E
*Succession planning

Regulatory

Permitting Issues
*Selenium
*Toxicity Plan
*RMP funding through AMP
*Chlorine residual compliance
*CARB survey for short lived pollutants
*BAAQMD Claen Air Action Plan
*Regulatory Issue Matrix

Emerging Issues

Pro-Active Opportunities
*CEC voluntary assessment
*Microplastics

Friday

Nutrients

Technical
*Science Update
*Op/Upgrade findings and costs
*Costs for NNLI
*Annual Trending Report
*Scientific critique of AF

Regulatory
*Update on current thinking for 2nd WS permit
*Discussion of Anti-degradation
*Summary of early actions and irrigation recycling
*Potential for trading
*timing for initiating negotiations

Governance
*Program Coordination Efforts

	*Discussion of increasing funding for science *Subembayment specific interests
Recycling	
	*Transition to General Order *Prop 1 proposal *Addressing impediments to recycling
Regulatory	**Permitting Issues** *Selenium *Toxicity Plan *RMP funding through AMP *Chlorine residual compliance *Risk reduction *Hg/PCB permit reissuance
	Pro-Active Opportunities
Emerging Issues	*CEC voluntary assessment *Microplastics
Collaboration	
	*Discussion on enhancing

United States Environmental Protection Agency

Office of Water
EPA 820-F-16-006
June 2016

Proposed Aquatic Life and Aquatic-Dependent Wildlife Criteria for Selenium in California's San Francisco Bay and Delta

Summary

EPA is proposing to revise the current federal Clean Water Act (CWA) selenium water quality criteria applicable to the salt and estuarine waters of the San Francisco Bay and Delta to ensure that the criteria are set at levels that protect aquatic life and aquatic-dependent wildlife, including federally listed threatened and endangered species.

Background

CWA section 101(a)(2) establishes the national goal that wherever attainable water quality should provide for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water. To protect aquatic communities from the harmful effects of pollutants in surface waters, states must adopt water quality criteria for pollutants that are protective of such designated uses in water bodies. EPA periodically publishes national criteria recommendations for certain pollutants under CWA section 304(a) for states to consider using to protect aquatic life uses.

EPA promulgated the San Francisco Bay and Delta's existing selenium criteria on the state's behalf in 1992 as part of the National Toxics Rule (NTR), using EPA's CWA section 304(a) recommended aquatic life criteria for selenium at the time. However, the latest science on selenium fate and bioaccumulation indicates that the existing criteria are not protective of aquatic life and aquatic-dependent wildlife in the salt and estuarine waters of the San Francisco Bay and Delta.

EPA determined that new or revised selenium criteria in the salt and estuarine waters of the San Francisco Bay and Delta are necessary to protect the designated uses for these waters. Therefore, to protect aquatic life and aquatic-dependent wildlife in the San Francisco Bay and Delta from the adverse effects of selenium, EPA is proposing the criteria in this rule using the best available science.

How EPA Derived the Proposed Selenium Aquatic Life and Aquatic-Dependent Wildlife Criteria

In 2016, EPA published revised CWA section 304(a) recommended criteria for selenium, based on the latest science on selenium bioaccumulation and toxicity (*Final Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater 2016*, US EPA, Office of Water, EPA 822-R-16-006). EPA considered the methodology and information used to derive the revised CWA section 304(a) recommended selenium criterion, along with additional information specific to the San Francisco Bay and Delta, in developing the selenium criteria in this proposed rule.

Due to the introduction and population explosion of an invasive clam species, Potamocorbula amurensis (commonly known as Corbula), there has been a rapid acceleration of selenium accumulation in the food chain of fish and bird species in the San Francisco Bay and Delta ecosystem. The species most at risk in the estuary from selenium are clam-eating fish and clam-eating bird species, and EPA is proposing revised federal criteria to ensure protection of these vulnerable species.

EPA is proposing selenium criteria in fish tissue (a whole body criterion of 8.5 micrograms per gram (µg/g) dry weight (dw) and a muscle criterion of 11.3 µg/g dw) and clam tissue (15 µg/g dw), to reflect biological uptake through diet, the predominant pathway for selenium toxicity, and to address reproductive toxicity. In order to facilitate monitoring and regulation of pollutant discharges, EPA is also proposing dissolved and particulate water column selenium criteria of 0.2 µg/L and 1 µg/g, respectively, that are designed to ensure the tissue criteria are met.

Public Hearings on the Proposed Rule

EPA will hold public hearings on the proposed rule so that interested parties may provide oral comments. A virtual hearing will be on August 22, 2016 from 6:00 pm to 8:00 pm. The in-person hearings will be on August 23, 2016, one at 9:00 am and one at 2:00 pm, at EPA's Region 9 Office: 75 Hawthorne Street, San Francisco, CA 94105.

Where can I find more information?

Contact Erica Fleisig at (202) 566-1057, Fleisig.Erica@EPA.gov or Diane Fleck at (415) 972-3527, Fleck.Diane@EPA.gov. To access the proposed rule, supporting documents, and more details on how to make written comments and/or how to register to make oral comments at a public hearing, visit EPA’s Water Quality Standards website at: https://epa.gov/wqs-tech/water-quality-standards-establishment-revised-numeric-criteria-selenium-san-francisco-bay.

Sherry Hull

From: Sherry Hull
Sent: Wednesday, August 17, 2016 9:16 AM
To: Sherry Hull
Subject: Selenium meeting with regulators
Attachments: Lower South Bay and South Bay Selenium data - RMP sturgeon bivalves and CSJ 2013-2015 water.xlsx

From: Dunlavey, Eric
Sent: Monday, August 15, 2016 10:58 AM
To: Engelage, Samantha Tran, Joanna
Cc: Ervin, James; Yigzaw, Simret Donald, Jessica 'Alo Kauravlla' Cameron KostigenMumper Bhavani Yerrapotu Ray Goebel Tom Hall Mike Connor David Williams Lorien Fono
Subject: LSB and South Bay Selenium data - surface water, sturgeon, bivalves

Everyone,

Attached is the San Jose ambient lower south bay dissolved selenium data from 2013 – 2015.

Also included on a separate tab in the attached are RMP selenium data in sturgeon from 1997 – 2003 collected in the south bay and lower south bay (that's as recent as was available on the SFEI website). There was only a single sample that exceeded the draft fish tissue muscle criteria of 11.3 ug/g dw that was from 2003.

And finally, we included the RMP bivalve data from the LSB and South Bay for comparison to the 15 ug/g dw in clam tissue number and the Palo Alto macoma data even though the RMP bivalve data is in mussels and oysters. The Palo Alto macoma data is the most relevant data I'm aware of to compare to the 15 ug/g dw clam tissue number. The good news is with clams (and bivalves) is this part of the Bay looks to be well below the proposed clam tissue number.

Sam, Joanna, and Karin, would it be possible to get the Palo Alto macoma data for selenium in a similar file/format?

Thanks,
Eric

Eric Dunlavey, ***Wastewater Compliance Supervisor***
Sustainability and Compliance Division
San José-Santa Clara Regional Wastewater Facility
700 Los Esteros Road | San José, CA 95134
Tel: 408.635.4017 | Fax: 408.586.8264
sanjoseca.gov/esd | brightgreen.sanjoseca.gov
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Lower South Bay Dissolved Selenium (ug/L) in surface water 2013-2015

Event date	Station Number					
	SB02	SB03	SB04	SB10	SB11	SB12
1/28/2013	0.152	0.251	0.541	0.2	1.06	1.89
5/7/2013	0.106	0.155	0.41	0.133	0.799	
8/1/2013	0.127	0.182	0.37	0.169	1.02	1.7
11/19/2013	0.134	0.127	0.22	0.091	0.61	0.37
2/12/2014	0.182	0.063	0.153	0.042	0.231	0.323
5/8/2014	0.207	0.292	0.483	0.244	1.56	1.31
8/6/2014	0.174	0.246	0.34	0.225	0.845	0.91
11/20/2014	0.178	0.21	0.254	0.145	0.418	0.26
2/17/2015	0.174	0.275	0.324	0.216	1.17	0.649
5/18/2015	0.197	0.257	0.356	0.259	0.675	0.501
8/25/2015	0.193	0.226	0.272	0.179	0.678	0.452
11/23/2015	0.218	0.224	0.251	0.193	0.331	0.262

Summary Statistics

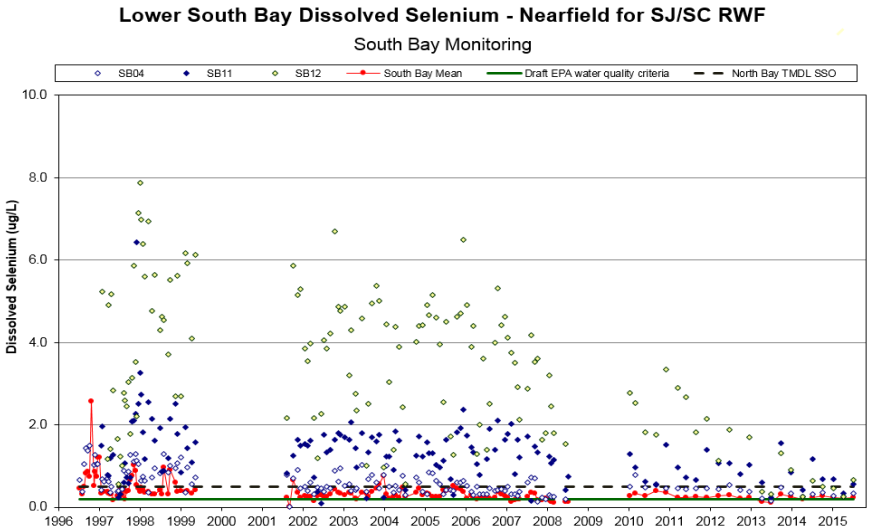
	SB02	SB03	SB04	SB10	SB11	SB12
Mean	0.170	0.209	0.331	0.175	0.783	0.784
Min	0.106	0.063	0.153	0.042	0.231	0.260
Max	0.218	0.292	0.541	0.259	1.560	1.890
n	12	12	12	12	12	11
SD	0.034	0.067	0.111	0.064	0.380	0.591
SE	0.010	0.019	0.032	0.018	0.110	0.178

Station Key

Station ID	Description of Location
SB02	Middle Channel, open lower south bay (not proximate to any POTW outfall)
SB03	Bay station that is closest to the Sunnyvale outfall (mouth of Guadalupe Slough)
SB04	Coyote Creek at railroad bridge, downstream station that is closest to the San Jose outfall (represents Coyote Creek and San Jose Effluent)
SB10	Bay station that is closest to the Palo Alto Outfall
SB11	Tributary station in Coyote Creek (upstream of the San Jose Outfall)
SB12	Tributary station in Guadalupe River/Alviso Slough (no nearby POTW discharge)

analytegroup	analyte	bayregion	stationcode	year	month	sampledate	matrix	fraction	unitname	result	mdl	rl	commonname	group	genus	species
Metals	Selenium	South Bay	2RMPSOB	1997	3	3/12/1997	tissue	Total	ug/g dw	4.63	0.05		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	South Bay	2RMPSOB	1997	3	3/12/1997	tissue	Total	ug/g dw	8.53	0.05		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	South Bay	2RMPSOB	1997	3	3/12/1997	tissue	Total	ug/g dw	4.54	0.05		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	South Bay	2RMPSOB	1997	3	3/13/1997	tissue	Total	ug/g dw	3.22	0.05		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	South Bay	2RMPSOB	1997	3	3/13/1997	tissue	Total	ug/g dw	4.25	0.05		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	South Bay	2RMPSOB	1997	3	3/13/1997	tissue	Total	ug/g dw	4.49	0.05		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOBI	2000	4	4/19/2000	tissue	Total	ug/g dw	5.58	0.1		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOBI	2000	4	4/19/2000	tissue	Total	ug/g dw	5.44	0.1		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOBI	2000	4	4/19/2000	tissue	Total	ug/g dw	8.37	0.1		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOBI	2000	4	4/19/2000	tissue	Total	ug/g dw	5.36	0.1		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOBI	2000	4	4/20/2000	tissue	Total	ug/g dw	7.67	0.1		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOBI	2000	5	5/18/2000	tissue	Total	ug/g dw	5.98	0.1		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOBI	2000	5	5/19/2000	tissue	Total	ug/g dw	6.8	0.1		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOBI	2000	5	5/19/2000	tissue	Total	ug/g dw	6.59	0.1		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOB3	2003	5	5/29/2003	tissue	Total	ug/g dw	2.01	0.1	0.3	White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOB3	2003	5	5/29/2003	tissue	Total	ug/g dw	2.51	0.1	0.3	White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	South Bay	2RMPSOB	1997	6	6/4/1997	tissue	Total	ug/g dw	2.67	0.05		White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOB3	2003	8	8/12/2003	tissue	Total	ug/g dw	3.44	0.1	0.3	White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOB3	2003	8	8/12/2003	tissue	Total	ug/g dw	12	0.1	0.3	White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOB3	2003	8	8/13/2003	tissue	Total	ug/g dw	12.3	0.1	0.3	White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOB3	2003	9	9/19/2003	tissue	Total	ug/g dw	10.9	0.1	0.3	White Sturgeon	Fish	Acipenser	Acipenser transmontanus
Metals	Selenium	Lower South Bay	2RMPSOB3	2003	9	9/19/2003	tissue	Total	ug/g dw	10.4	0.1	0.3	White Sturgeon	Fish	Acipenser	Acipenser transmontanus

Applicable draft EPA water quality criteria for the above data is 11.3 ug/g dw - this is the muscle criteria and all of the RMP data is muscle fillet (or muscle plugs for future sturgeon data).
Only one sample from the lower south bay is above the 11.3 ug/g dw draft criteria for sturgeon muscle. That sample was collected in 2003, which was 13 years ago and based on the San Jose surface water sampling, ambient dissolved selenium was higher then:



analytegr	analyte	bayregion	stationcode	year	month	sampledate	matrix	fraction	unitname	result	mdl	rl	commonname	group	genus	species	numberfi	sampletype	collection	resultrepli	tissuename
Metals	Selenium	South Bay	204ST0410	1982	1	1/18/1982	tissue	Total	ug/g dw	1.5			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST1550	1982	1	1/18/1982	tissue	Total	ug/g dw	2.1			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST1453	1982	1	1/18/1982	tissue	Total	ug/g dw	1.8			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST1240	1982	1	1/18/1982	tissue	Total	ug/g dw	1.9			California Mussel	Bivalves	Mytilus	Mytilus californianus	15	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST1550	1986	1	1/27/1986	tissue	Total	ug/g dw	3.8			California Mussel	Bivalves	Mytilus	Mytilus californianus	15	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST0410	1986	1	1/27/1986	tissue	Total	ug/g dw	4.4			California Mussel	Bivalves	Mytilus	Mytilus californianus	15	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST1453	1988	1	1/15/1988	tissue	Total	ug/g dw	3.4			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	Lower South Bay	SFDB	1989	1	1/16/1989	tissue	Total	ug/g dw	4.633333			Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	1989	1	1/17/1989	tissue	Total	ug/g dw	7.75			Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	205ST1127	1991	1	1/16/1991	tissue	Total	ug/g dw	2.4			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST0410	1991	1	1/16/1991	tissue	Total	ug/g dw	2.3			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST1453	1991	1	1/16/1991	tissue	Total	ug/g dw	2.6			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST1550	1991	1	1/16/1991	tissue	Total	ug/g dw	1.8			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	Lower South Bay	SFDB	1991	1	1/24/1991	tissue	Total	ug/g dw	5.3	0.77		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	1991	1	1/25/1991	tissue	Total	ug/g dw	4.666667	0.77		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	1992	1	1/16/1992	tissue	Total	ug/g dw	3.93	0.61		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	1992	1	1/17/1992	tissue	Total	ug/g dw	5.39	0.61		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	1993	1	1/18/1993	tissue	Total	ug/g dw	5.61	1		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	2001	1	1/23/2001	tissue	Total	ug/g dw	3.6	0.054		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	2001	1	1/23/2001	tissue	Total	ug/g dw	3.24	0.054		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	2005	1	1/17/2005	tissue	Total	ug/g dw	3.83	0.0531		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	2005	1	1/18/2005	tissue	Total	ug/g dw	3.19	0.0531		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	2007	1	1/28/2007	tissue	Total	ug/g dw	5.08	0.103		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	2007	1	1/28/2007	tissue	Total	ug/g dw	3.39	0.103		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	204ST1550	1985	2	2/12/1985	tissue	Total	ug/g dw	2.4			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST1453	1985	2	2/12/1985	tissue	Total	ug/g dw	2.7			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST0410	1985	2	2/12/1985	tissue	Total	ug/g dw	2.2			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	Lower South Bay	SFDB	1987	2	2/10/1987	tissue	Total	ug/g dw	5.4	0.18		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	1987	2	2/25/1987	tissue	Total	ug/g dw	4.633333	0.18		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	1990	2	2/4/1990	tissue	Total	ug/g dw	5.15	0.5		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	1990	2	2/5/1990	tissue	Total	ug/g dw	5.62	0.5		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	205ST1127	1993	2	2/1/1993	tissue	Total	ug/g dw	9			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	SFSM	1994	2	2/7/1994	tissue	Total	ug/g dw	5.25	3.7		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	1995	2	2/12/1995	tissue	Total	ug/g dw	8.042			Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	1995	2	2/12/1995	tissue	Total	ug/g dw	5.989			Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	1997	2	2/2/1997	tissue	Total	ug/g dw	5.55			Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	1997	2	2/2/1997	tissue	Total	ug/g dw	6.74			Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	1998	2	2/8/1998	tissue	Total	ug/g dw	4.42			Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	1998	2	2/8/1998	tissue	Total	ug/g dw	3.83			Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	1999	2	2/2/1999	tissue	Total	ug/g dw	6.86			Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	1999	2	2/2/1999	tissue	Total	ug/g dw	4.53			Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	2003	2	2/10/2003	tissue	Total	ug/g dw	4.2	0.03		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	2003	2	2/10/2003	tissue	Total	ug/g dw	4.08	0.03		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	1988	3	3/18/1988	tissue	Total	ug/g dw	5.266667	0.36		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	1988	3	3/19/1988	tissue	Total	ug/g dw	3.866667	0.36		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	South Bay	SFSM	1986	4	4/10/1986	tissue	Total	ug/g dw	2.1	0.51		Mytilus	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	SFDB	1986	4	4/12/1986	tissue	Total	ug/g dw	2.733333	0.51		California Mussel	Bivalves	Mytilus	Mytilus		Composite	1	1	not recorded
Metals	Selenium	Lower South Bay	BA10	1995	4	4/25/1995	tissue	Total	ug/g dw	4.011	0.013	0.013	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1995	4	4/25/1995	tissue	Total	ug/g dw	1.884	0.013	0.013	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1995	4	4/25/1995	tissue	Total	ug/g dw	2.056	0.013	0.013	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	1996	4	4/30/1996	tissue	Total	ug/g dw	2.26	0.008	0.008	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1996	4	4/30/1996	tissue	Total	ug/g dw	2.42	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1996	4	4/30/1996	tissue	Total	ug/g dw	2.32	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	2RMPSBB-2	1998	4	4/8/1998	tissue	Total	ug/g dw	4.86	2E-06		Japanese Littleneck Clam	Bivalves	Tapes	Tapes japonica	25	Composite	1	2	soft tissue (e.g. clams) with gonads intact
Metals	Selenium	South Bay	2RMPSBB-2	1998	4	4/8/1998	tissue	Total	ug/g dw	10.1	2E-06		Japanese Littleneck Clam	Bivalves	Tapes	Tapes japonica	25	Composite	1	1	soft tissue (e.g. clams) with gonads intact
Metals	Selenium	Lower South Bay	BA10	1998	4	4/22/1998	tissue	Total	ug/g dw	3.83	0.008	0.008	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	1999	4	4/28/1999	tissue	Total	ug/g dw	4.4	0.008	0.008	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1999	4	4/28/1999	tissue	Total	ug/g dw	3.7	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1999	4	4/28/1999	tissue	Total	ug/g dw	2.75	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	1994	5	5/4/1994	tissue	Total	ug/g dw	4.18	0.001	0.001	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1994	5	5/4/1994	tissue	Total	ug/g dw	3.24	0.001	0.001	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1994	5	5/4/1994	tissue	Total	ug/g dw	2.86	0.001	0.001	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	1997	5	5/7/1997	tissue	Total	ug/g dw	4.01	0.009	0.009	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1993	6	6/2/1993	tissue	Total	ug/g dw	2.97	0.001	0.001	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1993	6	6/2/1993	tissue	Total	ug/g dw	2.41	0.001	0.001	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	1994	9	9/12/1994	tissue	Total	ug/g dw	3.379	0.381	0.381	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1994	9	9/12/1994	tissue	Total	ug/g dw	3.0714	0.381	0.381	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1994	9	9/12/1994	tissue	Total	ug/g dw	2.9901	0.381	0.381	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism

Metals	Selenium	Lower South Bay	BA10	1995	9	9/12/1995	tissue	Total	ug/g dw	11	0.008	0.008	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1995	9	9/12/1995	tissue	Total	ug/g dw	3.28	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1995	9	9/12/1995	tissue	Total	ug/g dw	3.12	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	1996	9	9/12/1996	tissue	Total	ug/g dw	6.02	0.008	0.008	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1996	9	9/12/1996	tissue	Total	ug/g dw	3.11	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1996	9	9/12/1996	tissue	Total	ug/g dw	3.17	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	1997	9	9/24/1997	tissue	Total	ug/g dw	5.45	0.008	0.008	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1997	9	9/24/1997	tissue	Total	ug/g dw	2.51	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1997	9	9/24/1997	tissue	Total	ug/g dw	2.53	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	1998	9	9/2/1998	tissue	Total	ug/g dw	4.43	0.008	0.008	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1998	9	9/2/1998	tissue	Total	ug/g dw	4.06	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1998	9	9/2/1998	tissue	Total	ug/g dw	3.77	0.008	0.008	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	1999	9	9/14/1999	tissue	Total	ug/g dw	4.801	0.3	0.3	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1999	9	9/14/1999	tissue	Total	ug/g dw	4.509	0.3	0.3	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1999	9	9/14/1999	tissue	Total	ug/g dw	3.035	0.3	0.3	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	2000	9	9/20/2000	tissue	Total	ug/g dw	5.57	0.52	0.52	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	2000	9	9/20/2000	tissue	Total	ug/g dw	4.69	0.52	0.52	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	2000	9	9/20/2000	tissue	Total	ug/g dw	5.85	0.52	0.52	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	2001	9	9/26/2001	tissue	Total	ug/g dw	6.34	0.02	0.02	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	2001	9	9/26/2001	tissue	Total	ug/g dw	4.24	0.02	0.02	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	2001	9	9/26/2001	tissue	Total	ug/g dw	3.96	0.02	0.02	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	Lower South Bay	BA10	2008	9	9/9/2008	tissue	Total	ug/g dw	1.97	0.56	1.69	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	2008	9	9/9/2008	tissue	Total	ug/g dw	2.43	0.34	1.02	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	2008	9	9/9/2008	tissue	Total	ug/g dw	2.61	0.41	1.23	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	2014	9	9/16/2014	tissue	Total	ug/g dw	2.405498	0.4124	0.962	California Mussel	Bivalves	Mytilus	Mytilus californianus	110	Composite	1	1	soft tissue (e.g. clams) with gonads intact
Metals	Selenium	South Bay	BA30	2014	9	9/16/2014	tissue	Total	ug/g dw	2.884615	0.3698	1.036	California Mussel	Bivalves	Mytilus	Mytilus californianus	103	Composite	1	1	soft tissue (e.g. clams) with gonads intact
Metals	Selenium	South Bay	BA30	1993	10	10/6/1993	tissue	Total	ug/g dw	1.22	0.001	0.001	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA40	1993	10	10/6/1993	tissue	Total	ug/g dw	0.99	0.001	0.001	California Mussel	Bivalves	Mytilus	Mytilus californianus		Composite	1	1	whole organism
Metals	Selenium	South Bay	BA30	1993	10	10/6/1993	tissue	Total	ug/g dw	2.49	0.001	0.001	Pacific Oyster	Bivalves	Crassostre	Crassostrea gigas		Composite	1	1	whole organism
Metals	Selenium	South Bay	204ST1453	1982	12	12/9/1982	tissue	Total	ug/g dw	5.5			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	Lower South Bay	205ST1127	1991	12	12/16/1991	tissue	Total	ug/g dw	1.9			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST1453	1991	12	12/16/1991	tissue	Total	ug/g dw	3.4			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST0410	1991	12	12/16/1991	tissue	Total	ug/g dw	2.7			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut
Metals	Selenium	South Bay	204ST1550	1991	12	12/16/1991	tissue	Total	ug/g dw	3.6			California Mussel	Bivalves	Mytilus	Mytilus californianus	45	Composite	1	1	whole without gut

All of the RMP bivalve data is in either pacific oyster or california mussel, neither of which are clams. I've included the data here for comparison, but the most applicable data to compare to the EPA draft criteria of 15 ug/g dw in clams is the palo alto macoma data.
All of the RMP bivalve data is well below the 15 ug/g dw clam tissue draft criteria from EPA

Sherry Hull

From: Sherry Hull
Sent: Tuesday, August 16, 2016 1:39 PM
To: Sherry Hull
Subject: EPA NPDES Rule Update
Attachments: fwqcnpdesupdaterulecomments080216.pdf

From: Andes, Fredric [mailto:Fredric.Andes@btlaw.com]
Sent: Wednesday, August 3, 2016 12:33 PM
To: Andes, Fredric <Fredric.Andes@btlaw.com>
Subject: Final FWQC Comments on Proposed NPDES Update Rule

Attached are the final FWQC comments on EPA's proposed NPDES update rule. Thanks to all who reviewed and/or commented on the draft. We received many helpful suggestions, and the changes that we have made as a result have strengthened the document. We will now contact EPA, to schedule a meeting to discuss our concerns and recommendations. As soon as we have possible dates for that meeting, we will let you know. In the meantime, of course, please feel free to call or e-mail if you have any questions.

