

A G E N D A
BIG BEAR MUNICIPAL WATER DISTRICT

BOARD OF DIRECTORS
Special Meeting
January 23, 2014

PLACE: Big Bear Municipal Water District
40524 Lakeview Drive, Big Bear Lake, CA 92315

Next Resolution Number: 2014-02

OPEN SESSION: 1:00 P.M.

- 1. CALL TO ORDER**
- 2. PLEDGE OF ALLEGIANCE**
- 3. DISCUSSION AND ACTION ON CLOSED SESSION ITEMS**
- 4. REPORTS**
 - A. General Manager
 - B. Lake Manager
 - C. Legal
 - D. Committee
 - E. Other
- 5. CONSENT CALENDAR**
 - A. Minutes of a Special Meeting of January 9, 2014
 - B. Warrant List dated January 16, 2014 for \$16,300.44
- 6. BUSINESS**
 - A. Consider approval of a proposal for technical services associated with the design, monitoring and reporting of an alum treatment
 - B. Consider approval of an equipment and operation grant agreement with the State of California Department of Parks and Recreation, Division of Boating and Waterways and the Big Bear Municipal Water District, and authorizing the expenditure of \$14,000 to equip the new patrol boat
- 7. PUBLIC FORUM**

(The Board will receive comments from the public on items not on the agenda; no action is permitted on these items. Time set aside not to exceed 30 minutes total by all participants)
- 8. ANNOUNCEMENTS**

9. DIRECTOR COMMENTS

10. ADJOURNMENT TO CLOSED SESSION

11. CLOSED SESSION

Adjourn to closed session under Government Code Section 54956.8 Conference with Real Property Negotiator, Scott Heule General Manager, concerning 440 Catalina, Big Bear Lake, California, APN #2328-202-15, #2328-202-08, #2328-291-27

NEXT MEETING: Open Session at 1:00 P.M.
Thursday, February 6, 2014
Big Bear Municipal Water District
40524 Lakeview Drive, Big Bear Lake, CA

PLEASE NOTE:

If you wish to address the MWD Board of Directors during discussion of an agenda item, or during the PUBLIC FORUM, please complete a Speaker Request card (blue in color) and give it to the Board Secretary. Unless a detailed presentation of an agenda item is required by the Board of Directors, it is requested that each speaker limit comments to FIVE MINUTES. All testimony given before the Board of Directors is tape recorded.

Agenda related writings or documents provided to the Board of Directors are available for public inspection at www.bbmbwd.org or in the District office during business hours, 8:00 am – 4:30 pm Monday – Friday.

Big Bear Municipal Water District wishes to make all of its public meetings accessible to the public. If you need special assistance to participate in this meeting, please contact the Board Secretary. Notification 48 hours prior to the meeting will enable the District to make reasonable arrangements to ensure accessibility to this meeting

***MINUTES OF A SPECIAL MEETING OF
BIG BEAR MUNICIPAL WATER DISTRICT
HELD ON THURSDAY, JANUARY 9, 2014***

CALL TO ORDER

President Smith called the Open Session to order at 1:00 PM. Those in attendance included Director Murphy, Director Lewis, Director Suhay, Director Eminger, District Counsel Colin O'Neill (via conference call), General Manager Scott Heule, and Board Secretary Vicki Sheppard.

DISCUSSION AND ACTION ON CLOSED SESSION ITEMS

President Smith stated that there was no reportable action at the closed session of December 19, 2013.

APPROVAL OF CONSENT CALENDAR

Upon a motion by Director Eminger, seconded by Director Suhay, the following consent items were unanimously approved:

- Minutes of a Regular Meeting of December 19, 2013
- Warrant list dated December 24, 2013 for \$45,313.05

REPORTS

President Smith reported that the success of 2013 was not a direct reflection of his accomplishments explaining that it was successful due to the Board of Directors and Staff. He gave his review of 2013 summarizing the following accomplishments:

Completion of the East Launch Ramp office building.

Completion of the East Launch Ramp entrance booth increasing launching efficiency and improving parking.

Completion of the stairwell at the dam allowing access to the control building.

Progress in the District's in-lieu water agreement amendment.

A successful Kool Kids event.

A successful Adopt-A-Shoreline Cleanup Program adding that Director Eminger had a big part in the success of this program.

He thanked the Board and Staff for all their hard work and a successful 2013.

APPOINTMENT OF BOARD OFFICERS FOR CALENDAR YEAR 2014

Director Murphy (representing Division 1) took his seat as President of the Board as determined by the automatic rotation of officers by divisions described in the District's Administrative Code. Director Lewis (representing Division 2) will serve as Vice President this year.

APPOINTMENT OF COMMITTEE MEMBERS FOR CALENDAR YEAR 2014 AND PRESIDENT'S GOALS

President Murphy explained that each year, at the first meeting in January, the new Board President announces the Committee Members and distributes the committee descriptions for the upcoming year. President Murphy announced the committee members as follows:

ADMINISTRATIVE COMMITTEE

Todd Murphy
Mary Ann Lewis

Alternate: Skip Suhay

BUDGET AND FINANCE COMMITTEE

Vince Smith
Mary Ann Lewis

Alternate: Todd Murphy

FACILITIES COMMITTEE

Skip Suhay
Vince Smith

Alternate: John Eminger

LAKE IMPROVEMENT COMMITTEE

John Eminger
Mary Ann Lewis

Alternate: Todd Murphy

OPERATIONS COMMITTEE

Todd Murphy
Skip Suhay

Alternate: Vince Smith

WATERMASTER COMMITTEE

John Eminger
Skip Suhay

Alternate: Mary Ann Lewis

WATERSHED COMMITTEE

John Eminger
Vince Smith

Alternate: Skip Suhay

President Murphy announced that he is adding a new committee; a one year Ad Hoc to complete detailed short range (5 years) and long range (10 years) Capital Improvement Plan.

