Okanagan Basin Water Board Meeting Agenda

DATE: Friday, Sept. 9, 2011

TIME: 12 p.m. to 1 p.m.

PLACE: Okanagan Regional Library
1380 Ellis St, Kelowna, B.C.

1. CALL MEETING TO ORDER

2. APPROVAL OF AGENDA

3. INTRODUCTION OF LATE ITEMS

4. ADOPTION OF MINUTES
   - 4.1 Minutes of the Regular Meeting of the Okanagan Basin Water Board of July 5, 2011 at Regional District of North Okanagan in Coldstream, B.C. *(page 1)*

5. STAFF REPORTS
   - 5.1 Executive Director Report *(page 8)* *(includes recommendations)*
   - 5.2 Water Stewardship Director Report *(page 41)* *(includes recommendation)*
   - 5.3 Communications and Research Coordinator Report *(page 43)*

6. ADJOURN TO IN-CAMERA MEETING
   - 6.1 Matters pertaining to UBC-O Water Research Chair

7. RESUME REGULAR MEETING

8. NEW AND UNFINISHED BUSINESS
   - 8.1 Letter to Environment Canada *(page 45)* *(includes recommendation)*

9. CORRESPONDENCE
   - 9.1 Letter re: OBWB Water Management Program from Regional District of Central Okanagan *(page 55)*
   - 9.2 Letter re: Milfoil Control Program from District of West Kelowna to B.C. Ministry of Environment *(page 56)*

10. NEXT MEETING
    - 10.1 The next regular meeting of the Okanagan Basin Water Board will be held Oct. 4, 2011 at Regional District of North Okanagan.

11. ADJOURNMENT

Okanagan Basin Water Board
Regular meeting
Sept. 9, 2011
Agenda No: 4.1

MINUTES OF A REGULAR MEETING OF THE OKANAGAN BASIN WATER BOARD HELD JULY 5, 2011, AT REGIONAL DISTRICT OF NORTH OKANAGAN 9848 ABERDEEN RD., COLDSTREAM, B.C.

PRESENT

Chair Stu Wells	Regional District Okanagan-Similkameen
Vice-Chair Rick Fairbairn	Regional District North Okanagan
Director Buffy Baumbrough	Regional District North Okanagan
Director Doug Dirk	Regional District North Okanagan
Director Graeme James	Regional District Central Okanagan
Director James Baker	Regional District Central Okanagan
Director Doug Findlater	Regional District Central Okanagan
Director Gordon Clark	Regional District Okanagan-Similkameen
Alt. director Dan Ashton	Regional District Okanagan-Similkameen
Alt. director James Pepper	Okanagan Nation Alliance
Director Bernie Bauer	Okanagan Water Stewardship Council
Director Toby Pike	Water Supply Association of BC

OBWB STAFF

Anna Warwick Sears	Executive Director
Nelson Jatel	Water Stewardship Director
Melissa Tesche	Interim Office and Grants Administrator
Corinne Jackson	Communications and Research Coordinator

GUESTS

Jason Schleppe	Ecoscape Consulting

1. CALL MEETING TO ORDER

Chair Wells called the meeting to order at 10:03 a.m.

2. INTRODUCTION OF LATE ITEMS

3. APPROVAL OF AGENDA

"THAT the agenda of the regular meeting of the Okanagan Basin Water Board of July 5, 2011 be approved."

CARRIED

4. ADOPTION OF MINUTES

4.1 Minutes of the Regular Meeting of the Okanagan Basin Water Board of June 7, 2011 at Regional District of Okanagan-Similkameen, Penticton.

"THAT the minutes of the regular meeting of the Okanagan Basin Water Board of June 7, 2011 at Regional District of Okanagan-Similkameen in Penticton be adopted."

CARRIED

5. DELEGATIONS

5.1 Jason Schleppe – Ecoscape Consulting: Using the Foreshore Inventory Maps to assess disturbance on Okanagan lakeshore

Mr. Schleppe explained to the board that the Province of B.C. has a three step process for shoreline management: 1) Foreshore Inventory Mapping (FIM) which catalogues the foreshore, riparian conditions and modifications, 2) Aquatic Habitat Index which is a descriptive listing, and 3) the development of a shoreline management guideline.

Shoreline inventories are being conducted out of recognition by the province and local governments that alterations are occurring without compliance in multiple jurisdictions. At the same time, local residents are asking for protection of their watersheds, noting its importance to drinking water quality, their economy, tourism and recreational values.

Change monitoring

As a result of the Okanagan Lake FIM study, it has been found that only 43% of the shoreline is in its natural condition. Substrate modification was prevalent along 47% of the shoreline, Mr. Schleppe reported, noting: 1,799 retaining walls covering 20% of the shoreline; 2,718 docks with an overall density of 11.43 docks/km; 222 concrete boat launches; 41 marinas with more than six boat slips; 939 groynes or 39.5 groynes per kilometer. Much of this has been built without permit. However, there are significant opportunities for shoreline restoration across all land use types, he added.

The first FIM began in 2004. These latest findings are a result of mapping being redone in 2010. The rate of change is estimated at -0.5 to -2% of natural shoreline per year, showing an increase in all modifications observed (e.g. in 7 years there were 140 new docks). Of particular concern is the loss of shoreline affecting kokanee spawning grounds.

FIM has been conducted on Shuswap Lake also, showing significant impacts along its shoreline. That said, Okanagan Lake is one of the most impacted lakes because of its dense population. It is ranking high in terms of impact, added Mr. Schleppe, noting that it is important to recognize this and address it now.

How can government use FIM to reverse trends?

Mr. Schleppe provided recommendations to protect the existing shoreline and even reverse some of the damage done:

1) Collaboratively develop Shoreline Management Guidelines and incorporate them into Official Community Plans, waterfront plans, etc;
2) Develop specific restoration objectives and goals;
3) Complete Change Monitoring through ongoing FIM studies;
4) Work collaboratively to enforce compliance and prosecution for violations;
5) Shoreline restoration opportunities should be considered as part of any development process, no matter how small, to help change current trends.

In addition, he stressed the importance of education and outreach to change behavior, the continuation of data collection as part of a comprehensive approach to foreshore management, and creation of a data management program to ensure that all the layers of data are accurate and accessible.

In response to questions from directors, Mr. Schleppe noted that people don't like the waits that occur with rules and regulations and sometimes they think it is easier to do wrong and ask for forgiveness later. Agencies need to find collaborative ways to address this.

Dir. Clark asked if the OBWB was the right agency to be addressing this. Dr. Warwick Sears responded, saying the OBWB's role is to pull the information together, highlight the trends and take it to municipalities, helping develop a basin-wide plan for the lake.

Alt. dir. Ashton entered the meeting at 10:57 a.m.

A number of directors noted that the problem is with enforcement – that the work has been downloaded without funding attached to it. However, Dir. Pike noted that just because enforcement is difficult doesn't mean it shouldn't be done. Perhaps natural areas should require a permit to allow alterations.

Chair Wells added that perhaps there is a role for the Water Stewardship Council on this issue. Dr. Warwick Sears offered to take the issue to the council for their input.

Dir. Baumbrough noted a recent letter from the City of Vernon to the provincial government, voicing concern about changes that will affect the ability for local government to comment on riparian area variances.

Mr. Schleppe concluded that protection of the foreshore is a complicated issue and the answers aren't simple, but suggested all three levels of government working collaboratively, and the OBWB working from a basin-wide approach, is a good direction to go.

6. STAFF REPORTS

6.1 Executive Director Report

Dr. Warwick Sears spoke to a letter received by the Polis Project, asking that funding not be cut to Environment Canada's (EC) water monitoring programs, and suggested that the OBWB write its own letter. The letter should speak to the importance of EC's water quality monitoring work, the lake evaporation project soon to get underway in the Okanagan, and the critical role the agency plays in important water research. Further, the letter should invite EC to use the Okanagan as a hub for its research, added the executive director.

Directors asked staff to look into what cuts the ministry is facing and to report back to the board with a draft letter. It was further suggested that the letter be cc'd to all three Okanagan MPs.

Dr. Warwick Sears continued with her report noting that B.C. Ministry of Environment (MoE) has asked the Water Board to stop rototilling the Kelowna foreshore within half a kilometer of a creek mouth due to fish spawning. Water Board staff are continuing to work with MoE on this issue, recognizing the high value of this area for recreational uses and because the fish are not endangered. The data from the FIM and Ecoscape's information about species in the area will be useful, she added.