P.S. FYI, we have also attached a copy of the comments filed today by the Association of Clean Water Administrators (ACWA), the trade association of State water agencies. As you'll see, the ACWA comments raise significant concerns about the EPA proposal, many of which overlap with issues raised in the FWQC comments. We will continue to be in touch with ACWA as the rulemaking process moves forward.

P.P.S. Here is a link to this note on the FWQC web site: http://fwqc.org/members/DocumentLibrary/Final%20FWQC%20Comments%20on%20Proposed%20NPDES%20Update%20Rule.htm .

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From: Andes, Fredric
Sent: Monday, July 25, 2016 8:17 AM
To: Andes, Fredric
Subject: Draft FWQC Comments on Proposed NPDES Update Rule
Importance: High

The draft FWQC comments on EPA's proposed NPDES Update Rule are attached for your review and comment. (The EPA proposal is also attached, for your reference.) Per the recent extension of the comment deadline, the comments are due on Tuesday, August 2. Please send us any comments on the draft by Friday, July 29. In the meantime, of course, please feel free to call or e-mail if you have any questions. Thanks.

P.S. Here is a link to this note on the FWQC web site:

http://fwqc.org/members/DocumentLibrary/Draft%20Comments%20on%20Proposed%20NPDES%20Update%20Rule.htm .

From: Andes, Fredric
Sent: Thursday, May 19, 2016 2:42 PM
To: Andes, Fredric
Subject: EPA Issues Proposed NPDES Update Rule

As you may recall, we have been aware for some time that EPA was working on a proposal to update the NPDES regulations. The Agency has been telling stakeholders that the changes would be non-controversial. However, we learned that the proposal would include at least one very controversial provision, which would allow EPA to force States to reissue expired permits – and if they refuse, then EPA could take over and issue the permit itself. The proposal has now been issued in the Federal Register – copy attached. Comments are due July 18.

The proposal does contain the "veto of expired permits" provision that we have been concerned about. It says that if a State-issued permit is not reissued within a certain period after expiration (which could be either 2 years or 5 years – they are taking comment on that), then EPA could deem the expired permit to be a "proposed" permit, which they could then formally object to as not containing appropriate permit limits and conditions. If the State does not address those concerns (such as the need for new limits based on new water quality standards that have been adopted since the permit was first issued) by issuing a new permit containing the new conditions, then EPA could take over the permit and issue it on its own, as an EPA permit. This provision raises obvious legal problems. It was first floated by EPA back in 1999-2000, as part of the Clinton-era TMDL rule. We objected to it then, in our comments on that rule. It was contained in the final TMDL rule, and we filed a legal challenge, but that rule was eventually withdrawn, so the issue was never briefed. Now it is back again…

We also have policy concerns about the new veto provision. EPA and the States have made major progress in the last 10 years in reducing permit backlogs. Therefore, it is not entirely clear why EPA needs a radical new mechanism to force issuance of permits in a timely way. This will be a key issue for us to think about – perhaps we can come up with other ways to address the Agency's concerns.

In fact, our initial discussions on this issue indicate that they may be open to considering other options besides the veto provision. We did mention the veto issue in our meeting last week with Deputy AA for Water Joel Beauvais. (A summary of the meeting will be to you soon.) We had earlier raised concerns with his staff about the fact that EPA did not follow normal procedures on this rule, including not adequately informing folks (including OMB) that they had put in the controversial veto provision. We discussed the issue generally during the meeting, and after the meeting, I got a call from Sheila Frace at EPA, who supervises the group that issued the proposal. She apologized for the process problems, indicated that the Agency is very willing to talk/meet with us regarding the rule, and also indicated a willingness to discuss the expired-permit issue and consider other options for addressing the EPA concern about permit backlogs. I think that we will probably want to schedule a meeting very soon, before we submit our comments.

The proposal does address other issues besides expired permits. It revises the NPDES rules on a broad list of issues, including whole effluent toxicity, antidegradation, antibacksliding, dilution allowances, reasonable potential, and fact sheets. On many of these issues, EPA says that it just putting concepts into the rules that are already in Agency guidance, or that are minor clarifications, but we'll need to review those provisions to make sure that that is the case.

We will also need to consider whether to ask for an extension of the comment period, and if so, for how long. The first step will be to set up a call, so we can review the proposal and talk about what issues to address in the comments (plus discuss an extension request). Please click on the Doodle link provided here - http://doodle.com/poll/5qxrb6fphv5tu7ih - and let me know what dates and times look good for you. Once we review the responses, we will send out another note with the final call-in details. In the meantime, of course, please feel free to call or e-mail if you have any questions. Thanks.

P.S. Here is a link to this note on the FWQC web site: http://fwqc.org/members/DocumentLibrary/EPA%20Issues%20Proposed%20NPDES%20Update%20Rule.htm .

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Federal Water Quality Coalition

August 2, 2016

Office of Water - Docket
U.S. Environmental Protection Agency
1200 N. Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Re: Comments on Proposed Rule as to NPDES Applications and Program Updates, Docket ID No. EPA-HQ-OW-2016-0145

Dear Sir or Madam:

The Federal Water Quality Coalition ("FWQC" or the "Coalition") appreciates the opportunity to file comments with EPA regarding the Agency's proposed rule revising the National Pollutant Discharge Elimination System regulations (the "Proposed NPDES Update Rule" or the "Proposal"). The proposal was issued on May 18, 2016 (81 Fed. Reg. 31344), and the comment period was extended, to August 2, 2016, on June 27, 2016 (81 Fed. Reg. 41507).

The FWQC is a group of industrial companies, municipal entities, agricultural parties, and trade associations that are directly affected, or which have members that are directly affected, by regulatory decisions made by the EPA and States under the federal Clean Water Act (CWA). The FWQC membership includes entities in the aluminum, agricultural, automobile, chemical, coke and coal chemicals, electric utility, home building, iron and steel, mining, municipal, paper, petroleum, pharmaceutical, water/wastewater, rubber, and other sectors. FWQC members, for purposes of these comments, include: Alcoa, Inc; American Chemistry Council; American Coke and Coal Chemicals Institute; American Forest & Paper Association; American Iron and Steel Institute; American Petroleum Institute; Association of Idaho Cities; Auto Industry Water Quality Coalition; Bristol-Myers Squibb; City of Superior (WI); Edison Electric Institute; Eli Lilly and Company; Freeport-McMoRan Inc.; General Electric Company; Hecla Mining Company; Indiana Coal Council; Johnson & Johnson; Kennecott Utah Copper LLC; Mid America CropLife Association; Monsanto Company; National Association of Home Builders; Orange County (CA) Sanitation District; Pfizer Inc.; Rubber Manufacturers Association; Shell; Treated Wood Council, U.S. Chamber of Commerce; Utility Water Act Group; Western Coalition of Arid States; Western States Petroleum Association; and Weyerhaeuser Corporation.

FWQC member entities or their members own and operate facilities located around the country. Those facilities operate pursuant to NPDES permits that impose control requirements with respect to wastewater discharges. The NPDES Update Proposal will change the requirements imposed in NPDES permits issued by the States and EPA. The FWQC therefore has a direct interest in the NPDES Update Proposal that EPA has issued for comment.

The FWQC supports several aspects of the Proposal, particularly regarding the provisions that require further specificity in Fact Sheets. However, we have serious concerns regarding other aspects of the Proposal, which we believe that EPA should reconsider. Our thoughts and recommendations on these issues are set forth in detail below.

1. **EPA REVIEW OF ADMINISTRATIVELY-CONTINUED PERMITS: EPA lacks authority to veto and reissue State-issued permits that have been administratively continued. The provision purporting to give EPA that right should be eliminated from the Proposal.**

In the Proposal, EPA provides (in new 40 CFR 123.44(k)) that it may review and veto any administratively-continued State permit that is not reissued within a specified time period after expiration. If the State does not reissue the permit, with new requirements, within 180 days after EPA gives notice, EPA can issue the new permit itself. This proposed requirement has absolutely no basis in the CWA and should be withdrawn.

Congress granted States the authority to administer permit programs for discharges of pollutants into their navigable waters, once their permitting programs have been approved by EPA. CWA § 402(b). Once a State has been delegated the NPDES authority, permits will be issued by the State, not by EPA. EPA does have the authority to veto a State-issued permit if the Agency determines that the permit does not meet CWA requirements. However, this veto authority is expressly limited to the period ending 90 days after the date that the State notifies EPA of its decision to issue a permit. CWA § 402(d). Where EPA does not veto a State-issued permit within the 90-day notice period, the permit becomes valid and enforceable, as a matter of State and Federal law. As long as that permit continues in effect, the discharger is assured that if it complies with the permit, it is in compliance with the Act. CWA 402(k). And, as a matter of Federal and State law (recognized also in EPA's regulations), that permit remains in effect until the issuance of a new permit, where the permittee has submitted a timely and complete application for renewal. *See* 5 U.S.C. § 558(c); 40 C.F.R. § 122.6(d). EPA cannot remove that protection solely because it wants an additional authority, to be exercised "in its discretion," that Congress simply has not provided.

Under the Act, EPA has one and only one opportunity to veto a State-issued permit: when the permit is first issued. Congress easily could have included a provision in the Act granting EPA more than one veto opportunity. For example, Congress could have granted EPA additional veto authority where conditions

changed and necessitate new permit limits. Congress, however, did not grant such additional authority. No such opportunity exists under the statute, and the proposed regulation providing that opportunity has no legal authority.

In addition to lacking legal authority, EPA's proposed "second veto" would be extremely unfair, subjecting responsible dischargers to potential liability for conditions beyond their control. Permittees are required to submit a renewal application at least 180 days, in some cases 270 days, before the current permit expires if they wish to continue discharging. This advance submittal is presumably to provide State agencies time to evaluate data, prepare a draft permit, conduct a public comment period, evaluate comments received, and promulgate the new permit. All of these activities are beyond the control of the permittee. The State sets the pace for the renewal process and the permittee can only respond when called upon. If the State fails to renew the permit before the old one expires, the proposed rules would allow EPA to nullify the administratively-continued permit despite the fact that the permittee has done everything it can to obtain a renewal. Further, by deeming an administratively-continued permit to be "proposed," EPA appears to be leaving a responsible discharger, who has applied for renewal in accordance with the law, without permit coverage from the date that EPA deems the permit "proposed" until the effective date of the reissued permit. This result, in addition to being wholly without legal authority, is simply unfair and inappropriate.

In addition to being inappropriate in its treatment of responsible dischargers, EPA's "second veto" proposal also fails to recognize that there can be, and often are, legitimate reasons why a State might delay issuing a particular permit, or a group of permits. Often, States allow permits to remain administratively-continued while other issues are being resolved that will affect the terms of those permits. For example, there could be a TMDL being developed that will affect many permits in a specific watershed. Sometimes, there is a State activity – legislation, or rulemaking, or litigation – that, once finalized, will need to be implemented in a set of permits. In those situations, it makes no sense to reissue permits before that activity takes place, and then have to reopen and modify all of the permits once the TMDL or other action has occurred. EPA itself has recognized that permitting authorities must balance various priorities in deciding when to reissue permits. In the case of *In re: Sierra Club, Inc., et al.*, No. 12-1860, 2013 WL 1955877 (1st Cir., May 8, 2013), environmental groups sought to compel EPA to take action to reissue two administratively-continued permits, which had been issued more than 15 years earlier. (This was in a State where EPA is still the permitting authority.) In denying that petition, the First Circuit noted EPA's position:

> EPA maintained that it required additional time to complete the complex analyses required to develop NPDES permits for steam electric power plants. In addition, EPA argued that the permits must be balanced against a number of competing priorities, which the agency has limited resources to meet.

Those same considerations apply with just as much force to States issuing permits as they did to EPA's permitting authority in that case.[1] Yet, EPA's Proposal would give the Agency unlimited discretion to force a State to reissue permits, even when the States have "a number of competing priorities" and "limited resources." Moreover, while EPA says that it expects the new authority to be used "in very limited circumstances," there is no such limitation in the regulatory language, and the criteria that would be considered in using this new authority are so broad that they could be applied to virtually any permit. This new, virtually unbounded authority is simply improper.

It is not clear, from the Proposal, what legal or factual basis EPA has for adopting this new "second veto" authority. The Agency notes that it did include a similar regulatory change in the "TMDL Rule" that it adopted back in 2000. EPA does concede that the TMDL Rule was withdrawn in 2003, due to "widespread controversy and disagreement over the rule and its legal authority." But EPA then seeks to dismiss the importance of that withdrawal, by stating that "the TMDL rule and disagreement over its legal authority were not based on concerns regarding the proposed section on administratively continued permits." That statement is simply not true, and we know that because the FWQC's predecessor organization, the TMDL Coalition, was one of the groups that challenged the section of the TMDL rule that concerned administratively continued permits. The Coalition filed comments explaining why that portion of the rule lacked legal authority, and when the Coalition filed its petition for review of the TMDL rule in the D.C. Circuit, the Coalition's list of issues to be litigated – filed with the Circuit – specifically identified the "second veto" provision as one of the issues that the Coalition intended to brief. Since the Rule was withdrawn, the briefing never happened. But the veto provision, and its legal authority, were challenged during that process – and the same concerns exist now, about the parallel provision in the Proposed NPDES Update Rule.

In the "second veto" provisions of the Proposal, EPA states that it can exercise this new review authority by deeming an administratively-continued permit to be a "proposed permit." In fact, the Agency is proposing to change the meaning of the term "proposed permit" in order to make this happen. The lack of legal or logical basis can be seen by

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[1] In fact, most EPA Regions have worse backlog rates, for permits that they issue, than the States in their Regions. Permit backlog information obtained from EPA, NPDES Permit Status Reports, *available at* https://www.epa.gov/npdes/npdes-permit-status-reports (last visited July 14, 2017).

examining carefully what the Agency is trying to do with that definition. Under the current rules, a "proposed permit" is a permit that has been prepared in final form by a State and sent over to EPA for its review before the State issues it as a final permit. That makes sense; the State has completed its work on the permit, and is now "proposing" it for EPA to review and, hopefully, not object to, so the State can go ahead and issue it as a final permit. Now, though, EPA wants to add, to the definition of "proposed permit," this phrase: "or a State NPDES permit designated as a proposed permit under Section 123.44(k)." New Section 123.44(k), in turn, states that EPA "may, in its discretion, review the administratively continued permit as a proposed permit." So, even though that administratively continued permit has already been issued once as a proposed permit, and sent to EPA for review, and not objected to, EPA can simply decide, years later, to now call the final permit a "proposed permit" and object to it. The concept that one can call an administratively-continued, already-EPA-reviewed permit, which has been in effect for at least 5 years, a "proposed permit" represents a straining of the English language that simply should not be tolerated. An administratively-continued permit and a proposed permit are two different things, no matter how much EPA tries to change how it defines either concept.

The difference between administratively-continued permits and proposed permits is made even clearer by going back to where the permit process starts: the application process. Under EPA's new veto process, when a State is told that an administratively-continued "proposed" permit is inadequate, it must go back and revise the permit to meet new requirements that have been issued since the permit was initially issued. But that raises at least two difficult process questions. First, in revising the permit, what information does the State consider? That permit was issued more than 5 years ago, on the basis of an application, and it would seem that the State would need to use that application as the basis for the permit going forward. But that application is likely outdated. Moreover, the permittee will have filed another application since then, since they were required to file a new application at least 180 days before that permit expired. Can the State use that newer application in revising the permit? That is not clear – that application is for a different permit, which has not yet been issued, and has no direct relation to the administratively-continued permit that was issued previously. Even more importantly, if the administratively-continued permit is now deemed an inadequate "proposed permit," how does the State revise it to address EPA's objections, when it is an administratively continued permit that, under basic Federal (and State) administrative law principles, cannot be modified? There are no answers to these questions, because it was simply never intended by Congress that EPA could do what it is trying to do here. Permits can be objected to once, and only once, before they are issued. EPA's attempt to "take a second shot" at the permit, years later, is both illegal and illogical.

Beyond the legal and logical problems with the EPA "second veto" proposal, this concept is simply unnecessary. The Agency has worked closely with the States to have permits issued in a more timely manner, and by designating certain permits as "priority permits," the agencies have made great strides in reducing backlogs. We see no reason why that process cannot continue to yield good results. To

the extent that EPA believes that these programs for timely issuance of key permits need improvement, that is a program management issue, to be addressed by EPA and States cooperatively. For example, if the Agency feels that it needs greater ability to focus on a particular permit and get that permit reissued in the near-term, a provision promoting that goal could be made part of the EPA/State agreements under which the Federal Government provides funding for State water programs under Section 106 of the CWA. Certainly it makes sense to modify those agreements first, and see if that addresses the concern, before making major changes to the NPDES rules to try to accomplish the same aim. In fact, the rule changes proposed by EPA would go far beyond that purpose, since they would allow EPA to force reissuance of <u>any</u> permit that had not been reissued in a timely way by the State. (While EPA states that it would not intend to use the provision often, there is nothing about the rule change that would limit how often it could be used.) The rule change, therefore, is overbroad, unnecessary, and – as stated above – illegal and illogical. For all of these reasons, the "veto of administratively-continued permits" provision cannot and should not be adopted.

2. **DILUTION ALLOWANCE DATA REQUIREMENTS: The new requirement that a dilution allowance must be supported by pollutant-specific data or analyses is a major change in the rules, and improperly invalidates reasonable mixing assumptions that are made by States in writing permits.**

In the Proposal, EPA adds a major new requirement as to the issuance of dilution allowances in permits: it requires that any dilution allowance must "be supported by data or analyses quantifying or accounting for the presence of such pollutant or pollutant parameters in the receiving water." While this new provision may sound innocuous, it actually constitutes a substantial change in how dilution allowances are issued and justified, and will effectively reverse the mixing zone policies that have been followed (successfully) for years by many State permit authorities.

As EPA concedes, "in many instances permitting authorities grant dilution allowances for pollutants assuming the complete absence of the pollutant in the receiving water." That policy has been followed in many States, and EPA Regions have allowed it and expressly approved its use. Yet, the Agency now claims that "EPA has long intended that permit writers should consider information regarding the actual assimilative capacity of the receiving waters and the amount of the pollution already present in the receiving water when determining dilution allowances and mixing zones." While EPA may have "intended" that, in practice the Agency has not required States to follow that practice, and has allowed States to make reasonable, practical assumptions regarding mixing, that allow States to issue permits in a timely manner without extensive deliberations and arguments over the amount and nature of background water quality data. EPA is now changing that long-held policy.

The extent of EPA's policy change is dramatic. The Agency now states that every time that a dilution allowance is granted, the permitting

agency would be required to conduct "a basic background inquiry into the receiving water's assimilative capacity," and "would be required to include a basis grounded in analyses of available information."[2] Importantly, if "the actual assimilative capacity of the receiving water cannot be accurately determined or predicted," then the permitting agency would have to establish permit limits based on meeting water quality criteria at end-of-pipe. This change in policy will likely result in many dischargers having to meet much more stringent effluent limits, with enormous potential compliance costs.[3] Yet, EPA states that the change "will not impose a new burden." That is clearly not the case. The burden imposed, and the change required in State permitting programs, is substantial, and EPA has not justified making this radical change. It should not be adopted.

3. **ANTI-BACKSLIDING: The proposed changes to the anti-backsliding regulations need to be made completely consistent with the statutory provisions on that issue.**

On the anti-backsliding issue, EPA properly recognizes that it has not yet made its regulations consistent with the statutory provisions on anti-backsliding that Congress enacted back in 1987. EPA states that it is "including anti-backsliding statutory language verbatim," and therefore the Agency is not seeking comments on the proposed language. In fact, though, that language is not entirely consistent with the statute. New Section 122.44(l)(3)(ii) states as follows:

> *Standard Attained.* Any effluent limitation based on a total maximum daily load or other waste load allocation established under this section, or any water quality standard established under this section, or any other permitting standard may be revised only if such revision is subject to and consistent with the antidegradation requirements established under this section.

There are two problems with this new language. First, and most importantly, it omits a critical portion of the relevant statutory language. The CWA provision at issue is Section

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[2] The costs of collecting this information can be enormous. Taking multiple samples, over various seasons, in a range of conditions, can be extremely costly as well as practically difficult. And, unless the data are collected pursuant to a well-constructed sampling plan, the possibilities for error, and drawing of incorrect conclusions, are significant. EPA needs to recognize this burden, which it did not do in the Proposal.

[3] In fact, many of EPA's new recommended human health water quality criteria are so stringent that they are lower than the method detection limits for those parameters. In those situations, the Proposal could obligate States to issue permit limits of "no detect allowed" for those substances. Such an irrational result should, and can, be avoided.

303(d)(4)(B), and it is identical to the above EPA language, except that it starts with this proviso: "For waters identified under paragraph (1)(A) where the quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable water quality standards,". That limitation of the provision fits perfectly with the title of that provision in EPA's proposal: "Standard Attained." But by taking this important statutory language out, EPA has made the provision apply to all waters, instead of only those that are attaining standards. That is obviously inconsistent with the statutory language, and we assume that the omission was by accident. EPA should restore that missing statutory language in the new regulatory language.

The other problem with the new anti-backsliding language, which applies to Section 122.44(l)(3)(ii) and to the preceding provision, Section 122.44(l)(3)(i), is that EPA has retained language from the CWA that needs to be adjusted when put into the NPDES rules. Several times, the new rule language refers to various actions, such as TMDLs and water quality standards, "established under this section." In the relevant statutory anti-backsliding provision, which is Section 303(d)(4), that language properly referred to other portions of Section 303 that govern TMDLs and standards. But when the anti-backsliding provision is inserted in 40 CFR 122.44, which is part of the NPDES rules, referring to "this section" for TMDL and water quality standard actions is simply incorrect. Those references in Section 122.44(l)(3) need to be corrected, so they refer properly to Section 303 of the CWA.

4. **SUBLETHAL TOXICITY: The addition of sublethal effects to the definition of "whole effluent toxicity" is either unnecessary or a significant change in the regulations. In either event, this change should not be made.**

EPA is proposing to make the definition of "whole effluent toxicity" ("WET") more specific. The primary aspect of this change, as noted in EPA's preamble, is to include chronic sublethal effects within the definition of WET. The Agency attempts to minimize the impact of the change, claiming that the "proposed clarification would not change any existing regulatory requirements with respect to inclusion of acute or chronic WET limits in permits." EPA further explains that if a State chooses to have its WET water quality standards focus on either acute or chronic toxicity, then permit limits would be written only to address the chosen endpoint. But if those statements are true, then we do not understand why EPA feels it necessary to change the WET definition at all. If the changed definition makes no difference in how the States or EPA conduct business, then the change is not needed. And if the changed definition does make some difference in how permits are issued,

then EPA has proposed a significant change to the regulation, and a thorough analysis of that change is needed beforehand.[4]

5. **DATA SUBMITTAL DEADLINE FOR NEW DISCHARGERS: The new deadline of 18 months for new dischargers to submit data has not been justified. The current deadline of 2 years should be retained, for both municipal and industrial dischargers.**

Under the current NPDES rules, new industrial dischargers are given two years after commencement of the discharge to submit effluent data. For municipal dischargers, there is no specified timeframe. In the Proposal, EPA specifies a timeline of 18 months for both of these groups to submit their effluent data. We do not disagree with the notion that the deadlines for both discharger groups should be consistent, but we see no valid reason for EPA to change that deadline from 2 years, as it is currently, to 18 months. For new dischargers, it can take time, after commissioning and start-up, for the operations to move into a steady-state situation, in which representative data can be collected. Then, the discharger would need to collect sufficient effluent data, considering seasonal variations. That entire process could certainly take more than 18 months to complete.

EPA indicates in the preamble that 18 months "would provide a reasonable time period." But the Agency says nothing about its prior choice of 2 years, and does not explain why it is reversing its previous view that 2 years was the appropriate timeline. EPA also improperly minimizes the impact of the change, stating that the new timeline would "impose no new burden." Of course, there is a new burden; the discharger has to prepare and submit the effluent data 6 months earlier than under the current rules. Unless and until EPA can justify that new requirement and explain why the current requirement is improper, it should retain the 2-year deadline in the current rules, and apply it to all new dischargers.

