14,501

BACWA EXECUTIVE BOARD MEETING

Thursday, January 27, 2011, 1:30 p.m. – 3:30 p.m.

HANDOUTS

Handout Packet is available on the BACWA website (www.BACWA.org).

Pages	Handout Title	Agenda Item #
2	Agenda	
3	Prop 50 Grant Disbursement Summary, December 2010	1
4 – 5	Executive Director Report	2
6 – 16	Fact Sheet for Sacramento Regional County Sanitation District's New NPDES Discharge Permit for the Sacramento Regional Wastewater Treatment Plant	4
17 – 19	Meeting Minutes from BACWA Executive Board Meeting of December 16, 2010, File 14,012	5
20 – 24	November 2010 Treasurer's Report	6
25 – 33	Board Action Request – Authorize the Executive Board Chair to Execute a Contract with the HDR for nutrient strategy assistance; $125,000; File 12,345.	7
34	Board Action Request – Authorize Executive Director to undertake actions to support the Suisun Bay Monitoring Workplan; $50,000; File 12,346.	8
35 – 36	USGS Water Quality Monitoring Meeting, January 28, 2011 Draft Agenda	8
37 – 40	Board Action Request – Approval of BACWA to participate as a partner of the San Francisco Bay Protection & Behavior Change Campaign; $25,000; File 12,347.	9
41 – 42	BACWA 2010 – 2011 Budget Projections	10

AGENDA

Executive Board Meeting

Thursday, January 27, 2011
1:30 p.m. – 3:30 p.m.

Boy Scouts Facility
1001 Davis Street, San Leandro, CA

ROLL CALL AND INTRODUCTIONS (1:30 p.m. – 1:35 p.m.)

PUBLIC COMMENT (1:35 p.m. – 1:45 p.m.)

REPORTS (1:45 p.m. – 2:00 p.m.)

1. Proposition 50 Grant Disbursements Status Report.
2. Executive Director Report.
3. Executive Board Reports.
4. Chair & Executive Director Authorized Actions
   a. Executive Director Authorization for As-Needed Assistance from Downey Brand for PCB Tentative Order Review (12,166); $1,500; December 20, 2010.
   b. Chair Authorization of contract with Patricia McGovern Engineers for As-Needed Assistance (12,320); $9,500; December 27, 2010.
   c. Executive Director Authorization for As-Needed Assistance from Larry Walker & Associates for Annual Meeting; $4,000; January 20, 2011.
   d. Executive Director Authorization for a Contract with Teleosis Institute for Hospice Pharmaceutical Disposal Education; $4,999; January 21, 2011.

CONSENT CALENDAR (2:00 p.m. – 2:15 p.m.)

5. Minutes from December 16, 2010 BACWA Executive Board Meeting.
6. November 2010 Treasurer's Report.

OTHER BUSINESS (2:15 p.m. – 3:30 p.m.)

7. BACWA Nutrient Strategy Assistance: Selection Committee Recommendation.
8. Suisun Bay Monitoring Plan Support.
9. Support for City of San Jose San Francisco Bay Water Quality Regional Education & Behavior Change Campaign.
10. BACWA and WQAS/CBC Revenues and Expenditures for Fiscal Year 2011-2012.

ADJOURNMENT (3:30 p.m.)

Handout Packet will be available by January 26, 2010 on the BACWA website (www.BACWA.org).

NEXT REGULAR MEETING

The next regular meeting is scheduled for **February 24, 2011**, **9:00 to 2:00** at the EBMUD Plant Lab Library in Oakland.

Grant Disbursement Summary to Date (Jan. 11, 2011) Bay Area Integrated Regional Water Management (IRWM) Prop 50 Grant											
Agr. No.	**Implementing Agency**	**Project Title**	**DWR Proj. No.**	**Max. State Grant Funds by Project**	**Grant Funds Invoiced to date**	**Paid by DWR to date**	**DWR Retention**	**Admin[2] Funds Rec'd by BACWA**	**Funds paid out to date**	**Payable as of this date**	**Total Paid and Payable**
1	Contra Costa Water District	Regional Intertie (VFDs)	1	500,000.00	500,000.00	181,397.33	(50,000.00)		176,731.44	0.00	176,731.44
		BACWA Admin	16	15,625.00	7,142.85	5,959.11	(662.12)	15,625.00			
2	East Bay Municipal Utility District	Reg. Conservation Outreach	2	250,000.00	250,000.00	225,000.00	(25,000.00)		1,889,049.85	2,340.41	1,891,390.26
		California WaterStar Initiative -	3	525,000.00	0.00	0.00	0.00				
		New Business Guidebook Pilot	4	75,000.00	0.00	0.00	0.00				
		Richmond Adv Recycling	8	2,127,600.00	2,127,600.00	1,648,512.93	(183,168.10)				
		BACWA Admin	16	46,875.00	21,428.55	17,877.33	(1,986.37)	46,875.00			
3	City of Redwood City	Redwood City Recycled WP	5	972,800.00	972,800.00	**972,800.00**	**0.00**		978,759.11	0.00	978,759.11
		BACWA Admin	16	15,625.00	7,142.85	5,959.11	(662.12)	15,625.00			
4	City of Palo Alto	Mt.View-Moffett Recycl WP	6	972,800.00	972,800.00	**972,800.00**	**0.00**		965,858.13	2,275.98	968,134.11
		BACWA Admin	16	15,625.00	7,142.85	5,959.11	(662.12)	15,625.00			
5	Santa Clara Valley Water District	Reg. Conservation Outreach	2	125,000.00	125,000.00	112,500.00	(12,500.00)		80,625.00	4,377.33	85,002.33
		South Bay Adv Recycl WTP	7	2,934,600.00	0.00	0.00	0.00				
	(& San Jose)	BACWA Admin[3]	16	31,875.00	6,428.55	4,377.33	(486.37)	31,875.00			
SJ	City of San Jose	BACWA Admin for SCVWD[3]	16	15,000.00	15,000.00	13,500.00	(1,500.00)	15,000.00	7,000.00	6,500.00	13,500.00
6	North Coast County WD	Pacifica Recycled Water Proj	9	744,400.00	0.00	0.00	0.00		0.00	1,459.11	1,459.11
	(& SFPUC)	BACWA Admin[3]	16	10,625.00	2,142.85	1,459.11	(162.12)	10,625.00			
SF	S.F. Public Utilities Comm	Reg. Conservation Outreach	2	297,550.00	297,550.00	267,795.00	(29,755.00)		242,045.00	20,918.22	262,963.22
		BACWA Adm for Reg.Consrv	16	31,250.00	14,285.70	11,918.22	(1,324.25)	31,250.00			
		BACWA Admin for NCCWD[3]	16	5,000.00	5,000.00	4,500.00	(500.00)	5,000.00			
SOL	Solano Co. Water Agency	Reg. Conservation Outreach	2	50,000.00	50,000.00	45,000.00	(5,000.00)		45,000.00	0.00	45,000.00
7	North Marin Water District	North Marin Recycled Water	10	244,550.00	244,550.00	**244,550.00**	**(0.00)**		241,750.47	0.00	241,750.47
		BACWA Admin	16	9,375.00	4,285.71	3,575.47	(397.27)	9,375.00			
8	Zone 7 Water Agency	Reg. Conservation Outreach	2	60,000.00	60,000.00	54,000.00	(6,000.00)		720,000.00	5,959.11	725,959.11
		Mocho GW Demin Project	11	740,000.00	740,000.00	666,000.00	(74,000.00)				
		BACWA Admin	16	15,625.00	7,142.85	5,959.11	(662.12)	15,625.00			
9	Marin Municipal Water District	Reg. Conservation Outreach	2	200,000.00	200,000.00	180,000.00	(20,000.00)		374,451.90	468.08	374,919.98
		Direct Installation HET Prog	12	366,800.00	311,894.35	197,719.52	(21,968.84)				
		BACWA Admin	16	9,375.00	4,285.71	3,575.47	(397.27)	9,375.00			
10	Montara Water & Sanitary District	Groundwater Exploration Project	13	37,100.00	37,100.00	33,390.00	(3,710.00)		33,390.00	1,191.82	34,581.82
		BACWA Admin	16	3,125.00	1,428.57	1,191.82	(132.42)	3,125.00			
11	Alameda County Water District	Reg. Conservation Outreach	2	60,000.00	60,000.00	54,000.00	(6,000.00)		589,334.11	0.00	589,334.11
		Alameda Creek Phase 2 Fish	14	600,000.00	600,000.00	540,000.00	(60,000.00)				
		BACWA Admin	16	15,625.00	7,142.85	5,959.11	(662.12)	15,625.00			
12	Sonoma Valley County Sanit. Dist.	Sonoma-Napa Marsh RWP	15	366,800.00	269,332.62	0.00	0.00		0.00	3,575.47	3,575.47
		BACWA Admin	16	9,375.00	4,285.71	3,575.47	(397.27)	9,375.00			
Grand Total				**12,500,000.00**	**7,932,912.56**	**6,490,810.56**	**(507,695.91)**	**250,000.00**	**6,343,995.01**	**49,065.55**	**6,393,060.56**

Notes: 1. BACWA Administration Costs invoiced and paid to date: 114,285.59 92,070.65

3. Reimburse SFPUC and San Jose for Admin Costs until reimbursement = $80k then pay SCVWD & NCCWD

2.Admin funding = $152,250 in upfront funding plus grant check deductions.

1/25/2011

DIRECTOR'S REPORT TO THE BOARD

Prepared for the January 27, 2011 Executive Board Meeting
December 12, 2010 – January 23, 2011

A. Executive Board & Administrative Matters

Financial & Administrative Matters

The Executive Director (ED) and Assistant Executive Director (AED) began planning for the Fiscal Year 2011-2012 and have completed end of year projections for revenue and expenses. The transition to the new accounting systems appears to be completed, except for Proposition, and is working well.

B. Regulatory Affairs & Developments

Mercury Risk Reduction

The ED worked with EPA, the Water Board, ASC and DPH to ensure that the risk reduction program will meet EPA's grant requirements. The next risk reduction report is due March 1, 2011.

PCB TMDL Implementation

The ED drafted comments on the Tentative Order amending the Mercury Watershed Permit to incorporate PCBs. The comments have been reviewed by legal and technical consultants and have been shared with representatives of the Permits and Laboratory Committees. The ED also communicated with Water Board staff regarding the main points in the comment letter, which his due **Monday, January 31, 2011**.

CIQWS

The State Board held a workshop on the e-SMR transition on January 20. The ED expects to work with the Permits and Laboratory Committees and EOA to develop a more specific scope of work as appropriate.

Nutrients

- The RFP for assistance developing a nutrient strategy was issued on December 30. A committee met to review the proposals on January 18.
- The next Numeric Nutrient Endpoint Stakeholder Advisory Committee meeting is **Friday, February 4**.
- A technical meeting to discuss the Suisun Bay monitoring plan is scheduled for **Wednesday, January 26**.
- The Regional Monitoring Program Steering Committee met on January 19 and one of the action items from that meeting was the development of an "RMP nutrient strategy."
- A meeting to discuss continuation of USGS's monitoring and a nutrient workshop is scheduled for **Friday, January 28.**

Selenium

Multiple BACWA representatives attended the December 14 meeting at which USGS presented their selenium model. A summary of this meeting was sent to the Executive Board after the meeting. Agency staff have recommended engaging experts to review effects levels on sturgeon.

Other

- The changes in SSO reporting at the regional level are still on hold until the key Water Board staffer returns.
- The ED attended and presented at the CASA mid-year conference.
- The ED prepared and submitted a letter to the Water Board demonstrating members' compliance with various permit requirements, including those related to copper and cyanide.
- The ED participated in a teleconference with EPA, Water Board, and BACWA representatives regarding CECs. The RMP's Emerging Contaminants Workgroup has completed a draft fact sheet on Triclosan.

C. Committee Affairs & Regional Collaboration

Committees	See Committee Reports for actions undertaken by the Committees during this period, including progress made under their leadership.
Workshops & Trainings	• The Strass workshop is scheduled for Friday, March 4. • A workshop on the Whole Effluent Toxicity Policy is scheduled for Tuesday, February 8
IRWMP	The region's application for Proposition 84 was submitted in early January. The next effort to be undertaken by the coordinating committee is the updating of the IRWMP.

D. Membership

Member Communications	The third consecutively monthly e-newsletter was sent out in early January. The ED and AED organized and prepared for the Annual Meeting on **Thursday, January 27.**

E. Upcoming Meetings

- January 31: Comments due on PCBs Tentative Order and Attachment H
- February 2: BAPPG
- February 7: RMP Steering Committee Master Planning workshop
- February 8: Permits Committee
- February 9: San Francisco Bay Regional Water Quality Control Board meeting
- February 9: Recycled Water Committee
- February 9: Laboratory Committee
- February 24: Executive Board Meeting (9:00 – 2:00)
- March 3: Collection Systems Committee
- March 8: Permits Committee
- Laboratory Committee: March 8

FACT SHEET

Sacramento Regional County Sanitation District's
New NPDES Discharge Permit for the
Sacramento Regional Wastewater Treatment Plant

January 10, 2011

OVERVIEW

The Sacramento Regional County Sanitation District (SRCSD) owns and operates the Sacramento Regional Water Treatment Plant (SRWTP), a Publically Owned Treatment Works (POTW) that has been in operation since 1983 and is permitted to discharge an average dry weather flow of 181 million gallons per day (MGD) to the Sacramento River.