Directors voiced concern, noting that rototilling is much more effective in controlling milfoil than harvesting, and residents want it done. It was also noted that leaving the milfoil unattended would have drastic consequences on aquatic habitat as well.

Dr. Warwick Sears said that staff will continue to work with MoE to address milfoil control.

"THAT the Okanagan Basin Water Board defers next steps in addressing the Watermilfoil Control Program to the next board meeting."

CARRIED

Dr. Warwick Sears reported that the Water Supply and Demand Project committee has conducted a second set of scenarios that look at an increase in overall water demand due to changes in development, as well as an increase in agriculture and population. A report will be provided to the board.

Staff is looking at holding a workshop in November on the various tools developed by the Water Board, and others, for local government engineers and planners. For example, the FIM maps, the groundwater and soil bylaws toolkits, the Water Supply and Demand project and the accompanying Local Government Guide, also the Irrigation Management Tool, and the Water Balance Model.

Directors were reminded about the Osoyoos Lake Water Science Forum and asked to register if they haven't already done so.

"THAT the Executive Director's Report, dated June 28, 2011, be received."
CARRIED

6.2 Water Stewardship Director Report

Mr. Jatel reported that the province is looking to adopt the Streamlined Water Use Reporting Tool (SWURT) B.C.–wide. This bodes well for other water sensitive areas in B.C., but also in helping the Water Board develop the tool further to include snowcourse information.

The Water Stewardship Council is continuing to work with the federal and provincial government on the Groundwater Wells Monitoring Project – a three-year project. Six monitoring wells have been drilled in sensitive aquifers so far, with more to come. The council has a committee looking at the development of an Agricultural Water Reserve for the Okanagan and another one looking at source water protection measures.

In addition, the council is working with senior levels of government to expand hydrometric monitoring in the valley. At one time, there were 150 stations. Today, there are 35. Council is working to re-establish between three and five stations by the end of 2012.

In response to a question from Dir. Fairbairn, Mr. Jatel noted that one funding application to NASA for remote-sensing water research, jointly submitted with our counterparts in the U.S., was rejected. The other should be announced in about a month. There may also be an opportunity to partner with UBC-Okanagan on this, he added.

As for the Water Act Modernization process, Mr. Jatel reported that the province recently went through some restructuring which has created some delays.

"THAT the Water Stewardship Director's Report, dated June 29, 2011, be received."
CARRIED

6.3 Communications and Research Coordinator Report

Ms. Jackson reported on a number of communication initiatives underway, including: the reprinting and distribution of the Okanagan Waterscape poster, the production of a series of videos, creation of a valley-wide water conservation ad campaign, development of a "Where's my water from?" web app, creation of an Okanagan Homeowners' Guide to Rainwater Harvesting, creation and distribution of the Okanagan WaterWise radio and print series, and communication around the Osoyoos Lake Water Science Forum.

Ms. Jackson went on to show directors a draft of the Okanagan WaterWise water conservation video, Make Water Work.

"THAT the Communications and Research Coordinator's Report, dated June 28, 2011, be received."

CARRIED

7. NEW AND UNFINISHED BUSINESS

7.1 Water Management Program Review

Dr. Warwick Sears submitted the report "Water Management Program Review 2011" to the board, noting the report will also be provided to the three Okanagan regional districts, looking for them to reauthorize the WMP for another three year term.

The program's new term would begin April 1, 2012. The three–year review provides a good check up of the program, looking at the WMP as a whole, its projects, governance, the Sustainable Water Strategy and grants.

Since 2006, when the program began, it has gathered some of the best data in B.C. for local government planning and which is being replicated in other areas. The Water Supply and Demand study has been completed. Indeed the study showed the need to protect the water storage we have and was an integral part of our – successful – submission to the province to not sell its reservoir lease lots. An Endocrine Disruptor Study was conducted, the Groundwater Bylaws Toolkit was created, as was the Streamlined Water Use Reporting Tool. Groundwater Monitoring Wells are being drilled to keep an eye on sensitive aquifers in the Okanagan. In addition to many other projects, the WMP has established the OBWB as a voice for B.C. water policy, and as an example of a working structure for engagement and conflict resolution, added Dr. Warwick Sears.

Dr. Warwick Sears requested that the board approve continuation of the program, approve the review's recommendations and preliminary budget draft for 2011- 12, and forward the same request to the Okanagan regional districts.

Directors suggested a few additions to the WMP Review report, including reference to the importance of research, advocacy and outreach. It was suggested that there be some clarification regarding strategic priorities for the next three years. There was also discussion around references to First Nations involvement in water management and how to further engage bands.

Dr. Warwick Sears noted that the OBWB has made presentations to the various bands and has worked to ensure the board and council seat for the Okanagan Nation Alliance is filled. Additional meetings can be arranged (e.g. to discuss what information is available for planning), and further steps to encourage engagement will be made.

Dir. Findlater asked for a cost-benefit analysis for the additional staff person.

"THAT the Okanagan Basin Water Board approve the draft 2011 Water Management Program Review in principle and that staff present the report to the three member regional districts requesting reauthorization for the next three-year term."

CARRIED

7.2 U.S. milfoil treatment proposal for Osoyoos Lake

Dr. Warwick Sears presented the board with a draft letter to the Okanogan County Noxious Weed Control Board, regarding the U.S. agency's proposal to use aquatic herbicide to control milfoil on their side of Osoyoos Lake. The letter requests that chemical control not be used and

offers assistance in finding another solution to the milfoil issue.

The board was told that the letter was written recognizing the history of herbicide control in the Okanagan and the opposition from residents, as well as the B.C. government's own talk of a potential province-wide ban on cosmetic pesticides.

"THAT the Okanagan Basin Water Board send a letter to Okanogan County Noxious Weed Control Board requesting that aquatic herbicide not be applied on Osoyoos Lake, and offering assistance in exploring other methods of control."

CARRIED

8. CORRESPONDENCE

8.1 Drinking Water Inter-Agency Directors Committee letter to OBWB

8.2 City of Vernon letter to Province of B.C. re: Water Act Modernization

Dir. Baumbrough noted that the letter from the City of Vernon notes that it would like an opportunity to comment on the proposed Water Sustainability Act as it evolves.

8.3 City of Vernon letter to senior governments re: Riparian Area Regulations

Dir. Baumbrough explained that the letter notes concerns about proposed changes in the province's Riparian Area Regulation Variance Protocol and the affect on local government's ability to speak to variances, how riparian area rules would be regulated and the lack of integration with municipal zoning.

8.4 Sunshine Coast Regional District letter to Premier Christy Clark re: Decision-Making Authority in Watersheds

"THAT the Okanagan Basin Water Board receive the correspondence from City of Vernon and Sunshine Coast Regional District."

CARRIED

9. NEXT MEETING

9.1 The next regular meeting of the Okanagan Basin Water Board

Following some discussion, it was decided that the next regular meeting would follow the Water Board's Annual General Meeting on Sept. 9, 2011, unless an issue arises that requires the board to meet sooner.

10. ADJOURNMENT

"THAT there being no further business, the regular meeting of the Okanagan Basin Water Board of July 5, 2011 be adjourned at 2:09 p.m."

CARRIED

Certified Correct:		
Chair		**Executive Director**

7

Okanagan Basin
WATER BOARD
1450 KLO Road, Kelowna, BC V1W 3Z4
P 250.469.6271 F 250.762.7011
www.obwb.ca

MEMORANDUM

Okanagan Basin Water Board
Regular meeting
Sept. 9, 2011
Agenda No: 5.1

File No. 0550.04

To: OBWB Directors

From: Anna Warwick Sears, Executive Director

Date: September 1, 2011

Subject: Executive Director Report

OBWB's Water Management Program Renewal In August, the OBWB's Water Management Program was renewed by all three regional districts, according to the terms of reference given in the OBWB's Governance Manual. The OBWB is now set to undertake another three years of water management programming, with the requirement to again seek renewal in 2014.

OBWB Annual Budget Because of the timing of the BC Municipal Election, I will be bringing the OBWB's provisional budget for 2012-13 for consideration at the October meeting of the board. The final budget must be adopted no later than the November 1st board meeting.

Water Research Chair The UBC-O Water Research Chair agreement is close to being finalized, with not much more than paperwork remaining. I have been working with UBC-O staff to plan the terms of reference for the advisory committee.