6. **REASONABLE POTENTIAL FOR NEW DISCHARGERS: The new requirements as to "reasonable potential" determinations for new dischargers constitute major changes in the rules, and have not been justified as necessary.**

Like the new requirements for dilution allowances, the provisions in the Proposal as to "reasonable potential" determinations for new dischargers include new requirements that seem uncontroversial but that actually make major changes in current practices. As EPA recognizes, permitting agencies "often defer the reasonable potential determination and

[4] This analysis needs to include a review of the costs and challenges involved in doing sublethal testing. The tests are costly, and testing services are not readily available in all geographic areas. Short holding times, and high sample volume requirements, result in the need to ship large volumes of water by express courier to remote laboratories.

development of WQBELs until a minimum data set has been collected." That is a reasonable practice, which EPA has allowed many States to follow; it ensures that for dischargers that are not yet in operation, decisions about permit limits are made after enough information has been collected to make a scientifically-sound determination. Yet, that is the practice that EPA, in the Proposal, seeks to prohibit.

The Proposal would require that a decision on whether to require a permit limit "must consider relevant qualitative or quantitative data, analyses, or other valid and representative information for pollutants or pollutant parameters that could support the need for effluent limitations for new discharges." EPA makes clear that the purpose of this change is to ensure that States make permit limit-setting decisions when the permits are issued for new dischargers, apparently without regard to whether enough information (a minimum data set) is present to make a decision with a reasonable degree of scientific confidence. While EPA states that this new rule is "consistent with...existing guidance and policy," that is just not so – EPA has not required States to follow this practice previously, and it has provided no justification for mandating that States change their EPA-approved procedures as to permitting of new dischargers. The proposed change should not be adopted.

7. **FLOW VALUES FOR MUNICIPAL PERMITS: The change in the flow values used in determining water quality-based limits for POTWs, which moves away from the current reliance on design flow, is improper and should be removed from the rules.**

In the Proposal, EPA seeks to change the flows that are used to calculate limits for POTWs. The Agency states that it is simply intending to "provide permit writers with additional flow options for calculating WQBELs," but the change is actually more significant than just providing options. Under current rules and State permitting policies, all limits for POTWs – whether technology-based or water quality-based – are generally calculated using design flows. That makes sense, given the nature of municipal operations, which tend to increase or decrease in wastewater flow depending on economic growth (or lack thereof), which is not in the control of the treatment facility. In the proposal, EPA points out that for industrial operations, limits are generally based upon "actual production of the facility," and then suggests that limits for municipal operations should be calculated similarly. The implication is that States should use "effluent flows other than design flow" to determine limits for POTWs. In the Proposal, EPA states that it is not intending to preclude permitting authorities from using design flows, just providing them with other options. But EPA provides no basis for deciding when to use design flows versus other flows. The Agency states that the proposed change "is not intended to discourage permitting authorities from current practices under which design flow is used for WQBEL development." But if that is the case, then it is hard to see why EPA is even proposing a change in the rules. EPA has not justified that change, and it should not be adopted.

8. REQUEST FOR VARIANCE INDICATION: Industrial and municipal dischargers must indicate in the permit renewal application whether a variance to water quality-based permit requirements is requested.

EPA is proposing to revise 40 CFR 122.21(f) and 122.21(j), to add a paragraph requiring applicants to indicate in the permit renewal application whether they are requesting any of the variances permitted under 40 CFR 122.21(m) (for non-POTWs) and (n) (for POTWs). EPA states that the primary reason for this change would be to ensure that the permitting authority is aware of the request at the time of permit application and can therefore better determine whether the facility has submitted all of the required information. However, this rationale does not recognize that variance requests and permit applications have different timelines. Renewal applications must be submitted at least 180 days, in some cases 270 days, before the current permit expires, if the facility wishes to continue discharging. At that point in time, it is unlikely that a final conclusion will have been made as to whether a variance is needed. During the permit renewal process, large amounts of data are collected and compiled, to fully characterize the effluent. Thorough evaluations of these data versus new or changing standards may not be, and often are not, completed prior to submittal of the renewal application. Moreover, discussions with the regulatory agency during the permitting process facilitate understanding of the implementation strategy for new standards, and one may determine at that point that a variance is needed. In these situations, one would not have known, when submitting the permit application, that a variance request would be submitted later.

EPA's Proposal does not clearly state whether if industrial and/or municipal dischargers would still have the opportunity to pursue a variance if that intent was not indicated in the original permit renewal application. If variance requests would only be considered if they were noted in the permit renewal application, this would likely cause permittees to make premature decisions regarding permitting strategy, rather than decisions based upon well-established data and logical evaluations. Additionally EPA states the rationale for the change is to "better determine whether the facility has submitted all the required information". This statement once more obscures the intent of the proposed change – is EPA requiring a simple indication of intention to submit a variance request with the application, or must the discharger meet all requirements for submittal of a variance application? Again, EPA minimizes the impact of the change, stating that the proposal "imposes no new burden." The burden imposed is substantial, and the proposed rule change should not be adopted.

9. **DETAILS IN FACT SHEETS: The new requirements for further specificity in fact sheets generally promote transparency and regulatory accountability. We support the inclusion of those changes in the rules, after review to ensure that the burdens created by the final provisions are reasonable.**

In the Proposal, EPA adds significant additional detail to the information that it requires to be included in fact sheets. This is based on an Agency finding that the current rules "lack specificity, which has led to fact sheets with very little or inconsistent justification of the permit terms and conditions." That EPA finding is consistent with the experience of FWQC members. The level of detail contained in fact sheets differs considerably among the various permitting authorities. In some cases, the fact sheets have so little information that it is very difficult for any stakeholder – even the discharging entity itself – to determine how decisions were made as to whether limits should be included, and as to the level at which the limits should be set. That makes it difficult to comment on draft permits in an effective and meaningful way. Adding additional information to the fact sheets will improve transparency and regulatory accountability, which are surely important objectives for any regulatory system, including the NPDES program.

We understand that permitting is a difficult and time-consuming activity, and that there are resource constraints, so the level of detail required should be reasonable. We encourage EPA to review the proposed changes in the fact sheet requirements carefully, as it is finalizing these provisions, to ensure that the burdens will not be excessive. Also (as discussed further below), EPA needs to recognize that the new fact sheet requirements will carry an additional burden, which needs to be considered, along with the burdens created by other parts of the Proposal, in determining the final provisions to be adopted.

10. **MINIMIZING REGULATORY BURDENS: EPA should develop reasonable estimates of the burdens created by each aspect of the Proposal, and then seek to minimize that burden as it finalizes the regulations.**

We have noted several times, in these comments, that EPA has underestimated the burdens created by the new permitting requirements in the Proposal. In several cases, EPA has stated that there is no new burden created by a specific provision, when it is obvious that States and/or permit applicants will have to do more work than is required under the current regulations. The Agency needs to reevaluate those situations, develop reasonable estimates of the amount of additional work involved (including the costs that result), and then add those estimates to the burdens that it already expects to occur from the new requirements, so that both the Agency and the stakeholders have a clear sense of the overall burden created. Then, as EPA makes decisions about the content of the final regulations, the Agency should seek to minimize this overall burden, so that the goals embodied in the Proposal can be

reached in an effective and efficient manner. As a matter of law, and as a matter of sound regulatory policy, that effort is critical to the successful completion of this rulemaking.

The FWQC appreciates the opportunity to submit these comments concerning the development by EPA of changes to the NPDES regulations. Please feel free to call or e-mail if you have any questions, or if you would like any additional information concerning the issues raised in these comments.

Fredric P. Andes
Coordinator

Federal Water Quality Coalition

CALIFORNIA ASSOCIATION of SANITATION AGENCIES

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August 2, 2016

Water Docket
U.S. Environmental Protection Agency
Mail Code 4203M
1200 Pennsylvania Ave., N.W.
Washington, DC 20460
Attention Docket ID No. EPA-HQ-OW-2016-0145

Submitted via Federal Rulemaking Portal

EPA-HQ-OW-2016-0145
NPDES Application and Updates Rule

The California Association of Sanitation Agencies (CASA) appreciates the opportunity to submit comments to the United States Environmental Protection Agency (EPA) in accordance with the May 18, 2016, Federal Register Notice (Notice) requesting stakeholder input regarding proposed changes to the National Pollution Discharge Elimination System (NPDES) regulations. For 60 years, CASA has been the leading voice for public wastewater agencies on regulatory, legislative and legal issues. We are an association of local agencies, engaged in advancing the recycling of wastewater into usable water, generation of renewable energy, and other valuable resources. Through these efforts we help create a clean and sustainable environment for Californians. Changes to the NPDES regulations directly impact our member agencies.

CASA supports EPA's goal to align the NPDES regulations with the Clean Water Act (CWA) statute; eliminate regulatory and application form inconsistencies; improve permit documentation, transparency, and oversight; clarify existing regulations; and remove outdated provisions. Specifically, CASA supports proposed revisions allowing for public notice of NPDES permits to be posted on the permitting authority's public website, as well as changes to improve the level of detail and information included in fact sheets to facilitate more transparent and effective documentation of permitting decisions and determinations concerning NPDES permits.

EPA has indicated that the proposed changes are primarily clarifications, and therefore should be non-controversial; however, CASA has identified some substantive changes that represent significant deviations from existing policy and are of great concern to our members. Two changes that we strongly recommend against are: (1) the proposed revisions to § 122.45, regarding the calculation of NPDES effluent limitations based on other-than-design flow for publicly-owned treatment works (POTWs); and (2) the proposed revisions to § 123.44, regarding EPA review of and objections to State permits whereby an administratively continued State permit could be designated as ''proposed'' after either a two-year or five-year period following the expiration of the initial five-year permit term, at which time the permit would be evaluated and decided

upon by EPA. CASA firmly believes that these two proposed changes would be detrimental to the NPDES program and would have adverse unintended impacts on California municipalities and POTWs, and therefore should not be implemented by EPA.

CASA's input and recommendations on these topics as well as general comments on the proposed revisions to the NPDES regulations are discussed in detail in the paragraphs that follow. Specific changes are included as Attachment 1.

§122.45 - Calculating NPDES permit conditions

Design Flow for POTWs

The proposed NPDES Application and Updates Rule includes revisions to § 122.45(b) that will require permitting authorities to calculate effluent limits for POTWs using design flow only where the limits are based on technology standards. Existing regulation states that POTW permit effluent limitations, standards, and prohibitions shall be calculated based on design flow. This is clearly a significant change to existing regulations as it will allow permitting authorities to use flow other than design (e.g. current flow, estimated flow, etc.) as the basis for calculating effluent limitations for POTWs.

Existing regulations stipulate the use of design flow in calculation of effluent limitations for POTWs for a number of reasons. POTWs provide an essential service to public health, are designed and constructed through careful planning processes to meet future growth, and represent a major investment of public funds. Unlike privately owned industrial dischargers who can fully control production levels in their facilities, discharge flow rates from most POTWs are affected by population growth, water usage rates, service area growth, and climatic conditions and, as such, are subject to changes beyond their control. The duration and severity of climatic variations (such as the recent drought in California) have been and will continue to be difficult to predict, and wastewater treatment is always subject to significant variability.

The negative impact of the change to non-design flows as the basis for calculating mass-based effluent limitations would be particularly significant in light of the proposed changes to the anti-backsliding provisions, which would prevent future changes in effluent limitations even as flows increase, unless the change would result in attainment of the water quality standard when a total maximum daily load has been established. POTWs would accrue violations due to flow increases beyond their control and would be unable to fully utilize the design capacity of their facilities, thereby stranding assets financed by public funding, and would need to build additional treatment facilities to compensate for loss of operational capacity.

CASA strongly recommends against this change and requests that the proposed revisions to § 122.45(b) be removed from the proposed rule in their entirety.

§ 123.44 - EPA review of and objections to State permits

The proposed revisions to § 123.44 would allow EPA to deem any State-issued permit that is not reissued within a certain period after expiration (either 2 years or 5 years) to be a "proposed" or a "draft" permit, which EPA could then formally object to as not containing appropriate permit limits and conditions. If a State does not address those concerns (such as the need for new limits based on new water quality standards that have been adopted since the permit was first issued) by issuing a new permit containing the new conditions, EPA could take over the permit and issue it on its own, as an EPA permit.

EPA and the States have made significant progress in recent years to reduce permit backlogs, and EPA has not provided data to indicate that outcomes differ when the EPA or the State agency is the permitting agency. Therefore, it is not clear why EPA needs a new regulatory mechanism to alter the issuance of permits. In addition, the proposed revision does not address the status and processing of pending applications for existing NPDES dischargers that have already submitted data and documentation for permit renewal under the terms of their previous permit. The compliance status of these pending-applicant dischargers in the interim would also be unclear under the proposed revised scheme.

Therefore, CASA strongly recommends against this change and request that the proposed revisions to § 123.44 be removed from the proposed rule.

§ 122.44 - Establishing limitations, standards, and other permit conditions

Antidegradation Policies

According to 40 CFR § 130.3, "A water quality standard (WQS) defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses". Furthermore, water quality standards are defined in CWA § 303(c)(2)(A) as "the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses." Based on these WQS definitions, antidegradation policies represent implementation procedures to attain or maintain WQS and are not components of WQS. CASA therefore recommends that the preamble on page 31353 not characterize antidegradation policies as components of state water quality standards:

> "Water quality standards consist principally of ~~three~~two elements: Designated uses~~,~~ and water quality criteria ~~and antidegradation policies~~."

Antidegradation Applicability Clarification

As currently written, the proposed revisions in § 122.44(d)(1) concerning antidegradation policy can be misconstrued as being applicable to all waterbodies, without regard to applicability, possibility for exceptions, or other considerations as established in § 131.12. CASA strongly recommends that the proposed revisions be revised as indicated below:

> "§ 122.44 Establishing limitations, standards, and other permit conditions (applicable to State NPDES programs, see § 123.25).
>
> * * * * *
> (d) * * *
> (1) Achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality, and **where applicable,** ensure consistency with the State antidegradation policy established under § 131.12."

Dilution Allowance Determinations

The NPDES Application and Updates Rule under § 122.44 (d)(1)(ii) and § 122.44 (d)(1)(vii)(C) proposes requirements for information to be considered and procedures to be followed by permitting staff in making determinations concerning dilution and mixing zone requirements for NPDES discharges. It also includes requirements for data and analyses quantifying and accounting for the presence of pollutants and references requirements for fact sheet documentation of such supporting information at § 124.56(a). However, the proposed text requires that only allowances comply with applicable dilution and mixing zone requirements. To facilitate transparency and oversight, CASA strongly recommends that all determinations of dilution and mixing zones, including allowances as well as denials, comply with the same requirements and that such determinations be clearly documented in fact sheets. CASA recommends that § 122.44(d)(1)(ii) be revised as indicated below:

> "§ 122.44 Establishing limitations, standards, and other permit conditions (applicable to State NPDES programs, see § 123.25).
>
> * * * * *
> (ii) When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures ~~which~~ **that** account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), the use of relevant qualitative or quantitative data, analyses, or other information on pollutants or pollutant parameters to assess the need for a

water quality-based effluent limitation, and where appropriate, the dilution of the effluent in the receiving water. A dilution ~~allowance~~ determination under this paragraph must ~~comply with~~ consider applicable dilution and mixing zone requirements and low flows established in State water quality standards and must be supported by data or analyses that account for the presence of each assessed pollutant or pollutant parameter in the receiving water (see fact sheet requirements at §124.56(a)).

* * * * *
(vii) * * *
(C) Any dilution determination, whether resulting in an allowance or denial of dilution credit, complies with applicable dilution and mixing zone requirements and low flows established in State water quality standards and must be supported by data or analyses quantifying or accounting for the presence of each limited pollutant or pollutant parameter in the receiving water (see fact sheet requirements at § 124.56(a))."

BMP Guidance

The Note to Paragraph (k)(4) provides references to technical information on BMPs and the elements of BMPs. To ensure that the most current BMP guidance is provided, CASA recommends that the listed BMP guidance documents be replaced by a general reference to the website where updated BMP information is contained. CASA recommends that § 122.44(k)(4) be revised as indicated below:

"§ 122.44 Establishing limitations, standards, and other permit conditions (applicable to State NPDES programs, see § 123.25).

* * * * *
(k) * * *
(4) * * *

Note to Paragraph (k)(4): Additional technical information on BMPs and the elements of BMPs ~~is contained in the following documents: Guidance Manual for Developing Best Management Practices (BMPs), October 1993, EPA No. 833/B–93–004, NTIS No. PB 94– 78324, ERIC No. W498); Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices, September 1992, EPA No. 832/R–92–005, NTIS No. PB 92–235951, ERIC No. N482); Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices: Summary Guidance, EPA No. 833/ R–92–001, NTIS No. PB 93–223550; ERIC No. W139; Storm Water Management for Industrial Activities, Developing Pollution Prevention Plans and Best Management Practices, September 1992;~~

~~EPA 832/R–92–006, NTIS No. PB 92–235969, ERIC No. N477; Storm Water Management for Industrial Activities, Developing Pollution Prevention Plans and Best Management Practices: Summary Guidance, EPA 833/R–92–002, NTIS No. PB 94–133782; ERIC No. W492. EPA guidance documents~~ can be obtained through the National Service Center for Environmental Publications (NSCEP) at *http://www.epa.gov/nscep.* In addition, States may have BMP guidance documents."

Reissued Permits

First, the revisions to § 122.44(l) of the proposed NPDES Application and Updates Rule are sequenced to begin with a paragraph numbered (l)(2)(i), thus indicating that EPA may intend to maintain the existing paragraph (l)(1). However, paragraph (l)(1) was not explicitly included in the documentation published in the Federal Register, nor was it included in the most recently amended version of § 402(o) of the CWA, indicating that there was no congressional approval for the language of paragraph (l)(1). To ensure consistency with the CWA, paragraph (l)(1) should be removed and the remaining paragraphs should be renumbered accordingly.

Second, the exceptions currently listed under (l)(2)(iii) can be applied to waters whether or not the applicable water quality standard has been attained. However, as currently written, the applicability of these exceptions is unclear, and the proposed revisions may prevent changes to effluent limits based on TMDLs unless the changes would result in attainment of the water quality standard. This would be a significant deviation from existing regulations because there would be no allowance for exceptions such as technical mistakes or alterations to facilities that would justify a less stringent limit. CASA requests that additional clarity be provided to indicate that the exceptions currently listed under (l)(2)(iii) are potentially applicable to waters meeting the classification of either (3)(i) or (3)(ii), as currently numbered in the proposed revisions.

To provide clarity and to better track the language and structure of the corresponding section of the CWA, CASA recommends that this section in the proposed rule be reorganized as follows:

"§ 122.44 (*l*) *Reissued Permits* * * *

(~~2~~ 1) General Prohibition.

(i) In the case of effluent limitations established on the basis of section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) of the CWA subsequent to the original issuance of such permit, to contain effluent

limitations ~~which~~ that are less stringent than the comparable effluent limitations in the previous permit.

(ii) In the case of effluent limitations established on the basis of section 301(b)(1)(C) or section 303(d) or (e) of the CWA, a permit may not be renewed, reissued, or modified to contain effluent limitations that are less stringent than the comparable effluent limitations in the previous permit except in compliance with paragraph (*l*)(3) of this section.

(~~iii~~ 2) ~~Exceptions.~~ Limitations on Revisions of Certain Effluent Limitations.

~~(3)~~ (i) *Standard Not Attained.* For waters identified under section 303(d)(1)(A) of the ~~Act~~ CWA where the applicable water quality standard has not yet been attained, any effluent limitation based on a total maximum daily load or other waste load allocation established under ~~this~~ section 303(d) may be revised only if: (A) The cumulative effect of all such revised effluent limitations based on such total maximum daily load or waste load allocation will assure the attainment of such water quality standard, or (B) the designated use ~~which~~ that is not being attained is removed in accordance with regulations established under ~~this~~ section 303 of the CWA.

(ii) *Standard Attained.* For waters identified under section 303(d)(1)(A) of the CWA where the quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable water quality standards, a~~A~~ny effluent limitation based on a total maximum daily load or other waste load allocation established under ~~this~~ section 303(d), or any water quality standard established under ~~this~~ section 303, or any other permitting standard may be revised only if such revision is subject to and consistent with the antidegradation ~~requirements~~ policy established under this section.

(3) Exceptions.

(i) A permit with respect to which paragraph (*l*)(~~2~~ 1) of this section applies may be renewed, reissued, or modified to contain a less stringent effluent limitation applicable to a pollutant, if:

(A) Material and substantial alterations or additions to the permitted facility occurred after permit issuance ~~which~~ that justify the application of a less stringent effluent limitation;

(B)(1) Information is available ~~which~~ that was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and

~~which~~ that would have justified the application of a less stringent effluent limitation at the time of permit issuance; or

(2) The Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(~~b~~B) of the CWA;

(C) A less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy;

(D) The permittee has received a permit modification under CWA section 301(c), 301(g), 301(h), 301(i), 301(k), 301(n), or 316(a); or

(E) The permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the reviewed, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification).

(ii) ~~Note to paragraph (l)(2).~~ Paragraph (~~2~~ 3)(~~ii~~ i)(B)(1) of this section shall not apply to any revised waste load allocations or any alternative grounds for translating water quality standards into effluent limitations, except where the cumulative effect of such revised allocations results in a decrease in the amount of pollutants discharged into the concerned waters, and such revised allocations are not the result of a discharger eliminating or substantially reducing its discharge of pollutants due to complying with the requirements of ~~this chapter~~ the CWA or for reasons otherwise unrelated to water quality.

(~~iv~~ 4) Limitations.

(i) In no event may a permit with respect to which paragraph (*l*)(~~2~~ 1) of this section applies be renewed, reissued, or modified to contain an effluent limitation ~~which~~ that is less stringent than required by effluent guidelines in effect at the time the permit is renewed, reissued, or modified.

(ii) In no event may ~~such~~a permit ~~to discharge into waters~~ with respect to which paragraph (*l*)(1) of this section applies be renewed, issued, or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of a water quality standard under CWA section 303 applicable to such waters."

§ 124.10 - Public notice of permit actions and public comment period

Public Notice Requirements

CASA supports the proposed changes to the public notice posting requirements as described under § 124.10 to allow for public notices of major NPDES permits to be posted on the permitting authority's public website, in lieu of posting in a daily or weekly newspaper. CASA recommends that all notices related to NPDES permits (major and minor permits) and hearings be allowed to meet public notification requirements by online postings.

§ 124.56 - Fact Sheets

Fact Sheet Requirements

CASA supports the proposed changes to the fact sheet requirements as described under § 124.56, and we particularly support changes to include discussions of a permit's monitoring and reporting requirements and assurances that the prescribed analytical methods meet the requirements of § 122.44(i). CASA also supports the proposed goals to improve the level of detail and information included in fact sheets to facilitate more efficient, transparent, and effective documentation of permitting decisions and determinations concerning NPDES permits. However, as discussed under the comment on dilution allowance determinations, CASA recommends that § 124.56(a)(1)(iv)(C) be revised as follows:

> "§ 124.56 Fact sheets.
>
> * * * * *
> (C) For any proposed water quality based effluent limitation or condition required by § 122.44(d), any dilution or mixing ~~allowance~~ determination, including a discussion of how ambient pollutant concentrations were considered in the water quality analysis;"

Thank you for the opportunity to provide input on the on the proposed NPDES Application and Updates Rule. If you have any additional questions or would like additional information on the issues identified above, please do not hesitate to contact me at alink@casaweb.org or (916) 446-0388.

Sincerely,

Adam D. Link
Director of Government Affairs, CASA

ATTACHMENT 1: Errata with Corresponding Page Numbers

1. Page 31371, section (l)(2)(ii): "…except in compliance with paragraph (l)(3) of this section." should be changed to "…except in compliance with paragraph (l)(2)(iii) of this section."

2. Page 31371, section (l)(3)(i): "*Standard Not Attained*. For waters identified under section 303(1)(A) of the Act…" should be changed to "*Standard Not Attained*. For waters identified under section 303(d)(1)(A) of the Act…".

Sherry Hull

From: Sherry Hull
Sent: Tuesday, August 16, 2016 1:32 PM
To: Sherry Hull
Subject: SWRCB Enforcement Policy

From: Adam Link [mailto:alink@casaweb.org]
Sent: Monday, August 15, 2016 9:41 AM
Subject: Proposed Changes to SWRCB Enforcement Policy

CASA Enforcement Workgroup,

We recently received notice that the State Water Board is proposing to make significant modifications to the Enforcement Policy. Here is a link to the redline version and notice: http://www.waterboards.ca.gov/public_notices/comments/index.shtml

I am just getting back and have not had a chance to review yet, but will do so this week. We should convene a call of the workgroup soon to discuss these proposed changes and develop an outline for comments. Here is a doodle poll wth possible times for a call: http://doodle.com/poll/2k75is9dd7rhifyi

Comments are currently due September 13, which does not give us a lot of time to provide feedback or meet with staff. At the CASA attorneys meeting last week, it was also suggested that CASA request an extension of the time for comments given the lack of engagement and notice on the part of the State Water Board. Unless I hear otherwise I am going to put together a draft letter requesting an extension and reach out to a few other associations to potentially join our request.