The Central Valley Regional Water Quality Control Board (Regional Board) administers SRWTP's National Pollutant Discharge Elimination System (NPDES) permit, which allows treated wastewater to be discharged into the Sacramento River at Freeport. Prior to the recent permit adoption in December 2010, SRWTP was operating under an administratively extended permit since their permit had an original expiration date of August 2005 (Order No. 5-00-188).[1]

A new NPDES permit was adopted by the Regional Board at a Formal Board Hearing on December 9, 2010 (Order No. R5-2010-0114).[2] The changes from the previous permit were significant and resulted in controversy from a wide range of interested stakeholders including local water agencies, southern California water suppliers, municipal dischargers, businesses, farmers, state and federal agencies (including US EPA Region 9), legislators including U.S. Senator Feinstein, Governor Schwarzenegger, and many regional and local politicians, and individual rate payers. The hearing was a formal legal proceeding with testimony provide by the interested parties. It ran from 8 am through 11pm and was contentious.

The recently adopted permit includes new limits for ammonia, nitrate, and total coliform, among others (see Table 1), and results in the need for additional facilities to be built and constructed at significant cost. These facilities include nitrification, denitrification, and Title 22 filtration and disinfection (Figure 1). SRCSD estimates that the total project costs for these facilities is $2.06 billion (project costs include all engineering, legal, administrative, and contingencies to deliver a complete project. All costs in January 2009 dollars, ENRCCI 9138).

[1] Order No. 5-00-188, NPDES No. CA0077682 located at: http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/sacramento/5-00-188_npdes.pdf

[2] Order No. R5-2010-0114, NPDES No. CA0077682 located at: http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/sacramento/r5-2010-0114_npdes.pdf

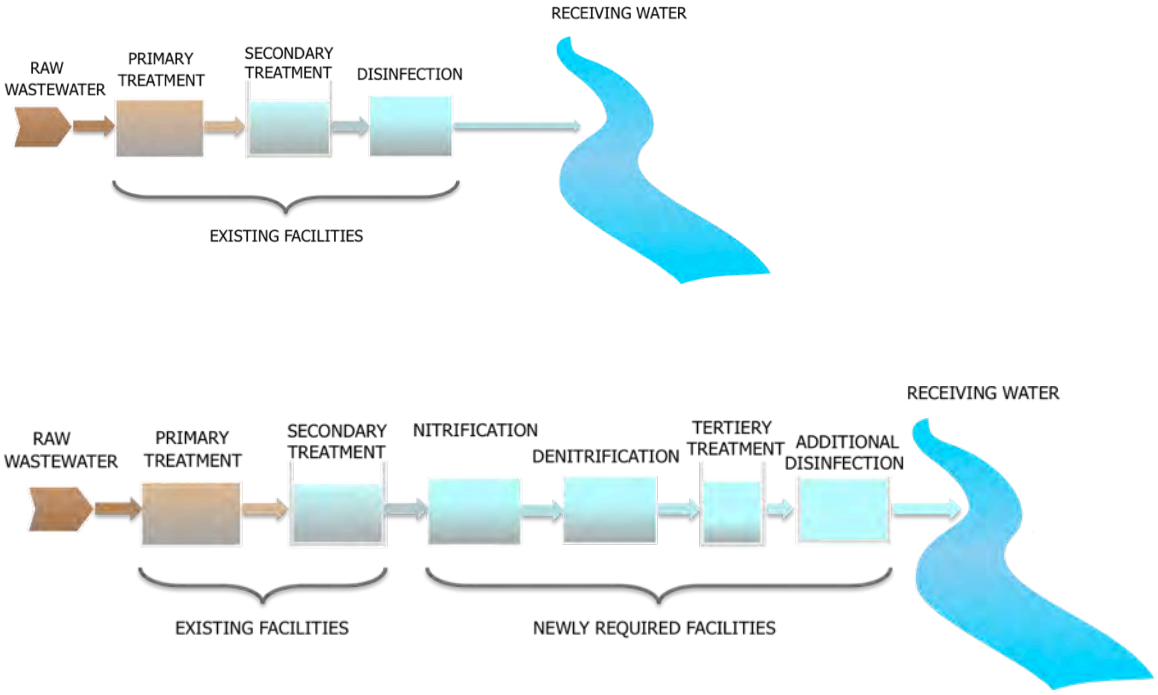
Table 1. New Final Permit Limits[3]

Parameter	Old Limit	New Final Limit	Treatment Required
Ammonia	-	1.8 mg/L - average monthly	Nitrification
Nitrate	-	10 mg/L - average monthly	Denitrification
Total Coliform	23 MPN/100mL weekly median;	2.2 MPN/100mL - 7-day median;	Tertiary Treatment + Additional Disinfection
	500 MPN/100mL daily max not to be exceeded in any two consecutive days	23 MPN/100mL, more than once in any 30-day period;	
		240 MPN/100 mL, at any time	
Total Residual Chlorine	0.011 mg/L monthly average	0.011 mg/L 4-day average	Additional Disinfection
	0.018 mg/L daily average	0.019 mg/L 1-hour average	
Electrical Conductivity (for salinity)	-	900 umhos/cm - annual average	Salinity Evaluation and Minimization Plan
BOD	30 mg/L average monthly	10 mg/L average monthly	Tertiary Treatment
	45 mg/L average weekly	15 mg/L average weekly	
	60 mg/L maximum daily	20 mg/L maximum daily	
TSS	30 mg/L average monthly	10 mg/L average monthly	Tertiary Treatment
	45 mg/L average weekly	15 mg/L average weekly	
	60 mg/L maximum daily	20 mg/L maximum daily	
Chronic Whole Effluent Toxicity	-	There shall be no chronic whole effluent toxicity in the effluent.	

MPN = Most probable number

[3] Not all "new" effluent limits are included. For a complete list of parameters, the can be found in the permit at: http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/sacramento/r5-2010-0114_npdes.pdf

Figure 1. Schematic of Existing and Newly Required Facilities



The Regional Board's decision to impose these permit requirements is precedent setting. The findings used to justify these new permit limits are based more on prevailing theories by selected scientists, and less on actual data and broad consensus among professionals. Also, a decisive factor in the adoption of the new permit was the political and public pressure put upon Northern California and the Sacramento Region in particular. A major interpretation by the press of the controversy surrounding the permit was that it was "a war between the North and South" over water.[4] This was reinforced during the lengthy permit review process and subsequent Board Hearing when Southern California water interests were given "Designated Party" status and provided substantial and lengthy written and oral testimony in support of the permit.

The major issue that could significantly impact Bay Area POTWs is the requirement for nitrification and denitrification. The prevailing reasons given in the new permit for the need for ammonia reduction are 1) to protect dissolved oxygen levels immediately downstream of the discharge and 2) to protect fishery resources in the Delta and Suisun Bay. Of the two, the second argument is the most significant and precedent setting for Bay Area POTWs.

[4] Sacramento Bee, Thursday December 9, 2010 http://www.sacbee.com/2010/12/09/3247806/sewage-plant-upgrade-ordered.html#mi_rss=Latest%20News, and Friday December 10, 2010: front page.

The second argument is based on an involved hypothesis and theory put forth by some scientists studying the water quality dynamics in the Delta and Suisun Bay, and summarized in the following sections. In short, this controversial theory suggests that the food chain in the Bay is negatively impacted by ammonia. This theory has been advanced to help explain the long decline in pelagic fish species (e.g. salmon, delta smelt and striped bass)[5] that depend on a rich food supply in the Bay during critical times of the year when readying themselves for the long migration upstream.

It is feasible that other Bay Area dischargers may be impacted by the same findings and actions taken in the SRCSD permit, as the underlying rationale is considered new and significant. In fact, Diana White, Assistant Executive Officer of the Bay Area Regional Water Quality Control Board (Region 2), as well as US EPA Region 9 Water Division Director, Alexis Strauss, both testified at the Board Hearing in support of the permit, and both noted that the rationale for nitrification is all based on new information developed in just the last few years (i.e. permits soon up for renewal may now also be subject to the findings from this new information).

Of the Bay Area POTWs that may be the most impacted in the near future by the findings and actions taken in the SRCSD permit is Central Contra Costa Sanitary District (CCCSD). CCCSD discharges to Suisun Bay, and is located such that the area of its discharge could be considered potential drinking water supply during part of the year, depending on the volume of Delta outflow and the associated salinity. Therefore, not only is CCCSD potentially a candidate for new nitrification and denitrification requirements, but Southern California water interests are likely to have a similar interest in their permit as they did in the case of the SRCSD permit, potentially leading to consideration of full filtration.

This fact sheet outlines the new requirements in the permit and relevant information regarding the more controversial changes that may have significance to Bay Area dischargers.

NUTRIENTS

SRCSD's recently adopted permit includes stringent new requirements for both ammonia and nitrate. Ammonia or nitrate limits were not included in SRCSD's previous permit as the SRWTP has consistently met the US EPA aquatic life criteria for acute toxicity in their mixing zone allowed in the Sacramento River. Recently though, the Regional Board has become increasingly concerned about reported fish declines in Suisun Bay and the Delta. More specifically, pelagic fish populations - fishes that use open water habitat versus near-shore environments - have declined significantly. This decline in pelagic fish is often referred to as the Pelagic Organism Decline, or POD.

[5] Populations of the pelagic organism, delta smelt have significantly declined in the Delta since the early 1980s, resulting in a 2010 listing as endangered by the US Fish and Wildlife Service.

There are confounding issues in Suisun Bay and the Delta surrounding the determination of the cause of this, but a predominate theory is that raised levels of ammonia are significantly contributing to the decline of pelagic organisms. The following briefly describes the Regional Board's position on these issues.

> ***Toxicity:*** The Regional Board has cited concerns by scientists that ammonia levels in the Sacramento River and Delta may be chronically toxic to pelagic organisms and their food supply. Chronic toxicity reduces the chances that an organism will survive in the environment.
>
> ***Inhibited Food Supply:*** Phytoplankton such as diatoms are the basis of the ecological food chain for pelagic organisms such as the delta smelt. When elevated levels of ammonia are present, nitrate uptake and growth of diatoms is inhibited. Additionally, ammonia may be shifting food sources from diatoms to less desirable phytoplankton species. Consequently, increased ammonia levels may be contributing to pelagic organism declines by disrupting the food chain in the Delta.
>
> ***Decreased Dissolved Oxygen Levels:*** As ammonia is oxidized in the environment, dissolved oxygen is consumed. Hence, greater levels of ammonia decrease dissolved oxygen. Moderate depressions of dissolved oxygen are associated with reduced species diversity, while more severe depressions can produce fish kills.

The underlying theory that ammonia is contributing to fish declines in the greater San Francisco Bay system (Bay) is involved. It begins with the fact that the Bay is a nutrient-rich estuary (primarily in the form of nitrate and organophosphates), yet with historically low net primary productivity rates (i.e. phytoplankton growth). Essentially, the concentrations of phytoplankton and the growth rates of phytoplankton are not as high as would be expected based on the concentrations of nutrients that are available in the Bay.

While eutrophication from high nutrient inputs is a concern in many estuaries, high turbidity levels in the Bay limit the amount of light available to the phytoplankton, resulting in low net primary productivity rates. Sediment supplies from tributaries and rivers into the Bay during the wet season keep turbidity high, and tidal and wind-driven sediment re-suspension creates high turbidity during the dry season.[6]

Consequently, most Bay Area POTWs do not have effluent ammonia limitations because it was long recognized that ammonia was not contributing to biostimulatory production of algae with its associated nuisance and oxygen demand concerns.

[6] McKee, L.J., N.K. Ganju, and D.H. Schoellhamer, 2006. *Estimates of suspended sediment entering San Francisco Bay from the Sacramento and San Joaquin Delta, San Francisco Bay, CA*.

However, more recently, Richard Dugdale, Ph.D. at California State University at San Francisco and other scientists have proposed that normal seasonal changes in the Bay that operate to support primary production at a critical time in the migratory cycle of pelagic fish are interrupted by ammonia contributed from POTWs. Dugdale argues that in the late spring months, when Delta outflows subside and the associated turbulence and turbidity drop significantly, light penetrates far enough in the water column to allow a burst of primary food chain production. This food production coincides with the migratory pattern of fish species, and is beneficial to fish survival. Yet if the ammonia concentrations are too great (i.e. greater than 4 uM / 56 ug/L), the uptake of nitrate in Bay is inhibited. Phytoplankton must now use ammonia, which is rapidly consumed, over nitrate. When ammonia is depleted, the phytoplankton then must switch over to using nitrate to continue growing. The switch of metabolic pathway from ammonia to nitrate takes too long to be accommodated during the short window of quiescent flows and low turbidity. The result is primary food production that is less than sufficient to support pelagic fish.[7]

SRWTP is the largest discharger to the Delta and one of the only few that does not remove ammonia. In August 2009 the Regional Board held a workshop, the Ammonia Summit: Assessing the role of Ammonia in the Delta and Suisun Bay Ecosystem, which brought together researchers and scientists exploring these issues. A consensus at the Summit was that the SRWTP is a major source of ammonia to the Delta. Consequently, the Regional Board believes that ammonia from the SRWTP effluent is contributing to the fish declines in the Delta.