Infrastructure Planning Grant Application At the end of July, we submitted a grant application for $10,000 to the Ministry of Community Development for an Infrastructure Planning Grant. The application was submitted in partnership with the Okanagan Collaborative Conservation Partnership, and the Regional District of Central Okanagan. Before it can be finalized it needs a formal endorsement by the OBWB. The project will combine the results of the Foreshore Inventory Maps, recently completed for Okanagan Lake, with GIS/planning layers from the regional growth strategies and official community plans for areas around the lakeshore – showing where development is planned and zoned along the lakeshore.

> Recommended resolution: *That the OBWB support the Infrastructure Planning Grant application to conduct an Okanagan Lake Foreshore Gap Analysis.*

NR Can Grant Application In August, OBWB staff submitted a package of five funding applications to NRCan for a total of $142,275. The projects include (1) further development of the Okanagan Basin water models – applying them to sub-basins, rather than the lake as a whole; (2) a tools-training workshop for local government staff; (3) a project to develop techniques to use satellite imagery to assess snow-water; (4) a survey of water utility customers to determine the relative acceptance of different water conservation policies; and

(5) to hold a workshop for Okanagan water suppliers to discuss source protection planning. All the funds must be spent by March 31st, 2012, so we were somewhat limited in the scope of our projects. The OBWB would use $68,525 from our budgeted project funds to leverage these grants.

> Recommended resolution: *That the OBWB supports the funding applications as submitted to NR Can, on August 29th, 2011.*

Watermilfoil Control Program

I spoke with Jerry Vakenti, the Ministry of Environment's integrated pest management officer about milfoil herbicide treatments. He reported that the Washington State Department of Ecology is still considering the responses they received to the proposal for pesticide applications in Osoyoos Lake – there are some discussions about dye studies to evaluate drift, but no conclusive decisions.

This summer, we completed a GPS survey milfoil locations in our treatment areas. We are launching an educational movie of the program on the website. Staff have now completed rototilling for the season, and are doing the annual maintenance and repair of machinery.

Osoyoos Lake Water Science Forum

The Osoyoos Lake Water Science Forum is all set to go for Sept. 18 to 20. As a result of very successful fundraising, we were able to reduce the charge for "local" citizens to $20 for the full program. As of September 1st, 108 people are registered.

The forum will focus on six main themes (Water Supply, Water Quality, Governance, Fisheries and Species at Risk, Climate Change, and Local Actions), as well as discussion on the expected renewal of the Osoyoos Lake Operating Orders by the International Joint Commission. Speakers include representatives from the U.S. and Canada, ensuring a truly international conference. I've attached the tentative program.

Directors who are attending the Forum may wish to drive down early on Sept 18th, and attend the ONA Salmon Feast in Okanagan Falls. The ceremony begins at 10:30am, and the feast begins at 12 noon. This year will be very festive, because of the excellent sockeye run in the Okanagan River.

PLEASE READ THE PROGRAM GUIDE before completing this Application Form. A separate Application Form must be completed for each project. Applicants should be aware that information collected is subject to provincial freedom of information legislation.

This Application Form is designed to be filled in electronically using word processing software. If you have any questions, please contact Local Government Infrastructure and Finance by Phone: 250 387-4060, Fax: 250 356-1873 or Email: Infra@gov.bc.ca

	For Administrative Use Only

A. Applicant Information

Legal Name of Applicant: Okanagan Basin Water Board		
Address: 1450 KLO Road		
Town/City: Kelowna		Postal Code: V1W3Z4
Phone No: 250-469-6251	Fax No:250-762-7011	Email Address:anna.warwick.sears@obwb.ca
Primary Contact Name: Anna Warwick Sears		
Title of Primary Contact: Executive Director		

B. Project Description

Project Title: Okanagan Lake Foreshore Gap Analysis

Brief Project Description (less than 200 words):

Okanagan Lake is among the highest-use recreation areas in BC, with rapid lakeshore development. The lake is the largest source of drinking water for the Okanagan, supplying the City of Kelowna, and many smaller water utilities. The ability to maintain lake water quality depends on maintaining environmental buffers and natural filtration processes on the shoreline. However, a recent foreshore inventory found that only 43% of natural shoreline remains. The rate of loss is up to 2%/year, and the shore could be near fully altered within 20 years. This project will conduct an inventory of data and policy to determine the need for a whole-lake community planning process - similar to that of the Shuswap, and inform how it could be adapted for the Okanagan. It will assess the location of planned growth areas with respect to environmental buffers and sensitive habitat, and provide a summary of existing foreshore guidelines and policy directives which currently guide approvals. It will also calculate the relative impact of different land uses - such as industry or residential - on lakeshore conditions. When complete, this project will support municipal infrastructure planning around the lake. It will also support source protection planning required for water utilities.

C. Project Information

1. What are the main objectives of the project?

The project assesses the information for Okanagan lakeshore planning. The project will (1) overlay GIS layers from the new foreshore inventory maps for Okanagan Lake with the GIS layers of zoning, subdivision, and planned development for all jurisdictions surrounding the lake (bringing together different community OCPs, RGS, etc.). It will (2) analyze the average impacts of each land use on lakeshore condition and potential effects on water quality. It will (3) develop maps showing current and future development and a summary report for Okanagan communities to consider for use in a whole-lake planning process. The project will also (4) inventory existing foreshore guidelines - including the Okanagan Large Lakes Protocol, to identify existing policies and

BMPs to protect environmental and water quality for the lake (e.g., OCPs, RGS, and water intake protection zones). By combining GIS and policy inventories, it will be possible to (5) identify potential shoreline protection needs for each region to focus limited resources on areas at greatest risk. It will also (6) provide information to communities who wish to make best use of existing infrastructure on the lake and for them to evaluate requests for infrastructure extension to rural areas along the shoreline. Overall, it will (7) support a more consistent policy approach among regional partners.

2. What is the estimated total cost of the project?

$26,000

3. What is the estimated completion date of the project?

March 31, 2012

4. If multiple applications are being submitted, this project is ranked as priority 1 out of 1 applications.

5. The project will be completed by:

☒ Local government staff ☒ Consultant ☒ Other (please specify): OCCP Partners

6. a) Will the project enhance environmental protection? ☒ **Yes** ☐ **No**

b) If yes, describe: The project overlays current and future development for the entire lake onto foreshore inventory maps, showing which areas are critical for protection to support water quality, environmental buffers, and species habitats.

7. a) Will the project improve public health and safety? ☒ **Yes** ☐ **No**

b) If yes, describe: Okanagan Lake is the most important drinking water source for a valley of 300,000 residents. This is a necessary precursor for an inter-regional planning process that will support water quality protection and public health. As well, the project will support analyses of recreational boat use, access, and moorage on Okanagan Lake - which would improve public safety by identifying which areas are most appropriate for boat traffic.

8. a) Does the project support any community sustainability goals? ☒ **Yes** ☐ **No**

b) If yes, describe: The project supports implementation of the OBWB's Sustainable Water Strategy, that seeks to protect water quality and water supplies - specifically Action 2-2 (Protect, restore and enhance riparian and wetland areas), Action 2-3 (Develop a basin wide source protection strategy), and Action 2-8 (Use best practice local government land-use bylaws to protect local water sources). The project will integrate RGS and OCP layers from the North, Central, and Okanagan-Similkameen regional districts, and it will help protect high value environmental resources and aquatic and riparian habitats. It will improve community sustainability by striving to balance environmental, social, and economic attributes of Okanagan Lake.

9. a) Does the project support the development or implementation of any long-term plans? e.g. Regional Growth Strategy, Liquid Waste Management Plan ☒ **Yes** ☐ **No**

b) If yes, describe: This project supports the implementation of the Central Okanagan Lake Foreshore Plan.

10. a) Does the project use any innovative technologies or approaches? ☒ **Yes** ☐ **No**

b) If yes, describe: The project will join together and integrate foreshore inventory mapping, sensitive habitat assessments, and land-use plans from three different regional districts, including two First Nations reserves

and six municipalities.

11. a) Will the project be developed in partnership with any organizations? ☒ **Yes** ☐ **No**

b) If yes, list the partners and describe their role in this project: The OBWB will be the lead agency, providing in-kind financial management and issuing contracts. The Okanagan Collaborative Conservation Partnership (OCCP - with 34 member organizations) will contribute in-kind project management and review. The project steering committee will include members of the Okanagan Lake Foreshore Inventory Mapping (FIM) Action Team and the Okanagan Water Stewardship Council. The Central Okanagan Regional District will provide GIS and project management support, as an in-kind contribution. Collaboration will also be sought from the Okanagan Nation Alliance Natural Resources Department.