Please fill out the doodle poll and hopefully we find a time that works for next week. Thanks.

- Adam

Adam D. Link
Director of Government Affairs
California Association of Sanitation Agencies
916.446.0388, ext 2 (office)
916.947.2900 (mobile)
Ensuring Clean Water for California

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Sherry Hull

From: Sherry Hull
Sent: Monday, August 15, 2016 6:29 PM
To: Sherry Hull
Subject: EPA Enforcement Policy

From: Adam Link [mailto:alink@casaweb.org]
Sent: Monday, August 15, 2016 4:00 PM
To: Bobbi Larson <blarson@casaweb.org>; 'Terrie Mitchell' <mitchellt@sacsewer.com>; 'Debbie Webster' <eofficer@cvcwa.org>; Geoff Brosseau <geoff@brosseau.us>; David Williams <dwilliams@bacwa.org>; Thorme, Melissa <mthorme@DowneyBrand.com>; Granquist, Nicole <ngranquist@DowneyBrand.com>; Tess Dunham <tdunham@somachlaw.com>; Monica Oakley <mmowater@comcast.net>; Tremblay, Martha <MTremblay@lacsd.org>; Ann Heil <aheil@lacsd.org>; Green, Sharon <SGreen@lacsd.org>; Adam Link <alink@casaweb.org>; Mitch Mysliwiec <MitchM@lwa.com>; Haney, Lisa <LHaney@OCSD.COM>; Tom Grovhoug <tomg@lwa.com>; Meregillano, Tom <TMEREGILLANO@OCSD.COM>; Gallis, George <GGallis@lacsd.org>
Subject: Enforcement Policy Call Scheduled

Enforcement Workgroup,

Thanks everyone for the quick responses. It looks like next **Thursday, August 25 from 1-2 PM** will work for everyone, so let's schedule a call then.

Conference Call: (712) 432-1212
PIN# 408-153-751

I will send a calendar invite shortly, and an agenda early next week.

- Adam

Adam D. Link
Director of Government Affairs
California Association of Sanitation Agencies
916.446.0388, ext 2 (office)
916.947.2900 (mobile)
Ensuring Clean Water for California

www.casaweb.org

RMP

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Program Relevance

BACWA Representatives Guide the RMP

RMP Steering Committee

- Karin North, Vice Chair
- Jim Ervin
- Dan Tafolla

RMP Tech. Advisory Com.

- Eric Dunlavey
- Amy Chastain
- Rod Miller
- Nirmela Arsem
- Tom Hall

Addressing stakeholder needs is a priority for the RMP

Thank you to BACWA representatives who advise the RMP

RMP Impact for Wastewater Agencies

Regulations Addressed

- NPDES Permits
- Nutrient Watershed Permit
- CEC Action Plans
- Copper SSO Implementation Plan
- Selenium TMDL
- Mercury TMDL
- PCBs TMDL
- Mercury and PCBs Watershed Permit

RMP IMPACT SUMMARY: MUNICIPAL WASTEWATER DISCHARGERS

DECISIONS INFORMED BY THE RMP

Are treatment plant modifications or upgrades, or source reduction activities needed?

- **Which contaminants need to be reduced in municipal wastewater?**
  Examples of contaminants currently under consideration for reductions are nutrients, the current use pesticides fipronil and imidacloprid, and other contaminants of emerging concern.
- **At which treatment plants are the reductions needed?**
  Different segments of the Bay vary greatly in their general characteristics, including in some cases their sensitivity to additional contaminant loads. The need for load reductions may therefore vary in different parts of the Bay.
- **How much of a reduction is needed?**
  The goal of TMDLs and other control plans is to reduce concentrations in the Bay to levels that do not significantly impact beneficial uses. This requires a solid understanding of impairment and contaminant cycling in the Bay.
- **What is the effect of the reductions or modifications on Bay water quality?**
  Monitoring is essential in demonstrating that load reduction efforts achieve the desired improvement in beneficial use attainment. Treatment plant modifications (e.g., implementation of reverse osmosis for water reuse) also have some potential for adverse impacts on certain beneficial uses, and these must also be monitored.

Are actions needed for other pathways to reduce loads and impairment from contaminants found in municipal wastewater?
A holistic understanding of the relative importance of loads for all pathways is needed to optimize overall load reduction efforts.

REGULATIONS ADDRESSED

NPDES Permits

Mercury TMDL

PCBs TMDL

Selenium TMDL

Copper SSO Implementation Plan

Nutrient Watershed Permit

Mercury and PCBs Watershed Permit

CEC Action Plans

Cyanide SSO Implementation Plan

Upcoming RMP Products

RMP CEC Strategy Update

1. CEC monitoring, evaluating risk

2. Sharing expertise, learning from others

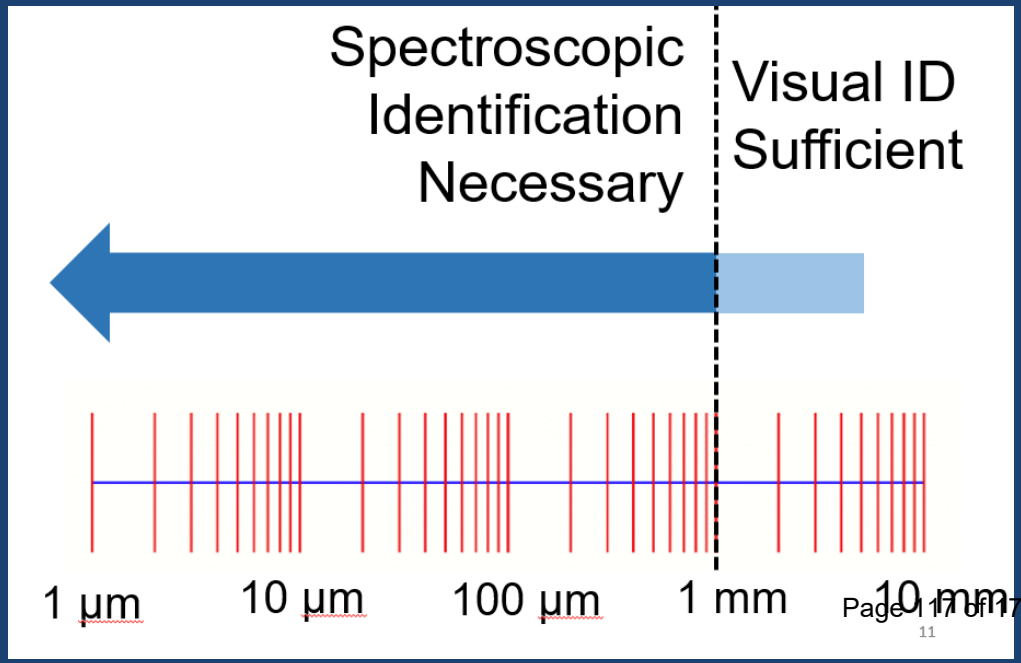
3. Non-targeted monitoring (bioassays, broadscans)

Voluntary Pharmaceuticals Study

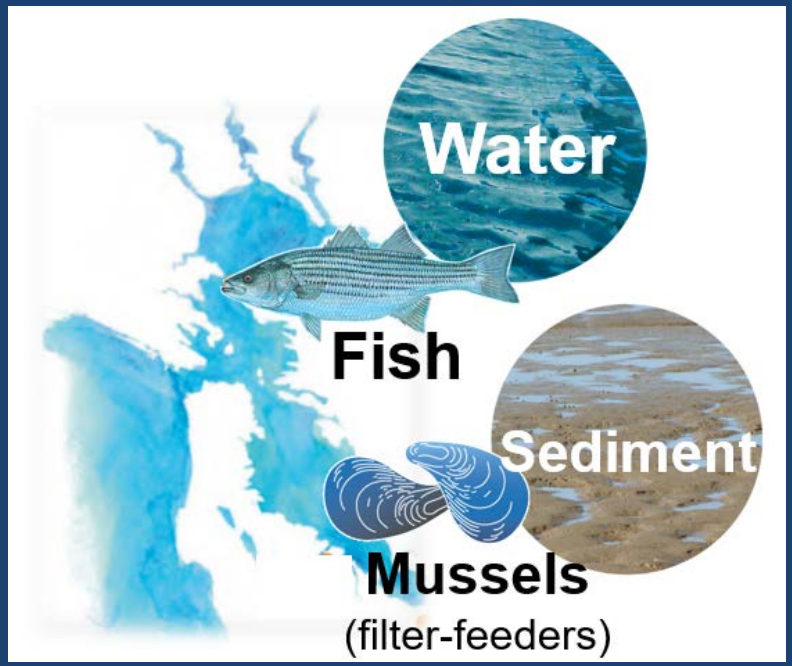
- 7 POTWs
- 104 target analytes
- Lab contract on agenda for approval
- Sampling to begin in Sept. before rains

Microplastics Workgroup Outcomes

Develop Analytical Methods for Small Particles



Collect in-Bay Data Priority on Fish



Priority Pollutant Monitoring

- Repeat of 2002-3 Study of “CTR” pollutants
- No concerns
- Summary of all results 1993-2015

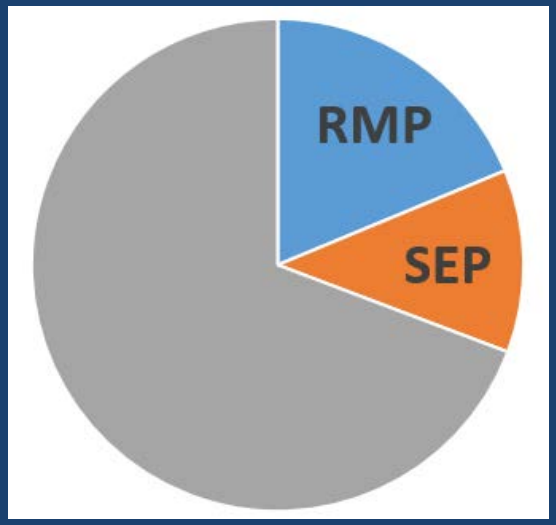
Nutrient Studies Inform a Multi-Billion Dollar Decision

Continuous Monitoring with Moored Sensors

Water Quality Modeling

Ship Based Measurements

RMP Contribution to NMS



Recent and Upcoming Reports

2015 Pulse of the Bay

Available: www.sfei.org/rmp/pulse

2016 RMP Update

Coming Soon (October)

http://www.sfei.org/projects/rmp-annual-meeting

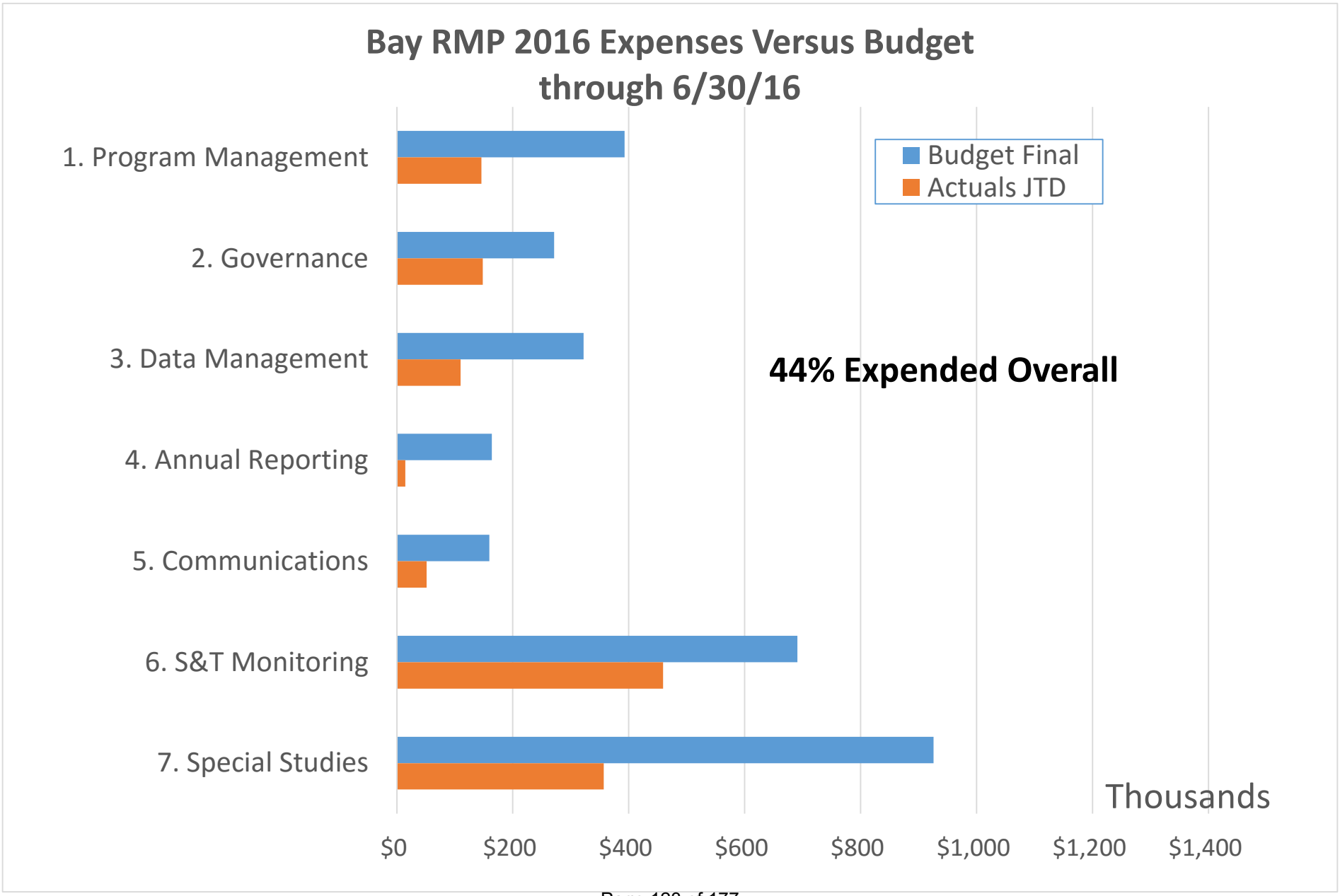
RMP Fees

Base Fees

- For 2017-2021, SC approved increases of 3% per year

AMR Order Supplemental Contributions

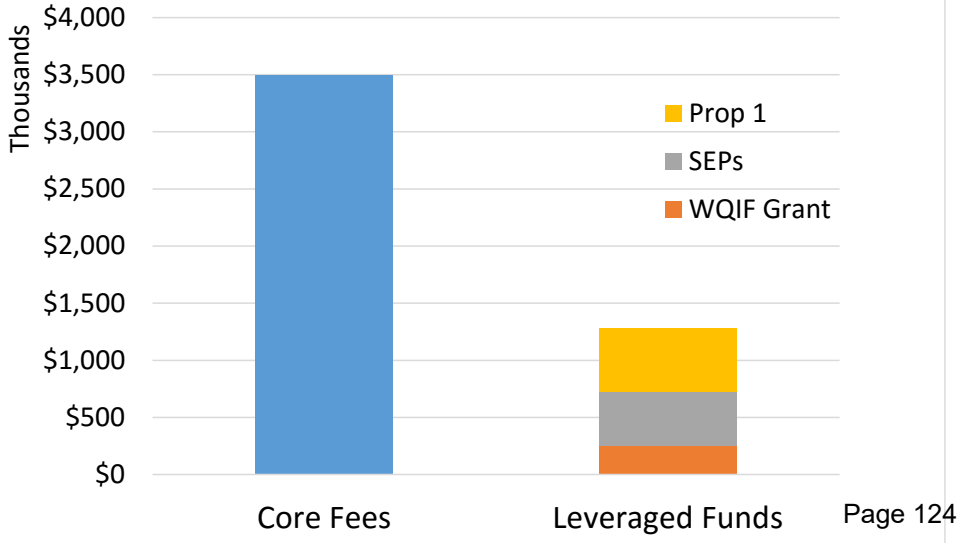
- 23 of 36 POTWs participating so far
- $163K received
- 9/30/16 is deadline for coverage under Order

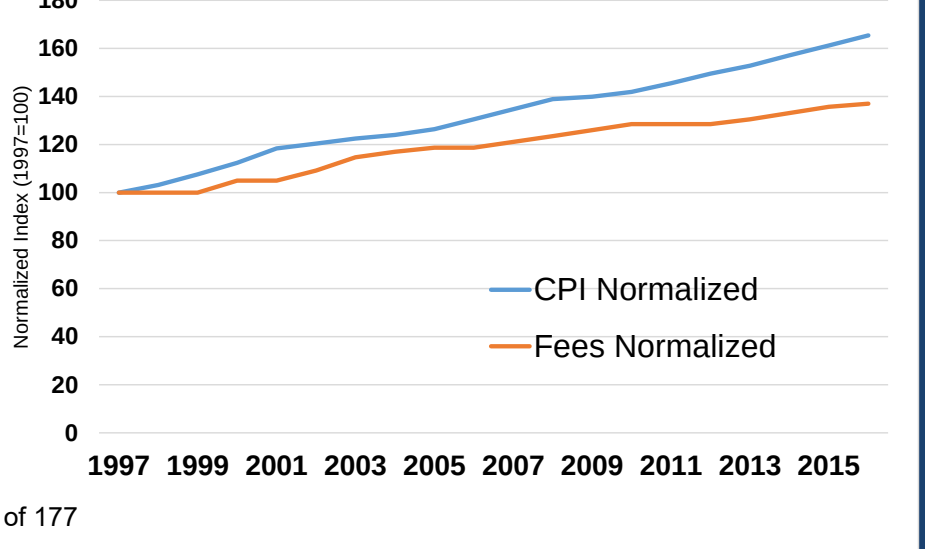

Bay RMP 2016 Expenses Versus Budget through 6/30/16
1. Program Management
2. Governance
3. Data Management
4. Annual Reporting
5. Communications
6. S&T Monitoring
7. Special Studies
Budget Final
Actuals JTD
44% Expended Overall
Thousands
$0
$200
$400
$600
$800
$1,000
$1,200
$1,400

Leveraging and Saving Money

$1.3M External Funds Secured in 2016

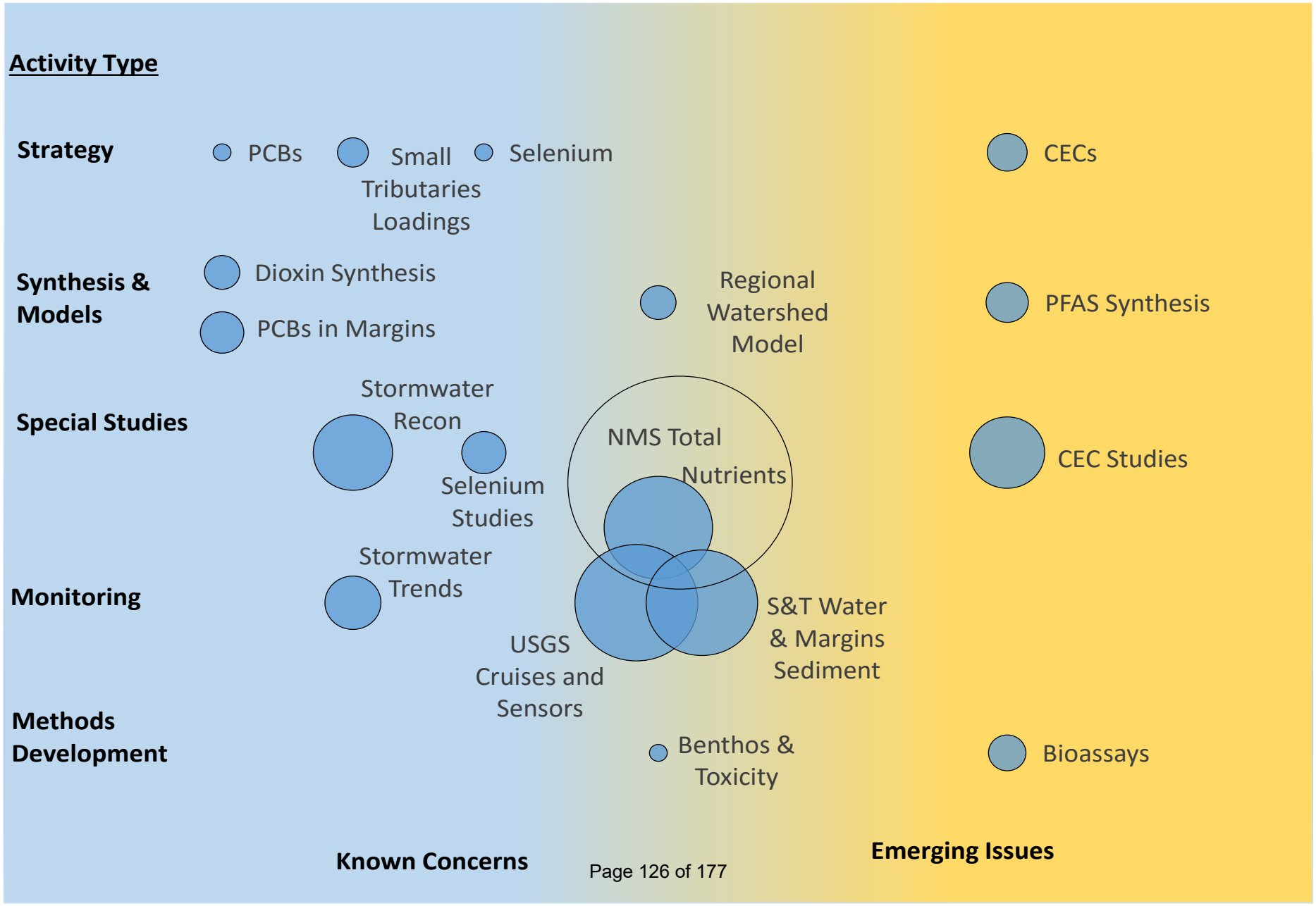
- Held cost increases slower than inflation
- In 2016, reduced PM costs by $100K





Plans for 2017 Studies

RMP Monitoring and Special Studies - 2017



What else would you do if you had access to:

- A unique platform for regional studies
- Independent and peer-reviewed science
- Infrastructure and experience to produce high-impact results
- Management decision-makers?

RMP

Science Needs Discussed Last Year

- ✓RO Concentrate Management
- ✓Pharmaceuticals in Effluent
- ✓Nutrient Studies
- ✓Dissolved Oxygen WQ Objective
- ✓CTR/Broadscan Monitoring

Studies Underway!

- Nanomaterials
- Impacts of Shallow Water Outfalls
- Toxicity Test Method
- True Cost of Clean Water

CURRENT AND ANTICIPATED MANAGEMENT DECISIONS, POLICIES, AND ACTIONS

DETERMINATION OF PERMIT LIMITS

LONG-TERM MANAGEMENT STRATEGY FOR PLACEMENT OF DREDGED MATERIAL/ DREDGED MATERIAL MANAGEMENT OFFICE

Regional Sediment Management Strategy

DREDGING PERMITS

Bioaccumulation testing triggers and in-Bay disposal levels

303(D) LIST AND 305(B) REPORT

COPPER

Compare levels to site-specific objectives triggers

CYANIDE

Compare levels to site specific objectives trigger

SELENIUM

North Bay Selenium TMDL

USEPA Water Quality Criteria

South Bay Selenium TMDL

DIOXINS

Review 303(d) listings and establish TMDL development plan or alternative

MERCURY

Review existing TMDL and establish plan to revise

PCBS

Review existing TMDL and establish plan to revise

NUTRIENTS

Nutrient Management Strategy

Nutrient Water Quality Objectives

PATHOGENS

Bay Beaches Bacteria TMDL

Source identification at non-compliant beaches

SEDIMENT HOT SPOTS

Review 303(d) listings and establish TMDL development plan or alternative

CONTAMINANTS OF EMERGING CONCERN

Review of RMP strategy

Development of action plans

TOXICITY

New state plan on effluent and receiving water toxicity

BAY WATERSHED PERMITS

Municipal Regional Stormwater Permit

Mercury and PCBs Watershed Permit for Municipal and Industrial Wastewater

Nutrient Watershed Permit for Municipal Wastewater

LEGACY PESTICIDES

Monitoring recovery

SUISUN MARSH

Establish TMDL for dissolved oxygen, mercury, nutrients, and salinity

The RMP contributes to effective management by providing scientific support for current policies and by anticipating and addressing information needs related to future policies and actions

2017 is the 25th Anniversary of the RMP

For More Information

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RMP Budget Year:	**2017**	3.0% increase in budget
Total of Current Year's Program Fees:	**$3,626,168**	
Avg Number of Program Participants 2005-2014:	**73**	
Number of Municipal Participants:	**35**	(POTWs)
Current Fees for Municipal Participants:	**$1,595,514**	
Base Charge [1]	**$4,967**	
Additional Fee for Load Factor [2]	**$102**	

NOTE: As of 2007 budget year the Water Board Letter requests that these data are reported in pounds per year (lbs/year) not lbs/day as in prior years.