The Regional Board decided not to grant dilution in the calculation of ammonia and nitrate effluent limits. The State Implementation Policy (SIP), which governs dilution, requires that mixing zones (areas where dilution is acceptable) do not;

1. compromise the integrity of the entire water body,
2. adversely impact sensitive or critical habitats, and
3. produce undesirable or nuisance aquatic life.

The Regional Board contends that the effluent discharge would result in all three of these impacts.

The Regional Board has moved forward by taking actions in the SRCSD permit based on these assumptions of fish declines. However, although some unexplained declines in fish populations may be attributed at least in part to phytoplankton dynamics, the declines in Bay fish species is widely agreed to have multiple causes including water exports, pesticides, and invasive species. All of these issues still need to be further studied as potential causes for the unexplained declines before definitive conclusions can be drawn.

[7] Wilkerson, F. R. Dugdale, V. Hogue, and A. March, 2006. Phytoplankton blooms and nitrogen productivity in San Francisco Bay. Estuaries and Coasts 29(3):401-416., and others. http://www.usc.edu/org/seagrant/Publications/PDFs/Wilkerson_etal_2006.pdf

Even still, the Regional Board's final conclusion is that the SRWTP discharge is degrading the Sacramento River and Delta and therefore, in accordance with the State Water Resource Control Board's Antidegradation Policy[8], Best Practicable Treatment or Control (BPTC) of the discharge is required. They have considered full nitrification of the effluent to remove ammonia to be BPTC.

In addition, the Regional Board believes further treatment will reduce carcinogenic nitrosoamine compounds (N-nitrosodimethylamine, or NDMA) from the effluent. Nitrosoamines are created when ammonia and other nitrogenous constituents are chlorinated. SRCSD chlorinates its effluent for disinfection. When comparing the SRWTP effluent to California Toxic Rule human health criterion for drinking water, the Regional Board found that the discharge is above the NDMA limit 100-fold.

To meet the new ammonia limits, SRCSD will need to design and construct nitrification facilities that remove ammonia. SRCSD has estimated the project costs of these facilities to be $582 million (project costs include all engineering, legal, administrative, and contingencies to deliver a complete project. All costs in January 2009 dollars, ENRCCI 9138).

The process of removing ammonia through nitrification creates nitrate. Nitrate in drinking water is toxic to fetuses and infants. Also, the addition of nitrate in receiving waters can create excessive plant growth and may further disrupt the ecological nutrient balance. Consequently, the new permit also includes a final total nitrate limit based on the State Drinking Water Standard of 10 mg/L as Nitrogen. In order to meet the limit in the future, SRCSD will need to build denitrification facilities that will remove nitrate from the effluent. SRCSD has estimated the project costs for denitrification facilities to be $200 million (project costs include all engineering, legal, administrative, and contingencies to deliver a complete project. All costs in January 2009 dollars, ENRCCI 9138).

The Regional Board has included a 10-year compliance schedule to allow time to build the new facilities. Interim ammonia limits that expire on November 30, 2020 have been included in the permit:

Interim Ammonia Nitrogen, Total as Nitrogen

33 mg/L average monthly

35 mg/L average weekly

45 mg/L maximum daily

When the nitrification facilities are in operation, it is expected that effluent nitrate levels will increase. At present, the SRWTP discharges low levels of nitrate and can meet the new standard. Therefore, no interim limits for nitrate were included in the permit.

[8] Resolution No. 68-16
http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf

Additionally, due to testimony heard on at the Formal Board Hearing, the Regional Board added a permit reopener that allows for the final nitrate effluent limitation to be modified based on on-going studies to evaluate the effect of nitrogen in the Bay-Delta system and to users of Bay-Delta waters.

DISINFECTION - TITLE 22 TERTIARY TREATMENT

The new permit includes more stringent pathogen effluent limits for the protection of recreation uses in the downstream waters. Title 22[9] tertiary treatment facilities, or equivalent, are required to be designed and constructed to treat SRWTP wastewater to minimize pathogen exposure risks.

US EPA's national risk criteria for human health protection in freshwater is 8 illnesses per 1,000 exposures.[10] Dr. Charles Gerba from the University of Arizona conducted a health risk assessment of the SRWTP discharge on behalf of SRCSD. The study found that the risk of illness downstream of the discharge versus upstream due to cryptosporidium was essentially the same. And, the study concluded that bacteria levels downstream of the discharge are far below US EPA's risk criteria, and that therefore, the discharge is protective of recreation contact use.

The results from the study prompted the Regional Board to request a site-specific recommendation from the California Department of Public Health (DPH)[11] on the appropriate levels of disinfection for protection of full body-contact recreation downstream of the SRCSD discharge. DPH's recommended that pathogen concentrations be reduced until the risk in river waters is no more than 1 illness per 10,000 exposures. This requirement is consistent with US EPA drinking water criteria.[12] SRCSD believes that this requirement is too stringent and contends that even without contributions from their discharge, the Sacramento River does not meet this risk level.

Nevertheless, the Regional Board has required that wastewater receive Title 22 tertiary treatment, or equivalent based on DPH's recommendation. Title 22 requires that wastewater for recycled water use be oxidized, coagulated, filtered, and adequately disinfected (see Appendix A for detailed Title 22 requirements). Title 22 requirements are recycled water standards that do not apply to surface water discharges.

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[9] DPH reclamation criteria, California Code of Regulations (CCR), Title 22, division 4, chapter 3 (Title 22) requires wastewater for recycled water use be oxidized, coagulated, filtered, and adequately disinfected.

[10] EPA promulgated water quality standards as part of the Beaches Environmental Assessment and Coast Health (BEACH) Act of 2000 on November 16, 2004 rule *Water Quality Standards for Coastal and Great Lakes Recreation Waters*: http://edocket.access.gpo.gov/2004/pdf/04-25303.pdf

[11] The California Department of Public Health (DPH) puts forth disinfection requirements for the protection of public health.

[12] Surface Water Treatment Rule http://water.epa.gov/lawsregs/rulesregs/sdwa/swtr/upload/SWTR.pdf

The Regional Board believes that providing tertiary treatment to the discharge will also improve the water quality of drinking water and irrigation water taken from the Sacramento River downstream of the discharge. Additionally, tertiary treatment will improve removal of other pollutants such as heavy metals, total organic carbon, BOD, TSS, phosphorus, and emerging pollutants of concern such as endocrine disruptors.

The 2010 SRCSD Permit includes the total coliform final limits (see Table 1) to be met after a 10-year compliance schedule allowance. SRCSD has estimated the project costs for filtration (i.e. microfiltration) and disinfection (i.e. ultraviolet light disinfection) to be $1.16 billion and $116 million, respectively (project costs include all engineering, legal, administrative, and contingencies to deliver a complete project. All costs in January 2009 dollars, ENRCCI 9138).

The permit includes a 10-year compliance schedule to allow time for the facilities to be designed and constructed. Interim limits for total coliform, which expire on November 20, 2020, are the same as the total coliform limits in the previous permit:

Interim Total Coliform

23 MPN per 100 mL, as a weekly median;

500 MPN/100 mL, in any two consecutive days as a daily maximum

With the technological improvement of tertiary treatment, 5-day Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) levels in the effluent will improve. Consequently, the permit includes new technology-based limits for BOD and TSS as presented in Table 1. These limits will not be able to be met until the tertiary facilities are in operation. Therefore, the permit includes interim limits, which are the same as the previous permit limits:

Interim BOD

30 mg/L average monthly;

45 mg/L average weekly;

60 mg/L maximum daily.

Interim TSS

30 mg/L average monthly;

45 mg/L average weekly;

60 mg/L maximum daily.

These limits expire at the end of the compliance schedule on November 30, 2020.

Similarly, with improved disinfection facilities, the Regional Board has included new final effluent limits for total residual chlorine (see Table 1) that expire November 30, 2020. In the interim, the limits are the same as the previous permit:

Interim Total Residual Chlorine

0.011 mg/L, as a monthly average;

0.018 mg/L, as a daily average.

SALINITY

The Regional Board found that the SRCSD discharge does not have a reasonable potential to exceed applicable water quality objectives for salinity. Even still, a no net increase limit for electrical conductivity, which is one measure of salinity, has been imposed on the discharge (see Table 1), essentially not allowing any increases in salinity above current levels (with some room for increases due to potential water conservation efforts). The Regional Board deems the new limit appropriate measure in light of a Region-wide effort to reduce salinity loads to the Delta and San Joaquin River.

No new treatment facilities are required to be built at this time, but SRCSD does need to identify a plan to target salinity reductions in the collection system and is required to develop a Salinity Evaluation and Minimization Plan.

Appendix A – Title 22 Disinfected Tertiary Requirements

Title 22 Criteria				
Code Section	**Recycled Water Type**	**Treatment Process**	**Median Coliform (MPN/100mL)**	**Total Coliform (MPN/100mL)**
60301.230	Disinfected Tertiary	Filtered[(1)] and Disinfected[(2)]	2.2[(3)]	23[(4)] 240[(5)]

Notes:
MPN – most probable number
(1) "Filtered" means an oxidized wastewater that satisfies (A) or (B) below:
- (A) Has been coagulated and passed through natural soils or filter media with a specified maximum flux rate, depending on the type filtration system, and the turbidity does not exceed any of the following:
  1) A daily average of 2 NTU.
  2) 5 NTU more than 5 percent of the time within a 24-hour period.
  3) 10 NTU at any time.
- (B) Has been passed through a microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane so that the turbidity does not exceed any of the following:
  1) 0.2 NTU more than 5 percent of the time within a 24-hour period.
  2) 0.5 NTU at any time.

(2) Disinfected by either:
- a. A chlorine process with continuous CT of 450 mg-min/L with a modal contact time of 90 minutes (based on peak dry weather design flow).
- b. A combined process that inactivates and/or removes 99.999 percent (5-log removal) of F-specific bacteriophage MS-2, or polio virus.

(3) In the last 7 days for which analyses have been completed.
(4) In no more than 1 sample in any 30 day period.
(5) In no samples.

Bay Area Clean Water Agencies
A Joint Powers Public Agency
Leading the Way to Protect our Bay

MINUTES
Executive Board Meeting

Thursday, December 16, 2010
9:30 a.m. – 11:30 a.m.

EBMUD Operations Center
2020 Wake Ave., Oakland, CA

ROLL CALL AND INTRODUCTIONS

Executive Board Representatives: Ben Horenstein, Chair (East Bay Municipal Utility District); Tommy Moala, Vice Chair (San Francisco Public Utilities Commission); Jim Kelly (Central Contra Costa Sanitary District); Mike Connor (East Bay Dischargers Authority); Bhavani Yerrapotu (City of San Jose).

Other Attendees: Dave Williams (East Bay Municipal Utility District); Margret Orr (Central Contra Costa Sanitary District); Gail Chesler (Central Contra Costa Sanitary District); Kirsten Struve (City of San Jose); Sharon Newton (City of San Jose); Laura Pagano (San Francisco Public Utilities Commission); Rod Miller (San Francisco Public Utilities Commission); Karl Royer (East Bay Dischargers Authority); Greg Baatrup (Fairfield Suisun Sewer District); Andy Morrison (Union Sanitary District); Guy Moy (Union Sanitary District); Monica Oakley (RMC Environmental); Tom Hall (Eisenberg Olivieri Associates, Inc.); Denise Conners (Larry Walker Associates); Michele Pla (MPLA Cleanwater Consulting); Jim Sandoval (CH2M Hill); Arleen Navarret; Amy Chastain (BACWA); Alexandra Gunnell (BACWA).

PUBLIC COMMENT

There were no public comments.

REPORTS

Committee Reports, agenda item 1, were included in the meeting handout packet and Committee Chairs were given the opportunity to provide further clarification, as requested by meeting attendees.

The Board requested that the next monthly report from BAPPG include information about pollution prevention efforts that may be needed to address PCB TMDL implementation.

The Collection Systems (CS) Committee noted that the Regional Water Quality Control Board (RWQCB) has requested minutes and a list of attendees from previous CS committee meetings. The Executive Director (ED) will address this request and CS committee meeting attendees will be informed about this request.

For **agenda item 2**, the **Proposition 50 Grant Disbursements Status Report,** prepared by Brian Campbell (EBMUD), was included in the packet.

Under **agenda item 3,** the ED referred to the **Executive Director's Report** included in the meeting handout packet and provided meeting attendees with an opportunity to ask questions related to the report.

Executive Board (Board) members were invited to share any items of interest under **agenda item 4**, **Executive Board Reports.**

The Aquatic Science Center meeting was attended by the designated BACWA representatives. A discussion of BACWA's possible role in strategic planning for SFEI and the RMP will be added to the February BACWA Executive Board meeting agenda.

During the December Tri-TAC retreat there appeared to be statewide interest in the draft Whole Effluent Toxicity (WET) Policy. The next Tri-TAC meeting will be a workshop focused on concerns surrounding WET policy. The October Tri-TAC meeting was a combined meeting with the Water Committee of the Southern California Alliance of Publicly Owned Treatment Works (SCAP), and it was suggested that upcoming meetings may follow the same model, such as combining with the Water Committee for the Central Valley Clean Water Association (CVCWA) when Tri-TAC meets in Sacramento, and combining with the BACWA Permits Committee when Tri-TAC meets in the San Francisco bay area.