AD HOC – CIP COMMITTEE

Todd Murphy
Vince Smith

Alternate: Mary Ann Lewis

President Murphy announced that in addition to the new CIP Committee, he will be holding monthly workshops to increase transparency and to involve all board members in pressing issues confronting each committee. He added that they will be held the 3rd Wednesday of each month at 1:00 pm as follows:

Workshop Dates

January 22
February 19
March 19
April 16
May 14
June 18
July 16
August 20

Committee

Lake Improvement
Operations
Budget and Finance
Facilities
Watershed
CIP
Lake Improvement
Budget and Finance

September 17	Operations
October 15	Facilities
November 19	CIP

He added that Watermaster is not included but will be held as needed.

President Murphy explained that it doesn't look like a wet winter and asked that the different committees look at alternatives considering the low lake conditions. He thanked Director Smith for his successful year as President. He announced that he will be unavailable for 3 meetings this year so Vice President Lewis will be in charge for those meetings.

APPOINTMENT OF THE DISTRICT'S JPIA REPRESENTATIVE FOR CALENDAR YEAR 2014

President Murphy reported that the District utilizes the services of the Joint Powers Insurance Authority (JPIA) for its property and liability insurance requirements. He announced that Director Lewis was the representative last year and he is recommending that she be appointed as the District's JPIA representative for calendar year 2014.

Director Suhay moved approval of appointing Director Lewis as the District's JPIA Representative for Calendar Year 2014. Director Eminger seconded the motion and it was unanimously approved.

CONSIDER APPROVAL OF A RESOLUTION OF THE BOARD OF DIRECTORS OF BIG BEAR MUNICIPAL WATER DISTRICT IN SUPPORT OF THE ASSOCIATION OF CALIFORNIA WATER AGENCIES' STATEWIDE WATER ACTION PLAN

Mr. Heule reported that ACWA's Board of Directors unanimously approved a Statewide Water Action Plan for California on September 27, 2013. He explained that the plan was developed by a broad cross-section of member water interests convened by ACWA over several months. The plan outlines 15 actions to improve water supply reliability, protect water rights, protect the integrity of the state's water system and promote better stewardship. He added that it also includes guiding principles for implementation of the plan to help ensure actions benefit the entire state, respect water rights and contract terms and reflect a new regulatory approach that can better meet the needs of water users and ecosystems. Mr. Heule reported that the Statewide Water Action Plan was submitted to Governor Jerry Brown on October 2, 2013 as the water community's recommendations for developing the Administration's water plan for the state. He explained that although the District does not receive any direct benefit, the District's in-lieu partner San Bernardino Valley Municipal Water District does and could benefit from its implementation. He reported that the Committee recommends that the District express support for the ACWA plan by adopting the resolution and forwarding it to the Governor's office in Sacramento.

Director Lewis moved approval of a Resolution of the Board of Directors of Big Bear Municipal Water District in support of the Association of California Water Agencies' statewide Water Action Plan. Director Eminger seconded the motion and it was unanimously approved.

PUBLIC FORUM

No comments were made

REPORTS AND ANNOUNCEMENTS

Mr. Heule thanked the Board for allowing staff to have an extended Christmas and New Year's holiday. He commented that being out of the office from the 24th of December until this past

Monday was a nice break explaining that fortunately District business immediately affecting the public this time of year is almost non-existent. He reported that Mike Stephenson is still hunting and will be back in the office next Monday the 13th adding that he is sure Mike is going to have stories to tell. Mr. Heule reported that we received a letter from the Division of Safety of Dams earlier this week in response to Mike Rogers memorandum about the dam safety during overtopping. He added that the Division agreed with Mr. Rogers recommendation to paint the steel cross bracing and rock anchors and loose rock scaling at the abutments. He explained that they also concluded that in light of Mr. Rogers evaluation that the dam is in "good condition with sufficient stability under normal, seismic, and flood conditions" the District will not be required to retrofit the dam with the large radial arm flood gates. He added that we will have to respond to their request for development of a plan that will limit overtopping of the dam by March 1, 2014 reporting that we are actually well on the way towards getting that accomplished. He commented that any work we do to paint the cross bracing and abutment reinforcement will be considered general maintenance work that will not require an application or review fees to be paid to the Division. Mr. Heule reported that the Rotary Club wants to express their sincere appreciation for allowing them to use the Board room for Santa Central for several days last month. He explained that the club Santa's visited nearly 250 homes and gave gifts to 600 children. He announced that in accordance with District Ordinance No. 45 Directors per diem rate was adjusted for calendar year 2014 by the most recent annual CPI of 0.5%. He explained that this raises Director per meeting compensation from \$140.11 to \$140.81. He reported that the draft of the Upper Santa Ana River Integrated Water Resources Management Plan has been completed. He stated that he reviewed the plan and made some edits. He added that he also forwarded the draft plan to the DWP and the CSD for their review and comment. He explained that the plan is intended to assist agencies in the plan area with developing tools for optimizing management and use of the region's water resources while protecting ground water basins from water quality degradation and liquefaction. He commented that although the District is a small piece of the whole, participants in the update process wanted the plan to be comprehensive. He reported that he provided input based on collaboration with the DWP, CSD and BBARWA adding that Directors will be asked to endorse the plan probably within a month's time. Mr. Heule announced that the next Board meeting will be held on the fourth Thursday in January, January 23, instead of the third Thursday. He stated that the office will be closed for the national Martin Luther King holiday on January 20, 2014. He added that a Board workshop will be held on Wednesday January 22nd at 1:00 PM to review and discuss Lake Improvement Committee topics including interpretive signs at Stanfield Marsh and target goals for aquatic plants in the Lake. He reported that he and Don Evenson will be meeting with Valley District for further discussion of the in-lieu agreement amendment before the Watermaster Committee meeting on January 21st.