12. a) Will (has) this project receive(d) any funding or in-kind contributions from a third party? ☒ **Yes** ☐ **No**

b) If yes, list the parties and describe the contributions: The OCCP will provide an in-kind contribution of staff time for project management. Members of Okanagan Water Stewardship Council, and the FIM Action Team will make an in-kind contribution of participation to the steering committee (precise steering committee composition TBD). The Central Okanagan Regional District will contribute aggregated GIS data, and project coordination.

13. a) Will there be any public consultation and/or participation? ☒ **Yes** ☐ **No**

b) If yes, describe: The maps and summary reports will be presented to the public on completion of the project.

14. a) What is the population of the community? 300,000

b) What is the estimated population that will be served by this project? 300,000

15. This application should be submitted with any supporting documentation that may help with the assessment process (e.g. terms of reference, consultant's proposal, letters of support). If applicable, please list the supporting documentation that will be submitted with the application.

Project outline including budget; letter of support from the Central Okanagan Regional District planning department; letter of support from the OCCP; Foreshore Inventory Mapping for Okanagan Lake report; Central Okanagan Lake Foreshore Plan; Lakeshore Development Compliance Project report; Staff Report to the Kelowna Council. Letter of support from City of Kelowna planning department to follow. Certification Form to follow.

16. Does the Ministry have permission to share the information contained in this application with the Federation of Canadian Municipalities' Green Municipal Fund? ☒ **Yes** ☐ **No**

Please email the completed Application Form and any supporting documentation to: **Infra@gov.bc.ca**

Hardcopies can be mailed to: Ministry of Community and Rural Development
Infrastructure and Finance Division
PO Box 9838 Stn Prov Govt
Victoria BC V8W 9T1

To complete the application process you must sign and mail the Certification Form to the address above. By signing the Certification Form you are certifying that the information contained in this application is to the best of your knowledge correct and complete. Applications are not eligible for assessment until the Certification Form is received by the Ministry of Community and Rural Development. The Certification Form can be downloaded from http://www.cd.gov.bc.ca/lgd/infra/infrastructure_grants/infrastructure_planning_grant.htm

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OKANAGAN LAKE FORESHORE GAP ANALYSIS: PROJECT OUTLINE

File No.5280.22.02

Background

This paper outlines a collaboration between the Okanagan Basin Water Board (OBWB), the Okanagan Collaborative Conservation Partnership (OCCP), and the Central Okanagan Regional District (RDCO), as lead partners, to analyze and inventory existing GIS and policy information related to development on the Okanagan Lake foreshore. Currently, most planning efforts are confined to a particular jurisdiction, but a recent Foreshore Inventory Mapping (FIM) and Sensitive Habitat Index developed for Okanagan Lake as a whole, indicated that the lakeshore is being modified at a rapid rate. This speaks for the potential benefit of a whole-lake planning process similar to that undertaken for the Shuswap. The current project is a necessary precursor to such an endeavor, overlaying development data with the FIM to identify the high value and high risk areas. With these data, communities will be able to make an informed choice about how to approach any further whole-lake plan.

The OBWB has a mandate to support sustainable water management in the Okanagan, providing information and resources to local governments, especially where an inter-jurisdictional approach is needed.

Funding

The OBWB will be the lead applicant for an Infrastructure Planning Grant of $10,000, matching it with a $2000 cash contribution, and an in-kind contribution of financial management and participation in the steering committee. The OCCP will make an in-kind contribution in staff time as the project manager. The RDCO will contribute aggregated GIS data for its region, as well as project coordination, and will lead the steering committee. The Steering Committee will include members of the original Okanagan Foreshore Inventory Mapping Team, and members of the Okanagan Water Stewardship Council. Cost estimates for in-kind contributions are given below.

Budget

GIS aggregation and analysis and policy inventory	$6,800
Land Us Impacts review	$2,100
Reporting	$3,300
Project Management (consultant)	$800
Project Management, Oversight and Coordination (partners)	$6,500
RDCO Aggregated Data	$3,000
Review by steering committee	$3,500
Total Budget	$26,000

Cost Estimates for in-kind contributors

	Name	Representing	Days	Per Diem	Value ($)
1	Margaret Bakelaar	Regional District of Central Okanagan	4.5	$500	$2250
2	Carolina Restrepo-Tamayo	Okanagan Collaborative Conservation Program	4.5	$500	$2250
3	Anna Warwick Sears	Okanagan Basin Water Board	3	$500	$1500
4	Carol Teschner	Okanagan Basin Water Board (finance)	1	$500	$500
5	GIS staff	Regional District of Central Okanagan	2	$500	$1000
6	Steering Committee, 7 members TBD	Okanagan Water Stewardship Council and FIM Action Team members – two 4 hour meetings	1	$500	$3500
	Additional In-Kind Contributions				
7	OBWB	Cash		$2000	$2000
8	RDCO	Aggregated GIS data		$3500	$3000
	Total in-kind		17		$16,000

Climate Change Impacts & Adaptation Program
Okanagan Basin Water Board – Project Proposal 1
August 2011

1. Basic information:

Project Title: Modelling risks to water supply in Okanagan sub-basins dependent on upland storage

Project Lead: Okanagan Basin Water Board

Partners: BC Ministry of Agriculture, RHF Systems, Agriculture and Agri-Food Canada, and Environment Canada.

Contact: Anna Warwick Sears, Executive Director
Okanagan Basin Water Board
1450 KLO Road
Kelowna, BC V1W 3Z4
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Email: anna.warwick.sears@obwb.ca

2. Objective:

This project will determine the weekly risks of water shortages in key sub-basins in the Okanagan where there is potential for conflict between fisheries and human water use. The work will build on the Okanagan Basin Water Supply and Demand Project, in which analysis has largely been on annual data for the basin as a whole. To date, analysis has focused on the near future, to 2040, and three climate models. This project will integrate existing and new output from the Okanagan Water Demand Model, the Okanagan Basin Hydrology model (MIKE-SHE) and the Okanagan WEAP model in sub-basin drainages of three major Okanagan water purveyors, taking into account current and future water use and supply to 2100, using nine climate models. The model development and analysis in this project can be used as a template and base for watershed studies throughout BC and Canada.

3. Description:

Whether a community is vulnerable to drought depends both on how much precipitation is received, and on the water supply system's water withdrawal rights and ability to store water in reservoirs. The frequency of water shortages also depend on water demand for human use, relative to the need of fish and environment health. Because of high demand, communities in which irrigated agriculture is the dominant economic activity may be more vulnerable to shortages than those with a more diverse tax and income base.

Previous work on one Okanagan community indicated vulnerability to water shortages in response to climate change as water demand increased and supply was reduced (Neilsen et al., 2006) and it is likely that other communities that depend upland water storage will be similarly at risk. Modeling of supply and demand, incorporating reservoir operations, has recently been completed at a basin scale (OBWB, 2010). However, more detail is needed to determine ecosystem requirements, vs. agricultural needs, storage needs, and drought planning at the sub-basin scale – The geographic scale at which conflicts usually arise. RAC-funded WEAP ("Water Evaluation and Planning") modeling, funded under the current RAC (as the Hydrologic Connectivity Study), has permitted the introduction of license and fish flow requirements in the OBWB Water Supply and Demand Model, but more work is needed to permit these factors to be applied at the sub-basin level.

The project will model a range of stress factors in the system, including:

- climate change and variability
- increased population
- irrigation for agricultural lands
- water requirements for first nations
- water requirements for fish

New climate change scenarios and improved linkages among the Water Demand, 'MikeShe' Okanagan Basin Hydrology and the Okanagan Basin WEAP models will expand the current OBWB-RAC project to allow specific risk analyses. The results from this project will provide information and methods that can be used by water managers and applied to other water supply areas and purveyors in the Okanagan and other regions.

The project is led by the Okanagan Basin Water Board in partnership with a research team from the BC Ministry of Agriculture, RHF Systems, Agriculture and Agri-Food Canada and Environment Canada.