San Francisco has received verbal notification that based on their last EPA inspection there will be a recommendation that they be cited for not reporting sanitary sewer overflows as a hazardous material spill. Any written communication received from EPA will be shared with the BACWA Board and ED.

The following **Chair and Executive Director Authorized Actions** were listed under agenda **item 5**.

a. Chair Execution of agreement with Solano Community College to support the Water Operator Training Program for Spring 2011; $70,000; File 12,312.

b. ED Authorization of As-Needed Assistance from Larry Walker & Associates to assist with WET policy meeting; $2,000; File 12,163.

CONSENT CALENDAR

*Consent calendar **agenda items 6 through 8** were approved in a motion made by Mike Connor and seconded by Tommy Moala. The motion carried unanimously.*

6. Minutes from November 18, 2010 BACWA Executive Board Meeting.
7. October 2010 Treasurer's Report.
8. Authorize the Executive Director to Execute a Contract with the Aquatic Science Center to Determine Selenium Speciation in Treated Municipal Effluent; $24,000; File 12,314.
9. Resolution establishing the Arleen Navarret Leadership Award; File 12,315.

***Agenda item number 9** was approved in a motion made by Ben Horenstein and seconded by Tommy Moala. The motion carried unanimously.*

BOARD DISCUSSION ITEMS

Agenda item 10 covered **Nutrient Updates and Discussion**. Central Contra Costa Sanitary District has submitted comments on the **SWAMP Monitoring Workplan** and it appears that many of their concerns will be considered as the document is revised.

A draft **Request for Proposals (RFP) for Consultant Assistance** was included in the handout packet and reviewed. The ED will send a request to the BACWA Board for feedback and assistance in RFP drafting and selection process.

A motion was made by Jim Kelly to move forward with refining the Request for Proposal, revising it to include support for tracking the Numeric Nutrient Endpoint development for San Francisco Bay, increasing the not to exceed contract value by $50,000, and expediting the selection process. Tommy Moala seconded.

It was also noted that BACWA may need to document the organization's position on key regulatory issues to insure that a consistent message is conveyed by the member agencies and their representatives.

For **agenda item 11**, **Energy Updates & Discussion,** a letter from Steve Weissman offering to host a meeting with PG&E at UC Berkeley was included in the handout packet and discussed Mike Connor and Ben Horenstein will work together to frame the issues that might be appropriate topics for BACWA to work with PG&E in a meeting.

Under **agenda item 12,** updates on **PCB TMDL Implementation,** the ED noted that the draft permit was expected to be issued today and that more information would be provided as it becomes available.

For **agenda item 13** the **Whole Effluent Toxicity (WET) Policy** was discussed. CCCSD will be utilizing consultant support to analyze their historical data and requested that the BACWA Board members send data from their agencies to her Plant Operations Director, Margaret Orr. The ED will continue to discuss cost concerns with the RWQCB staff and upcoming Tri-TAC and CASA meetings are also expected to include discussion on this topic.

Pollution Prevention/ Clean Water Program Education concerns were discussed under **agenda item 14**. CCCSD distributed a draft survey and requested that it be added to the next BAPPG meeting agenda for discussion. The ED will discuss this topic with Paul Causey to see if additional information can be obtained through the rate survey that he administers. The March or April BACWA Board meeting agenda will include a presentation from Paul Causey. The focus of this outreach is to build a more informed citizenry so that financial and technical challenges faced by treatment works can be understood (and approved).

The next regular meeting is scheduled for **February 24, 2011**, **9:00 a.m. to 12:00 p.m.** at the EBMUD Plant **Lab Library** in Oakland. There will be NO Executive Board Meeting for January 2011 to accommodate the BACWA Annual Member Meeting on January 27, 2011 at the Boy Scouts Facility in San Leandro.

The meeting adjourned at 11:30 a.m.

January 21, 2011

MEMO TO: Bay Area Clean Water Agencies Executive Board
MEMO FROM: Gary Breaux, Director of Finance, East Bay Municipal Utility District
SUBJECT: Treasurer's Report – July to November 2010

As required by section eight of the Joint Powers Agreement establishing the Bay Area Clean Water Agencies (BACWA) and California Government Code Sections 6500 et seq., attached is the BACWA Treasurer's Report for the period covering **July 1, 2010 through November 30, 2010** (first five months of the Fiscal Year 2010-2011). This report covers expenditures, cash receipts, and cash transfers for the following BACWA funds:

- BACWA (BACWA),
- BACWA Training Reserve (BCTWRNG),
- BACWA Legal Reserve (BCLWGLR),
- BACWA Operating Reserve (BCWOPR),
- Proposition 50 (Prop50),
- Air Issues and Regulation Group (AIR),
- Bay Area Pollution Prevention Committee (BAPPG),
- Clean Bay Collaborative (CBC/WQAS),
- CBC/WQAS Emergency Reserve (WQEMGR),
- CBC/WQAS Operating Reserve (CBCOPR),
- CBC/WQAS Technical Action Fund (WQTACT),
- Regional Water Recycling Program (RWR)
- Bay Area Pollution Prevention Committee (BAPPG),
- Water Operator Training (WOT), and
- Reserve (RESERVE).

	BEGINNING FUND BALANCE 7/1/10	*Total Receipts*	*Total Disbursements*	ENDING FUND BALANCE 11/30/10	*Outstanding Encumbrances*	UNOBLIGATED FUND BALANCE 11/30/10
BACWA	334,476.06	520,500.00	142,869.90	712,106.16	372,967.11	339,139.05
BCTWRNG	250,000.00	-	-	250,000.00	-	250,000.00
BCLWGLR	300,000.00	-	-	300,000.00	-	300,000.00
BCWOPR	153,500.00	-	2,562.29	150,937.71	-	150,937.71
Prop50	18,147.96	505,508.30	320,562.40	203,093.86	78,332.92	124,760.94
AIR	2,592.18	78,828.00	5,964.83	75,455.35	80,790.00	(5,334.65)
BAPPG	49,131.29	28,855.00	16,463.20	61,523.09	19,957.00	41,566.09
WQEMGR	400,000.00	-	-	400,000.00	-	400,000.00
WQTACT	250,000.00	-	-	250,000.00	-	250,000.00
CBCOPR	162,000.00	-	-	162,000.00	-	162,000.00
WQA	64,897.39	390,000.00	108,068.50	346,828.89	46,124.74	300,704.15
RWR	16,516.27	-	-	16,516.27	-	16,516.27
WOT	55,287.83	71,000.00	56,000.00	70,287.83	-	70,287.83
RESERVE	120,000.00	-	-	120,000.00	-	120,000.00
Total	2,176,548.98	1,594,691.30	652,491.12	3,118,749.16	598,171.77	2,520,577.39

BACWA: Bay Area Clean Water Agencies
BCTWRNG: BACWA Training Fund
BCLWGLR: BACWA Legal Reserve
BCWOPR: BACWA Operating Reserve
Prop50: Proposition 50 Grant
AIR: Air Issue and Regulation Group
BAPPG: Bay Area Pollution Prevention Group

WQEMGR: WQAS Emergency Reserve
WQTACT: WQAS Technical Action Fund
CBCOPR: CBC Operating Reserve
WQA: Clean Bay Collaborative/Water Quality Attainment Stra
RWR: Regional Water Recycling
WOT: Water/Wastewater Operator Training
RESERVE: Reserve

BACWA Revenue Report for November 2010

DEPT_DESCR	PROG_DESCR	AMENDED	CP_DIRECT	CP_INVCED	YTD_DIRECT	YTD_INVCED	YTD_ACTUAL	UNRECON_BUD
Bay Area Clean Water Agencies	BDO Member Contributions	450,000.00	0.00	0.00	0.00	360,000.00	360,000.00	90,000.00
Bay Area Clean Water Agencies	BDO Other Receipts	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bay Area Clean Water Agencies	BDO Interest Income	15,000.00	0.00	0.00	0.00	0.00	0.00	15,000.00
Bay Area Clean Water Agencies	BDO Assoc.&Affiliate Contr	159,000.00	0.00	1,500.00	0.00	160,500.00	160,500.00	-1,500.00
Bay Area Clean Water Agencies	BDO Fund Transfers	37842						
BACWA TOTAL		**661,842.00**	**0.00**	**1,500.00**	**0.00**	**520,500.00**	**520,500.00**	**103,500.00**
AIR-Air Issues&Regulation Grp	BDO Member Contributions	83,400.00	0.00	0.00	0.00	78,828.00	78,828.00	4,572.00
AIR-Air Issues&Regulation Grp	BDO Other Receipts	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AIR-Air Issues&Regulation Grp	BDO Interest Income	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AIR TOTAL		**83,400.00**	**0.00**	**0.00**	**0.00**	**78,828.00**	**78,828.00**	**4,572.00**
BAPPG-BayAreaPollutnPreventGrp	BDO Member Contributions	80,505.00	0.00	0.00	0.00	28,855.00	28,855.00	51,650.00
BAPPG-BayAreaPollutnPreventGrp	BDO Other Receipts	50,000.00	0.00	0.00	0.00	0.00	0.00	50,000.00
BAPPG-BayAreaPollutnPreventGrp	BDO Interest Income	3,079.00	0.00	0.00	0.00	0.00	0.00	3,079.00
BAPPG TOTAL		**133,584.00**	**0.00**	**0.00**	**0.00**	**28,855.00**	**28,855.00**	**104,729.00**
WQA-WtrQualityAttainmntStratgy	BDO Member Contributions	450,000.00	0.00	500.00	0.00	390,000.00	390,000.00	60,000.00
WQA-WtrQualityAttainmntStratgy	BDO Other Receipts	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WQA-WtrQualityAttainmntStratgy	BDO Interest Income	8,000.00	0.00	0.00	0.00	0.00	0.00	8,000.00
CBC/WQAS TOTAL		**458,000.00**	**0.00**	**500.00**	**0.00**	**390,000.00**	**390,000.00**	**68,000.00**
WOT - Wtr/Wwtr Operat Training	BDO Member Contributions	0.00	0.00	0.00	0.00	71,000.00	71,000.00	-71,000.00
WOT - Wtr/Wwtr Operat Training	BDO Other Receipts	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WOT - Wtr/Wwtr Operat Training	BDO Interest Income	350	0.00	0.00	0.00	0.00	0.00	0.00
WOT TOTAL		**350.00**	**0.00**	**0.00**	**0.00**	**71,000.00**	**71,000.00**	**-71,000.00**
Prop50BayAreaIntegRegnlWtrMgmt	BDO Member Contributions	0.00	0.00	0.00	505,508	0.00	505,508	-505,508
Prop50BayAreaIntegRegnlWtrMgmt	BDO Other Receipts	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prop50BayAreaIntegRegnlWtrMgmt	BDO Interest Income	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
PROP 50 TOTAL		**2,000.00**	**0.00**	**0.00**	**505,508.30**	**0.00**	**505,508.30**	**-505,508.30**