2017 RMP Fees for Municipal Participants

	Participant	Daily flow unit	Cu	Ni	Cr	Se	2015 Total Load of Selected Metals	2014 Total Load of Selected Metals	Yearly Difference (%)	Yearly Difference (unit)	Metals Load Unit	Base Charge [1]	Additional Fee for Load Factor [2]	Total Fee
1	City of Benicia	MGD	28.84	17.82	2.45	2.56	51.67	46.31	112%	5.36	lbs/year	$4,967	$5,288	$10,255
2	City of Burlingame	MGD	50.91	29.95	2.32	3.51	86.69	97.45	89%	(10.76)	lbs/year	$4,967	$8,871	$13,839
3	City of Calistoga	MGD	1.81	0.63	0.04	0.13	2.61	6.20	42%	(3.59)	lbs/year	$4,967	$267	$5,234
4	Central Contra Costa Sanitary District	MGD	648.30	264.70	38.40	54.50	1,005.90	960.70	105%	45.20	lbs/year	$4,967	$102,940	$107,907
5	Central Marin Sanitation Agency	MGD	80.26	65.30	10.25	5.50	161.31	205.35	79%	(44.04)	lbs/year	$4,967	$16,508	$21,475
6	Delta Diablo	MGD	105.72	142.27	38.77	12.24	299.00	297.87	100%	1.13	lbs/year	$4,967	$30,598	$35,566
7	East Bay Dischargers Authority	MGD	1,289.00	731.00	120.00	73.00	2,213.00	2,301.00	96%	(88.00)	lbs/year	$4,967	$226,469	$231,437
8	East Bay Municipal Utility District	MGD	983.40	894.40	115.80	51.50	2,045.10	2,503.70	82%	(458.60)	lbs/year	$4,967	$209,287	$214,254
9	Fairfield-Suisun Sewer District	MGD	174.47	87.59	13.81	11.82	287.69	342.55	84%	(54.86)	lbs/year	$4,967	$29,441	$34,408
10	Las Gallinas Valley Sanitary District	MGD	23.99	12.64	1.25	0.90	38.78	67.65	57%	(28.87)	lbs/year	$4,967	$3,969	$8,936
11	City of Millbrae	MGD	35.78	15.45	1.66	2.17	55.06	52.27	105%	2.79	lbs/year	$4,967	$5,635	$10,602
12	Mountain View Sanitary District	MGD	22.26	8.63	0.65	2.42	33.96	34.99	97%	(1.03)	lbs/year	$4,967	$3,475	$8,443
13	Napa Sanitation District	MGD	39.66	51.05	5.43	3.09	99.23	146.89	68%	(47.66)	lbs/year	$4,967	$10,155	$15,122
14	Novato Sanitation District	MGD	23.87	29.48	3.54	3.57	60.46	93.48	65%	(33.02)	lbs/year	$4,967	$6,187	$11,155
15	City of Palo Alto	MGD	526.40	241.50	20.00	75.70	863.60	1,016.00	85%	(152.40)	lbs/year	$4,967	$88,377	$93,345
16	City of Petaluma	MGD	19.00	33.30	3.31	1.85	57.46	74.57	77%	(17.11)	lbs/year	$4,967	$5,880	$10,848
17	City of Pinole/Hercules	MGD	25.82	26.02	2.19	3.06	57.09	61.81	92%	(4.72)	lbs/year	$4,967	$5,842	$10,810
18	Rodeo Sanitary District	MGD	8.22	4.28	1.00	0.70	14.20	14.70	97%	(0.50)	lbs/year	$4,967	$1,453	$6,421
19	San Francisco International Airport	MGD	12.86	9.78	1.68	0.58	24.90	24.16	103%	0.74	lbs/year	$4,967	$2,548	$7,516
20	City and County of San Francisco	MGD	1,091.90	747.49	136.94	36.98	2,013.31	1,827.39	110%	185.92	lbs/year	$4,967	$206,034	$211,001
21	City of San Jose	MGD	673.10	1,318.70	138.40	115.20	2,245.40	2,112.10	106%	133.30	lbs/year	$4,967	$229,785	$234,752
22	City of San Mateo	MGD	162.83	127.41	14.14	9.05	313.43	529.47	59%	(216.04)	lbs/year	$4,967	$32,075	$37,042
23	Sausalito-Marin City Sanitary District	MGD	30.10	13.30	3.10	1.30	47.80	50.70	94%	(2.90)	lbs/year	$4,967	$4,892	$9,859
24	Sewerage Agency of Southern Marin	MGD	102.72	25.98	4.83	1.85	135.38	186.09	73%	(50.71)	lbs/year	$4,967	$13,854	$18,822
25	City of South San Francisco/San Bruno	MGD	184.99	79.27	17.31	8.92	290.49	336.23	86%	(45.74)	lbs/year	$4,967	$29,728	$34,695
26	Sonoma County Water Agency	MGD	0.00	0.00	0.00	0.00	0.00	12.89	0%	(12.89)	lbs/year	$4,967	$0	$4,967
27	Silicon Valley Clean Water	MGD	248.85	160.01	20.63	16.26	445.75	345.74	129%	100.01	lbs/year	$4,967	$45,616	$50,584
28	City of Sunnyvale	MGD	80.90	114.30	13.20	16.90	225.30	240.30	94%	(15.00)	lbs/year	$4,967	$23,056	$28,024
29	City of St. Helena	MGD	0.00	0.00	0.00	0.00	0.00	2.77	0%	(2.77)	lbs/year	$4,967	$0	$4,967
30	Marin County Sanitary District #5, Tiburon	MGD	12.95	6.93	1.10	1.05	22.03	27.22	81%	(5.19)	lbs/year	$4,967	$2,254	$7,222
31	Union Sanitary District	MGD	30.50	69.50	34.50	2.80	137.30	162.30	85%	(25.00)	lbs/year	$4,967	$14,051	$19,018
32	Vallejo Sanitation & Flood Control District	MGD	170.91	69.13	11.23	11.68	262.95	322.96	81%	(60.01)	lbs/year	$4,967	$26,909	$31,877
33	West County Wastewater District	MGD	189.78	75.35	13.47	4.69	283.29	374.70	76%	(91.41)	lbs/year	$4,967	$28,991	$33,958
34	Town of Yountville	MGD	0.04	0.02	0.00	0.00	0.06	2.70	2%	(2.64)	lbs/year	$4,967	$6	$4,973
35	U.S. Navy, Treasure Island	MGD	7.49	3.43	0.72	0.22	11.86	10.57	112%	1.29	lbs/year	$4,967	$1,214	**$6,181**
	TOTAL	MGD	7087.63	5476.61	792.12	535.70	13892.06	14891.78	93%	-999.72	lbs/year	$173,857	$1,421,656	$1,595,514

[1] BASE CHARGE = [10% of total program costs / avg number of RMP Program participants 2005-2014]

[2] ADDITIONAL FEE FOR LOAD FACTOR = [(total municipal costs - base charges) / total load of POTWs] * individual POTW's metals load
For informational purposes only. Prior years' data do not factor into the calculation of the fee.

RMP FY17 Invoices for Coverage Under Water Board Alternative Monitoring Requirement Order

POTW	Amount	Date Received	Received Amount	Balance
City of Benicia - Municipal	$8,886.00	8/8/16	$8,886.00	$0.00
Burlingame - Municipal	$8,886.00		$0.00	$8,886.00
Calistoga - Municipal	$184.00	6/13/16	$184.00	$0.00
CCCSD - Municipal	$9,726.00	6/1/16	$9,726.00	$0.00
Central Marin - Municipal	$9,181.00		$0.00	$9,181.00
Delta Diablo - Municipal	$8,886.00	6/6/16	$8,886.00	$0.00
EBDA - Municipal	$21,282.00		$0.00	$21,282.00
EBMUD (SD#1) - Municipal	$9,726.00	5/25/16	$9,726.00	$0.00
Fairfield/Suisun - Municipal	$9,726.00	5/25/16	$9,726.00	$0.00
Las Gallinas - Municipal	$7,656.00		$0.00	$7,656.00
Millbrae - Municipal	$8,886.00	7/11/16	$8,886.00	$0.00
Mt. View - Municipal	$7,886.00	7/17/16	$7,886.00	$0.00
Napa - Municipal	$7,656.00	7/8/16	$7,656.00	$0.00
Novato - Municipal	$9,726.00	5/26/16	$9,726.00	$0.00
Palo Alto - Municipal	$9,726.00	5/26/16	$9,726.00	$0.00
Petaluma - Municipal	$7,656.00		$0.00	$7,656.00
Pinole/Hercules - Municipal	$8,886.00		$0.00	$8,886.00
Rodeo - Municipal	$8,886.00		$0.00	$8,886.00
SF Airport - Municipal	$8,886.00	7/8/16	$8,886.00	$0.00
San Francisco SE - Municipal	$9,726.00		$0.00	$9,726.00
San Jose/Santa Clara - Municipal	$9,726.00	6/6/16	$9,726.00	$0.00
San Mateo - Municipal	$8,886.00		$0.00	$8,886.00
Sausalito - Municipal	$3,886.00	3/10/16	$3,886.00	$0.00
Sewer Agency of So Marin - Municipal	$4,886.00		$0.00	$4,886.00
So. SF/San Bruno - Municipal	$8,886.00	5/18/16	$8,886.00	$0.00
Sonoma - Municipal	$8,886.00	5/26/16	$8,886.00	$0.00
Silicon Valley Clean Water - Municipal	$9,726.00		$0.00	$9,726.00
Sunnyvale - Municipal	$9,726.00	6/22/16	$9,726.00	$0.00
St. Helena - Municipal	$184.00		$0.00	$184.00
Tiburon (SD#5) - Municipal	$3,886.00	6/20/16	$3,886.00	$0.00
Vallejo SFC - Municipal	$9,726.00	6/1/16	$9,726.00	$0.00
West County - Municipal	$10,820.00		$0.00	$10,820.00
Yountville - Municipal	$184.00	8/1/16	$184.00	$0.00
Treasure Island (U.S. Navy) - Municipal	$7,466.00	7/7/16	$7,466.00	$0.00
American Canyon - AMR	$9,726.00		$0.00	$9,726.00
Crockett Community Services Dist.- AMR	$184.00	6/1/16	$184.00	$0.00
Marin Co Paradise Cove(SD#5) - AMR	$184.00	6/20/16	$184.00	$0.00
TOTALS	**$289,027.00**		**$162,640.00**	**$126,387.00**

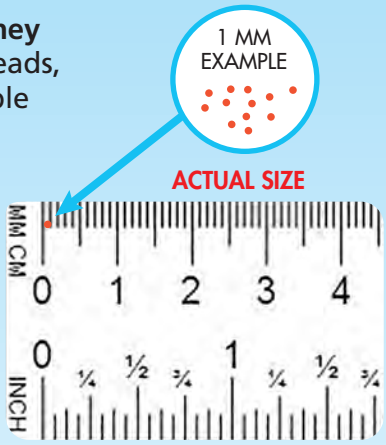
MICROPLASTIC CONTAMINATION IN SAN FRANCISCO BAY

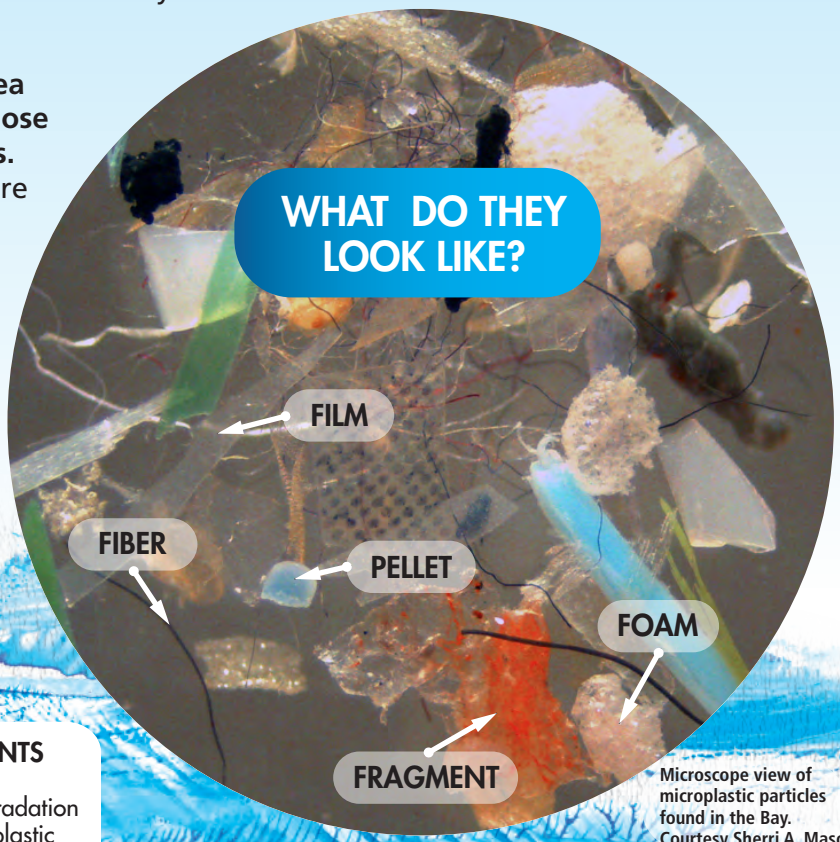
Contribution No. 770

RMP
REGIONAL MONITORING PROGRAM FOR WATER QUALITY IN SAN FRANCISCO BAY

www.sfei.org/rmp

- **Microplastics are tiny particles of plastic five millimeters or smaller, and they enter the environment through human use.** Beauty products with microbeads, synthetic clothing, plastic bags, polystyrene foam packaging, and disposable plastic items can all contribute to microplastic pollution.
- **Wildlife mistake microplastics for food.** When eaten, the tiny particles expose them to pollutants within the plastics or absorbed from their surroundings.
- **In a pilot study, microplastic pollution appeared to be greater in San Francisco Bay than in the Great Lakes and Chesapeake Bay.** Microbeads from beauty products and tiny fibers, likely from synthetic clothing, were found in all nine Bay water samples.
- **Microparticles passed through Bay Area wastewater treatment plants, even those using the most advanced technologies.** Bay Area wastewater typically had more of these particles than wastewater in other parts of the US, but data are extremely limited. Fibers made up most of the particles released into the Bay via treated wastewater. Not all of these fibers are known to be plastic.





Microscope view of microplastic particles found in the Bay. Courtesy Sherri A. Mason.

KEY TYPES OF MICROPLASTIC POLLUTION

MICROBEADS pellets and fragments used in personal care products such as facial scrubs and toothpastes

FOAMED PLASTIC PARTICLES from packaging, cigarette filters, and other items

FRAGMENTS from the photodegradation of larger plastic items such as plastic bottles

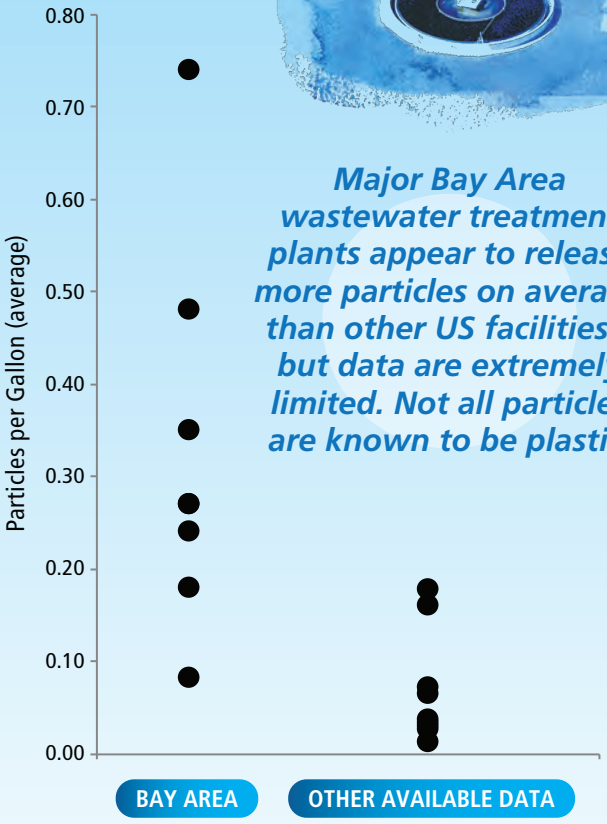
FIBERS derived from clothes and fabrics made with synthetic materials (polyester, acrylic) or fishing lines

NURDLES pre-production plastic pellets that are molded into larger plastic products

THE REGIONAL MONITORING PROGRAM FOR WATER QUALITY IN SAN FRANCISCO BAY (RMP) is an independent, long-term monitoring program providing policymakers with the information they need to protect this vital urban ecosystem. The RMP is an innovative collaboration between the San Francisco Estuary Institute, the San Francisco Bay Regional Water Quality Control Board, and regulated dischargers.

MICROPLASTIC POLLUTION IS WIDESPREAD IN BAY AREA WASTEWATER AND BAY WATER

Wastewater



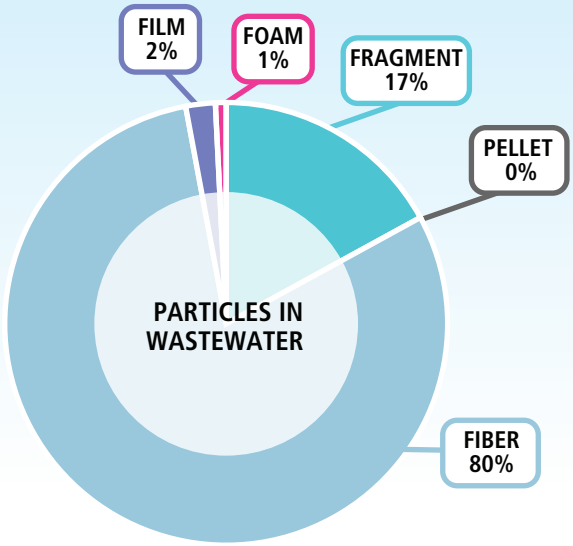
Major Bay Area wastewater treatment plants appear to release more particles on average than other US facilities – but data are extremely limited. Not all particles are known to be plastic.

SFEI scientists collected particles from wastewater at eight Bay Area wastewater treatment plants using sieves. The eight plants discharged an average of 0.33 particles per gallon. This was more than four times the average of 0.07 particles per gallon observed in a study of nine facilities in other parts of the US, part of a larger study of municipal wastewater treatment facilities that Dr. Sherri A. Mason is completing now.

On average, Bay Area facilities released an estimated 7,000,000 particles per day to San Francisco Bay.

HOW DO MICROPLASTICS END UP IN WASTEWATER RELEASED TO THE BAY?

Microbeads from the beauty products we wash down the drain and synthetic fibers rinsed from clothing by our washing machines make their way to the Bay because they are too small, light-weight, and inert to be fully removed by treatment plants.



Fibers made up most of the particles in wastewater. They may be derived from plastic and non-plastic sources.

Many of the fragments in wastewater are thought to be microbeads derived from beauty products.

FIBER (INCLUDES SYNTHETIC TEXTILES, FISHING LINES, OTHER SOURCES)

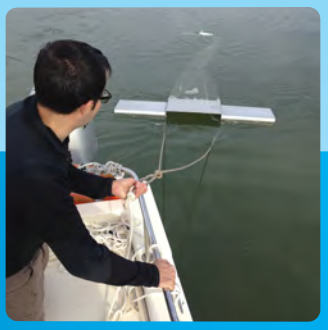
FILM (PLASTIC BAGS, PACKAGING)

FOAM (POLYSTYRENE, CIGARETTE FILTERS)

FRAGMENT (INCLUDES MICROBEADS, OTHER SOURCES)

PELLET (MICROBEADS, NURDLES)

Bay Surface Water

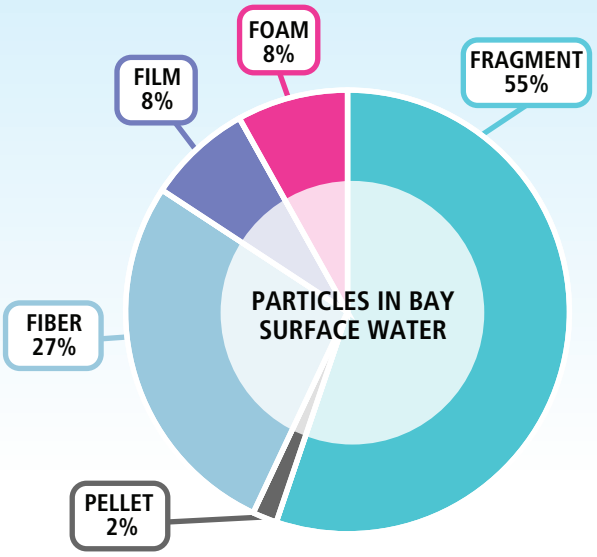


Ian Wren of San Francisco Baykeeper deploying the Manta Trawl. Photo courtesy Meg Sedlak.

Scientists with SFEI, San Francisco Baykeeper, and the 5 Gyres Institute collected surface water samples at nine locations in the Bay by deploying a Manta Trawl – a device that skims the water surface – for 30 minutes. Additional monitoring is needed to confirm these findings and determine the full extent of Bay microplastic pollution.

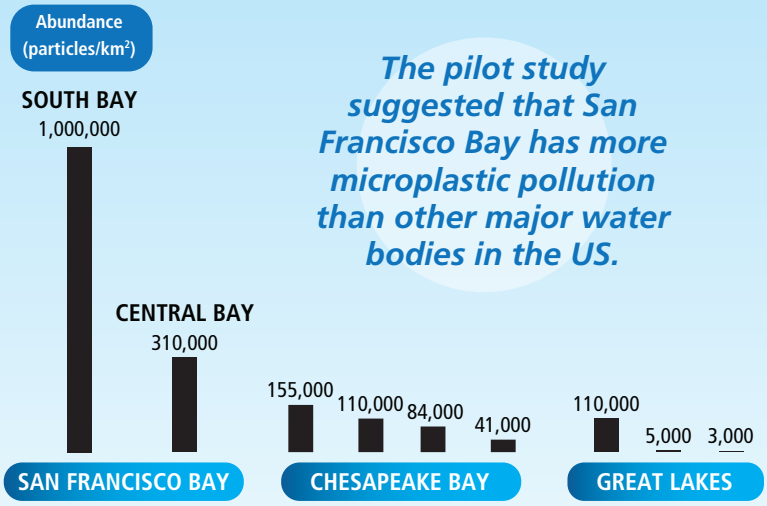
HOW ELSE DO MICROPLASTICS END UP IN THE BAY?

Wastewater is not the only pathway for microplastics to enter the Bay. Rain carries plastic litter of all sizes from land into the Bay through urban creeks and storm drains. Illegal dumping and wind-borne plastic trash also add to the plastic pollution in the Bay.

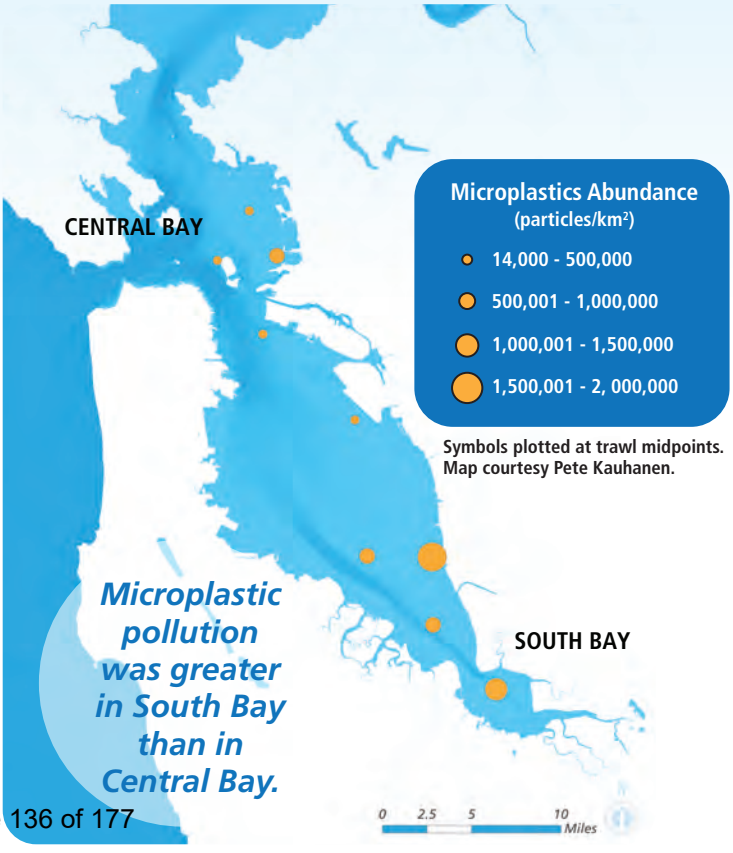


Bay surface water contained more fragments and fewer fibers than wastewater. Some of the plastic pollution in the Bay comes from stormwater, which likely has different sorts of particles than wastewater.