DIRECTOR COMMENTS

Director Eminger commented that Director Smith let the lake drop more than 4 feet from this time last year. Director Smith stated that a "March Miracle" is coming. He also congratulated President Murphy. Director Lewis thanked Director Smith for his year as president and welcomed Director Murphy.

ADJOURNMENT

There being no further business, the meeting was adjourned at 1:21 P.M.

NEXT MEETING

Open Session at 1:00 P.M.
Thursday, January 16, 2014
Big Bear Municipal Water District
40524 Lakeview Drive, Big Bear Lake, CA

Vicki Sheppard
Secretary to the Board
Big Bear Municipal Water District

(SEAL)

9:22 AM

01/17/14

Big Bear MWD
Warrant List Detail
 December 25, 2013 through January 16, 2014

Num	Type	Date	Name	Account	Paid Amount
152011	Liability Check	1/2/2014	LINCOLN NATIONAL	1001-01 · General Checking Account	
				2101-01 · Deferred Compensation	-1,575.00
TOTAL					-1,575.00
152013	Liability Check	1/10/2014	COLONIAL LIFE	1001-01 · General Checking Account	
				2100-17 · Colonial Life - Insure Payable	-77.22
				2100-18 · Colonial Life- Post Tax Payable	-39.04
				2100-19 · Colonial - Pre Tax Payable	-147.06
TOTAL					-263.32
152014	Liability Check	1/10/2014	MID AMERICA APPLE PLAN	1001-01 · General Checking Account	
				2100-21 · Apple Plan - Company Pay	-161.28
				2100-20 · Apple Plan - Employee Pay	-161.28
TOTAL					-322.56
152015	Liability Check	1/10/2014	AFLAC	1001-01 · General Checking Account	
				2100-08 · AFLAC Payable	-284.18
TOTAL					-284.18
152016	Bill Pmt -Check	1/13/2014	BAUMGARTNER	1001-01 · General Checking Account	
110934	Bill	1/6/2014		5540-42 · OPS-PreEmployment Physicals	-90.00
TOTAL					-90.00
152017	Bill Pmt -Check	1/13/2014	BIG BEAR DISPOSAL	1001-01 · General Checking Account	
4598	Bill	1/1/2014		5507-41 · OPS-Utilities-Main Office	-156.74
TOTAL					-156.74
152018	Bill Pmt -Check	1/13/2014	BIG BEAR TODAY	1001-01 · General Checking Account	
755906	Bill	12/27/2013		5510-04 · ADMIN-Public Info-Ice Info/Sign	-200.00
TOTAL					-200.00
152019	Bill Pmt -Check	1/13/2014	BUTCHER'S BLOCK AND BUIL...	1001-01 · General Checking Account	
269556	Bill	1/7/2014		5630-31 · MAINT-Bldg/Facil Maint/Rep-Shop	-18.79
270144	Bill	1/9/2014		5630-10 · ADMIN-Bldg/Facility Maint/Rep	-8.40
270835	Bill	1/13/2014		5630-41 · OPS-Bldg/Fac Mtn/Rep-RV PARK	-52.13
TOTAL					-79.32
152020	Bill Pmt -Check	1/13/2014	BVE	1001-01 · General Checking Account	
122620...	Bill	12/26/2013		5507-43 · OPS-Utilities-Ramps	-602.22
123020...	Bill	12/30/2013		5507-22 · WATER-Utilities-Dam	-12.24
123020...	Bill	12/30/2013		5507-43 · OPS-Utilities-Ramps	-246.07
123020...	Bill	12/30/2013		5507-22 · WATER-Utilities-Dam	-481.86
123020...	Bill	12/30/2013		5507-21 · WATER-Utilities-Aerator	-765.72
123020...	Bill	12/30/2013		5507-41 · OPS-Utilities-Main Office	-12.47
123020...	Bill	12/30/2013		5507-22 · WATER-Utilities-Dam	-75.06
TOTAL					-2,195.64
152021	Bill Pmt -Check	1/13/2014	CAL CHAMBER	1001-01 · General Checking Account	
107721...	Bill	12/27/2013		5509-03 · ADMIN-Memberships-Subscriptions	-178.02
TOTAL					-178.02