BACWA Expense Report for November 2010

DESCR	DESCR	AMENDED	CP_ENC	CP_PV	CP_DA	YTD_ENC	YTD_PV	YTD_DA	OBLIGATED	UNOBLIGATED
Bay Area Clean Water Agencies	BC-Collections System	25,000	(2,680.00)	2,680.00	-	19,545.00	5,455.00	-	25,000.00	-
Bay Area Clean Water Agencies	BC-Permit Committee	25,000	(1,053.00)	1,053.00	-	22,282.00	2,718.00	-	25,000.00	-
Bay Area Clean Water Agencies	BC-Water Recycling Committee	11,000	-	-	-	-	-	-	-	11,000.00
Bay Area Clean Water Agencies	BC-Biosolids Committee	10,000	-	-	-	-	-	-	-	10,000.00
Bay Area Clean Water Agencies	BC-InfoShare Groups	25,000	-	-	-	20,912.50	4,087.50	-	25,000.00	-
Bay Area Clean Water Agencies	BC-Laboratory Committee	7,000	-	-	-	-	-	2,982.25	2,982.25	4,017.75
Bay Area Clean Water Agencies	BC-Miscellaneous Committee Sup	10,000	-	-	-	-	-	2,930.80	2,930.80	7,069.20
BACWA Committees Subtotal		**113,000.00**	**-3,733.00**	**3,733.00**	**0.00**	**62,739.50**	**12,260.50**	**5,913.05**	**80,913.05**	**32,086.95**
Bay Area Clean Water Agencies	TS-Media Relations Support	25,000	(5,703.75)	5,703.75	-	19,296.25	5,703.75	-	25,000.00	-
Bay Area Clean Water Agencies	TS-Consultant Support	100,000	(1,784.00)	1,784.50	-	68,216.00	1,784.50	-	70,000.50	29,999.50
BACWA Technical Support Subtotal		**125,000.00**	**-7,487.75**	**7,488.25**	**0.00**	**87,512.25**	**7,488.25**	**0.00**	**95,000.50**	**29,999.50**
Bay Area Clean Water Agencies	LS-Regulatory Support	20,000	(285.90)	285.90	3,877.53	9,616.00	384.00	3,877.53	13,877.53	6,122.47
Bay Area Clean Water Agencies	LS-Executive Board Support	10,000	-	-	-	5,000.00	-	-	5,000.00	5,000.00
BACWA Legal Support Subtotal		**30,000.00**	**-285.90**	**285.90**	**3,877.53**	**14,616.00**	**384.00**	**3,877.53**	**18,877.53**	**11,122.47**
Bay Area Clean Water Agencies	CAS-CWAA	10,000	-	-	-	-	-	10,000.00	10,000.00	-
Bay Area Clean Water Agencies	CAS-PSSEP	20,000	-	-	-	-	-	-	-	20,000.00
Bay Area Clean Water Agencies	CAS-CPSC	5,000	-	-	-	-	-	5,000.00	5,000.00	-
Bay Area Clean Water Agencies	CAS-PSI	500	-	-	-	-	-	-	-	500.00
BACWA Collab & Sponsor Subtotal		**35,500.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**15,000.00**	**15,000.00**	**20,500.00**
Bay Area Clean Water Agencies	CAR-BACWA Annual Report	20,000	-	-	-	-	8,000.00	1,633.48	9,633.48	10,366.52
Bay Area Clean Water Agencies	CAR-BACWA Website Development/	70,000	(9,821.00)	9,821.00	-	15,929.00	9,821.00	604.97	26,354.97	43,645.03
Bay Area Clean Water Agencies	CAR-Other Communications	15,000	(3,660.00)	3,660.00	193.80	14,340.00	3,660.00	193.80	18,193.80	(3,193.80)
BACWA Comm & Report Subtotal		**105,000.00**	**-13,481.00**	**13,481.00**	**193.80**	**30,269.00**	**21,481.00**	**2,432.25**	**54,182.25**	**50,817.75**
Bay Area Clean Water Agencies	SP-BAPPG Contribution	50,000	-	-	-	-	-	-	-	50,000.00
Bay Area Clean Water Agencies	GBS-Contingency	15,000	-	-	-	-	-	-	-	15,000.00
Bay Area Clean Water Agencies	GBS- Meeting Support	10,000	115.03	62.02	35.40	786.94	213.06	4,344.42	5,344.42	4,655.58
BACWA General Subtotal		**25,000.00**	**115.03**	**62.02**	**35.40**	**786.94**	**213.06**	**4,344.42**	**5,344.42**	**19,655.58**
Bay Area Clean Water Agencies	AS-BACWA Admin Expense	8,000	-	-	175.88	-	-	802.65	802.65	7,197.35
Bay Area Clean Water Agencies	AS-Executive Director	130,000	(10,833.33)	10,833.33	-	86,666.68	43,333.32	-	130,000.00	-
Bay Area Clean Water Agencies	AS-Assistant Executive Directo	70,000	-	-	-	46,600.00	21,600.00	-	68,200.00	1,800.00
Bay Area Clean Water Agencies	AS-EBMUD Administrative Servic	44,000	-	-	-	43,776.74	-	-	43,776.74	223.26
Bay Area Clean Water Agencies	AS-Insurance	5,000	-	-	-	-	-	3,739.87	3,739.87	1,260.13
BACWA Administration Subtotal		**257,000.00**	**-10,833.33**	**10,833.33**	**175.88**	**177,043.42**	**64,933.32**	**4,542.52**	**246,519.26**	**10,480.74**
BACWA TOTAL		**690,500.00**	**-35,705.95**	**35,883.50**	**4,282.61**	**372,967.11**	**106,760.13**	**36,109.77**	**515,837.01**	**174,662.99**

BACWA Expense Report for November 2010

DESCR	DESCR	AMENDED	CP_ENC	CP_PV	CP_DA	YTD_ENC	YTD_PV	YTD_DA	OBLIGATED	UNOBLIGATED
AIR-Air Issues&Regulation Grp	BDO Administrative Expense	4,038	-	-	-	-	-	-	-	4,038.00
AIR-Air Issues&Regulation Grp	BDO Contract Expenses	86,755	-	-	-	80,790.00	5,964.83	-	86,754.83	0.17
AIR TOTAL		**90,793.00**	**0.00**	**0.00**	**0.00**	**80,790.00**	**5,964.83**	**0.00**	**86,754.83**	**4,038.17**
BAPPG-BayAreaPollutnPreventGrp	BAPPG-CE-Fog	21,800	10,000.00	-	-	10,000.00	-	-	10,000.00	11,800.00
BAPPG-BayAreaPollutnPreventGrp	BAPPG-CE-Mercury	9,500	(825.00)	825.00	-	5,702.00	1,238.00	-	6,940.00	2,560.00
BAPPG-BayAreaPollutnPreventGrp	BAPPG-CE-Pesticides	16,000	-	-	-	-	-	10,000.00	10,000.00	6,000.00
BAPPG-BayAreaPollutnPreventGrp	BAPPG-CE-Copper	4,000	(900.00)	900.00	-	2,575.00	1,485.00	-	4,060.00	(60.00)
BAPPG-BayAreaPollutnPreventGrp	BAPPG-CE-Pharmaceutical	4,999	-	-	-	-	-	-	-	4,999.00
BAPPG-BayAreaPollutnPreventGrp	BAPPG-CE-General P2	46,500	-	-	-	-	-	1,420.20	1,420.20	45,079.80
BAPPG-BayAreaPollutnPreventGrp	BAPPG-CE-Emerging Issues	5,000	-	-	-	-	-	-	-	5,000.00
BAPPG-BayAreaPollutnPreventGrp	BAPPG-CE-Other	8,396	1,680.00	2,320.00	-	1,680.00	2,320.00	-	4,000.00	4,396.00
BAPPG-BayAreaPollutnPreventGrp	BDO Administrative Expense	5,810	-	-	-	-	-	-	-	5,810.00
BAPPG TOTAL		**122,005.00**	**9,955.00**	**4,045.00**	**0.00**	**19,957.00**	**5,043.00**	**11,420.20**	**36,420.20**	**85,584.80**
WQA-WtrQualityAttainmntStratgy	WQA-CE-Technical Support	191,728	(12,573.00)	12,573.00	-	13,194.99	48,530.59	-	61,725.58	130,002.42
WQA-WtrQualityAttainmntStratgy	WQA-CE-Collaborations & Sponso	50,000	-	-	-	-	-	50,000.00	50,000.00	-
WQA-WtrQualityAttainmntStratgy	WQA-CE-Trainings	7,190	-	-	-	-	-	-	-	7,190.00
WQA-WtrQualityAttainmntStratgy	WQA-CE-Commun. & Reporting	65,000	20,000.00	-	-	20,000.00	-	-	20,000.00	45,000.00
WQA-WtrQualityAttainmntStratgy	WQA-CE-Program Mgmt	39,000	-	-	-	-	-	-	-	39,000.00
WQA-WtrQualityAttainmntStratgy	WQA-CE-Other	103,430	-	-	-	12,929.75	6,000.00	3,537.91	22,467.66	80,962.34
WQA-WtrQualityAttainmntStratgy	BDO Administrative Expense	21,810	-	-	-	-	-	-	-	21,810.00
CBC/WQAS TOTAL		**478,158.00**	**7,427.00**	**12,573.00**	**0.00**	**46,124.74**	**54,530.59**	**53,537.91**	**154,193.24**	**323,964.76**
BACWA OperatingRsrve Fnd Tmfr	BDO Contract Expenses	-	-	-	2,562.29	-	-	2,562.29	2,562.29	-
WOT - Wtr/Wwtr Operat Training	BDO Administrative Expense	2,500	-	-	-	-	-	-	-	2,500.00
WOT - Wtr/Wwtr Operat Training	BDO Contract Expenses	81,000	-	-	-	-	-	56,000.00	56,000.00	25,000.00
WOT TOTAL		**83,500.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**56,000.00**	**56,000.00**	**27,500.00**
Prop50BayAreaIntegRegnlWtrMgmt	BDO Administrative Expense	8,000	-	-	-	941.00	1,059.00	167.40	2,167.40	5,832.60
Prop50BayAreaIntegRegnlWtrMgmt	BDO Contract Expenses	78,017	-	-	-	77,391.92	625.00	-	78,016.92	0.08
Prop50BayAreaIntegRegnlWtrMgmt	LPS Disbursement	-	-	-	17500	-	-	318711	-	-
PROP 50 TOTAL		**86,017.00**	**0.00**	**0.00**	**17,500.00**	**78,332.92**	**1,684.00**	**318,878.40**	**80,184.32**	**5,832.68**

BACWA EXECUTIVE BOARD ACTION REQUEST

AGENDA NO.: 7

FILE NO.: 12,345

MEETING DATE: January 27, 2011

TITLE: BACWA Nutrient Strategy Assistance

☒ **MOTION** ☐ **RESOLUTION**

RECOMMENDED ACTION

Authorize BACWA to contract with HDR, for an amount not to exceed $125,000, to assist BACWA in developing and implementing a strategy to understand and respond to nutrient regulatory and scientific developments.

SUMMARY

Since the adoption of the federal Clean Water Act, nutrient enrichment has not been identified has a water quality problem for San Francisco Bay. Our understanding of the mechanisms by which nutrient enrichment can disrupt aquatic ecosystems, however, has been changing rapidly and some research suggests that nutrient enrichment may impair Bay beneficial uses. Additionally, recent regulatory developments at the regional, state and local levels suggest that numeric effluent limits on dischargers of nutrients may be forthcoming with yet-unknown impacts on existing Bay Area treatment plants.

In order to understand and support ongoing research related to nutrient enrichment and to develop the data necessary to inform potential regulations, BACWA issued a request for proposals for nutrient strategy assistance. Six proposals were received and reviewed by a selection committee.

Of the proposals received, the committee recommends to the BACWA Board that offered by HDR. This proposal is recommended because of HDR's extensive experience with NPDES permitting, numeric water quality criteria, and modeling, as well as their work on the Water Environment Research Foundation's Nutrient Removal Challenge.

FISCAL IMPACT

The Fiscal Year 2010 – 2011 budget and workplan allocated $25,000 to the development of an issue paper on ammonia. To date, $5,000 has been spent (fact sheet on the Sacramento County Regional Sanitation District permit), leaving $20,000. Additional funds are also available in the "Contingency" budget line for WQAS/CBC, the CBC Operating Reserve, and the WQAS Technical Action Fund.

ALTERNATIVES

BACWA contracting policies require that the agency request proposals for all contracts exceeding $100,000. On January 30, 2011 BACWA issued a request for proposals (RFP) for nutrient strategy assistance. Six proposals were received and the reviewing committee recommends selection of HDR for the reasons identified above. The proposals were from: (1) Fred Krieger/Stephanie Hughes/Robertson-Bryan ($108,000); (2) Larry Walker & Associates/CH2M HILL ($125,000); (3) HDR ($125,000); (4)

Submitted: Selection Committee **Executive Director Approval:** /s/ Amy Chastain

MWH ($123,984); (5) LimnoTech/EPC ($125,000); (6) Carollo Engineers/AQUA TERRA/Patricia McGovern Engineers.

Attachments:

1. January 20, 2011 Request for Proposals
2. HDR Proposal (without Appendices)
3. HDR Budget Detail

REQUEST FOR PROPOSAL – Nutrient Strategy Assistance

DATE OF PROPOSAL – December 30, 2010

PROPOSAL DUE DATE – January 14, 2011

The Bay Area Clean Water Agencies (BACWA) is a joint powers agency that represents more than forty publicly-owned treatment works (POTWS) in the San Francisco Bay Area. BACWA is seeking proposals for consultant assistance to help the agency understand and respond to the rapidly-changing regulatory and scientific landscape related to nutrient enrichment of San Francisco Bay. Proposals should describe how the consultant will assist BACWA to accomplish the following:

1. *Track and respond to developments in nutrient regulation with the potential to affect Bay Area POTWs.*

Ensure that BACWA is apprised of and responding to nutrient-related regulatory developments with the potential to affect San Francisco Bay Area POTWs. Prepare and present to the BACWA Executive Board issue summaries[1] and position papers[2] on key regulatory issues, such as numeric nutrient endpoints, USEPA establishment of numeric nutrient criteria, and draft National Pollutant Discharge Elimination System (NPDES) permit renewals issued by the San Francisco Bay and Central Valley Regional Water Quality Control Boards. Represent BACWA at key meetings with regulators and the scientific community, providing Executive Board consensus responses at those meetings when necessary. Provide regular reports to the BACWA Executive Board from each meeting attended. Listen to the concerns of the Executive Board and the regulators, combining the information from both groups into a suggested strategy that ultimately provides a scientific basis for the regulators to make informed management decisions. Provide policy options and insight to the BACWA Executive Board and forecast possible directions that will be taken given the data available and how best to ensure the use of good science in decision making.

2. *Development of a strategy for identifying and filling data needs regarding nutrient impacts on San Francisco Bay beneficial uses and the need for nutrient effluent limits.*

Summarize the existing state of scientific knowledge of nutrients' current and potential impacts on Bay beneficial uses, identify data gaps, and any efforts currently underway to fill those gaps.

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[1] An issue summary is a factual two to three page document that provides a brief description of the issue, allowing for a common understanding of the issue.

[2] A position paper is a two to four page document that outlines BACWA's policy position on a particular issue, enabling BACWA representatives to be consistent in their communications regarding this issue.

Prepare a plan for how BACWA may supplement or expedite existing research efforts including a timeline and cost estimate for each phase of the work. Select and manage a team, which may include subconsultants if necessary, to initiate additional research or monitoring to fill the data gaps. Review current status of available models and determine what adaptations would be needed to apply them to nutrients, with the goal of developing an integrative model to enable data-driven decisions for future studies and regulatory decisions.