Processes that occur within the Bay, such as breakdown of larger plastic litter, settling of heavier particles on the Bay floor, and ingestion by wildlife can also affect the array of particles found in Bay surface water.



The pilot study suggested that San Francisco Bay has more microplastic pollution than other major water bodies in the US.



Symbols plotted at trawl midpoints. Map courtesy Pete Kauhanen.

Microplastic pollution was greater in South Bay than in Central Bay.

MICROPLASTICS IN FISH

We found 52 particles in nine small fish caught during Bay surface water sampling. This average of nearly six particles per fish is higher than the one to three particles typically found in Great Lakes fish.

WHY ARE WE CONCERNED?

Microplastics can contain toxic pollutants, and may be ingested by aquatic organisms that mistake them for food. These plastic particles can cause physical blockages, starvation, and increased exposure of wildlife to contaminants.

Microplastics accumulate in digestive organs, and people are most likely to be exposed to them if they consume wildlife whole. However, human exposure to the toxic pollutants transferred by microplastics could occur from eating any part of an affected fish or shellfish.

FOCUS ON MICROBEADS

Microbeads are plastic particles intentionally added to beauty products for their abrasive qualities. Beauty products with microbeads typically list "polyethylene" or "polypropylene" as an ingredient. Microbeads include both round, bead-like, brightly-colored plastic pellets, and rough, plain fragments.

In December 2015, President Obama signed the Microbead-Free Waters Act of 2015, a law that bans the manufacture of rinse-off personal care products containing microbeads by July 1, 2017, and the sale of such products by January 2, 2018. Many companies have already committed to eliminating these ingredients from their products.

Meanwhile, consumers can limit their personal contributions to microplastic pollution by avoiding products that contain microbeads, choosing clothing made from natural fibers, and taking care not to litter or flush plastic materials down the toilet.

Photo courtesy 5 Gyres

Optical microscope photo of microbeads extracted from off-the-shelf personal care products showing rounded, bead-like pellets along with more plentiful, rough plastic fragments. Courtesy Sherri A. Mason.

WHAT'S NEXT?

This study provides an initial baseline understanding of current conditions in the Bay as scientists, policymakers, and industry leaders work towards reducing the impact of microplastic pollution. More monitoring is needed to confirm these results and track trends in microplastic levels in response to the microbead ban and other policy changes designed to reduce plastic pollution.

Further study of microplastics in Bay fish is needed to determine whether they are more contaminated than fish in other major water bodies, and to investigate the potential for accumulation of microplastics and attached pollutants in sport fish that people eat.

ACKNOWLEDGMENTS

Funding for this study was provided by the Regional Monitoring Program for Water Quality in San Francisco Bay, with in-kind contributions from San Francisco Baykeeper and the 5 Gyres Institute. Special thanks to the wastewater treatment plants that voluntarily participated in this study: Palo Alto Regional Water Quality Control Plant, Fairfield-Suisun Sewer District, Central Contra Costa Sanitary District, East Bay Municipal Utility District, East Bay Dischargers Authority, City of San Mateo Wastewater Treatment Plant, San Jose/Santa Clara Regional Wastewater Facility, and San Francisco International Airport Sanitary Waste Treatment Plant and Reclaimed Water Facility.
Fact sheet design by Linda Wanczyk.

REGIONAL MONITORING PROGRAM FOR WATER QUALITY IN SAN FRANCISCO BAY
WWW.SFEI.ORG/RMP
RMP
NOVEMBER 2015
MANAGED BY THE SAN FRANCISCO ESTUARY INSTITUTE

FOR REFERENCES OR INFORMATION

See the Scientific Poster:
sfei.org/microplastics

Or Contact:
Rebecca Sutton, Ph.D., RebeccaS@sfei.org

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Pre-Proposal

Treatment of Reverse Osmosis Concentrate by Advanced Oxidation Processes and Engineered Treatment Wetlands

Prepared by:
Santa Clara Valley Water District
University of California at Berkeley
Stanford University
San Francisco Estuary Institute
Bay Area Clean Water Agencies

Contents

Introduction

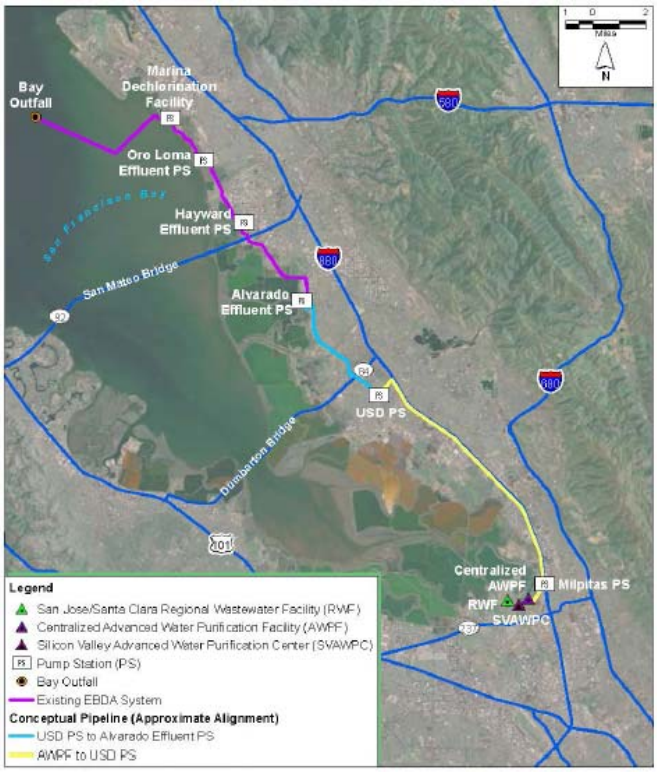
Indirect and direct potable reuse are key solutions to California's water crisis because they do not require identification of new water sources. They allow use of existing potable water distribution systems, rather than the construction of costly new purple pipe distribution systems to serve relatively few users. Key to any potable reuse project is the use of advanced treatment, such as Advanced Oxidation Processes (AOPs), and Reverse Osmosis (RO) to remove chemical and biological contaminants from treated wastewater effluent.

With the use of RO treatment, approximately 80 to 90 percent of the original treated wastewater volume becomes RO permeate which is used to supplement potable water supplies, and 10 to 20 percent becomes RO concentrate. The concentrate contains the salts and organic contaminants rejected by the membrane at roughly 6-fold concentration relative to their concentrations in the RO influent. The RO permeate for potable reuse projects in California will typically have a total dissolved solids (TDS) of less than 100 parts per million (ppm) and the concentrate will typically have a TDS of between 4,000 ppm and 6,000 ppm. In addition to a relatively high concentration of salts, the RO concentrate also contains relatively high concentrations of dissolved organic carbon, pathogens, nutrients, and pollutants of concern, including emerging contaminants (e.g., pharmaceuticals, hormones, household chemicals).

The Santa Clara Valley Water District (District) is moving forward with its plans for potable reuse. RO treatment is a core process unit of Full Advanced Treatment (FAT) trains for potable reuse in California. RO treatment is attractive because it serves as an effective physical removal barrier, capable of removing salts and a wide array of organic contaminants at high efficiencies. AOPs applied downstream of RO provide an effective chemical removal barrier against most organic contaminants that pass through the RO membranes, and can also be used to reduce pollutant concentrations in RO concentrate. Generally, AOPs such as ozone, ozone/hydrogen peroxide, or UV/hydrogen peroxide, operate by generating hydroxyl radicals, non-selective radicals capable of reacting with a wide array of contaminants with nearly diffusion-limited rate constants.

The District has studied various alternatives for managing the RO concentrate and the following have been determined (either alone or in combination) to be the most feasible at this time:

1. Discharge to a sewer line that goes to a regional wastewater treatment plant (WWTP).
2. Discharge to the Bay with dilution water (with effluent from a WWTP or stormwater).
3. Discharge to a deep Bay outfall.
4. Treatment wetlands, followed by direct discharge to the Bay.
5. Treatment of metals, nutrients, and organics in the concentrate to produce a high quality brackish supply that can be used for habitat restoration close to the facility.
6. Pre-treatment of RO concentrate, followed by one of the above options.



There are water quality concerns associated with the discharge of RO concentrate into the San Francisco Bay (Bay). Because of the relatively high concentrations of pollutants in RO concentrate, discharge of RO concentrate through existing outfalls could potentially lead to NPDES permit violations for individual contaminants. Contaminants in RO concentrate could also elicit toxicity in assays required for discharge permits. Additionally, there may be impacts from higher concentrations of constituents such as nutrients and emerging contaminants, which are not regulated via numeric water quality objectives but are monitored as part of the San Francisco Bay Nutrient Management Strategy[1], and Contaminants of Emerging Concern (CEC) Strategy[2], respectively.

In the research proposed here, the University of California at Berkeley (Berkeley) and Stanford University (Stanford), in partnership with the San Francisco Estuary Institute (SFEI), and the Bay Area Coalition Wastewater Agencies (BACWA), will help the District in evaluating the technical and economic feasibility of treating RO concentrate via Engineered Treatment Wetlands and AOPs to reduce concentration of emerging organic contaminants, metals and nutrients, as follows:

(1) *Engineered wetland treatment of RO concentrate*. Wetland-based treatment has the potential to remove emerging organic contaminants, nutrients, metals and pathogens, while increasing the TDS (through evaporation) and providing brackish water habitat. To assess the efficacy of engineered wetland treatment of RO concentrate, experiments will be conducted under conditions likely to be encountered in a full-scale treatment system.

(2) *AOP treatment of RO concentrate*. AOPs can degrade emerging organic contaminants and inactivate pathogens. When used as a pretreatment for engineered wetland

[1] See http://sfbaynutrients.sfei.org/

[2] See http://www.sfei.org/projects/contaminants-emerging-concern-strategy

treatment, AOPs may increase the efficiency of engineered wetland treatment by partially breaking down recalcitrant organic compounds, rendering them more susceptible to further biological degradation, and by increasing the UV/visible light transmittance, aiding photodegradation. They also may aid the removal of metals within the wetland by liberating metals from strong complexes (e.g., EDTA). To assess the potential use of AOPs for treatment of RO concentrate, the efficacy of ozone and UV/hydrogen peroxide treatment (and other potential oxidants) of RO concentrates will be studied alone and in combination with engineered wetland treatment.

Although the TDS of the concentrate is below the ~30,000 mg/L TDS of the Bay, it is in line with the brackish zones of salinity common in the South Bay region and which range from 1,000 ppm to 10,000 ppm. Discharging this brackish water locally could help in the ongoing restoration of marshes in the South Bay salt ponds. Historically the tule salt marshes would have been connected to creek mouths, moist meadows, cattail and willow groves that once served as transition zones, or "ecotones," between tidal habitats and terrestrial ones. Restoring historical creek connections is not possible in many places, but the RO concentrate could be substituted as a source of freshwater in the same zone: pipelines used for the distribution and discharge of the brackish water into the wetlands. Recreating these salinity gradients and their associated habitats may be ecologically beneficial. It also could increase their resiliency to climate change as well as providing flood protection to the communities behind them as sea level rises.

This project is being developed in conjunction with water and wastewater agencies in the Lower South Bay; however, the problem of RO concentrate management will need to be solved wherever potable reuse projects are being planned. As such, the conclusions from this study are applicable both regionally and statewide. The team that plans to work on this proposal includes top local scientists and a coalition of water agency and wastewater agencies. The project will be implemented in coordination with staff at the San Francisco Regional Water Board to ensure than any future full-scale project will be permittable. It is an excellent example of a multi-benefit project, which will help facilitate increased water reuse, improve receiving water quality, and enhance habitat. This will be the first pilot project to use wetland to treat RO concentrate in California, and the innovations developed as part of this research will set a precedent that can be used to develop potable reuse projects as the State expands its water reuse portfolio.

Project Team

This proposal brings together a strong, interdisciplinary team of engineers, chemists, ecologists, a water agency, and wastewater agencies. Descriptions of key participants are below.

Santa Clara Valley Water District

Hossein Ashktorab *(Project Manager, Recycled and Purified Water Unit Manager).* Dr. Hossein Ashktorab has been a Unit Manager of Recycled Water at the Santa Clara Valley Water District for over 16 years. He has a Ph.D. in Soil and Water Science from the University of California, Davis, a Master of Science in Irrigation System Design, and a Bachelor of Science in Agricultural Engineering. He has been responsible for all of the District's Water Recycling program, including the Silicon Valley Water Purified Water Center. Prior to working for the

District Dr. Ashktorab worked at the California Department of Water Resources for seven years in urban and agricultural water management. He also taught and performed research at the University of California, Davis and as an Assistant Professor at the Shiraz University, Shiraz, Iran. He has published a scientific book and technical papers on water management.

Luisa Sangines (Project Manager, Senior Engineer in the Recycled and Purified Water Unit). Ms. Sangines' engineering background includes over 15 years of engineering experience working for utilities in water quality, treatment process optimization, and operations support. At the District she served as the Penitencia Water Treatment Plant (PWTP) engineer, and led projects such as filter media change out, optimization of taste and odor, and disinfection by-product minimization. While working for eight years at the Alameda County Water District (ACWD) she served in a leadership role for water quality and treatment issues, and assessing and developing compliance plans for new drinking water regulations. She provided advice on major treatment projects, including the start up and expansion of a 10 million gallons per day desalination facility, conducting RO membrane process optimization pilot studies, providing NPDES support for RO concentrate discharge, and troubleshooting of ultrafiltration fouling problems. With a strong background in water quality and membrane treatment processes, Ms. Sangines is uniquely qualified to lead the day-to-day project management tasks for this project.

UC Berkeley

David Sedlak (Principal Investigator for Pilot Wetland). Dr. David Sedlak is the P. Malozemoff Chair Professor in the Department of Civil & Environmental Engineering at UC Berkeley. His research addresses the occurrence, fate and treatment of wastewater-derived chemical contaminants. As part of these efforts, he has investigated the removal of steroid hormones, pharmaceuticals and nutrients in constructed wetlands as well as the speciation and fate of metals in wastewater treatment plants. Dr. Sedlak's research team pioneered the use of open water unit process wetlands for the treatment of wastewater effluent in pilot-scale and demonstration-scale projects in California.

Stanford University

William Mitch (Principal Investigator for AOPs). Dr. William Mitch is an Associate Professor in the Department of Civil and Environmental Engineering at Stanford University. He would be responsible for overseeing the application of pre-oxidants to control contaminants of emerging concern in concert with subsequent engineered wetland treatment. He has published several articles on the application of oxidants, including ozone and advanced oxidation processes, to control contaminants in saline waters, including reverse osmosis concentrates from potable reuse operations.

San Francisco Estuary Institute

Rebecca Sutton (Principal Investigator for Emerging Contaminants). Dr. Sutton leads SFEI's Emerging Contaminants Program. In this capacity, she manages the emerging contaminant research conducted by the Regional Monitoring Program (RMP) for San Francisco Bay and is responsible for the aforementioned Emerging Contaminant Strategy for the Bay. Her

research spans across many types of contaminants including pharmaceuticals, current use pesticides, flame retardants, and microplastics. With strong connections to the wastewater industry, familiarity with San Francisco Bay water quality, and a wide-ranging expertise in organic contaminants, Dr. Sutton is uniquely qualified to lead the assessment of emerging contaminants studied in this project.

Jeremy Lowe (Principal Investigator for Landscape Restoration). Jeremy Lowe is a Senior Environmental Scientist in SFEI's Resilient Landscapes Program. He is a coastal geomorphologist with 30 years of experience in tidal wetland restoration and sea-level-rise adaptation planning in San Francisco Bay, on the Pacific Coast and in Europe. Jeremy leads the Institute's initiatives related to rising sea levels due to climate change and is uniquely qualified to lead the wetland and landscape planning tasks for this project being instrumental in groundbreaking projects to integrate wastewater discharges into shoreline planning in the Bay. He was a PI for the IRWMP funded Oro Loma Ecotone Slope Demonstration Project, working with Prof. David Sedlak of UC Berkeley, on the pilot project to decentralize wastewater effluent discharges through seepage slopes into marshes. He was also a PI for the East Bay Dischargers Authority (EBDA) study, funded by the State Coastal Conservancy, to assess the opportunities and constraints of decentralizing EBDA's discharge and re-introducing freshwater inputs to the San Leandro to Fremont shoreline.

Philip Trowbridge (Project Manager). Phil Trowbridge is the Manager of the RMP and the Delta RMP. In this capacity, he manages $4.5 million in projects each year and organizes and facilitates large stakeholder meetings. The deliverable and budget tracking tools used for these large programs will be used to keep this project on track. Mr. Trowbridge will provide an important organization link between the RMP and this project and will facilitate stakeholder meetings.

BACWA

Lorien Fono (POTW and Stakeholder Coordinator, Regulatory Liaison). Dr. Lorien Fono is BACWA's regulatory program manager. She works with POTWs throughout the Bay Area and facilitates collaboration on regulatory and technical issues. Dr. Fono has worked on recycled water master plans for wastewater agencies throughout California, with a focus on regulatory compliance. Dr. Fono's dissertation research was conducted in David Sedlak's laboratory, where she studied the fate and transport of emerging contaminants in natural systems.

Jim Ervin (POTW Representative, Technical Review). Mr. Jim Ervin is BACWA Vice Chair and San Jose-Santa Clara Regional Wastewater Facility Compliance Manager. Mr. Ervin has been a member of the BACWA Executive Board, representing the San Jose-Santa Clara Regional Wastewater Facility (SJ-SC RWF), since 2013, and chaired the BACWA permits committee for three years prior. He has managed wastewater compliance for SJ-SC RWF since 2003. In his compliance role, Mr. Ervin oversees monitoring of wastewater discharge compliance and has performed numerous studies of facility effluent impact on receiving water quality and local biota.

Scope of Work

This project will be divided into the following phases and tasks:

Project Management

Task 1 Work plan preparation and project management

Stanford, Berkeley, SFEI, BACWA and the District will develop a mutually agreed upon phased work plan that will meet the specific tasks mentioned below. Project meetings held at least quarterly will allow the project partners to report progress, exchange ideas and develop deliverables.

Deliverable: Project work plan. Quarterly project meetings, or more frequently as needed

Phase 1: Research

Task 2 Identify contaminants of concern

SFEI, in collaboration with Berkeley, Stanford, and BACWA, will develop a list of priority wastewater contaminants based upon the literature, water quality monitoring data from the Lower South Bay, and SFEI's ongoing research related to the Bay. Bay regional action plans for emerging contaminants will inform the prioritization. This list will serve as the basis for the CECs to be evaluated in later tasks.

Deliverable: Technical memorandum reporting on emerging contaminants, and other constituents, to target.

Task 3 Laboratory experiments to facilitate pilot-scale system design

Laboratory experiments will be conducted by UC Berkeley and Stanford to assess the required dose of oxidants, extent of photosynthetic respiration needed to raise solution pH to levels that will precipitate metals and the survival and growth of algae in the concentrate. UC Berkeley will assess performance of organisms from an open water unit process wetland in contaminant treatment through batch experiments using biomat materials collected from a demonstration-scale system. Stanford will evaluate the application of ozone and UV/hydrogen peroxide AOP treatment of RO concentrate at laboratory-scale. The efficacy of this treatment will be evaluated in terms of the dose requirements needed to achieve removal of the water quality parameters evaluated under Task.

Additionally, Stanford will consider the potential for generation of unwanted byproducts (e.g., bromate). Laboratory work will include the evaluation of the ability of these treatments to degrade metal-EDTA complexes and the subsequent removal of treated water by the biomat from the open water system. Stanford will conduct the chemical analyses associated with these experiments, or pay for their analysis by outside laboratories.

Deliverable: Technical memorandum reporting on the results of the laboratory-scale evaluation of wetland processes, and AOP Treatment of RO concentrate.

Task 4 Design, construct, and test engineered treatment wetland

A pilot-scale system will be designed by Berkeley, Stanford, SFEI, BACWA and the District to test hypotheses about the performance of wetland systems and oxidative pre-treatment. The most likely location for the system is adjacent to the Silicon Valley Advanced Water Treatment Facility or the San José/Santa Clara Regional Wastewater Facility, where RO concentrate is readily available, or another site agreed upon by all parties. The District will provide infrastructure for the study, including power, RO concentrate from the Advanced Water Purification Center, secure space, and discharge for the pilot engineered treatment wetland effluent.

On the basis of previous results and design experience, the team anticipates that the pilot-scale system will consist of a flow-through oxidative treatment system and an open water unit process wetland system. The system will likely occupy approximately 500 ft^2 and would treat approximately 5,000 gallons per day (~3.5 gpm). The team anticipates splitting the cell into two parallel cells: one receiving untreated RO concentrate and one received oxidative pre-treatment to compare these scenarios side-by-side. For the oxidative pre-treatment, this would require a ~2 gallon-per-minute flow-through unit (e.g., ozone treatment unit) installed at the site.

Deliverable: Technical memorandum on pilot system design.

Task 5 Combination of AOP and engineered pilot wetland for treatment of RO Concentrate.

The technical team (Berkeley, Stanford, SFEI, BACWA) will evaluate the combination of AOP treatment followed by engineered wetland treatment of RO concentrate, both at pilot-scale. As part of this task the team will evaluate whether the combination of treatments will be more efficient than either process alone for key water quality parameters. The AOP laboratory tests (Task 3) will inform this task with respect to the type of AOP (i.e., ozone or UV/hydrogen peroxide) and dose requirements to evaluate. The batch experiments conducted with the biomat will inform design decisions with respect to hydraulic residence times needed to achieve adequate treatment.

Operation and water quality monitoring of the wetland is part of this task. The set of water quality parameters to monitor, and the monitoring frequency, will be agreed upon in consultation with the District; parameters will primarily include emerging contaminants and other ancillary parameters, such as total organic carbon, nutrients, and metals. The testing may include the effect of system parameters (e.g., installation of bio-barriers to enhance nutrient removal) and seasonal variations.

Deliverable: Technical memorandum reporting on the results of the combination of AOP and engineered wetland treatment.

Task 6 Data integration, analysis, and reporting

Task 6 is divided into four subtasks as follows:

Task 6.1: The Technical Team will prepare a technical memorandum on the results for the experimental work undertaken in Task 3, 4 and 5. The memorandum will evaluate the technical feasibility of RO concentrate treatment by AOP or engineered wetland treatment alone or in combination, and make recommendations.

Task 6.2: SFEI will develop sections of the technical memorandum on impacts to Bay water quality including potential changes to the loadings and mass balances of emerging contaminants with respect to the regional emerging contaminant management plan, and evaluation of permit issues.

Task 6.3: SFEI will develop sections of the technical memorandum describing opportunities and constraints for local discharge of treated brackish water into Bayland marshes; provide concepts of how the discharges may be incorporated into the marshes; envision scenarios for regional freshwater balance; and assess the co-benefits of such discharges including meeting Bayland restoration goals and enhancing local restoration actions.

Task 6.4: SFEI will host a stakeholder workshop to report on the findings of Phase 1 tasks and allow discussion of the regional issues related to the discharges. The workshop discussion will be reported as a section of the technical memorandum and will help define the scope for Phase 2.

Deliverable: Phase 1 Technical memorandum reporting on Results of Pilot Project and Feasibility Analyses. Stakeholder Workshop.

Phase 2: Planning for full-scale implementation

Currently only Phase 1 is covered under this proposal and under contract to be managed by SCVWD. A separate Phase 2 proposal will be submitted based on the results of Phase 1, although a draft budget is included herein.

Task 7 Design of a demonstration- or full-scale system

Based on the results of Phase 1, the technical team (Berkeley, Stanford, SFEI, BACWA) would work with a technical consultant to design a demonstration- or full-scale system for the Advanced Water-Purification Center at the District according to a detailed scope of work to be decided in consultation with the District. The system will likely include:

- AOP treatment
- Contaminant removal from RO concentrate in wetlands
- Local discharge to the Bayland marshes

This task involves working with the San Francisco Regional Water Board and any applicable resource agencies to ensure the permittability of the full-scale

project.
Deliverable: Technical design memorandum reporting on planning the implementation of a full-scale system design.

Task 8 Evaluation of treatment potential at other facilities

The District expressed an interest in pilot testing at other facilities considering water recycling with RO treatment. Such facilities include treatment plants operated by the Cities of Palo Alto and Sunnyvale. Berkeley and Stanford will assess this option based upon the results obtained at the District's Advanced Water Purification Center. These facilities feature greater space restrictions and do not currently have RO pilot facilities to generate a RO concentrate. If the Phase 1 results suggest that the treatment system is promising, testing at additional facilities would be useful to capture potential variations in treatment efficacy arising from different RO concentrate water qualities. The scope of work would be delineated in consultation with the District and the participating wastewater agencies, but may involve additional laboratory or pilot-scale testing to evaluate any site-specific differences from the District's Advanced Water Purification Center.