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01/17/14

Big Bear MWD Warrant List Detail December 25, 2013 through January 16, 2014

Num	Type	Date	Name	Account	Paid Amount
152022	Bill Pmt -Check	1/13/2014	CHARTER COMMUNICATIONS	1001-01 · General Checking Account	
121620...	Bill	12/16/2013		5505-08 · ADMIN- Phone Office DSL	-274.99
TOTAL					-274.99
152023	Bill Pmt -Check	1/13/2014	COMSERCO	1001-01 · General Checking Account	
67603	Bill	12/31/2013		5506-41 · OPS-Radio Service Contract	-260.00
TOTAL					-260.00
152024	Bill Pmt -Check	1/13/2014	CSB WATER AND SANITATION	1001-01 · General Checking Account	
123120...	Bill	12/31/2013		5507-43 · OPS-Utilities-Ramps	-123.92
123120...	Bill	12/31/2013		5507-43 · OPS-Utilities-Ramps	-123.92
TOTAL					-247.84
152025	Bill Pmt -Check	1/13/2014	DIRECTV INC	1001-01 · General Checking Account	
220758...	Bill	12/23/2013		5507-42 · OPS-Utilities-RV Park	-192.71
TOTAL					-192.71
152026	Bill Pmt -Check	1/13/2014	DISH NETWORK	1001-01 · General Checking Account	
010420...	Bill	1/4/2014		5507-41 · OPS-Utilities-Main Office	-70.00
TOTAL					-70.00
152027	Bill Pmt -Check	1/13/2014	DIVERSIFIED MARINE PRODU...	1001-01 · General Checking Account	
171412...	Bill	1/6/2014		5630-31 · MAINT-Bldg/Facil Maint/Rep-Shop	-36.87
TOTAL					-36.87
152028	Bill Pmt -Check	1/13/2014	DWP	1001-01 · General Checking Account	
122720...	Bill	12/27/2013		5507-44 · OPS-Utilities-Trout Pond	-83.19
122720...	Bill	12/27/2013		5507-41 · OPS-Utilities-Main Office	-49.90
122720...	Bill	12/27/2013		5507-43 · OPS-Utilities-Ramps	-20.19
122720...	Bill	12/27/2013		5507-43 · OPS-Utilities-Ramps	-128.51
122720...	Bill	12/27/2013		5507-42 · OPS-Utilities-RV Park	-83.19
122720...	Bill	12/27/2013		5507-41 · OPS-Utilities-Main Office	-15.14
TOTAL					-380.12
152029	Bill Pmt -Check	1/13/2014	LEMIEUX & O'NEILL	1001-01 · General Checking Account	
20-999...	Bill	12/31/2013		5520-01 · ADMIN-District Counsel Retainer	-3,500.00
TOTAL					-3,500.00
152030	Bill Pmt -Check	1/13/2014	MASTERCARD	1001-01 · General Checking Account	
123120...	Bill	12/31/2013		5571-03 · ADMIN-Div 3- Suhay Expenses	-860.81
TOTAL					-860.81
152031	Bill Pmt -Check	1/13/2014	NAPA AUTO PARTS	1001-01 · General Checking Account	
170634	Bill	12/23/2013		5580-41 · OPS-Boat Maintenance-Patrol	-27.67
172183	Bill	1/6/2014		5580-41 · OPS-Boat Maintenance-Patrol	-133.84
172405	Bill	1/8/2014		5600-31 · MAINT-Vehicle Maint-ON ROAD	-43.40
172686	Bill	1/9/2014		5600-31 · MAINT-Vehicle Maint-ON ROAD	-36.99
TOTAL					-241.90

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01/17/14

Big Bear MWD
Warrant List Detail
 December 25, 2013 through January 16, 2014

Num	Type	Date	Name	Account	Paid Amount
152032	Bill Pmt -Check	1/13/2014	NO CONTRACT VOIP	1001-01 · General Checking Account	
010620...	Bill	1/6/2014		5505-01 · ADMIN-Phones Local/Hardware/...	-144.18
TOTAL					-144.18
152033	Bill Pmt -Check	1/13/2014	PITNEY BOWES PURCHASE P...	1001-01 · General Checking Account	
121920...	Bill	12/19/2013		5501-01 · ADMIN-Post&Ship OFFICE	-64.12
TOTAL					-64.12
152034	Bill Pmt -Check	1/13/2014	QUILL	1001-01 · General Checking Account	
8084977	Bill	12/18/2013		5503-01 · ADMIN-Office Supplies-Office	-44.70
TOTAL					-44.70
152035	Bill Pmt -Check	1/13/2014	ROTARY	1001-01 · General Checking Account	
113020...	Bill	12/31/2013		5509-08 · ADMIN-Member/Subs/Permit-Rot...	-92.00
123120...	Bill	12/31/2013		5509-08 · ADMIN-Member/Subs/Permit-Rot...	-73.00
TOTAL					-165.00
152036	Bill Pmt -Check	1/13/2014	SQUEEGEE CLEAN WINDOW ...	1001-01 · General Checking Account	
010920...	Bill	1/9/2014		5630-10 · ADMIN-Bldg/Facility Maint/Rep	-50.00
TOTAL					-50.00
152037	Bill Pmt -Check	1/13/2014	SUPERMEDIA	1001-01 · General Checking Account	
121920...	Bill	12/19/2013		5505-07 · ADMIN-Phone Office Web/Email	-59.90
010120...	Bill	1/1/2014		5505-01 · ADMIN-Phones Local/Hardware/...	-67.50
TOTAL					-127.40
152038	Bill Pmt -Check	1/13/2014	TERMINIX	1001-01 · General Checking Account	
331131...	Bill	1/6/2014		5630-40 · OPS-Bldg/Fac Mtn/Rep	-285.18
				5630-40 · OPS-Bldg/Fac Mtn/Rep	-285.18
TOTAL					-570.36
152039	Bill Pmt -Check	1/13/2014	UPS	1001-01 · General Checking Account	
0000F3...	Bill	12/21/2013		5501-01 · ADMIN-Post&Ship OFFICE	-14.81
				5631-01 · OPS-Quagga Mussel Prevention	-12.68
TOTAL					-27.49
152040	Bill Pmt -Check	1/13/2014	VERIZON CALIFORNIA	1001-01 · General Checking Account	
121320...	Bill	12/13/2013		5505-01 · ADMIN-Phones Local/Hardware/...	-53.18
122820...	Bill	12/28/2013		5505-04 · ADMIN-Phone At the Dam	-46.61
010120...	Bill	1/1/2014		5505-02 · ADMIN-Phones Ramps Local Svc	-54.22
010120...	Bill	1/1/2014		5505-02 · ADMIN-Phones Ramps Local Svc	-57.03
TOTAL					-211.04
152041	Bill Pmt -Check	1/13/2014	VOLVO PENTA OF THE AMERI...	1001-01 · General Checking Account	
306374	Bill	1/7/2014		5580-41 · OPS-Boat Maintenance-Patrol	-92.90
306779	Bill	1/9/2014		5580-41 · OPS-Boat Maintenance-Patrol	-64.96
TOTAL					-157.86