3. *Development of a strategy for understanding and communicating the infrastructure implications of more stringent nutrient regulation.*

Prepare a summary of Bay Area infrastructure for all major and representative minor POTWs, including treatment technologies utilized and planned, current nutrient removal capabilities, and estimated nutrient loading. Assist BACWA in determining what changes to existing infrastructure would be required by more stringent nutrient regulations.

4. *Identify other factors that may inform management decisions.*

Prepare a plan for identifying non-infrastructure factors (*e.g.*, energy use, greenhouse gas emissions, impacts to resource recovery programs, cost, etc.) that may be considered by Bay Area POTWs to determine if enhanced nutrient removal represents the best environmental decision.

Response Requirements

All interested persons must provide the following requested information as part of their response to this proposal:

- Name and address of company.
- Point of contact for contract negotiation and oversight.
- Information on the proposed project team, including resumes or curriculum vitae.
- Potential conflicts of interest.
- Project description, tasks, schedule (not to exceed one year).
- Estimated costs (not to exceed $125,000).

Proposals, inclusive of project description, tasks and schedule, must be no longer than four (4) pages. Additional information including project team resumes, relevant publications and experience with similar projects may be attached in an appendix but should not exceed twenty (20) pages.

Proposals must be received no later than 5:00 p.m. on January 14, 2011 and should be submitted via email to Amy Chastain, achastain@bacwa.org.

PROJECT TEAM

Our proposed project team is presented in the figure below. **Kevin Kennedy** will serve as project manager, and has more than 15 years of wastewater planning and permitting experience. He will be supported by a team with unmatched understanding of the emerging challenges regarding nutrient effects in receiving-water, and how those impacts affect BACWA public-owned treatment works (POTWs). Resumes are included in Appendix A. Related project experience is provided in Appendix B.

HDR has more nutrient management expertise than any other firm you are considering for this project, having published state-of-the-art discussions of key nutrient management issues that confront wastewater dischargers nationwide as part of the WERF Nutrient Challenge.

NO CONFLICT OF INTEREST STATEMENT

HDR's legal staff has reviewed the agreement in the request for proposal (RFP). We are not aware of any actual, apparent, direct or indirect, or potential conflicts of interest that may exist with respect to firm's management, employees of the firm, or other persons relative to the services to be provided for your project. HDR has no conflict of interest.

PROJECT DESCRIPTION

Nutrients are one of the most pressing water quality challenges currently facing POTWs – not just in North America, but throughout the world. The implementation of U.S. Environmental Protection Agency's (EPA's) nutrient criteria strategy will require many POTWs to achieve more stringent nitrogen and phosphorus limits, some of which will be at or below our technological capabilities. Moreover, with the recent publication of Sacramento Regional County Sanitation District's (SRCSD's) recent draft NPDES discharge permit, POTWs throughout Northern California are scrambling to understand and get ahead of the rapidly-changing nutrient regulatory and scientific landscape.

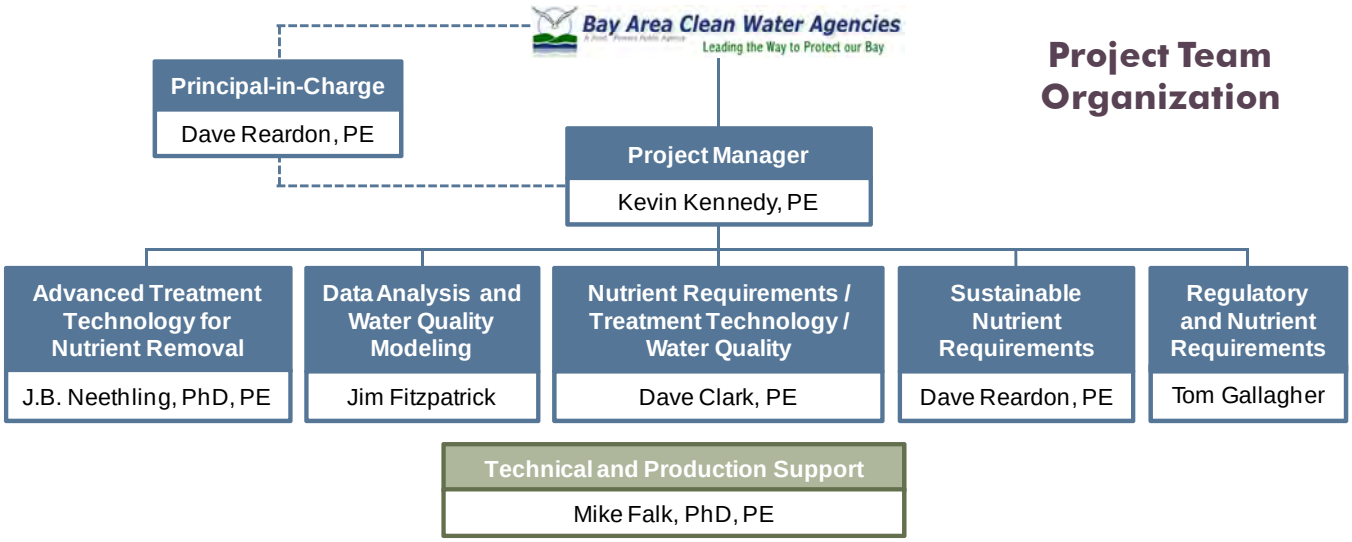
HDR's approach to this project has been specifically designed to **create the foundation for scientific-based San Francisco Bay nutrient limits**. More specifically, HDR will position BACWA to thoroughly understand the scientific knowledge base related to nutrient impacts on San Francisco Bay's water quality, and collaborate with BACWA and the San Francisco Regional Water Quality Control Board (RWQCB) to **establish both the scientific basis and process for the development of the nutrient water quality objectives and effluent limitations necessary to balance sustainability, the health of the San Francisco Bay and wastewater treatment technology.**

TASKS

The following are descriptions on how HDR will assist BACWA to successfully complete the tasks listed in the RFP:

Nutrient Regulation Developments (1)

HDR's approach to this task is to first listen to BACWA Executive Board's concerns regarding potential nutrient impacts, then leverage its existing knowledge, expertise,



HDR has the most national expertise than any other firm in nutrient management, and has conducted virtually-identical nutrient strategy projects.

and established relationships with federal, state, and local regulatory agencies to keep BACWA apprised of, and responding to, nutrient-related regulatory developments, with the potential to affect San Francisco Bay Area POTWs. For example, HDR has extensively reviewed the Florida Department of Environmental Protection (FDEP) and EPA numeric nutrient criteria (NNC) development efforts for freshwater (free-flowing) and estuary (marine) water bodies for the regulated community in Florida. These efforts have also included nutrient criteria and TMDL development support to the regulated community (Fenholloway Estuary, Escambia/Pensacola Bay) for working cooperatively with FDEP in their efforts to develop scientifically based nutrient criteria for estuaries. In addition, HDR is currently supporting the Metropolitan Council Environmental Services Metro plant in Minneapolis/St. Paul for review and comment on the Minnesota Pollution Control Agency nutrient criteria and TMDL development efforts in the Upper Mississippi River including Lake Pepin.

It is proposed to monitor regulatory agency actions related to estuarine nutrient criteria development that are currently completed or are in process. Specifically, we will critically review the EPA Region IX and California State Water Resources Control Board (SWRCB) document "Technical Approach to Develop Nutrient Numeric Endpoints for California Estuaries," which outlines the proposed approach of basing estuarine NNC on eutrophication related endpoints (biological response indicators that provide a direct risk-based linkage to beneficial uses). In general, HDR agrees with basing nutrient criteria on specific endpoints such as dissolved oxygen (DO), algal levels, etc., and have provided further information regarding our position in Appendix C (Nutrient Criteria Endpoints).

It is anticipated that four issues summaries and one position paper will be prepared by HDR for this task. The issue summaries will provide a brief description of the issue to allow a general understanding by BACWA members. The following issues may be included in these summaries: ■ state and federal NNC regulations; ■ NH_4 inhibition impacts on algal growth; ■ nutrient cycling; and ■ marsh interactions. The position paper will be drafted after discussion with the BACWA Executive Board and regulators to gather and understand their concerns of NNC development and to develop a suggested strategy that ultimately provides scientific basis for making informed management decisions. This document will represent the collective concerns of BACWA members coupled with the HDR's understanding of the technical issues surrounding NNC development. The draft document will be delivered to BACWA for review and comment. After receiving one consolidated set of comments, we will incorporate agreed-upon comments into a final position paper that presents the BACWA policy position on NNC. We will also represent BACWA at key meetings with regulators and the scientific community, providing Executive Board consensus responses at those meetings when necessary. Meeting reports, focused on action items and activities recommended by HDR, will be prepared for the BACWA Executive Board from each meeting attended. It is anticipated that the local HDR project manager will attend meetings with specific HDR experts in NNC development, water quality modeling, and wastewater treatment assessment and design, participating via conference call or in person for strategic meetings with BACWA and the regulatory agencies.

Gap Analysis and Model Review (2)

Under the second task, HDR will review and summarize existing water quality data and scientific knowledge of nutrient current and potential impacts on San Francisco Bay beneficial uses, as well as identify data gaps and efforts underway to fill those gaps.

Water Quality Data Assessment Summary

Parameters Needed to Assess Beneficial Uses: salinity, temperature, chlorophyll, nutrients, suspended solids/light attenuation, DO, seagrass, and benthic filter feeder distribution/health.

Potential Data Sources: USGS San Francisco Bay monitoring program (1972), Regional Monitoring Program, Interagency Ecological Program and Pelagic Organism Decline, EPA, and published literature.

HDR's collective experience shows that it is important to include the variables identified above because these variables may have as important a role in determining algal biomass, primary production, DO levels, and beneficial uses as nutrients themselves. For example, Cloern and Dufford (2005) and Cloern (1999) demonstrated that the major cause for historically low levels of phytoplankton was due to light limitation; not nutrient limitations. In assessing the reasons for more recent increases in observed phytoplankton levels, Cloern, et. al. (2007) noted sharp declines in benthic bivalves, which feed on water column algae, due to record high abundances of several bivalve predators. Together, these studies suggest that nutrient impacts on water quality and beneficial uses do not follow a simple load-response paradigm; therefore, it would be appropriate to consider developing a conceptual site model of the Bay (CSM) to understand the complex

interactions among physical processes, biological processes, nutrient cycling, primary productivity, DO, and beneficial uses.

Another issue to be considered in this task includes the interactions between various forms of inorganic nitrogen on phytoplankton growth. Recently, Dugdale et. al., (2007) hypothesized that the presence of NH_4 at inhibitory levels may reduce NO_3 uptake by algae, and contribute to a lower diatom phytoplankton growth. However, other scientific literature (Suksomjit et. al., 2009a and 2009b) suggest that diatoms grow quite well under high levels of NH_4. If awarded this project, one recommendation likely to be made is to consider funding field and laboratory studies to investigate algal growth rates under various levels of light, temperature, NH_4, and NO_3.

After completing the gap analysis, HDR will perform outreach to various state organizations, such as CALFED, Department of Water Resources (DWR), and the RWQCB to see what studies are currently being funded that may be relevant to filling data gaps. HDR will also identify and recommend relevant field and lab studies that are relevant to completing the CSM. For example, a preliminary review of existing data and the literature suggests that measurements of sediment nutrient fluxes do not exist in the Bay.

HDR will also review existing models of the Bay, as well as other public-available models suitable for use within the Bay, and determine what adaptations would be required to allow their use in modeling nutrients and nutrient-related processes. Currently, there are a number of hydrodynamic models (SUNTANS, UNTRIM, RMA, and MIKE-21) being employed within the Bay and Delta system. However, none of these models currently have a true water quality component. HDR is particularly well qualified to perform the review process and to recommend which, if any, of the available models are suited for use in nutrient applications. We believe that the decision as to which model to use for future studies and regulatory decisions should be a collaborative effort among BACWA, regulatory agencies, and advisors from the scientific community. We would also recommend that BACWA consider the formation of a Model Evaluation Group (MEG) to advise the future modeling efforts.

Our experiences in the Massachusetts Bays system, Long Island Sound, New York/New Jersey Harbor, and Jamaica Bay suggests that the presence of a MEG helps improve model development and its scientific credibility and acceptance by the regulatory and regulated communities.

Infrastructure Implications (3)

HDR fully understands the implications of evolving nutrient regulations by virtue of the national role of the WERF Nutrient Challenge, a five-year research program led by HDR. Much of our WERF work is directly applicable to BACWA members in assessing potential changes resulting from more stringent regulations and the implications to existing infrastructure. The WERF Nutrient Challenge was established in 2007 to develop and provide current information about wastewater treatment nutrients, their characteristics, and bioavailability in aquatic environments to help regulators make informed decisions. The nutrient challenge also presents data on nutrient removal performance to help POTWs select sustainable, cost-effective methods and technologies to meet permit limits. Current research efforts and key findings, such as a Nutrient Management Compendium, are available at www.werf.org/nutrients.