Task 9 Vision for Water Management in the Lower South Bay

Based on the results of Phase I, SFEI will address how the historical and present freshwater discharges and salinity gradients functioned and what are the regional opportunities and constraints for future local discharge of brackish water into the South Bay marshes –similar to work undertaken by SFEI in the East Bay. The deliverable would be a technical memorandum reporting on impacts of the implementation of the full-scale system in the South Bay. This would help inform the design undertaken in Task 7 at San Jose and Task 8 for Sunnyvale and Palo Alto. A stakeholder workshop hosted by SFEI will allow discussion of the regional issues related to the discharges. SFEI will provide concepts of how the discharges may be incorporated into the local marshes; and assess the co-benefits of such discharges including meeting Bayland restoration goals and enhancing local restoration actions.

Deliverable: Technical design memorandum reporting on impacts of the implementation of the full-scale system in the South Bay, including workshop discussion notes.

Organization, Cost-sharing and Execution

The lead contracting entity for Phase I of this project will the Santa Clara Valley Water District. All other entities will serve as subcontractors.

The project will be executed with researchers and students at the University of California at Berkeley and Stanford University, as well as SFEI and BACWA involvement under the umbrella of the contract between the District and a competitively selected consultant for RO Concentrate Management Plan. The District will be the lead for managing the overall contract, with Dr. Hossein Ashktorab and Luisa Sangines as the Principal District representatives. Professor David Sedlak (Berkeley) will be the Principal Investigator (PI), Professor William Mitch (Stanford) will be co-PIs and. Lorien Fono (BACWA) and James Ervin (San Jose/Santa Clara Regional Wastewater Facility) will provide coordination between the project team and wastewater agencies and regulators.

Specific responsibilities for the participating entities are as follows:

- The District will provide space for the construction of the engineered treatment wetland and AOP pilot units, provide electricity, sanitary facilities, and telephone for testing sites where needed, secure the site by fencing or other appropriate means, and provide for the discharge of the engineered treatment wetland effluent. The work in this proposal will be executed as a subtask under the scope of the District's RO Concentrate Management Consultant Services contract. Pilot treatment wetland construction will be executed under that umbrella contract. The District will rent the pilot-scale ozonation system.
- The District will obtain all necessary permits or approvals for wetland design, and will coordinate field activities with other agencies interested in the study.
- Berkeley and Stanford will maintain the pilot engineered treatment wetland and AOP units and will collect samples from those units as needed.
- Water quality analyses will be conducted at the facilities of the Berkeley or Stanford Departments of Civil and Environmental Engineering or, if necessary, subcontracted to commercial laboratories at Berkeley or Stanford's expense. Berkeley and Stanford will analyze general water quality parameters, dissolved organic carbon (DOC), nutrients, major anions, and trace organics. For Task 3, involving laboratory-scale testing of AOP treatment of RO concentrate, the laboratory of the Department of Civil and Environmental Engineering at Stanford will be used, and laboratory-scale assessment of the open water unit wetland system will be conducted at UC Berkeley.
- SFEI will serve as a technical partner for the project. Rebecca Sutton will lead CEC tasks. Jeremy Lowe will lead the tasks related to wetland and landscape restoration.
- BACWA and its member agencies will provide coordination with the POTW community and regulators, and stakeholder review.
- Collaboration with private consulting firms will be sought through a competitive selection process, if needed and subsequent subcontracts will be established.

Budget

Phase 1 will be part of the District's RO Concentrate Management Consultant Services contract, with an estimated cost not-to-exceed $1.5 million. Through this effort the District would satisfy any cost share requirements under Proposition 1. Additionally, all time spent by SCVWD and BACWA and member agency staff will be contributed as in-kind services. Phase 2 will be described via an additional proposal upon the completion of Phase I tasks.

	Task	**Lead**	**Total**	**SCVWD**	**BACWA**	**Expenses**	**UC Berkeley**	**Stanford**	**SFEI**
	Project Management		**$13,000**						
1.1	Work plan preparation		$3,000						$3,000
1.2	Project Management (incl quarterly mtgs)		$10,000						$10,000
	Phase 1 - Research		**$533,000**						
2	Identify contaminants of concern	SFEI	$18,000						$18,000
3	Laboratory experiments	UCB/Stanford	$420,000				$135,000	$135,000	
4.1	Design pilot treatment wetland	UCB/Stanford							
4.2	Construct pilot treatment wetland treatment	UCB/Stanford				$100,000			
4.3	Test pilot wetland treatment	UCB/Stanford							
5	Combination AOP and wetland treatment	UCB/Stanford				$50,000			
6.1	Data integration, analysis, and reporting	UCB/Stanford							
6.2	Impacts on Bay water quality	SFEI	$40,000						$40,000
6.3	Opportunities and constraints for marsh discharge	SFEI	$40,000						$40,000
6.4	Stakeholder workshop	SFEI	$15,000						$15,000
	Phase 2 - Planning for Full Implementation		**$460,000**						
7	Design of San Jose full-scale treatment wetland	UCB/Stanford/SFEI	$200,000						

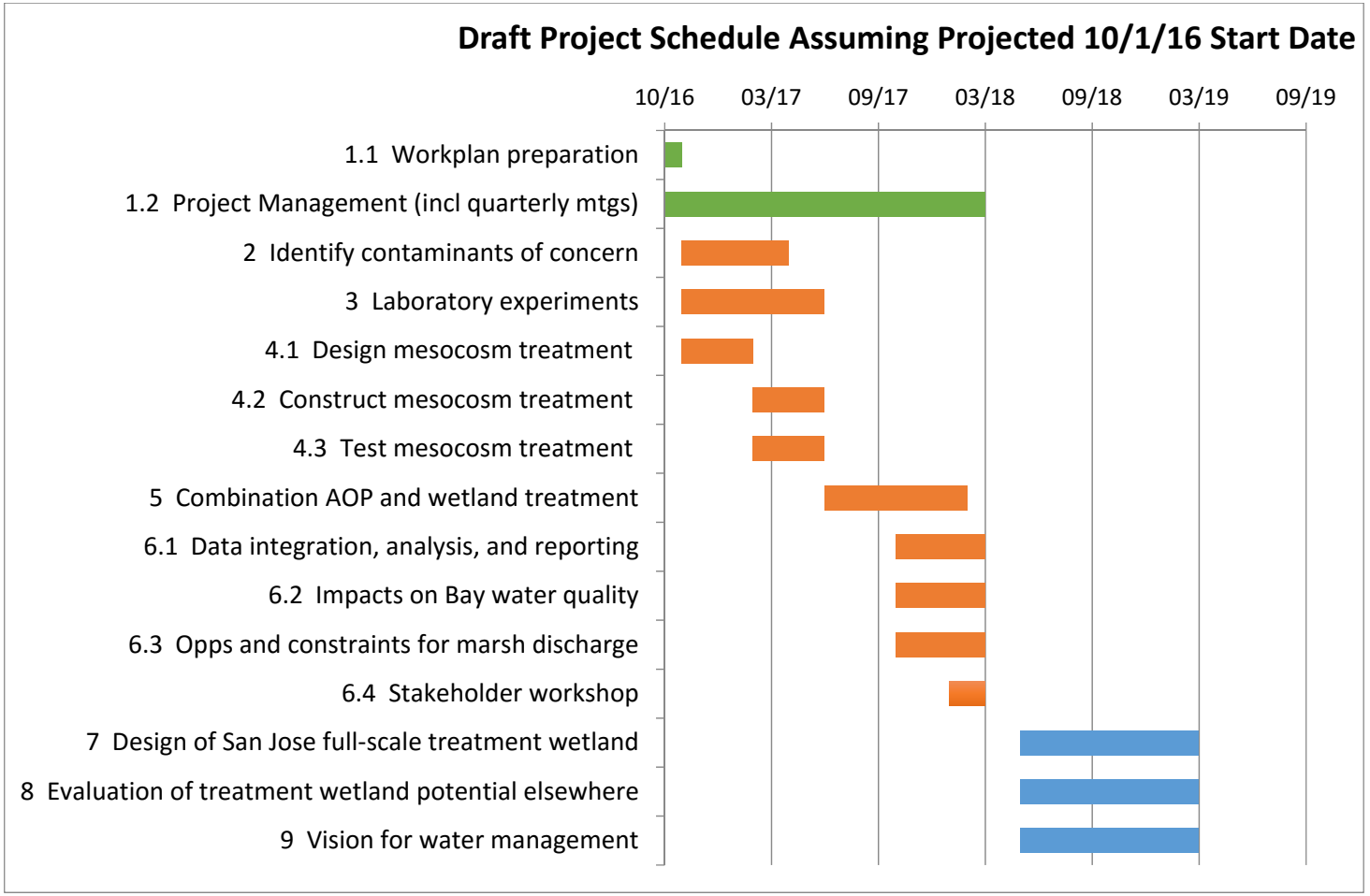
8	Evaluation of treatment wetland potential elsewhere	UCB/Stanford/SFEI	$200,000						
9	Vision for water management	SFEI	$60,000						$60,000
	TOTAL FOR PHASE 1 AND PHASE 2		**$1,006,000**						

Timeline

Projected Project start 10/1/2016

Task	Deliverables	Due Date	Start mth	Duration (mths)	Start Date	End Date	Duration (days)
1.1 Work plan preparation	Work plan	End of Month 1	0	1	10/1/2016	10/31/2016	30
1.2 Project Management (incl quarterly mtgs)	Quarterly Meetings	End of Month 18	0	18	10/1/2016	3/25/2018	540
2 Identify contaminants of concern	Technical Memo	End of Month 3 (draft); End of Month 6 (final)	1	6	10/31/2016	4/29/2017	180
3 Laboratory experiments	Technical Memo	End of Month 9	1	8	10/31/2016	6/28/2017	240
4.1 Design pilot treatment wetland	Technical Memo	End of Month 9	1	4	10/31/2016	2/28/2017	120
4.2 Construct pilot treatment wetland			5	4	2/28/2017	6/28/2017	120
4.3 Test pilot treatment wetland			5	4	2/28/2017	6/28/2017	120
5 Combination AOP and wetland treatment	Technical Memo	End of Month 14 (interim), End of Month 17 (final)	9	8	6/28/2017	2/23/2018	240

6.1 Data integration, analysis, and reporting	Phase I Report	End of Month 18	13	5	10/26/2017	3/25/2018	150
6.2 Impacts on Bay water quality			13	5	10/26/2017	3/25/2018	150
6.3 Opportunities s and constraints for marsh discharge			13	5	10/26/2017	3/25/2018	150
6.4 Stakeholder workshop	Stakeholder Workshop	End of Month 18	16	2	1/24/2018	3/25/2018	60
7 Design of San Jose full-scale treatment wetland		End of Month 30	20	10	5/24/2018	3/20/2019	300
8 Evaluation of treatment wetland potential elsewhere		End of Month 30	20	10	5/24/2018	3/20/2019	300
9 Vision for water management		End of Month 30	20	10	5/24/2018	3/20/2019	300


Draft Project Schedule Assuming Projected 10/1/16 Start Date
10/16
03/17
09/17
03/18
09/18
03/19
09/19
1.1 Workplan preparation
1.2 Project Management (incl quarterly mtgs)
2 Identify contaminants of concern
3 Laboratory experiments
4.1 Design mesocosm treatment
4.2 Construct mesocosm treatment
4.3 Test mesocosm treatment
5 Combination AOP and wetland treatment
6.1 Data integration, analysis, and reporting
6.2 Impacts on Bay water quality
6.3 Opps and constraints for marsh discharge
6.4 Stakeholder workshop
7 Design of San Jose full-scale treatment wetland
8 Evaluation of treatment wetland potential elsewhere
9 Vision for water management

Bay Area POTW Budgets FY2017

Each year, BACWA will be reissuing this survey to better understand Regional expenditures on wastewater in the San Francisco Bay area. This year we are separating wastewater treatment costs from collection systems. Wastewater treatment includes all treatment costs, including recycled water production (where produced by the wastewater agency) and biosolids treatment. If you are a wastewater treatment-only or collection system-only agency, you can leave the questions that do not pertain to your agency blanks.

* Required

What is your agency's name? *

Are you a wastewater treatment plant, collection system, or both? *

- ◯ Wastewater Treatment Only
- ◯ Collection System Only
- ◯ Both Wastewater Treatment and Collection System

What is your governing body-approved 5-year capital budget for wastewater treatment?
(enter as $xxx,xxx, not $xM)

What is your governing body-approved 5-year capital budget for collection systems?
(enter as $xxx,xxx, not $xM)

What is your governing body-approved annual operating budget for wastewater treatment for fiscal year 2017?
(enter as $xxx,xxx, not $xM)

What is your governing body-approved annual operating budget for collection systems for fiscal year 2017?
(enter as $xxx,xxx, not $xM)

Contact email *

Additional Comments.

Submit

Never submit passwords through Google Forms.

100%: You made it.

BAPPG Committee Report to BACWA Board

Meeting Date: August 3, 2016
Prepared By: Lorien Fono, BACWA RPM
BAPPG Chair: Robert Wilson

22 attendees representing 15 member agencies.
Committee Notes are available online.
Committee Updates from BAPPG's General Committee Meeting on August 3, 2016:

- ***Regional Water Board report –*** Agencies may now submit their Pollution Prevention reports via CIWQS, and will be required to do so beginning January 1, 2017. The Alternate Monitoring Plan will be included in permits moving forward, and agencies will have to opt out of it if they don't wish to participate.
- ***Steering Committee update –*** The FY16 budget was more than 90% spent, indicating successful completion of outreach projects.
- ***Pollutant Prioritization for FY18***
  The group held break-out discussions and participated in a ranking exercise to select the pollutants/campaigns that will be the focus for the next fiscal year. The top ranked items were:
  - Toilets Aren't Trash Cans (Campaign includes wipes and pharmaceuticals)
  - Pesticides (Focus on pyrethroids and fipronil)
  - FOG

  Based on recommendations by by the steering committee and supported by the Regional Water Board, the committee aims to focus municipal staff resources on fewer pollutants/campaigns compared to previous fiscal years. Other pollutants covered in prior years will continue to be completed by consultant support.
- ***Outreach Goal for FY17***
  O'Rorke provided a presentation on the current outreach campaigns to help the committee prioritize its efforts for this fiscal year. The committee selected project managers to head up efforts on the following efforts:
  - Toilets Aren't Trash Cans
  - Chinook Book ads
  - FOG Spanish radio ads
  - Media relations on flea & tick pesticide alternatives
  - BAPPG Annual Report

Date of Next BAPPG Meeting

BAPPG Steering Committee Meeting
September 14, 2016, 10:00am
Conference Call
Teleconference Number: 605-475-4350
Participant Code: 1210113#

BAPPG General Meeting
October 5, 2016: 10:00am-12:00pm
1515 Clay Street, Second Floor, Room 11
Oakland, CA

Biosolids Committee – Report to BACWA Board

Biosolids Committee meeting on: July 21, 2016
Executive Board Meeting Date: August 19, 2016
Committee Chair: Karla Guevarra and Alicia Chakrabarti

Committee Request for Board Action: None.

Agenda Item : Committee Administrative Updates

- Lorien Fono introduced herself and described her role with BACWA. She supports the committees, of which there are nine. For the Biosolids Committee, Lorien will 1) attend meetings on occasion and look for links with the BACWA Board and other committees, 2) support the online survey for biosolids uses and costs, and 3) support the email distribution and Google Group usage.

Agenda Item : "Best Biosolids Programs"

- Karri Ving presented on her trip to the Pacific Northwest (PNW), which was funded by the Arlene Navarrete Award.
- The PNW has been conducting research and building relationships regarding biosolids for thirty years now.
- The Bay Area is behind in this regard, largely because we have had reliable beneficial use as landfill alternative daily cover (ADC) and have not had to work directly with the public.
- Karri presented on three successful biosolids products:
  - King County LOOP product – Class B product, managed with direct farmer relationships
  - Tacoma Tagro product – Class A, gained success in part through county fair growers' competitions
  - DC Water – Bloom, Class A, new program

Agenda Item : What Do We Need to Do to Get There

- SFPUC will be joining the Northwest Biosolids Management Association for a fee of $250 per year.
- SFPUC will support academic partnerships, biosolids demonstration garden, remediation project using biosolids within San Francisco, and field trials in Marin County.
- SFPUC has determined that producing Class A biosolids is not enough, rather a whole program is needed.

Agenda Item : BACWA Biosolids Survey

- Lorien reviewed the draft on-line survey, and the group provided feedback.

Next BACWA Biosolids Committee Meeting: October 20, 2016, location to be determined

Attendees:

Name/Title	Agency
Ryan Batjiaka	University of Washington
Alicia Chakrabarti	East Bay Municipal Utility District
Jim Dunbar	Lystek
Manon Fisher	SFPUC
Lorien Fono	BACWA
Karla Guevarra	SFPUC
Zachary Kay	City of Santa Rosa

Name/Title	Agency
Tammy McManama	Lystek
Rebecca Overacre	East Bay Municipal Utility District
Kishen Prathivadi	Sewer Authority Mid-Coastside
Natalie Sierra	Brown & Caldwell
Mark Takemoto	RMC
Karri Ving	SFPUC

Collection Systems Committee Meeting on: 7/14/16
Executive Board Meeting Date: 8/19/16
Committee Chair: Lenny Rather

Committee Request for Board Action: None

26 attendees, representing 15 member agencies

Presentation on Sewer System Audit

Jim Fischer from the State Water Board gave a presentation on SSO Compliance and Enforcement. The committee asked questions about self-auditing and communicating with the Water Boards. Jim clarified the following point:

- Documented procedures should be checked to make sure they actually work, and should be compared to procedures actually in practice
- Most changes to an agency's SSMP would not be considered "major modifications" that would need Board approval. However, all changes should be logged, as per the MRP
- Agencies are encouraged to contact Water Board staff to ask about audit scheduling. (Note – CASA is developing a letter to the Water Board to clarify the 2-year and 5-year auditing requirements, and will ask BACWA to sign on)
- If the owner and operator are different entities, enforcement may be applied to either or both entities depending on who is at fault. It should be clearly understood between the owner and operator who is responsible for responding to a spill.
- There is no universal approach for rehab program replacement rates.

Jim Fischer also provided the committee an updated pre-inspection questionnaire, and feedback from the City of Folsom on using the pre-audit questionnaire. He provided the report from the State Water Board's inspection of the City of Victorville on 12/19/15. Jim also urged the Committee members to look at the State Water Board SSO library, with several new updated documents:
http://www.waterboards.ca.gov/water_issues/programs/sso/sso_reduct_lib.shtml

Private Sewer Lateral Programs

The committee has been in contact with SFEP about the Bay Area Comprehensive Conservation and Management Plan update for 2016. Its Action 26 aims to encourage private sewer lateral ordinances. SFEP staff have not yet been assigned to implement this Action which is now scheduled for 2017.

Announcements of Upcoming Training, Conferences, and Meetings

- CWEA SF Bay Section training holds ongoing collection systems meetings and training events. The summer meeting will be held July 29-30.
- CWEA's Annual Golf Tournament will be held July 29.
- Maintenance Superintendents Association Meeting - Sept 5-9, 2016 at the Berkeley Marina**.** They also have a monthly workshop schedule.
- Tamalpais Community Services District is hiring.
- CASA has created a Collection Systems workgroup which will meet quarterly via teleconference .

Succession and Future meetings

Justin Waples of Central Contra Costa Sanitary District volunteered to be the new committee chair beginning after the July 2016 Committee meeting. Erin Smith of the City of Alameda would like to continue as committee vice-chair. The chairs will work with BACWA RPM to circulate a survey of potential future agenda items to ascertain which subjects are of most interest to committee members.

Next Collection System Committee Meeting

Our next committee meeting will be held on September 8 at the Boy Scouts Council in San Leandro.

Laboratory Committee – Report to BACWA Board

Laboratory committee meeting on: 13 July 2016
Executive Board Meeting Date: 15 July 2016
Committee Chair : Nirmela Arsem

Committee Request for Board Action: None

Informational items :

- 27 June 2016 workshop on nutrient optimization/upgrade: reported on the levels of treatment options such as sidestream treatment, cost for improvements and cost per pound of nitrogen or phosphorus.
- 29 June 2016 RMP workshop on microplastics: BACWA lab committee microplastics work group presentation was impactful and the unique nature of wastewater matrix and the need for verifying each particle as microplastic resonated with the attendees.
- Feedback was requested from lab committee microplastics workgroup on the desired next steps. The response was that the group ought to put in additional work and make it a complete, stand-alone method that can be used by wastewater treatment plants. The proposal will be brought to the executive committee for decision.
- The 2017 RMP fees for municipal participants was distributed and reviewed. The general fee increase was noted.

Regulatory Developments:

- There were no Environmental Laboratory Technical Advisory Committee (ELTAC) members present at the meeting. However, the communication was positive, that the group was influencing ELAP decisions in a positive manner and that all types of environmental laboratories may find a win-win solution. The next meeting is scheduled for July 27.
- One of the committee members shared his experience bringing a commercial laboratory in Hawaii form ELAP to TNI standards. While it was achieved, it required more than 18 months and more than one full time employee supported the effort full time.
- The committee discussed the selenium criteria published by EPA; members expressed concern about the seasonal variation associated with clam tissue concentration.
- Permit committee highlights were discussed. Of special interest was the microplastics workshop report out. At the meeting it was noted that SFEI has not changed their publications, including the poster on their website, based on the findings reported by BACWA lab committee. Some members also expressed concern about the upcoming presentation by Rebecca Sutton (July 28) to the water board on this subject and if the message would be accurate. Other topics reported were: EPA's selenium criteria and the new annual nutrient reporting spreadsheet.

Agency Reports:

- City of San Jose laboratory was audited for microbiology and some wet chemistry by Caron Lee; there were only recommendations and no findings. Some of the outcomes were: for solids, constant weight must be demonstrated with each batch; there is a separate Field of Testing (FOT) for cyanide preparation and analysis.
- All ELAP correspondence are expected to go through their website only.
- City of Palo Alto laboratory was audited by the fire department. The new OSHA requirement is to store flammable material in a separate, self-closing and self-latching cabinet.

Open Forum:

- DSRDS brought to the attention of the members the new requirement for BOD calculation according to Standard Methods. An example was reviewed and accepted as the correct interpretation by members.

New Business:

- Topics of discussion for the coming months was solicited from members present:
  - ICPMS & metals analysis workshop
  - Microbiology topics: recycled water testing, legionella test, Enterolert, difficulties with Performance testing samples
  - Chronic toxicity data review, approval and validation
  - Chemical hygiene training
  - Implementing TNI standards: what is required, and the steps that need to be taken

Upcoming meetings, conferences, etc.:

- July 15th San Francisco Bay Section volunteer appreciation event, with bowling
- July 21st Lab analyst certification prep session in Pleasanton
- July 27: SFEI Selenium workshop
- July 27: ELTAC workshop
- August 24th TNI training with ELAP discussion
- August 4 – CWEA SF Bay Section meeting - Microplastics
- National Environmental Monitoring Conference – August 5-9, California

Next BACWA Laboratory Committee Meeting: August 10

Laboratory Committee – Report to BACWA Board

Laboratory committee meeting on: 10 August 2016
Executive Board Meeting Date: 19 August 2016
Committee Chair: Nirmela Arsem

Committee Request for Board Action: None

Regulatory Developments :

- ELTAC update from Mindy Boele & Mark Koekemoer (Napa San)
  - Concerned about approach change from Christine Sotelo in proposing TNI 2009 without regard to ELTAC recommendation or consideration of smaller agency laboratories staffed with one or two.
  - Mindy recommends BACWA POTWs and water agencies should all begin to strongly voice opinion on the issue of Quality Management System (QMS) other than TNI, such as using beneficial elements of TNI but removing others or current state QMS in Florida or Arizona. Jason recommended sending an updated BAWRC contact list to Mindy to request involvement from water agencies that may not be aware of the current status.
  - Approval has been received by ELAP to hire a new supervisor and four auditors. Current auditors who cannot function capably have been placed on hold status pending additional training.
  - Mindy indicated the e-mail sent to all BACWA Lab Committee members is a good summary.
  - Mindy has canceled scheduled meeting in order to attend next ELTAC session on 8/24.

Focus Topics:

- The status of ELTAC took up the majority of the meeting
- TMDL for Selenium: City of Vacaville predicts selenium monitoring requirements and limit in next NPDES permit.
- Microplastics – no comments

Recruitment Opportunities:

- EBMUD – Laboratory Supervisor (Biology Section)

Audits:

- City of Vacaville has not had an audit since April 2012. Mindy has requested an audit several times this year.