- Research Team: Ted Van Der Gulik, BC Ministry of Agriculture; Ron Fretwell, RHF Systems; Dr. Denise Neilsen, AAFC; Dr. Scott Smith, AAFC; Alex Cannon, Environment Canada.
- Technical Advisory Committee: Dr. Anna Warwick Sears, OBWB; Toby Pike, Southeast Kelowna Irrigation District; Bob Hrasko, Black Mountain Irrigation District

4. Work-plan:

Work on the project is divided into two stages. During each stage, the research team will work closely with the technical advisory committee.

Stage 1: Develop climate and population growth scenarios for water demand

a. Downscale climate change scenarios to 500m Okanagan gridded data model. Scenarios for CM2.0 A2, CM2.0 B1, ECHAM5 A2, ECHAM5 B1, CGCM3.1 A2 and

HadCM3 B1 are now available to complement the scenarios already run for CGCM2 A2, HadCM3 A2 and CGCM3.1 B1 in the current RAC project. (Alex Cannon, EC)

b. Improve linkages among MikeShe Hydrology and WEAP models. The WEAP model has been introduced into the OBWB toolkit, but the linkages between the MikeShe hydrology model and the WEAP model require streamlining in order to improve the efficiency of model runtime. (Fretwell, RHF Systems)

c. Run Water Demand, MikeShe Hydrology and WEAP models for a daily timestep for the two largest Sub-basins, Trout Creek and Mission Creek. Run models for the full set of climate change scenarios listed in (a) from 1961 to 2100 to allow a thorough analysis of the effects of climate change and variability on supply and demand, in response also to urban population growth and expanded agricultural development. (Neilsen AAFC, Fretwell RHF Systems)

Stage 2: Analyze scenario outcomes for risk

a. Risks associated with expanded demand. Quantitative analysis of relative contributions to demand from the five stress factors –climate, population growth, expanded agricultural development, environmental requirements, and expanded First Nations development. (Neilsen AAFC, Van Der Gulik BCMA)

b. Risks associated with reduced or changed supply. Analyse stream flows for violation of fish flow requirements and triggering of drought management plans –these will be specific to each of the three water purveyors – Black Mountain Irrigation District (Mission Creek), South East Kelowna Irrigation District (Mission Creek) and The District of Summerland (Trout Creek). (Neilsen, AAFC, Fretwell RHF Systems)

c. Determine frequency of droughts. Analyse the changing frequency of droughts in response to the four stress factors as a basis for future management decisions. (Neilsen, AAFC, Fretwell RHF Systems)

Schedule

Month	**Activity/Milestone**
September 2011	Pre-process and incorporate climate change scenarios into models. Run Water Demand models 1961-2100 Incorporate Purveyor Drought Planning into WEAP
October 2011	Run Water Demand Models for development scenarios Improve linkages between MikeShe and WEAP models
November 2011 – February 2012	Run hydrology and WEAP models
March 2012	Data analysis
April 2012	Data analysis/reporting

5. Deliverables:

There will be two primary deliverables for this project.

1. An improved Water Demand/Supply and water balance model for sub-basins and water purveyors in the Okanagan Basin.

2. A report, containing a summary of the following information:

- Analysis of changing water demand in major sub-basins in the Okanagan in response to five major stress factors: climate change and variability, population growth, agricultural expansion, environmental needs, and First nation's Development

- Analysis of changing supply in major sub-basins in the Okanagan in response to climate change and variability

- Analysis of risks to water purveyors and communities largely dependent on upland storage for water supply. This will include changing risks of drought to 2100, triggered by rules that take into account stream flows required to maintain fish populations and a hierarchy of drought management strategies aimed at different sectors within the community.

6. Budget and financial contributions:

The following budget is anticipated to complete the scope of work through May, 2012.

Task	Type	NRCan	Cash Contributions	In-kind Contributions
Pre-process climate change scenarios	Contract	$5,000	$5,000 OBWB	
	Staff time			
Model development	Contract	$20,000	$15,000 OBWB	
	Staff Time			$5,000 OBWB $5,000 BCMA
Model Runs	Contract	$20,000	$5,000 OBWB	
Data analysis/reporting	Contract	$5,000		
	Staff Time			$5,000 OBWB
Technical advisory Committee				$5,000 OBWB
Administrative costs		$5,000	$5,000 OBWB	$5,000
Total		$50,000	$30,000	$20,000

Literature Cited:

Neilsen, D., Smith, S., Frank, G., Koch, W., Alila, Y., Merritt, W., Taylor, B., Barton, M, Hall, J. and Cohen, S. 2006. Potential impacts of climate change on water availability for crops in the Okanagan Basin, British Columbia. Can. J. Soil Sci. 86: 909-924

OBWB 2010. Water Supply and Demand in the Okanagan Basin. http://www.obwb.ca/wsd/

Climate Change Impacts & Adaptation Program
Okanagan Basin Water Board – Project Proposal 2
August 2011

1. Basic information:

Project Title: Keeping up with the climate, keeping up with technology: hands on tools training for climate change adaptation

Project Lead: Okanagan Basin Water Board

Partners: BC Ministry of Agriculture, Water Sustainability Partnership of BC, Association of Professional Engineers, BC, Okanagan Collaborative Conservation Program

Contact: Anna Warwick Sears, Executive Director
Okanagan Basin Water Board
1450 KLO Road
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Phone: (250) 469-6251
Email: anna.warwick.sears@obwb.ca

2. Objective:

The Okanagan is a pilot area for water initiatives in Canada. This project is an innovative initiative to speed the uptake of climate change adaptation tools by local governments. The objective is to conduct a one-day workshop, followed by hands-on computer training session for municipal engineers and planners, featuring new web-based tools and protocols for water management policy and infrastructure planning. The training format piloted here can be replicated in other parts of BC and Canada.

3. Description:

Municipal planners and engineers are at the front lines for climate change adaptation. Many tools are being developed to assist these local government staff in making policy, planning, and infrastructure changes, but their value depends on the degree that tools are learned and put to use. We will hold a one-day workshop, followed by two days of hands-on training sessions to get the tools into the hands of the users.

In 2010, the OBWB partnered with the BC Water and Waste Association to highlight innovations in BC stormwater management – the RAC-sponsored workshop "From Rain to Resource," held in Kelowna. Experts from across BC made presentations to an audience that included elected officials, local government staff, and interested

stakeholders. Following the conference, a number of the municipal staff expressed interest in receiving in-depth information and hands-on training for the technical tools.

This project consists of two main components. First, a workshop featuring eight new policy and planning tools developed for BC, where the experts will walk through the features of the tool, and answer questions. Second, the participants will be able to sign up for hands-on training in a local computer lab, where the tool developers will walk them through the process of putting the tool to use.

A training manual with educational materials on each tool will be developed, along with a report on the training framework and process so that it can be easily replicated in other areas of BC and Canada.

The Workshop: Featured Tools

The lead-off workshop is planned as a one day session, to be held in Kelowna BC. Municipal staff – planners, engineers, and water managers from across BC will be invited to attend at reduced cost, as well as members of the professional community who work closely with municipalities. Each session will be approximately 40 minutes long, with time for questions. Participants are encouraged to attend all sessions, to distribute a common understanding of the different tool types across different departments.

The focus of the workshop is a technical discussion of how these tools are used, and is a natural next step to the 2010 Rain to Resource stormwater conference. All the featured tools are applicable BC-wide, or are in the pilot stage for release across BC. The workshop trainers are experts in the tools listed.

- Public Infrastructure Engineering Vulnerability Committee Protocol (PIEVC – Protocol) for assessing vulnerability of municipal infrastructure to climate change. This protocol was developed by Engineers Canada in partnership with NR Can.
    - Don Dobson, Association of Professional Engineers BC
- Water Balance Model - a "runoff-based tool" for source control evaluation and stream health assessment. The "runoff-based approach" holds the key to assessing environmental impacts in watercourses and the effectiveness of mitigation techniques.
    - Kim Stephens and Jim Dumont, Water Sustainability Partnership
- Foreshore Inventory Mapping and Sensitive Habitat Inventories – GIS map layers developed for planners to assess sensitive or vulnerable environments that may need additional protection through zoning, Official Community Plans, and other planning and policy tools.
    - Presenter: Jason Schleppe, EcoScape Environmental Consulting

- Okanagan Irrigation Management tool – an online tool (supported by a previous BC RAC grant) that helps farmers manage their water use – combining metered water use with a model showing how much water the farmer could conserve, based on environmental conditions.