HDR's chief treatment process designer, **Dr. JB Neethling**, serves as principal investigator for the WERF Nutrient Challenge Program. Dr. Neethling has led a team that includes a wide array of utilities, agencies, consultants, universities, other researchers, and practitioners to collaborate on projects that advance the goals of cost-effective nutrient removal. Of particular interest to BACWA is the WERF assessment of the state-of-the-art of wastewater treatment for nitrogen and possibly phosphorus control. These analyses scientifically characterized effluent nitrogen and phosphorus, which is especially important to wastewater utilities and regulatory agencies to foster a shared understanding of what can be accomplished by wastewater treatment in a technically feasible way.

Our experience has shown that misinformation about nutrient removal capabilities has confused the dialog between parties who are all interested in water quality. Portrayals of nutrient removal capabilities vary between technologists, treatment equipment sales representatives, ecologists, discharge permit writers, and the general public. A key goal of our BACWA support is to unify and facilitate a more constructive and strategic dialog focused on protecting water quality. HDR can leverage the WERF program work, and key HDR team members can lead this dialog with the RWQCB, SWRCB, and EPA.

David Clark is lead investigator for nutrient regulatory issues, and has recently published the first of a three-volume WERF series on nutrient regulatory and treatment issues titled "Nutrient Management: Regulatory Approaches to Protect Water Quality, Volume 1 Review of Existing Practices," 2010 (WERF NUTRIR06i). This report provides a state-of-the-art

discussion of key nutrient management issues that confront wastewater dischargers nationwide, describes the challenges that POTWs and regulators face setting and meeting low nutrient effluent limits, and characterizes the practical capabilities of current treatment technology.

A new volume is now being prepared to provide national guidance on appropriate NPDES permitting for nutrients titled "Volume 3: Development of Guidance for Nutrient Discharge Permits." It is anticipated that this particular report will provide the basis for nutrient discharges to receive special considerations (e.g., longer averaging periods) as compared to other pollutants.

As part of this infrastructure review, HDR will prepare a summary of Bay Area infrastructure for all major and minor POTWs, including treatment technologies utilized and planned, current nutrient removal capabilities, and estimated nutrient loading. We have started the development of this infrastructure summary specific to BACWA members, and have attached a copy in Appendix C for your reference. In addition, HDR will assist BACWA with determining what changes to existing infrastructure would be required by more stringent nutrient regulations. along with an estimated cost for infrastructure modifications.

Other Considerations (4)

BACWA members and other POTWs are interested in understanding cost and sustainability impacts for various levels of nutrient removal.

Dave Reardon is the lead WERF investigator for nutrient sustainability analysis. This work will soon be published under the title "Striking the Balance between Wastewater Treatment Nutrient Removal and Sustainability" (WERF NUTR106n). The objective of this work is to determine if a point of diminishing returns is reached where the sustainability impacts of increased levels of nutrient removal outweigh the benefits of improved water quality. The measurement used to quantitatively determine the environmental impacts is greenhouse gas (GHG) emissions since it provides a means to normalize data for comparative purposes. Given that sustainability is a broad term, the focus was placed on the following variables while developing the comparative model: ■ GHG emissions; ■ capital costs; ■ operating costs (e.g., staffing, chemicals, etc,); ■ energy demand; ■air and water quality; and ■ consumables, such as gas, diesel, etc.

Dave Clark has also led another national wastewater utility organization's technical analysis of the Natural Resources Defense Council (NRDC) petition for rulemaking on secondary treatment. Contrary to the assertions of the NRDC, nutrient removal requires a greater investment in facility sizing, footprint space, operational effort, energy use, chemical use, etc. This analysis included consideration of capital and operating costs for nutrient removal treatment, energy use and GHG emissions. A comparison between point and nonpoint source nutrient reductions was prepared to characterize the potential management approaches available in a watershed, including removal effectiveness, energy use, GHG emissions, and aesthetics. The objective was to inform the discussion of environmental decision making beyond the fenceline of wastewater facilities.

Comparison tables are provided in Appendix C to highlight the importance of a balanced consideration of point and nonpoint source controls for effective watershed management and water quality protection.

HDR will prepare a plan for identifying non-infrastructure factors (e.g., energy use, GHG emissions, impacts to resource recovery programs, cost, etc.) that may be considered by BACWA POTWs to determine if enhanced nutrient removal represent the best environmental decision.

SCHEDULE

The following is our proposed project schedule:

Task No.	Description	Duration (months)
1*	Nutrient Regulations Development	2
2	Gap Analysis and Model Review	2
3	Infrastructure Implications	1
4	Other Considerations	1
	Total Project Duration	6

** HDR understands that a longer duration will be required for regulation development. Continued support and participation could be provided through the assignment of one of HDR's project engineers focused on nutrient management such as Michael Falk, Ph.D., P.E.*

ESTIMATED COSTS

We propose to perform the scope of work described above and in the RFP, on a time and materials basis, for a total not-to-exceed cost of $125,000. This not-to-exceed cost is based on the above mentioned six-month schedule and the work effort estimates and rate schedule provided in Appendix C.

Table 1 - Estimated Work Effort and Cost

Bay Area Clean Water Agencies (BACWA)

Nutrient Strategy Assistance

Task No.	Task Description	Project Manager	Tech Specialist III	Tech Specialist II	Tech Specialist I	Project Engineer	Engineer II	Engineer I	Project Controller	Admin/ Clerical	Total HDR Labor Hours	Total HDR Labor ($)	Total HDR Expenses ($)	Total Cost ($)
	Rates	*$ 214*	*$ 230*	*$ 220*	*$ 160*	*$ 119*	*$ 135*	*$ 113*	*$ 115*	*$ 70*				
Task 1 - Track and Respond to Developments in Nutrient Regulations with the Potential to Affect Bay Area POTWs														
1.1	Executive Board Presentations (up to 4)	20	8	20	18	32					98	$17,253	$ 3,105	$ 20,358
1.2	Executive Board Meetings (up to two per month)	22		18	14	24					78	$13,800	$ 2,753	$ 16,553
1.3	SWRCB Meetings (up to 6)				*(This subtask is included in our budget)*									
1.4	RWQCB Meetings (up to 12)				*(This subtask is included in our budget)*									
1.5	Issue Summaries (up to 4)	10		16	24	40		24		16	130	$18,153	$ 1,815	$ 19,968
1.6	Position Paper (one)	6		8	8	24		16	6	8	76	$10,274	$ 1,027	$ 11,301
	Subtotal Task 1	**58**	**8**	**62**	**64**	**120**	**0**	**40**	**6**	**24**	**382**	**$ 59,479**	**$ 8,701**	**$ 68,180**
Task 2 - Development of a Strategy for Identifying and Filling Data Needs Regarding Nutrient Impacts on San Francisco Bay Beneficial Uses and the Need for Nutrient Effluent Limits														
2.1	Summarize Existing and Identify Data Gaps	4		14	14	12	6	24		2	76	$11,302	$ 1,130	$ 12,432
2.2	Prepare Plan to Supplement Research Efforts	4		10	12	12	8	32		2	80	$11,278	$ 1,128	$ 12,406
2.3	Review Current Status of Available Models	4			16		32		6	2	60	$8,595	$ 860	$ 9,455
	Subtotal Task 2	**12**	**0**	**24**	**42**	**24**	**46**	**56**	**6**	**6**	**216**	**$ 31,175**	**$ 3,117**	**$ 34,292**
Task 3 - Development of a Strategy for Understanding and Communicating the Infrastructure Implications of More Stringent Nutrient Regulations														
3.1	Prepare a Summary of Bay Area Infrastructure	4		6		8	18			2	38	$5,716	$ 572	$ 6,287
3.2	Identify Changes to Existing Infrastructure	4		4		12	22		6	2	50	$6,988	$ 699	$ 7,686
	Subtotal Task 3	**8**	**0**	**10**	**0**	**20**	**40**	**0**	**6**	**4**	**88**	**$12,703**	**$ 1,270**	**$ 13,974**
Task 4 - Identify Other Factors that May Inform Management Decisions														
4.1	Prepare Plan for Non-Infrastructure Factors	4	6	4		8		24	6	4	56	$7,777	$ 778	$ 8,554
	Subtotal Task 4	**4**	**6**	**4**	**0**	**8**	**0**	**24**	**6**	**4**	**56**	**$7,777**	**$ 778**	**$ 8,554**
COLUMN TOTALS		**82**	**14**	**100**	**106**	**172**	**86**	**120**	**24**	**38**	**742**	**$111,133**	**$13,867**	**$125,000**

BACWA EXECUTIVE BOARD ACTION REQUEST

AGENDA NO.: 8

FILE NO.: 12,346

MEETING DATE: January 27, 2011

TITLE: BACWA Support for Suisun Bay Monitoring Workplan

☒ **MOTION** ☐ **RESOLUTION**

RECOMMENDED ACTION

Authorize the Executive Director to undertake actions necessary to expand the Suisun Bay Monitoring Workplan to include analysis of ambient water samples for pesticides/herbicides, amount not to exceed $50,000.

SUMMARY

The San Francisco Bay Regional Water Quality Control Board (Water Board) has developed a monitoring workplan for Suisun Bay to better understand, among other things, the potential impacts of ammonia on Suisun Bay beneficial uses. The Water Board shared this workplan with BACWA Agencies, and Central Contra Costa Sanitary District (CCCSD) engaged an expert to review it. Based on CCCSD's comments, the Water Board agreed to expand the scope of the workplan to (1) include a sampling station on the San Joaquin River, (2) analyze samples for phosphorous, and (3) collect and analyze samples for pesticides/herbicides that may be causing toxicity.

The BACWA Executive Board has expressed its support for the Water Board's efforts on multiple occasions. CCCSD has committed to bearing the costs of the additional sampling station and the phosphorous analysis, and is requesting BACWA contribute funds for the pesticide/herbicide sampling and analyses.

This project will be managed by representatives from CCCSD.

FISCAL IMPACT

This project is not included in BACWA Fiscal Year 2010 – 2011 budget or workplan. Sufficient funds currently exist in the "Contingency" budget line for WQAS/CBC. Funds are also available in the BACWA Operating Reserve and the CBC Operating Reserve.

ALTERNATIVES

This action does not require consideration of alternatives.

Submitted: /s/ Jim Kelly **Executive Director Approval:** /s/ Amy Chastain

San Francisco Estuary Institute
7770 Pardee Lane, 2nd Floor • Oakland, CA 94621-1424
Office (510) 746-SFEI (7334) • Fax (510) 746-7300

USGS Water Quality Monitoring Meeting

January 28th, 2011
San Francisco Estuary Institute
Second Floor Conference Room
7770 Pardee Lane, Oakland, CA
10:00 PM - 12:30 PM

DRAFT AGENDA

1.	**Introductions**	10:00
2.	**Discussion: Workshop** (Attachment) We have attached a draft agenda for the nutrients workshop. We will need to discuss meeting date, location, and agenda.	10:05 Group
3.	**Discussion: Assuring Coordination amongst Various on-going Nutrient Activities** There are a number of nutrient related activities that are on-going. It would be helpful to identify them and to make sure that we are staying in contact with key individuals	11:00 Group
4.	**Discussion: Logistics for Transitioning the USGS Program** (handout) Jim will outline some of the logistical constraints (e.g., data server needs, vessels and equipment, staff etc.) and key partners who maybe able to assist.	11:20 Jim Cloern
5.	**Other topics**	11:50 Group
6.	**Adjourn**	12:30

Workshop on Nutrient Enrichment of San Francisco Bay
(downstream of Carquinez Strait)

Potential Dates:

- June 14-17
- June 21-24
- June 28-30

Potential Locations:

- Water Board Auditorium
- EBMUD Auditorium
- David Brower Center Berkeley

Audience?

Format?

Outcomes?

Facilitator?

Speakers:

· Walter Boynton, Chesapeake Biological Laboratory: an overview of the coastal eutrophication problem, its manifestations in Chesapeake Bay, and design and value of the Chesapeake Bay Monitoring Program
· Jim Cloern, USGS: why has San Francisco Bay been resilient to the harmful effects of nutrient enrichment; signs that the resilience is weakening; future visions?; need for a SFBay monitoring program
· TBD?: national or state initiatives to mandate nutrient TMDLs
· TBD (Tom Mumley)?: the Regional Board's perspective
· TBD: a discharger's perspective
· Rainer or Jay?: the RMP perspective
· TBD(Lester M)?: sources of nutrients to SFBay
· Dick Dugdale: why is the form of Nitrogen important?
· Dave Schoellhamer, USGS Sacramento: the Bay is clearing, implying faster phytoplankton growth rates
· Jim Kuwabara, USGS: a simple model to project phytoplankton responses to (a) increasing clarity of SF Bay waters and (b) scenarios of reduced nutrient inputs
· TBD (S. Monismith?): current state of hydrodynamic-water quality models for developing more realistic scenarios
· Mike Connor: objectives and design criteria for a SFBay monitoring program; need for a coordinated modeling and monitoring effort
· TBD: Panel Discussion – How to Proceed?
· Responses/Questions from audience

BACWA EXECUTIVE BOARD ACTION REQUEST

AGENDA NO.: 9

FILE NO.: 12,347

MEETING DATE: January 27, 2011

TITLE: San Francisco Bay Water Quality Regional Education & Behavior Change Campaign

☒ **MOTION** ☐ **RESOLUTION**

RECOMMENDED ACTION

Approval of participation as a partner of the San Francisco Bay Protection & Behavior Change Campaign and contribution of matching funds of an amount not to exceed $25,000 for an EPA Water Quality Improvement Fund (SFWQIF) grant.