9:22 AM

01/17/14

Big Bear MWD
Warrant List Detail
 December 25, 2013 through January 16, 2014

Num	Type	Date	Name	Account	Paid Amount
152042	Bill Pmt -Check	1/13/2014	MASTERCARD	1001-01 · General Checking Account	
123120...	Bill	12/31/2013		5510-07 · ADMIN-Empl Recognition-Winter	-50.00
				5510-07 · ADMIN-Empl Recognition-Winter	-21.60
				5510-07 · ADMIN-Empl Recognition-Winter	-32.40
				5570-01 · ADMIN-Training/Seminars-GM	-45.53
				5570-01 · ADMIN-Training/Seminars-GM	-167.70
				5570-01 · ADMIN-Training/Seminars-GM	-219.75
				5570-01 · ADMIN-Training/Seminars-GM	-1,123.63
				5570-04 · ADMIN-Training/Travel-Computer	-375.00
				5502-01 · ADMIN-Printing	-30.94
TOTAL					-2,066.55
152043	Bill Pmt -Check	1/13/2014	MASTERCARD	1001-01 · General Checking Account	
123120...	Bill	12/31/2013		5510-08 · ADMIN-Empl Recognition-End of S	-74.47
				5510-07 · ADMIN-Empl Recognition-Winter	-50.00
				5510-08 · ADMIN-Empl Recognition-End of S	-68.91
				5541-41 · OPS-Uniform/Sm Equip-Reg Empl	-107.49
				5631-02 · OPS-Quagga Prevention Equip	-48.90
				5510-07 · ADMIN-Empl Recognition-Winter	-97.98
				5543-30 · MAINT-Small Tools/Tool Supplies	-219.12
				5510-07 · ADMIN-Empl Recognition-Winter	-20.00
				5541-42 · OPS-Uniform/Sm Equip Seas Empl	-38.88
				5510-05 · ADMIN-Public Info-Other Agency	-40.65
				5660-02 · Aquatic Plant Control LAKE	-225.00
				5541-42 · OPS-Uniform/Sm Equip Seas Empl	-43.19
				5510-05 · ADMIN-Public Info-Other Agency	-24.75
				2810-05 · Aluminum Recycling Funds	-142.38
				5510-07 · ADMIN-Empl Recognition-Winter	-60.00
TOTAL					-1,261.72

**BIG BEAR MUNICIPAL WATER DISTRICT
REPORT TO BOARD OF DIRECTORS**

MEETING DATE: *January 23, 2014*

AGENDA ITEM: *6A*

SUBJECT:

CONSIDER APPROVAL OF A PROPOSAL FOR TECHNICAL SERVICES ASSOCIATED WITH THE DESIGN, MONITORING AND REPORTING OF AN ALUM TREATMENT

RECOMMENDATION:

The General Manager and the Lake Improvement Committee (Directors Eminger & Lewis) recommend approval of this proposal.

DISCUSSION/FINDINGS:

The General Manager and Lake Manager have had recent conversations with the TMDL Workgroup members about helping to fund an alum treatment in the Lake. The Regional Board wants the named parties to pursue an "in Lake" project and an alum application would satisfy that objective. Discussions with the City of Big Bear Lake, City Engineer indicate that the San Bernardino County MS4 dischargers (flood control, sanitary sewer responsible agencies) are committing to \$350,000 to help fund an alum treatment in Big Bear Lake. Tim Moore of Risk Sciences, who is consulting for the MS4 group, is discussing the proposed alum treatment with the Santa Ana Regional Water Quality Control Board (RWQCB) to secure their support for the work. The MW4 group hopes that their participation will satisfy the RWQCB regarding their obligation to reduce in-Lake legacy Phosphorous. Knowing that this level of interest was likely to come forward the Lake Manager asked Michael Anderson at the University of Riverside to draft a proposal for technical services associated with the design, monitoring and reporting of an alum treatment in the Lake this summer (2014). This work will be necessary in order to gain the necessary permits and complete CEQA documents for the treatment. The work will include both water and sediment sampling and analysis to develop an alum dosage and application plan, monitoring during the course of the application and finally an analysis after the treatment that measures its success. The objective of the treatment will primarily be to sequester soluble Phosphorous in the sediment so that it is no longer available to be released into the water column. Sequestering Phosphorous in the sediment eliminates its availability as a nutrient for aquatic plants and algae in the Lake. The application would also be timely in that the TMDL target compliance date occurs in 2015, just a year after the treatment would be completed. The cost for the proposed scope of work is \$29,400 as described in the attached proposal. In addition to the technical studies, additional costs would be associated with permitting and the CEQA document and are estimated not to exceed \$15,000 to \$20,000. The total cost of the actual alum application is estimated to be \$750,000. The Committee is recommending that the Board of Directors only approve the attached scope of work and cost described in the Michael Anderson proposal at this time and that it get paid for with Lake Improvement Fund dollars.