    - Presenter: Ted van der Gulik, BC Ministry of Environment

- Streamlined Water Use Reporting Tool – an online interface for water utilities to report the amount of water extracted from different sources, as well as reservoir levels and other important water management information. Utilities use the tool to analyze their use relative to weather conditions, and compare with neighbouring water purveyors.

    - Presenter: Nelson Jatel, Okanagan Basin Water Board

- Local Govt guide to the Water Supply & Demand project – A RAC-funded guide to the data sets available to municipal staff and contractors. A wealth of information exists, now packaged in a convenient guide. This session gives an overview of the project, and walks participants through the process of identifying what data they might want to access for different project types.

    - Presenters: Anna Warwick Sears, Okanagan Basin Water Board, Ted van der Gulik, BC Ministry of Environment

- Bylaw-development Toolkits – Policy guides developed by legal experts that provide templates and examples of green bylaws to protect groundwater and topsoil, and promote low impact development.

    - Presenter (to be confirmed): Deborah Curran, University of Victoria

The Training Labs

Once the larger group has received an overview of all the tools on the first day, they will then break into specialized sections for the following day. The training labs are designed for participants to get hands-on experience with the tools and techniques profiled by the workshop. Space is limited in the computer labs, and participants will register in advance for each session. There will be additional fees for each course, depending on the content, and continuing education credits for professional certification will be available.

Computer labs are available in Kelowna and Penticton and we will be holding the following sessions in both these locations.

- *Hands-on training on the PIEVC protocol* – Climate change is likely to place considerable stress on municipal infrastructure. The PIEVC protocol was designed by Engineers Canada to assess specific vulnerabilities, so that communities can develop plans to mitigate, resize, or otherwise respond to risks. This classroom based session will include case studies and training materials.

- *Test-driving the Water Balance Model* – Increased development may be inevitable for most BC communities, but how we develop can make big differences in managing rain and storm waters. In this computer-lab session, participants will learn to use the web-based Water Balance Model tool to design or redevelop neighbourhoods in ways that reduce stormwater run-off, down-stream pollution and flooding.

- *Using Foreshore Inventory Maps and Sensitive Habitat Inventories in Municipal Planning* – Sensitive habitat areas are at the receiving end of climate change impacts. The effects of heavy storm events are exacerbated by loss of riparian vegetation and buffer areas. This computer lab session trains municipal staff to use existing GIS resources to develop special zoning and other protections for sensitive environmental areas.

- *Writing Green Bylaws for your Community* – Since 2008, three Bylaw Toolkits have been developed to support changes in building practices, groundwater management, and topsoil protection. In this classroom session, an attorney specializing in municipal law will answer specific questions and assist planning staff to develop bylaws for their communities.

4. Work-plan:

September/October: Organize workshop and training sessions; reserve workshop venue and computer labs.

November: Host one-day workshop on November 22, 2011. Hold computer lab sessions in Kelowna and Penticton on November 23.

December/January: Draft report on the outcome of the workshop, and a manual on the training process to facilitate other regions ability to replicate the event.

5. Deliverables:

- Workshop and Training Sessions for local government staff and professionals who contract to local government – open to anyone in BC.

- Training manual and educational materials bound together for each participant.

- Guidebook for the training framework for communities who which to replicate it elsewhere.

6. Budget and financial contributions:

Task	Type	NRCan	Cash Contributions	In-kind Contributions
Workshop Planning	Professional Contracting	$1,000	$3,000 (OBWB)	
	Staff Time			$1,000 (OBWB)
Workshop Facilitation and Expenses	Facilities	$3,000		
	Presenter Stipends	$2,000	$3,500 (Training Fees)	2,500 (Partners)
	Travel	$3,000	$500 (OBWB)	
Reporting	Professional Contracting	$3,500	$1,500 (OBWB)	
	Staff Time			$1,000 (OBWB)
Administrative Fee (Fraser Basin Council)	Administration	$1,275	$1,275 (OBWB)	
Total		$13,775	$9,775	$28,050

the partnership
for water sustainability in bc

151 - 32500 South Fraser Way, Suite #126, Abbotsford, BC, V2T 4W1

August 23, 2011

Anna Warwick Sears, Ph.D.
Executive Director
Okanagan Basin Water Board
1450 KLO Road
Kelowna, BC V1W 3Z4

Dear Dr. Sears:

Re: **Keeping Up with the Climate, Keeping up with Technology: Hands-on Tools Training for Climate Change Adaptation**
Letter of Support for RAC Grant Application

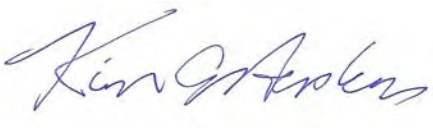
We are pleased to provide this letter of support for your application to the Climate Change Impacts and Adaptation Program. As we have discussed, the two grant applications by our respective organizations are complementary and mutually reinforcing. Also, collaboration provides the opportunity to leverage our individual and combined efforts vis-à-vis:

- the Partnership's proposed *Water Balance Model Enhancements and Outreach* initiative; and
- the OBWB's proposed *Keeping Up with the Climate, Keeping up with Technology* initiative

The Partnership's grant application has a Metro Vancouver and Vancouver Island emphasis because those are the regions where we would be concentrating our outreach and training efforts. By aligning these two initiatives, this opens the door to additional and expanded inter-regional sharing and learning among land use and infrastructure practitioners in three regions of British Columbia.

In closing, we are excited by this opportunity for collaboration between the OBWB and the Partnership.

On Behalf of the Directors:



Kim A Stephens, Executive Director

cc: Board of Directors

Climate Change Impacts & Adaptation Program
Okanagan Basin Water Board – Project Proposal 3
August 2011

1. Basic Information:

Project Title: Improving water supply predictions with remote sensing satellite data

Lead Agency: Okanagan Basin Water Board

Contact: Anna Warwick Sears, Executive Director
Okanagan Basin Water Board
1450 KLO Road
Kelowna, BC V1W 3Z4
Phone: (250) 469-6251
Email: anna.warwick.sears@obwb.ca

2. Objective:

The objectives of this project are to: (1) convene a workshop on how local, national and international partners can improve water supply predictions with space-based remote sensing data, using the Okanagan Basin as a pilot region for other Canadian mountainous watersheds, and (2) research and report on the application of existing algorithms to interpret existing data from space based remote sensing.

This project will focus on the use of remote sensing to quantify water supply in snow pack (snow water equivalence: SWE). Snow Water Equivalence is a key variable for the Okanagan's hydrologic modelling, and it is essential to have better estimates for water management and local adaptation to climate change.

3. Description:

This project will apply NASA satellite information (available through agreements with NASA) to local resource management – bringing space-based data down to a watershed scale - with implications for management in other water limited regions of the world. There are several potential applications of remotely-sensed (RS) data in the Okanagan Basin (the Basin). RS data will improve hydrological models used to support water management that will benefit both Canada and the US. Outcomes supported by the proposed activities will include: (1) remotely-sensed SWE data from NASA platforms (MODIS and AVHRR); (2) algorithms to convert the remote sensing data into hydrologic parameters; and, in a future project, (3) ground-based observations.

Snow water equivalent (SWE) is essential for calibration of hydrology models. SWE represents the volume of water stored in the uplands, which ultimately forms the bulk of water supply each spring. The existing Okanagan Basin Hydrology Model (OBHM) calculates SWE based on the available climate dataset – a 500 m by 500 m gridded climate layer based on downscaled GCM outputs calibrated to the local climate network. This local climate network does not well represent the high elevations where most of the annual winter snowpack accumulates. As the OBHM is highly sensitive to SWE, remote sensing has great potential to improve model accuracy, and ultimately allow the model to be used as a near real-time forecasting tool for drought and flood prediction.

This proposal focuses using existing production data to generate a high quality SWE dataset. The development of detailed snow properties from space-based platforms is of high importance to water managers, who have increased demands on supplies and uncertainties under altered climates.

The proposed development of algorithm applications for NASA's MODIS and AVHRR satellite RS data will support watershed scale decision making during periods of water scarcity and flood risk; developing a model of collaboration and technical expertise applicable to semi-arid watersheds across the country. This project connects the dots between NASA satellite remote sensing data, innovative algorithm development and the application of basin scale water supply models; enhancing the decision making local governments challenged with adapting to climate change.