SUMMARY

This action would support implementation of a regional water quality outreach and education campaign that would address pollutants of concern to Bay Area wastewater agencies. In partnership, agencies would pool resources and leverage grant funding to support creation of comprehensive, long-term umbrella awareness and behavior-change campaign to achieve needed results across the region. It is estimated that the initial budget for a 2-3 year campaign will be $670,000. The City of San Jose is currently developing an application for an USEPA San Francisco Bay Area Water Quality Improvement Fund grant in the amount of $500,000 to support campaign implementation. A grant of $500,000 and a required local match of $170,000 would support initial costs. The City of San Jose has been actively seeking partners to support the campaign and matching fund requirements.

The structure of the regional campaign would be framed through an interagency agreement to financially and materially support development of a multi-media, multi-year campaign. A campaign steering committee, comprised of partner representatives, would be formed to provide direction for campaign and creative development and decision making.

San Jose requests that BACWA consider two actions: (1) a letter to USEPA for the grant proposal, and (2) a contribution of $25,000 to support implementation of the project.

FISCAL IMPACT

This project is not included in BACWA Fiscal Year 2010 – 2011 budget or workplan. Sufficient funds currently exist in the "Contingency" budget line for WQAS/CBC. Funds are also available in the BACWA Operating Reserve and the CBC Operating Reserve.

ALTERNATIVES

This action does not require consideration of alternatives.

Attachments:

1. Project Summary

Submitted: /s/ Bhavani Yerrapotu **Executive Director Approval:** /s/ Amy Chastain

PROPOSAL

SAN FRANCISO BAY WATER QUALITY
REGIONAL EDUCATION & BEHAVIOR CHANGE CAMPAIGN

A. Why A Regional Campaign to Protect the San Francisco Bay?

Among today's topmost threats to the San Francisco Bay are the cumulative effects of everyday activities and habits of Bay Area residents. How people handle trash, pesticides, medicines, pet waste, automotive pollutants, indoor and outdoor water use, and more must be reshaped in order for the Bay to regain its aquatic health. It is Bay Area stormwater and wastewater dischargers who are being held accountable through their discharge permits to engage in effective outreach. A partnership that pools resources and leverages grants, aimed at creating a cohesive, long-term umbrella awareness and behavior-change campaign, has the greatest promise (using a memorable approach amplified through pooled resources) of achieving the needed results across a region of seven million-plus residents. The mobility of Bay Area residents, as workers and shoppers, also points to the high value of regional uniform messaging about pollution prevention.

Models of effective regional campaigns elsewhere demonstrate the feasibility and value of a unified, long-term approach where the message, and not the messenger, is emphasized:

- In Washington, the "Puget Sound Starts Here" campaign (now in its fourth year; www.pugetsoundstartshere.org) reflects the partnership of 57 cities, counties, and the Washington State Department of Ecology. The campaign effectively addresses wastewater and stormwater issues ("in your home, around your pet, in your yard, and around your car) in a simple yet comprehensive manner.
- San Diego's "Think Blue" campaign (now in its tenth year; www.sandiego.gov/thinkblue) also exemplifies how the multiplicity of topical issues associated with stormwater can be addressed through one simple unifying message – Think Blue. Consider how a similar mantra, e.g., "think Bay," accompanied by creative implementation and engagement activities, could work for our region on wastewater and stormwater issues alike.

B. Campaign Structure and Signatory Partners

The structure for a regional campaign could be framed through a simple interagency agreement to – as resources permit – financially and materially support development of a creative, multi-tactic campaign using professional creative services and including development of a single project-based clearinghouse (such as a unique project website that reflects all partners) and promotions (TV, radio, social media, etc., as determined to be appropriate).

C. Campaign Implementation

A Campaign Steering Committee would be formed to provide direction for campaign and creative development and decision making. The Steering Committee would consist of campaign partner representatives, preferably chosen for their communications and social marketing experience so as to effectively help scope, direct, and implement a regional creative campaign. An experienced project facilitator (*through the San Francisco Estuary Partnership*) would direct a consensus approach to decisions that result in clear direction to the creative consultant. The City of San Jose would provide

lead support to the campaign, including consultant and vendor management and campaign administration.

The campaign would roll out through its project-specific channels, such as a unique website that serves as clearinghouse (see Puget Sound Starts Here example) and media buys. Partners would subscribe to and leverage the work products of the umbrella campaign through their individual channels of communication.

Potential signatory partners and roles that are immediately logical to this effort include:

- ***San Francisco Estuary Partnership (SFEP)*** – SFEP is a key driving organization behind the Bay's restoration and protection and it champions the Bay's Comprehensive Conservation and Management Plan (CCMP).

- ***Bay Area Clean Water Association (BACWA)*** – BACWA represents the interests of wastewater dischargers in the nine Bay Area counties who must meet mandated NPDES outreach and reduced pollutant loading requirements. BACWA, through its Bay Area Pollution Prevention Group (BAPPG), currently engages in outreach campaigns, such as *No Drugs Down the Drain*. Using the regional campaign approach (instead or in addition to), BAPPG's interests could be well amplified and sustained for several years across the Bay Area. BACWA is well positioned to feed information about the proposed campaign to its member agencies.

- ***Bay Area Stormwater Management Agencies Association (BASMAA)*** – BASMAA represents the interests of 79 cities and six counties as Bay Area stormwater dischargers who must meet mandated NPDES outreach and reduced pollutant loading requirements. BASMAA is already attuned to the need for a regional campaign approach and is planning to address two key topics – litter and pesticides – through large scale campaigns. Ideally, if the proposed regional campaign can be coordinated in a timely manner, the BASMAA efforts could enfold into the concept of an overarching message point (e.g., "think Bay") and could become the launching topics of the multi-year regional approach proposed here.

- ***Municipalities*** – Large and small cities alike would benefit from signing on to the proposed regional partnership. Leadership from the Bay Area's largest cities, which may have the most resources, is immediately sought, including:

  - **City of San José**, which used professional services to develop a five-year strategic outreach plan to address wastewater and stormwater outreach requirements, is a willing signatory to the regional campaign approach. To provide a potential starting point for a regional campaign, San José has already circulated its plan, which includes analyses of wastewater and stormwater NPDES outreach requirements, target audiences, and concepts, timelines, and budget requirements. San José can also provide project leadership for the partnership, and is ready to commit resources as well as representation from its communications team.

  - **City and County of San Francisco or SF PUC**

  - **City of Oakland**

D. Campaign Funding - $500K EPA Grant Could Provide Launch

Grants between $500K and $1.5 million pertaining to the protection of water quality in the San Francisco Bay are available through the Environmental Protection Agency's San Francisco Bay Water Quality Improvement Fund (WQIF). If potential partners for the regional campaign become partners to a grant concept as outlined below, the grant could be submitted by the deadline of January 28, 2011 and would have up to a four-year period for grant implementation. The terms of the grant are as follows:

- ***Meet EPA Objectives for Bay*** - Grant proposals must show promise of achieving results concerning one or more of the following EPA priorities.

    - Protecting and restoring habitat including riparian corridors, floodplains, wetlands, and the Bay.
    - Reducing polluted run-off from urban development and agriculture.
    - Implementing TMDLs and watershed plans to restore impaired water bodies.

    Note that the grant allows for projects that address NPDES requirements.

- ***Local Match*** - A local match of 25 percent is required. Consultant work conducted for the City of San Jose on a regional campaign plan identified an initial budget of $670,000 for a 2-3-year campaign period. A grant of $500K and local match of $170,000 would support these costs. The grant also allows for funding greater than the required match.

- ***Timeline*** – The grant must be filed by January 28, 2011. Meeting a deadline of December 20, 2010, San José staff signaled to EPA via e-mail an intent to file. The grant allows a four year period for the project, which accommodates the multi-year approach proposed herein.

- ***Outputs and Outcomes*** – The grant requires the proposal to link to measurable outputs and outcomes. An outreach WQIF grant proposal that SFEP successfully submitted shows quarterly reporting for outputs and "increased public knowledge about water quality problems … and actions that can be taken to improve water quality…" as satisfactory outcomes. Reporting on activities of the proposed campaign and any number of possible measurements, such as numbers of residents reached, pledges secured, opinion surveys, attendance at events, etc., can be built into the reporting of the campaign.

E. Next Steps

If agencies are interested in becoming partners or supporters to a regional, multi-year umbrella campaign for the Bay Area and to using the WQIF grant opportunity to launch the project, please signal your interest, by January X, 2011, in this proposal to:

Sharon Newton
City of San José
sharon.newton@sanjoseca.gov

Staff at the City of San José is currently preparing the SF Bay Water Quality Improvement Fund grant submission.

FY 2011 PROJECTIONS

BACWA

	BUDGETED	YTD ACTUAL	PROJECTIONS	VARIANCE	%
COMMITTEES	**$113,000.00**	**$22,068.05**	**$98,500.00**	**$14,500.00**	**13%**
Collection Systems	$25,000.00	$7,783.50	$25,000.00	$0.00	0%
Permits	$25,000.00	$4,284.00	$25,000.00	$0.00	0%
Water Recycling	$11,000.00	$0.00	$5,500.00	$5,500.00	50%
Biosolids	$10,000.00	$1,840.56	$5,000.00	$5,000.00	50%
Info Share Groups	$25,000.00	$4,087.50	$25,000.00	$0.00	0%
Laboratory	$7,000.00	$2,982.25	$7,000.00	$0.00	0%
Miscellaneous Support	$10,000.00	$1,090.24	$6,000.00	$4,000.00	40%
TECHNICAL EXPERT	**$100,000.00**	**$13,754.00**	**$68,150.00**	**$31,850.00**	**32%**
MEDIA RELATIONS	**$25,000.00**	**$8,741.25**	**$25,000.00**	**$0.00**	**0%**
LEGAL SUPPORT	**$30,000.00**	**$4,261.53**	**$15,761.53**	**$14,238.47**	**47%**
SPONSORSHIPS	**$35,500.00**	**$20,000.00**	**$35,500.00**	**$0.00**	**0%**
COMMUNICATIONS	**$105,000.00**	**$25,435.90**	**$80,000.00**	**$25,000.00**	**24%**
SPECIAL PROGRAMS	**$50,000.00**	**$50,000.00**	**$50,000.00**	**$0.00**	**0%**
GENERAL BACWA SUPPORT	**$25,000.00**	**$5,684.62**	**$17,500.00**	**$7,500.00**	**30%**
ADMINISTRATION	**$253,000.00**	**$69,475.52**	**$248,739.87**	**$4,260.13**	**2%**
BACWA TOTAL EXPENSES	**$736,500.00**	**$219,420.87**	**$639,151.40**	**$97,348.60**	**13%**
BACWA TOTAL REVENUE	**$736,500.00**	**$720,940.00**	**$727,940.00**	**$8,560.00**	**1%**

FY 2011 PROJECTIONS

WQAS/CBC

	BUDGETED	YTD ACTUAL	PROJECTIONS	VARIANCE	%
Technical Support TOTAL	**$175,000.00**	**$92,058.00**	**$423,980.00**	**($248,980.00)**	**-142%**
Energy	$15,000.00	$9,087.00	$34,087.00	($19,087.00)	-127%
Stormwater Diversions	$10,000.00	$12,903.00	$12,903.00	($2,903.00)	-29%
PCBS	$40,000.00	$21,539.00	$30,000.00	$10,000.00	25%
CIWQS	$5,000.00	$0.00	$10,000.00	($5,000.00)	-100%
Se	$30,000.00	$0.00	$25,000.00	$5,000.00	17%
SQOs	$25,000.00	$0.00	$0.00	$25,000.00	100%
Nutrients	$25,000.00	$0.00	$180,000.00	($155,000.00)	-620%
PME Fact Sheet		*$0.00*	*$5,000.00*		
Strategy Assistance		*$0.00*	*$125,000.00*		
Suisun Bay Monitoring		*$0.00*	*$50,000.00*		
Bacteria	$10,000.00	$5,000.00	$5,000.00	$5,000.00	50%
CECs	$15,000.00	$0.00	$15,000.00	$0.00	0%
Sponsorships	**$50,000.00**	**$50,000.00**	**$50,000.00**	**$0.00**	**0%**
Trainings	**$7,190.00**	**$0.00**	**$20,000.00**	**($12,810.00)**	**-178%**
e-SMR		*$0.00*	*$10,000.00*		
PCBs		*$0.00*	*$10,000.00*		
Communications & Reporting	**$65,000.00**	**$6,000.00**	**$71,000.00**	**($6,000.00)**	**-9%**
Mercury	$20,000.00	$6,000.00	$26,000.00		
Recycled Water	$40,000.00	$0.00	$40,000.00		
CECs	$5,000.00	$0.00	$5,000.00		
Other/Contingency	**$100,000.00**	**$14,537.91**	**$50,000.00**	**$50,000.00**	**50%**
Admin Costs to BACWA	**$60,810.00**	**$60,810.00**	**$60,810.00**	**$0.00**	**0%**
WQAS TOTAL EXPENSES	**$458,000.00**	**$223,405.91**	**$675,790.00**	**($217,790.00)**	**-48%**
WQAS TOTAL REVENUE	**$458,000.00**	**$450,000.00**	**$454,000.00**	**$4,000.00**	**1%**