OTHER AGENCY INVOLVEMENT: None

FINANCING: Lake Improvement fund

Submitted by: Scott Heule, General Manager

PROPOSAL: ALUM TREATMENT, INTERNAL RECYCLING AND WATER QUALITY IN BIG BEAR LAKE

Introduction

Alum applications to lakes have been shown to effectively reduce internal loading of phosphorus (P), reduce algal levels and increase transparency. Previous studies have found that Big Bear Lake is generally P-limited, with a substantial portion of P available in the water column for phytoplankton production derived from recycling from sediments (Anderson and Dyal, 2003). An alum treatment in 2004 reduced phytoplankton concentrations and increased transparency (Berkowitz and Anderson, 2005), and successfully reduced internal P loading rates by up to 90% following treatment, with successful suppression of internal loading for several years thereafter (Fig. 1) (Anderson and Paez, 2007). These reductions were achieved despite the near-record precipitation and runoff in early 2005 that greatly increased external nutrient loading, lake volume and surface area and depth. Alum treatments have a finite capacity and lifespan however; for example, internal P recycling rates increased each year following treatment (Fig. 1). Based upon measured increases from 2004 to 2006, the internal recycling rate at TMDL site 1 is projected to have returned to baseline levels by about 2012 or 2013.

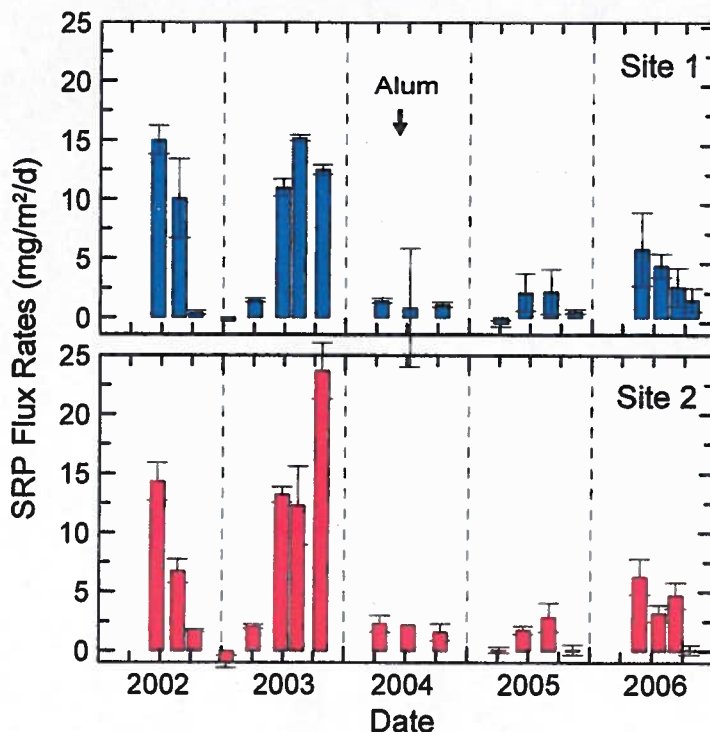


Fig. 1. Internal recycling of soluble reactive phosphorus (SRP) from sediments at TMDL monitoring stations 1 and 2, Big Bear Lake: 2002-2006

This proposal outlines sampling, analyses and monitoring to help determine appropriate dosages for a follow-on alum application, optimize treatment, and quantify the impacts of treatment on the water quality and nutrient recycling in Big Bear Lake.

Approach

1. Alum Dosage

Two sets of measurements are proposed to determine the optimal dose of alum to Big Bear: (i) jar tests to assess alum dose-pH-alkalinity relationships, and (ii) mobile P measurements.

i. Jar Tests

As with the alum treatment in 2004, jar tests will be conducted to quantify the effect of different doses of Al (added as alum) on equilibrium pH and alkalinity levels. pH is a critical variable in alum applications, regulating solubility and speciation of Al (Berkowitz et al., 2005). Jar tests conducted prior to treatment in 2004 demonstrated a linear decrease in alkalinity from 4 meq L⁻¹ in untreated water to <1 meq L⁻¹ with 30 mg L⁻¹ dose of Al (added as alum), and equilibrium pH values remaining near 7.5. pH values dropped to <5 at an Al dose of 40 mg L⁻¹. Given the annual variability in water level, total dissolved solids (TDS) concentrations, and alkalinity, another set of jar tests would be valuable in defining the upper limit on recommended dosages and help prevent local hotspots of low pH.

A series of 1-L samples of Big Bear Lake water collected prior to alum application will be dosed with 0, 5, 10, 15, 20, 25, 30, 35 and 40 mg L⁻¹ Al³⁺ (as alum), allowed to equilibrate, and then filtered and titrated with standardized acid to a pH endpoint of 4.5 following method 2320 B (APHA, 1998). Filtered subsamples will also be acidified with HNO₃ and analyzed for dissolved Al by ICP (Method 3120 B) and for total Al following HNO₃ digestion (Method 3030 E). The average water column concentration will depend upon the target dose rate (g Al/m²) and depth of the water column at that site. Higher dose rates and/or treatment of shallower water or subsurface injection would result in correspondingly higher average water column total Al concentrations.

ii. Sediment Mobile-P Measurements

A number of methods have been used to determine appropriate alum dose rates, including those based upon alkalinity, internal loading rates and sediment mobile P contents. The mobile P method involves measurement of the amount of P in labile (dissolved and exchangeable P) and potentially labile forms (reductant-soluble P) in the uppermost sediment layers (Pilgrim et al., 2007). Based upon available sediment total P concentration data, 6-15 sites will be sampled for mobile-P determination. An Ekman dredge will be used to collect surface sediment grab samples; sediment within the dredge will then be cored using 10 cm x 6.35 cm diameter clear polycarbonate tubes, sealed with plastic end caps and stored in a cooler for return to the lab. Sediment will then be extruded, subsampled for dry-weight determination and extracted for mobile-P following Pilgrim et al. (2007). Sediment mobile-P concentrations will then be converted to Al dose assuming 15 g Al per g mobile-P m^{-2} based upon previous sorption results using Big Bear Lake water (Berkowitz et al., 2006). The Al-dose will, in turn, be converted to alum dose based upon formulation of liquid alum to be used. The measurements will be repeated 1-3 months after the alum treatment to assess effectiveness of the alum treatment in binding sediment mobile-P.