Management of water resources is increasingly important in BC. Population growth, changes in land use and cover, and climate change induced water variability (increased frequency of drought and flood events) have presented a variety of challenges for water managers and regulators in BC. Balancing the water interests of agricultural and domestic users, addressing aboriginal water rights and fisheries interests, and supporting the species diversity, species at risk and endangered ecosystems that rely on water for their survival are important issues that need to be considered in day-to-day management strategies and long-term policy.

The geo-political, hydrologic, economic and climatic characteristics of the Okanagan Basin provide an ideal representative location to develop practical water management, policy and governance solutions that can be applied to semi-arid and arid regions throughout BC and Canada.

Any of the developed results will require, in a future project, field verification against previous snow course records and in some cases, in-situ data would have to be collected in areas lacking such information. This is outside of the scope of this proposal.

There are many potential climate adaptation benefits of the project, including:

- Gaining a better understanding of the water resource is essential to ensure a sustainable environmental and economic future;

- Making use of the best available science to guide long and short-term decision making on issues such as water rights, annexation, priority water uses, and instream flows;
- Improving the management of the Okanagan Lake Dam for fisheries purposes in both Canada and the US;
- Providing a tool to assist with drought and flood forecasting;
- Assisting the operators of Zozel Dam to operate within the constraints specified in the IJC Orders governing the operation of the dam;
- Illustrating the benefits of, and providing a scientific basis for, recommendations to increase the number of hydrometric measuring stations in the Basin;
- Providing an improved basis for development and adoption of appropriate climate change adaptation practices;
- Knowledge and experience gained through this project will be useful for future projects in other priority watershed in Canada;
- The project will have benefits for ongoing salmon recovery efforts in the Upper Columbia River system;
- Improving the OBHM using RS-based data to provide a stronger foundation for examining future alternative scenarios in Canada; and
- Assisting the BC government to make decisions on water licensing applications.

4. Work-plan

The work-breakdown structure for this project involves the following milestones:

	Activity / Milestone	Tangible deliverables
1	Define workshop purpose and participants	Workshop purpose statement
2	Define workshop principles, products, processes	Workshop agenda
3	Conduct workshop	Meeting notes
4	Reporting and Dissemination	Workshop report
5	Convene project technical committee	TAC formation
6	Research and report on developed SWE algorithm	Technical report
7	Reporting and Dissemination	Final technical report

Key dates:

Host remote sensing workshop:	December, 2011
Complete SWE algorithm technical research:	February, 2012
Reporting and dissemination	April, 2012

5. Deliverables

Project deliverables include:

1. Fall workshop (goal 25 participants)
2. Final workshop report

3. Final technical report

6. Budget and Financial Contributions:

Remote sensing capacity development to better understand Okanagan Snow Water Equivalence

Task	Type	NRCan	Cash Contributions	In-kind Contributions
Policy review/analysis	Professional Services			$4,500
Steering Committee Facilitation	Staff Time			$2,500
Workshop Facilitation	Professional Services		$2,500	$2,500
Workshop Materials	Materials		$1,000	
Room Rental/Facilities	Facilities	$1,000		
Workshop Report Writing	Professional Services	$1,500		$2,500
Research SWE Algorithms	Professional Services	$32,500	$10,000	
Meeting Costs	Food/Facilities		$1,500	
Project Management	Staff Time		$5,000	$4,500
Overhead (10%)	Overhead	$4,000	$4,000	
Total		$39,000	$24,000	$16,500

Climate Change Impacts & Adaptation Program
Okanagan Basin Water Board – Project Proposal 4
August 2011

1. Basic information:

Project Title: Assessing the effectiveness of climate change adaptation policies: a survey of residential and farmer preferences

Project Lead: Okanagan Basin Water Board

Partners: Simon Fraser University

Contact: Anna Warwick Sears, Executive Director
Okanagan Basin Water Board
1450 KLO Road
Kelowna, BC V1W 3Z4
Phone: (250) 469-6251
Email: anna.warwick.sears@obwb.ca

2. Objective:

This project will survey residents and farmers in Kelowna, BC, to determine which water demand management measures (e.g., sprinkling restrictions, block-rate pricing) will be most readily accepted by the community. The information will (in a separate project in 2012) be developed as a module for the Okanagan Water Demand Model, to refine predictions of future water use in climate change scenarios. The Water Demand Model is being replicated across BC, with keen interest from other parts of Canada, so this module will have broad application.

3. Description:

Good water policy is based both on good science and good social science. The RAC-funded Okanagan Water Supply & Demand project gives a technical base for understanding water issues in the Okanagan, and has been featured as an example of Integrated Water Resource Management by Agriculture Canada . The Water Demand Model component assesses current and future (climate-dependent) water use by farmers, industry and residents. But what happens if users change their water use practices? Which climate adaptation policies will be best accepted?

As policymakers develop new water management strategies for climate adaptation, it is crucial that proposed solutions will result in real changes to water consumption. This project uses new methods to estimate the "human behaviour" component in water management, supporting RAC's focus on solution-oriented approaches and tools. We will

survey the preferences of residential and agricultural water users for different water conservation and demand management policies, using the most up-to-date social science techniques. Information from these surveys will:

- Identify water policy alternatives for achieving management goals in the Okanagan Basin that can be applied generally;

- Determine water user preferences for water policy alternatives using stated preference choice analysis;

The results from this project will provide information and methods that can be adapted at a range of different geographic or system scales, allowing for specific management solutions and realistic, tailored policies. All water managers will benefit from new methods to develop policies that address impacts to climate change.

The project is led by the Okanagan Basin Water Board in partnership with a research team from the Simon Fraser University – School of Resource and Environmental Management. The project will be supported by a Technical Advisory Committee with extensive knowledge of the Okanagan valley.

- **Research Team**: Steve Conrad, Dr. Wolfgang Haider, Dr. Murray Rutherford, Dr. David Yates

- **Technical Advisory Committee**: Dr. Anna Warwick Sears, OBWB, Dr. Denise Neilsen, Agriculture and Agri-Food Canada, Ted Van der Gulik, BC Ministry of Agriculture and Lands, Don Degen, City of Kelowna, Toby Pike, Southeast Kelowna Irrigation District. Dr. Michael Brydon, SFU and the Regional District of Okanagan-Similkameen, Dr. John Janmaat, UBC – Okanagan.

4. Work-plan:

Work on the project is divided into two stages. During each stage, the research team will work closely with the technical advisory committee.

Stage 1: Develop policy scenarios for managing water demand

a. Literature review: Develop a list of key water management issues and the available options for addressing these issues with demand management.

b. Interview decision-makers and stakeholders: The second step is to interview decision-makers, one-on-one and through facilitated workshops.

c. Compile concerns and alternatives: Synthesis all data into a list of concerns and alternatives.

d. Consult with case study participants: The final step is to consult with the technical advisory committee and stakeholders to confirm the list the list of key concerns and alternatives.

e. Adapt key alternatives for application in a survey: Translate management alternatives to policy scenarios to present to survey respondents. Refine for use in a residential and agricultural survey.

Stage 2: Profile water user preferences

f. Design the discrete choice experiment and survey instrument: Present alternative future scenarios to residential and agricultural water users around Kelowna

g. Collect data: Two surveys are proposed for this research: one survey for farmers and one survey for residents. Data will be collected from a random sample of customers that represent a cross sampling of demographics and service location.

h. Analysis and Reporting: Derive estimates of the likely support for specific demand management alternatives, and how support varies by water user group. Quantify changes in water use under different policy and climate scenarios to integrate with existing water demand models.

Schedule

Month	**Activity/Milestone**
September – October 2011	Background information research and stakeholder interviewing/workshops Survey design & development
November 2011	Survey participant recruitment
December 2011 – February 2012	Survey management/data collection
March 2012	Data analysis
April 2012	Data analysis/reporting

5. Deliverables

There will be two primary deliverables for this project.

1. A set of quantitative consumer response data that can be built into the Okanagan Water Demand Model and a framework for quantifying data in other places this model is being used.

b. A report, containing a summary of the following information:

- A focused list of demand management policy alternatives that address water management concerns

- An understanding of the policy questions that are best supported with demand modelling, and a better understanding of the overall policy/management options in the region

- Increased understanding of relationship between residential and agricultural water user preferences for demand management options and the user's probable behaviour

6. Budget and financial contributions

The following budget is anticipated to complete the scope of work through May, 2012.