Action Items:

- Consider contacting BAWRC members to request involvement in ELAP improvements

Next BACWA Laboratory Committee Meeting: Wednesday, September 14, 2016, at EBMUD Laboratory Library

Recycled Water Committee Meeting on: 7/13/16
Executive Board Meeting Date: 8/19/16
Committee Chair: Rhodora Biagtan

Committee Request for Board Action: Confirm Cheryl Muñoz as BACWA representative to WateReuse workgroup on State Recycled Water Policy

Detailed notes from meetings are posted online.
25 attendees (including 9 on phone) representing 10 member agencies

State Water Board revision of State Recycled Water Policy
The State Water Board plans to adopt revisions to the State Recycled Water Policy in the next 12-18 months, and will begin the process this fall. They plan a stakeholder outreach process as part of this effort. The BACWA Recycled Water Committee recommends that Cheryl Muñoz serve as BACWA's representative to the WateReuse working group on this issue. WateReuse has asked the working group to share any "macro" issues they would like to have included in the resolution by August 4. Their Leg-Reg Committee will discuss the issues on a call on August 5, and with the Board of Trustees the following week. BACWA will comment that monitoring frequencies should not exceed those in the Alternate monitoring plan.

State General Order for Recycled Water
At the adoption hearing, the State Water Board considered three options for Finding 34, which governs which entities will be covered by the State General Order. They chose option 2, where Finding 34 was adopted as written in the April 22, 2016 draft of the General Order. All Regional permittees will be required to enroll in the General Order within three years. Individual permittees will not be required to enroll yet, although the State Water Board stated its intent to require their enrollment in the next permit reopener.

Regional Water Boards will need to review Engineering Reports for existing Regional permittees to determine which ones meet the requirements described in the State General Order. Agencies with Engineering Reports that do not meet the requirements will need to update them. The Recycled Water Committee will develop a proposal to deliver to the Regional Water Board streamline the transition to the State General Order. There was a comment in the committee that because Title 22 had not significantly changed since the adoption of 96-011, there will likely not need to be major revisions to Engineering reports.

Recycled Water Survey
A survey of agencies' 2015 recycled water use and agencies' future plans for water recycling is being circulated by the consultant performing the nutrient optimization and upgrade studies. Agencies will receive the survey with their draft facility report. BACWA has worked to ensure that it is understood by both the wastewater and water agencies that this survey is being distributed via the dischargers so there is not duplication of data. There was a discussion about how recycled water would not be integrated into the facility reports, but would be included in the Final Report to the Regional Water Board. Several agencies expressed that increasing recycled water use is a more sensible approach to water management than expensive nutrient treatment upgrades.

Recycled Water building standards for commercial and public buildings:
The California Department of Housing and Community Development and the California Building Standards Commission are soliciting participation on a steering committee to assist state agencies in the research and development of recycled water infrastructure building standards. The first meeting was held on June 14, 2016. Although this one has passed they would like to have the BACWA Recycled Water community's technical expertise, experience, and perspective in this area to assist them in future meetings. For more information, please contact Beth Maynard. DSRSD staff are participating on subcommittees on enforcement and cross-conneciton, and will report back to BACWA

Next Meeting – September 7, 2016 from 10:00 am to 12:00 pm, 2nd Floor Small Training Room at EBMUD Headquarters.

Executive Director's July 2016 Report

NUTRIENTS:

Completed a variety of tasks and activities associated with BACWA's interests on nutrients and collaborating with the Water Board including:
- Attended and participated in conference calls as well as the 20th meeting of the NMS Steering Committee's Planning Subcommittee and provided BACWA in-kind services by serving as scribe. Following the meeting prepared detailed meeting minutes and summary of action items.
-Chaired the monthly CMG meeting with the main topic being the review of the new cost tables.
-Coordinated with the OP/Upgrade consulting team on technical and administrative issues.
-Coordinated with the Limnotech project manager on the preparation of the scientific critique of the Assessment Framework documents.
-Hosted the fourth bi-weekly conference call with Limnotech on the review of the Assessment Framework documents.
-Prepared for and presented permit alternatives at the Workshop to review the Optimization/Upgrade study results with the BACWA membership.
-Coordinated with the EBMUD project manager on the EPA Sidestream Treatment research grant for review of a manuscript for presentation at the WEF Nutrient Conference.
-Provided a presentation to the CWEA Professional Development Committee on the status of nutrients in San Francisco Bay.

BACWA BOARD MEETING AND CONFERENCES:

-Worked with staff in preparing for the July BACWA Board meeting including reviewing the agenda with the Board Chair.
- Prepared for and attended the BACWA monthly Board meeting in June.
-Prepared for the next bi-monthly Joint Meeting with the Water Board in July.
-Continuing to track all action items to completion.
-Worked with the AED to visit and select a venue for the 2017 Annual Meeting

PERMIT COMMITTEE:

-Engaged in discussions on the next steps in response to the upcoming release of the new EPA selenium water quality objectives for San Francisco Bay.

COLLECTION SYSTEM COMMITTEE:

-Attended the monthly meeting of the Committee.

ASC/SFEI:

-As a member of the Executive Committee, coordinated with SFEI Executive Director on Board activities and participated in the June committee conference call meeting.

-Represented BACWA at the Mircoplastics Workshop.
-Chaired the Governance Committee conference call to discuss transition to a new Executive Committee.

CASA:

-Participated in the planning conference call to discuss launching a UTOF web page that would service as a resource for Summit Partner members.

NACWA:

-Attended the annual summer conference discussing Leadership Strategies for the Smart Utility

FINANCE:

-Reviewed the monthly BACWA financial reports with the AED.
-Continued coordinating with the AED in tracking the revenues coming in from the BACWA FY 16 member invoices.
-Worked with the AED to begin the close-out process for FY 16.

AIR COMMITTEE:

-Coordinated with the Committee on the transition to the new consultant providing technical support.

RECYCLED WATER COMMITTEE:

-Participated in the conference call for preparation of the Prop 1 grant proposal for funding a recycled water research project.

LAB COMMITTEE:

-Coordinated with the Lab Committee Chair on progress on developing protocols for testing wastewater effluent for microplastics and the presentation at the June 29th Microplastics Workshop.

WOT:

-coordinated with the BACCWE leadership in putting in place a contract for assistance in launching the new program a Gavilan College.

ADMINISTRATION:

Held the monthly BACWA staff meeting to coordinate and prioritize activities.

-Signed off on invoices, reviewed correspondence, prepared for upcoming Board meeting, responded to inquiries on BACWA efforts, oversaw updating of web page and provided general direction to BACWA staff.
-Worked with the RPM in the preparation of the monthly BACWA bulletin.
-Coordinated with the AED to plan activities and review duties, schedules, and priorities.
-Developed and responded to numerous emails and phone calls as part of the conduct of BACWA business on a day-to-day basis.
-Participated in a conference call with the BACWA file service provider to discuss improvements in the file storage system.
-Met with BACWA staff and EBMUD accounting staff to discuss transition to FY 17 and potential additional investment opportunities for BACWA reserves.

MISCELLANEOUS MEETINGS/CALLS:

-EBMUD's program manager on Prop 50 and Prop 84 and transition of program administration to ABAG
-BACWA Chair and Committee Chairs on items that arose during the month
-Water Board staff on coordinating the nutrient activities
-other misc calls and inquiries regarding BACWA activities
-participated in coordination calls with the HDR project manager
-responded to Board member's requests for information

BACWA ACTION ITEMS

Number	Subject	Task	Deadline	Status
	Action Items from July 15, 2016 BACWA Executive Board Meeting			
2016.7-11	POTW Budget Survey	Complete new survey in FY17 (RPM)	8/31/2016	completed
2016.7-10	Microplastics	Add to next Board Meeting Agenda (AED)	7/18/2016	completed
2016.7-9	Pardee Technical Seminar	Plan Board workshop in weeks prior to seminar (ED/AED)	7/31/2016	completed
2016.7-8	Proposed Selenium Water Quality Criteria	Develop strategy following Jt WB meeting (ED)	7/31/2016	completed
2016.7-7	Science Funding in next WRDA reauthorization	Identify agency contacts who might provide insight into lobbying for federal funding (ED)	8/31/2016	pending
2016.7-6	Technical Document Review	Prepare a transmittal letter (ED)	7/31/2016	completed
2016.7-5	Technical Document Review	Add "test drive" scope for $5,000 in FY17 (ED/AED)	7/31/2016	completed
2016.7-4	Joint WB Meeting	Add phosphorous removal to future Agenda (RPM)	8/31/2016	completed
2016.7-3	Contract Management Group	Add discussion of horizon for NNLI cost estimates (ED)	8/5/2016	completed
2016.7-2	Watershed Permit	Query Nutrient Stratgy Team re development of projects to fund (ED)	8/15/2016	pending
2016.7-1	Watershed Permit	Obtain legal advice on the application of anti-degradation (ED)	8/31/2016	completed
	Action Items Remaining from Previous BACWA Executive Board Meetings			
2016.6-97	Committee & AIR Consultant Thank you letters	send TY letters to Committee Chairs & special letter of thanks to CH2M (AED/Chair)	8/31/2016	completed
2016.6-93	NMS Steering Committee	Work With David Senn and Jim Ervin to get studies inside the tent (ED)	8/31/2016	pending
2016.6-90	AF Technical Document Review	Create high-level points that BACWA can agree on (ED)	7/31/2016	completed
2016.5-82	Biosolids Literature Review	Committee to consider alternatives and matching funds for further Board deliberation (Karri Ving)	9/30/2016	pending
2016.5-77	Opt/Upgrade Workshop	Schedule a 2nd Workshop for after Pardee (ED)	9/30/2016	pending
2016.3-65	Proposition 84	Develop agreement between BACWA & ABAG to transfer Prop 84 admin responsibilities (AED/Paul Gilbert-Snyder)	9/15/2016	pending
2016.3-61	Membership Policy	Develop policy for out of region agency membership (ED)	8/31/2016	pending

FY17: *9 of 11 Action Items completed.*
FY 16: *92 of 97 Action Items completed.*
FY 15: *90 of 90 Action Items completed.*
FY 14: *128 of 128 Action Items completed.*
FY 13: *67 of 67 Action Items completed.*

BACWA BAY AREA CLEAN WATER AGENCIES

BACWA BOARD CALENDAR

August 2016 to July 2017

DATE	AGENDA
8/19/2016 **Monthly Board Mtg** Items due: 8/12 Pagano; Connor; Horenstein; Ervin; Bailey, Williams; Fono; Hull	**Consent** Previous Board Meeting Minutes (AED) Monthly Treasurer's Report (EBMUD Accounting) Update on FY17 Invoicing **Authorizations & Approvals** Approval: Biosolids Literature Review **Other Business - POLICY/STRATEGIC** Discussion: Draft Agenda & Schedule Pardee Technical Seminar Discussion: WB Joint Meeting Debrief Discussion: RMP & NMS Update (Phil Trowbridge/David Senn) Discussion: Risk Reduction Update **Other Business - OPERATIONAL** **Reports** Committee Reports (Committee Chairs) Board Reports (Executive Board) ED Report (ED) RPM Report (RPM)
9/?/2016 **Joint Meeting** Items due: ? Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono	**Other Business: Discussions**
9/16/2016 **Monthly Board Mtg** Items due: 9/9 Pagano; Connor; Horenstein; Ervin; Bailey, Williams; Fono; Hull	**Consent** Previous Board Meeting Minutes (AED) Monthly Treasurer's Report (EBMUD Accounting) **Authorizations & Approvals** Approval: Solano Comm College Agrmt - Fall 2016 Approval: Biosolids Literature Review **Other Business - POLICY/STRATEGIC** Discussion: Draft Agenda Pardee Technical Seminar Discussion: Annual Meeting Planning Discussion: Draft Agenda Jt Meeting Water Board

	Other Business - OPERATIONAL
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

9/?/2016	
Nutrient Optimization/Upgrade Workshop #2	
Pagano; Connor; Horenstein; Ervin; Bailey	Optimization/Upgrade Studies
Williams; Fono	Water Board

10/12-14/2016	
Pardee Technical Seminar	
Pagano; Connor; Horenstein; Ervin; Bailey	
Williams; Fono; Hull	

11/18/2016	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 11/11	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	FY16 Annual Report & Audited Financials
Williams; Fono; Hull	**Authorizations & Approvals**
	Other Business - POLICY/STRATEGIC
	Discussion: Pardee Debrief & Survey
	Discussion: Draft Agenda Joint Meeting with WB
	Discussion: Biannual Update on CWCCG (SDeslauriers)
	Other Business - OPERATIONAL
	Discussion: Annual Meeting Planning
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

12/?/2016	
Joint Meeting	**Other Business: Discussions**
Items due: ?	
Pagano; Connor; Horenstein; Ervin; Bailey	
Williams; Fono	

12/16/2016	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 12/9	Monthly Treasurer's Report (EBMUD Accounting)

Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono; Hull	**Authorizations & Approvals** **Other Business - POLICY/STRATEGIC** Discussion: HDR Quarterly Update on Optimization/ Upgrade studies Discussion: WB Joint Meeting Debrief **Other Business - OPERATIONAL** Discussion: FY18 Budget Planning Schedule Discussion: Annual Meeting Planning Discussion: Update on BARR Taskforce **Reports** Committee Reports (Committee Chairs) Board Reports (Executive Board) ED Report (ED) RPM Report (RPM)

1/27/2017 **Annual Members Mtg** Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono; Hull	

2/17/2017 **Monthly Board Mtg** Items due: 2/12/15 Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono; Hull	**Consent** Previous Board Meeting Minutes (AED) Monthly Treasurer's Report (EBMUD Accounting) **Authorizations & Approvals** Approval: Solano Comm College Agrmt - Spring 2016 **Other Business - POLICY/STRATEGIC** Presentation: CPSC Update (Heidi Sanborn) **Other Business - OPERATIONAL** Discussion: FY2017 Budget Planning Discussion: Annual Meeting Debrief **Announcements** Pardee Seminar Dates **Reports** Committee Reports (Committee Chairs) Board Reports (Executive Board) ED Report (ED) RPM Report (RPM)

3/17/2017 **Monthly Board Mtg** Items due: 3/? Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono; Hull	**Consent** Previous Board Meeting Minutes (AED) Monthly Treasurer's Report (EBMUD Accounting) **Authorizations & Approvals** **Other Business - POLICY/STRATEGIC** Discussion: WB Joint Meeting Debrief Discussion: HDR Quarterly Update on Optimization/ Upgrade studies Discussion: Draft Agenda April Water Board Jt Mtg

	Presentation: CPSC Update (Heidi Sanborn)
	Other Business - OPERATIONAL
	Discussion: Second Draft of FY17 Budget
	Announcements
	Conflict of Interest Filing Deadline - April 1st
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

4/21/2017	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 4/?	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	**Authorizations & Approvals**
Williams; Fono; Hull	Approval: FY18 Budget
	Other Business - POLICY/STRATEGIC
	Discussion: WB Joint Meeting Draft Agenda
	Other Business - OPERATIONAL
	Discussion: Succession Planning FY18
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

5/?/2017	
Joint Meeting	**Other Business: Discussions**
Items due:	
Pagano; Connor; Horenstein; Ervin; Bailey	
Williams; Fono	

5/19/2017	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 5/?	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	**Authorizations & Approvals**
Williams; Fono; Hull	Approval: FY18 Amendments/Agreements
	Approval: Officers: Chair & Vice-Chair
	Approval: BACWA Reps to ASC/SFEI Governing Board
	Authorization: Legal Support Amendments
	Other Business - POLICY/STRATEGIC
	Discussion: Biannual Update on CWCCG (SDeslauriers)
	Discussion: WB Joint Meeting Debrief
	Discussion: Pesticides Update (Kelly Moran)
	Other Business - OPERATIONAL

	Request for updated Board Designee Letters for FY17
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

6/16/2017	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 6/?	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	**Authorizations & Approvals**
Williams; Fono; Hull	Approval: FY18 Agreements
	Other Business - POLICY/STRATEGIC
	Discussion: HDR Quarterly Update on Optimization/ Upgrade studies
	Discussion: WB Joint Meeting Draft Agenda
	Other Business - OPERATIONAL
	Discussion:
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

6/?/2017	
BAAQMD Workshop	
Pagano; Connor; Horenstein; Ervin; Bailey	
Williams; Fono	

7/21/2017	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 7/8	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	**Authorizations & Approvals**
Williams; Fono; Hull	Approval: Annual Nutrient WS Payment
	Approval: FY17 Agreements
	Other Business - POLICY/STRATEGIC
	Discussion: Draft Agenda Pardee Technical Seminar
	Discussion: RMP Update (Phil Trowbridge)
	Discussion: Risk Reduction Update
	Other Business - OPERATIONAL
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

8/?/2017	
Joint Meeting Items due: Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono	**Other Business: Discussions**
8/18/2017 **Monthly Board Mtg** Items due: 8/12 Pagano; Connor; Horenstein; Ervin; Bailey, Williams; Fono; Hull	**Consent** Previous Board Meeting Minutes (AED) Monthly Treasurer's Report (EBMUD Accounting) Update on FY17 Invoicing **Authorizations & Approvals** **Other Business - POLICY/STRATEGIC** Discussion: Draft Agenda & Schedule Pardee Technical Seminar Discussion: WB Joint Meeting Debrief Discussion: RMP & NMS Update (Phil Trowbridge/David Senn) Discussion: Risk Reduction Update **Other Business - OPERATIONAL** **Reports** Committee Reports (Committee Chairs) Board Reports (Executive Board) ED Report (ED) RPM Report (RPM)

CURRENTLY UNSCHEDULED & SIGNIFICANT	* Aug 2017: Discussion: FY18 Arlene Navarrett Award * BACWA Membership Engagement Opportunities * Tech Seminar/Workshop: CCCSD Cogen explosion need to schedule * SFPUC force main leak and repair, need to schedule * Chlorine Residual Analyzer Investigation * Suggestions for Monthly Meeting Guest Speakers/Presenters: i.e. Jim McGrath, State Water Board

Regulatory Program Manager's Report to the Board

July 2016

Prepared for the August 19, 2016 Executive Board Meeting

NUTRIENT SUPPORT: Participated in CMG conference call. Reviewed Watershed Permit negotiation survey and communicated with member agencies about their responses. Worked with consultant on Optimization/Upgrade studies progress report.

BACWA BULLETIN: Drafted and distributed August BACWA Bulletin.

PROPOSITION 1 PROPOSAL: Worked with SFEI staff, Dr. David Sedlak of UC Berkeley, Dr. Bill Mitch of Stanford, and Santa Clara Valley Water District staff to develop a pre-proposal to study engineered wetland and advanced oxidative treatment of reverse osmosis concentrate. Hosted conference call on pre-proposal.

SELENIUM CRITERIA: Reviewed proposed EPA Selenium criteria. Communicated with WSPA, BACWA member agency staff, and Regional Water Board about potential BACWA response.

SHALLOW DISCHARGE PROHIBITION: Discussed permitting strategies with Regional Water Board Staff.

CECs: Worked with SFEI staff on contract with AXYS for CEC sample in effluent of volunteer agencies.

POTW BUDGET SURVEY: Updated and distributed POTW Budget survey for FY2017.

COMMITTEE SUPPORT:
AIR – Communicated with new consultant about scope of work and September meeting. Drafted Board report for June meeting with Air Board and posted presentations and other materials to website.
Biosolids: Set up Google Group for committee. Attended meeting. Developed biosolids survey for committee review.
Collection Systems – Drafted agenda, attended meeting and drafted Board Report. Communicated with SFEP about CCMP action on Private Sewer Laterals.
Operations/Maintenance InfoShare – Drafted Board report.
Permits – Attended meeting, and drafted agenda and Board Report for meeting.
Recycled Water – Attended meeting.
Executive Board – Drafted agenda and meeting summary for joint meeting with Regional Water Board on 7/18. Contributed to Executive Board packet and meeting minutes for 7/15 Executive Board meeting.
Staff Meeting – Met with BACWA staff. Submitted FY2017 Performance Plan to ED.

MEETINGS ATTENDED: Staff meeting (7/6), CMG Conference Call (7/8), Prop 1 proposal conference call (7/12), Permits Committee (7/12), Recycled Water Committee (7/13), Collection Systems committee (7/14), Executive Board Meeting (7/15), Joint Meeting with Regional Water Board (7/18), Biosolids Committee (7/21).

From: Cheryl Mackelvie [mailto:cmackelvie@casaweb.org]
Sent: Tuesday, August 2, 2016 9:55 AM
To: Cheryl Mackelvie; lpagano@sfwater.org; David Williams; Jeff.Moorhouse@raymondjames.com; Bobbi Larson; mitchellt@sacsewer.com; eofficer@cvcwa.org; PScott@westbaysanitary.org; eallan@cwea.org; ghyde@lacsd.org; jpastore@scap1.org; gkester@casaweb.org; Adam Link; gparker@cwea.org
Subject: Clean Water Summit Partners
When: Tuesday, October 4, 2016 9:30 AM-1:30 PM (UTC-08:00) Pacific Time (US & Canada).
Where: The Sutter Club, California Room, 1220 9th Street, Sacramento

Agenda to follow.

DRAFT Minutes from the July 22, 2016 SFEI-ASC Joint board meeting

Attendance	
Present	
• Jim Kelly • Pamela Creedon • Karen Larson • Prabhakar Somuvarapu • Jim Ervin • Jim Fiedler • Jim Wheaton • Alan Ramo	• John Callaway • Mitch Avalon • Barbara Salzman • Bruce Wolfe • Adam Olivieri • Kirsten Struve - Call in first 45 minutes • Ann Hayden - Call in
Absent	Staff
• Dave Williams • Skyli McAfee • Laura Pagano	Warner Chabot Josh Collins Phil Trowbridge Cristina Grosso Joanne Cabling

Joint Business Meeting

1. **Call to order**- determination of quorum, review and approval of Agenda for Joint Board meeting, and individual SFEI and ASC business. The SFEI - ASC Board of Directors meeting was called to order at **10:03 am**, by Chair, Jim Fiedler. A determination of quorum was made.

2. **Public Comment** - none

3. **March Board Minutes** - Consent on March 11 minutes and action items - Minutes and action items were reviewed. Mitch Avalon moved and Barbara Salzman seconded; the board unanimously approved the March 11 minutes[1] .

4. **Budget** – The Board reviewed and approved the FY 2016-17 Budget (previously approved by the Executive Committee.

5. **Board Officers & Term Limits** – The Board approved the new officers for the Executive Committee. They briefly discussed the need to clarify term limits for all Board members. They agreed that: a) The existing documentation on the topic give conflicting direction, b) Warner should research the issue further and return to the Governance Committee with a report and recommendation and c) the current Governance Committee should have at least one or two conference calls this summer to make a recommendation for action at the September/October Board meeting.

6. **Executive Director's report** - Warner Chabot opened with trends that will affect SFEI's future; State Bond Measures, Measure AA and the Delta, followed by summaries on various SFEI projects that have to do with Climate Change Adaption.

5. **Memo on Fundraising** - Warner Chabot presented to the board, a memo on proposing a fundraising strategy and recommended the Board create a Development Advisory Committee to work with SFEI staff and a development consultant on a non-governmental funding strategy. Warner explained that the committee can have board members as well as non-board members. The Board expressed enthusiasm for the initiative.

In the discussion, Alan Ramo brought up the topic of legislative fundraising. Jim Fiedler asked the board if anyone wanted to join the new committee. Ann Hayden and Mitch Avalon volunteered. Warner Chabot made a note that Skyli McAfee would also like to be on the committee. Karen strongly recommended a SCCWRP staff member also be on the committee. Jim Kelly strongly recommended Jim F be on the committee. Barbara Salzman moved, Jim Wheaton seconded. The board unanimously approved.

6. **Board retreat - Fall 2016** - An alternative "tentative" date of Sept. 16th (instead of Sept 9th) ,was proposed for the Sept. Board meeting/retreat. A subsequent Doodle poll was distributed to identify a consensus date that worked for most board members.

Additional points to be added to the minutes:

Adam O: You are limiting yourself. Look for legislative funding for both CA research institutes.

(JMK note- is there a parallel to Tahoe Basin funding?..

Warner – Will investigate

Adam made point that RMP was stable funding.

(JMK note: it is but small compared to SCCWRP stable funding. Still worthwhile looking at their structure (JPA< etc)

Warner: Re: COO and business management at SFEI- Some internal promotions in the works to increase business and operational management. We will likely would be start with a consultant, and move to a COO type position, with the goal the the COO has to at least bring in enough $ to pay for themselves.

Anne (Hayden): Mentioned a Water Foundation as possible funder.

From: Warner Chabot [mailto:warnerc@sfei.org]
Sent: Tuesday, August 2, 2016 4:19 PM
Subject: Invitation: SFEI-ASC Board Retreat @ Fri Sep 23, 2016 10am - 4pm (dwilliams@bacwa.org)
When: Friday, September 23, 2016 10:00 AM-4:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: San Francisco Estuary Institute

more details »

SFEI-ASC Board Retreat

3/4 day retreat of the SFEI-ASC Board at an offsite location near the Richmond SFEI office.

When	Fri Sep 23, 2016 10am – 4pm Pacific Time
Where	San Francisco Estuary Institute (map)
Video call	https://plus.google.com/hangouts/_/sfei.org/sfei-asc-board

Going? **Yes** - **Maybe** - **No** more options »