2. Internal P Recycling Rates

In addition to measurement of mobile-P in bottom sediments, intact sediment cores will also be collected at the 4 TMDL sampling sites and potentially 2-4 additional sites for measurement of internal recycling rates of P and N. These measurements will be made prior to and 1-3 months following alum treatment. This will extend the historical dataset shown in Fig. 1 and directly quantify effectiveness of the alum treatment in suppressing recycling and release of P from bottom sediments.

The rate of nutrient release from sediments will be quantified using the core-flux method as done previously (*e.g.*, Anderson and Dyal, 2003; Anderson and Paez, 2007). Triplicated cores will be collected prior to alum application and 2-3 months following treatment. The cores will be returned to the lab and incubated in the dark at the temperature and DO condition present at the time of sampling. Presence or absence of floc and thickness/depth of floc, when present, will be recorded. Water samples will be collected daily and analyzed for SRP, NH_4-N and NO_3+NO_2-N using a Seal AQ2 discrete analyzer following Method 4500-P. Temperature, pH, DO and EC will be measured at the sites prior to sample collection using a Hydrolab as described below in section 4.

3. Hydroacoustic Measurements

The acoustic signature of bottom sediments is increasingly used to classify sediment hardness and roughness (Sternlicht and de Moustier, 2003), thickness (Odhiambo and Boss, 2004), and has also been found to correlate with organic C and total nutrient contents and rates of nutrient release and sediment oxygen demand (Anderson and Pacheco, 2011). A multi-frequency hydroacoustic survey will be conducted prior to the alum treatment to map out acoustical properties of sediments and, with data derived above, sediment mobile-P and internal recycling rates across the lake. Measurements will be made using a BioSonics DTX echosounder multiplexed to a 201-kHz split-beam transducer and 430-kHz and 38-kHz single beam transducers with integrated pitch-roll sensors and JRC real-time differential GPS. Measurements will also be made using a Lowrance Elite-5 using 80-kHz broadbeam sonar and 800-kHz down-scan imaging (DSI) to evaluate the utility of these frequencies and system configuration.

4. Lake Monitoring

Lake monitoring will be conducted immediately prior to, during and 3-4 weeks following the alum treatment. A Hydrolab DataSonde 4a will be calibrated prior to use and used to monitor temperature, pH, dissolved O₂, and specific conductance/TDS as a function of depth (1 m intervals or less) at the TMDL stations located within the treatment zone. Secchi depth will also be measured at each station. Composite photic zone samples (taken as 2x the pre-treatment Secchi depth) and discrete mid-depth and bottom samples will also be collected at these stations using a van Dorn sampler, transferred to sample bottles stored on ice and transported to UCR for analyses. Samples will be analyzed for pH, alkalinity by titration (Method 2320 B), dissolved and total Al, Si and dissolved major metal ion concentrations by ICP (Method 3120 B), and dissolved nutrients with a Seal AQ2 discrete analyzer following Method 4500-P F).

Two YSI Model 600 logging sondes will also be deployed near the dam and at TMDL station 1 approximately 5 m above the sediments prior to treatment and remain in the lake until at least August 1. These instruments will log hourly temperature, pH, DO, specific and conductance/TD, in the lake prior to, during and following treatment.

Expected Results

The proposed study will determine appropriate alum dosages, optimize treatment scheme, quantify pre-treatment conditions and assess the effectiveness of the alum application in reducing SRP release and improving water quality.

Reporting

Two reports will be prepared. The first report will summarize (i) jar test results describing alkalinity, pH and dissolved Al concentrations as functions of added alum, (ii) sediment mobile-P concentrations and their distribution using both discrete sampling results as well as more complete, hydroacoustically-estimated distributions, and (iii) areally defined alum dosages and delivery strategy. This report would be available by May 10 to assist in planning and implementation of the alum treatment in the summer.

The second report will summarize findings of the lake monitoring as well as effectiveness of the alum treatment in binding sediment mobile-P and reducing internal nutrient recycling rates. This report will be developed following completion of field and laboratory measurements and submitted by December 1, 2014.

Budget

The total cost for the project as outlined is \$29,400 to cover graduate student support, supplies and travel. An itemized budget by task provided in Table 1.

Activity	Schedule	Cost
1. i. Jar tests	April 2014	\$ 1,400
ii. Sediment mobile-P	April - September 2014	\$ 3,500
2. Internal nutrient loading	April - September 2014	\$ 9,500
3. Hydroacoustics	April 2014	\$ 5,000
4. Lake monitoring	June - September 2014	\$ 10,000
Total		\$ 29,400

References

Anderson, M.A. and K.J. Dyal. 2003. *Sediment Characterization and Internal Nutrient Loading: Big Bear Lake, CA*. Final Report to the Big Bear Municipal Water District. 14 pp.

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APHA. 1998. *Standard Methods for the Examination of Water and Wastewater*. 20th Edition. American Public Health Association, Washington, DC.

Berkowitz, J. and M.A. Anderson. 2005. *Full-Scale Alum Application to Big Bear Lake, California: Water Quality and Geochemical Responses*. Final Report to the Big Bear Municipal Water District. 71 pp.

Berkowitz, J., Anderson, M.A. and Graham, R. 2005. Laboratory investigation of aluminum solubility and solid-phase properties following alum treatment of lake waters. *Water Res.* 39(16):3918-3928.

Berkowitz, J., M.A. Anderson and C. Amrhein. 2006. Influence of aging on phosphorus sorption to alum floc in lake water. *Water Res.* 40:911-916.

Odhiambo, B.K. and S.K. Boss. 2004. Integrated echo sounder, GPS, and GIS for reservoir sedimentation studies: examples from two Arkansas lakes. *J. Am. Water Resour. Assoc.* 40:981-997.

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Sternlicht, D.D., de Moustier, C.P., 2003. Time-dependent seafloor acoustic backscatter (10-100 kHz). *J. Acoust. Soc. Am.* 114:2709-2725.

**BIG BEAR MUNICIPAL WATER DISTRICT
REPORT TO BOARD OF DIRECTORS**

MEETING DATE: *January 23, 2014*

AGENDA ITEM: *6B*

SUBJECT:

CONSIDER APPROVAL OF AN EQUIPMENT AND OPERATION GRANT AGREEMENT WITH THE STATE OF CALIFORNIA DEPARTMENT OF PARKS AND RECREATION, DIVISION OF BOATING AND WATERWAYS AND THE BIG BEAR MUNICIPAL WATER DISTRICT, AND AUTHORIZING THE EXPENDITURE OF \$14,000 TO EQUIP THE NEW PATROL BOAT

RECOMMENDATION:

The General Manager and Lake Manager recommend approval of the contract and the expenditure.

DISCUSSION/FINDINGS:

The District's Lake Patrol 2 was originally purchased with Boating and Waterways grant funding in 1995 and is in need of being replaced. Last fall the District applied for a grant to replace the patrol boat and it has been approved in the amount of \$80,000. This amount covers the cost of the boat but not radios, light bar or scanner equipment, which should not exceed \$14,000. As with all of the other boats purchased with grant funds this new boat will be aluminum chambered. Staff has already begun working on the specifications for the new Patrol Boat. If the Board approves executing the grant contract bids will be sought.

Staff recommends that the Board accept the grant from the Division of Boating and Waterways and authorize the General Manager to execute the contract (attached). Staff also recommends that the Board approve and an expenditure not to exceed \$14,000 to outfit the new Patrol Boat the radios, light bar and scanner equipment.

The District continues to be very appreciative of these grants from Department of Parks and Recreation, Division of Boating and Waterways.

OTHER AGENCY INVOLVEMENT: State of California

FINANCING: The current fiscal year budget includes an allocation of \$14,000 in the Capital Replacement Budget for the necessary additional equipment for a new Patrol Boat.

Submitted by: Scott Heule, General Manager

State of California – Natural Resources Agency
DEPARTMENT OF PARKS AND RECREATION
DIVISION OF BOATING AND WATERWAYS

GRANT AGREEMENT

GRANTEE BIG BEAR MUNICIPAL WATER DISTRICT

THE TERM OF THIS AGREEMENT IS JANUARY 15, 2014 THROUGH JUNE 30, 2029

GRANT TITLE: LAW ENFORCEMENT EQUIPMENT GRANT PROGRAM

GRANT NUMBER: C8956102

The Grantee agrees to the terms and conditions of this contract, hereinafter referred to as Agreement, and the State of California, acting through its Director of Parks and Recreation, pursuant to the State of California agrees to fund the total State grant amount indicated below. The GRANTEE agrees to complete the SCOPE OF WORK as defined in the Agreement.

The General and Special Provisions attached are made a part of and incorporated into the Agreement.

Grantee: BIG BEAR MUNICIPAL
WATER DISTRICT
Address: 40542 LAKEVIEW DRIVE
BIG BEAR, CA 92315

Agency: Department of Parks and Recreation,
Division of Boating and Waterways
ATTN: Corrina Dugger
Address: One Capitol Mall, Suite 500
Sacramento, CA 95814

BY: _____
(Authorized Signature)

BY: _____
(Authorized Signature)

(Printed Name and Title of Authorized Representative)

SYLVIA ORTEGA HUNTER, DEPUTY DIRECTOR
(Printed Name and Title of Authorized Representative)

Date _____

Date _____

CERTIFICATE OF FUNDING

GRANT NO C8956102	AMENDMENT NO	CALSTARS VENDOR NO		PROJECT NO
AMOUNT ENCUMBERED BY THIS DOCUMENT \$ 80,000.00	FUND TITLE Federal Trust Fund #0890			AGENCY BILLING CODE NO 032011
PRIOR AMOUNT ENCUMBERED BY THIS DOCUMENT \$0.00	ITEM 3790-101-0890	CHAPTER 20	STATUTE 2013	FISCAL YEAR 2013/14
TOTAL AMOUNT ENCUMBERED TO DATE \$0.00	INDEX 1700	OBJECT CODE 702	PCA CODE 68104	PROJECT/WORK PHASE
T.B.A. NO	<i>I hereby certify upon my own personal knowledge that the budgeted funds are available for this encumbrance.</i>			
B.R.NO	ACCOUNTING OFFICER'S SIGNATURE		DATE	

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