Task	Type	NRCan	Cash Contributions	In-kind Contributions
Background information research and stakeholder interviewing	Scientific Services		$6,000 PICS	
	Travel	$1,000		
	Staff time			$1,000 Project partners
Workshop facilitation and expenses	Staff Time			$11,250 Project partners
	Facilities			$1,000 OBWB
	Travel	$2,000		
	Professional Services		$6,000 PICS	
Survey design and development	Scientific Services	$5,000		$3,000 SFU
Survey implementation and data collection	Data collection services	$15,000		
Data analysis	Data collection	$3,125	$3,125 PICS	
	Scientific Services			$1,500 SFU
Reporting	Professional Contracting			$5,000 SFU
	Staff Time			$1000 OBWB/TAC
Fraser Basin Council	10% Administration Fees	$1,375	$1,375 PICS	
TOTAL		$27,500	$16,500	$23,750

FACULTY OF THE ENVIRONMENT
SCHOOL OF RESOURCE AND ENVIRONMENTAL MANAGEMENT

August 24, 2011

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Anna Warwick Sears, PhD
Executive Director
Okanagan Basin Water Board
1450 KLO Road
Kelowna BC V1W 3Z4

Subject: *Assessing the effectiveness of climate change adaptation policies: a survey of residential and farmer preferences*

Dear Anna,

We are pleased to work with you on the project *Assessing the effectiveness of climate change adaptation policies: a survey of residential and farmer preference* to quantify the preferences of residents and farmers for water demand management measures in the region.

$16,500 in Pacific Institute for Climate Solutions funds will be directed to the project and we will contribute an additional $9,500 as in-kind contributions.

Our in-kind contributions will consist of providing access to Simon Fraser University's library of resources, expertise and experience in choice survey design and public attitudes about climate change and associated policy responses, and time associated with analyzing survey data and documenting results.

We look forward to working with you on this important project.

Sincerely yours,

Steve Conrad

Climate Change Impacts & Adaptation Program
Okanagan Basin Water Board – Project Proposal 5
August 2011

1. Basic information

Project Title: Okanagan Source Water Protection Workshop

Lead agency: Okanagan Basin Water Board

Contact information: Anna Warwick Sears, Executive Director
Okanagan Basin Water Board
1450 KLO Road
Kelowna, BC V1W 3Z4
Phone: (250) 469-6251
Email: anna.warwick.sears@obwb.ca

2. Objective:

Climate change is projected to have intense impact on the quality of drinking water, yet our protection planning processes are in their infancy. This project will convene a workshop of drinking water purveyors in the Okanagan to initiate a process moving from drinking water source assessments to drinking water source protection plans. The project will also include development of a report, in partnership with Canadian Water Resources Association (CWRA) that will promote knowledge transfer and uptake throughout Canada by highlighting successful source protection strategies in Okanagan basin.

3. Description:

The proposed workshop focuses on regional adaptation, protecting the quality of water sources. Recently, local water purveyors have developed source water assessments to evaluate potential risks to human health and the infrastructure of their systems. A number these purveyors have shown success, by developing a technical advisory committee to support their individual drinking water risk assessments, which has subsequently led to collaboratively work with watershed resource users (example: foresters, ranchers) to reduce or in some cases eliminate identified risks to source drinking water.

In the semi-arid Okanagan, modelled climate change scenarios have identified a shift in water regimes throughout the watershed with increased precipitation coming in the form of rain and less as snow and a longer growing season in the fall. This changing water regime has the potential to increase drinking water risks in the Okanagan. For example, faster melt of high- and mid-elevation snow pack earlier in the year may increase the

likelihood of turbidity and fecal contamination in source waters. Increased recreational use, with potentially negative impacts to drinking water quality, may also result as a shorter winter and longer 'snow free' season increase the recreational window and outdoor activities on crown lands surrounding drinking water reservoirs.

This project will highlight successful source protection strategies to address climate change concerns.

The project is a priority initiative of the Okanagan Basin Water Board's technical committee – the Okanagan Water Stewardship Council – and involves the following activities:

- Workshop design,
- consultation with stakeholders involved in source water protection,
- convening a fall workshop, and
- developing a report to share the successful methods and collaborative best practices for source water protection with the rest of Canada.

The organizing team includes active participation from the following key organizations: local water utilities, Interior Health Authority, BC Government (various Ministries), CWRA, forest industry, ranching industry, UBC Okanagan, Okanagan First Nations, and the OBWB (project lead).

4. Work-plan

The work-breakdown structure for this project involves the following milestones:

Activity	**Deliverable**
Define workshop purpose and participants	Workshop purpose statement
Define workshop principles, products, place, processes	Workshop agenda
Prepare workshop inputs	Workshop inputs
Orient Participants	Final workshop agenda
Workshop logistics	WBS
Conduct workshop	Meeting notes
Reporting & dissemination	Workshop Report

Key dates:
Anticipated workshop date: November 9th, 2011
Final report (CWRA): January, 2012

5. Deliverables

Project deliverables include:
1. Fall workshop (goal 50 participants)

2. Final workshop report

6. Budget and financial contributions:

Okanagan Source Protection Workshop Budget (Fall 2011)

Task	Type	NRCan	Cash Contributions	In-kind Contributions
Source Protection Review/Analysis	Professional Services	$5,490	$435	$1,000
Workshop Facilitation	Professional Services	$5,000		$1,000
Workshop Materials	Materials		$100	$500
Room Rental/Facilities	Facilities		$900	
Technical Writer	Professional Services		$2,500	
Lunch	Food		$1,250	
Report Writing/Distribution	Professional Services			$2,500
Project Management	Staff Time		$1,500	$1,500
Overhead 10%	Overhead	$1,060	$1,065	
Totals		$12,000	$7,750	$6,500

2011 OLWSF AGENDA - Sept 1st

Day 1				
Sunday, September 18th, 5 - 7:30				
Welcome and Reception				**SPEAKER**
Location: The Nk'Mip Desert Cultural Centre				
		Facilitator: Stu Wells		**SPEAKER**
	1700-1710	**Welcome to Conference**		Mayor Wells,Chief Louie, Councillor Hart
	1710-1720	**Opening prayer: OIB**		OIB elder - Modesta
	1720-1740	**Overview of FN aspirations: ONA or CCTs**		J Peone/ ONA rep
	1740-1800	**Welcoming political remarks: State, Province, Federal**		Senator Morton; J Slater, MP Atamanenko
	1800-1930	**Wine and cheese social**		
Day 2				
Monday September 19th				
Sharing Water Science				
Welcome to OLWSF 8-8:30		***Anna Warwick Sears***		**SPEAKER**
	800-805	**Opening remarks**		Anna Warwick Sears - OBWB
	805-815	**Opening Prayer: OIB**		OIB elder
	815-820	**Town of Osoyoos welcome**		Stu Wells - Town of Osoyoos
		Moderator: Clint Alexander		
Setting the Stage	820-900	**The Challenge of managing water as a Vital Resource to Sustain Aquatic Ecosystems and Human Systems in the Okanagan Valley**		Kim Hyatt/Brian Symonds/John Wagner
	900-910	**The International Joint Commission's Osoyoos Lake Board of Control; One Part of the Picture**		Cindi Barton - USGS
	910-920	**2007 OLWSF overview/expectations**		Clint Alexander - ESSA
Climate Variation and Change		***Moderator: Nelson Jatel***		**SPEAKER**
	920-940	**Okanagan Basin Climate Studies**		Denise Neilsen -Agriculture Canada
	940-1000	**An investigation of methods for including climate change information in Orders of Approal (IJC Task 6)**		Brian Guy - Summit Environmental
	1000-1020	**BREAK**		
Water Quantity		***Moderator: Irene Brooks***		**SPEAKER**
	1020-1040	**Water Supply and Demand Study**		Anna Warwick Sears - OBWB
	1040-1100	**Okanagan Basin Basin hydrologic connectivity study**		Nelson Jatel - OBWB
	1100-1120	**Factors that govern Osoyoos Lake levels during floods, and channel capacity monitoring on the Okanogan River**		Brian Guy - Summit Environmental
	1120-1140	**An assessment of water levels for Osoyoos Lake during drought years**		Michael Barber WSU
	1140-1200	**Evaluating the declaration of drought and managing levels on Osoyoos Lake**		Don Dobson, Jim Mattison - Urban Systems
	1200-1300	**LUNCH**		
Water Quality		***Moderator: Craig Nelson***		**SPEAKER**
	1300-1320	**Groundwater Resources in Osoyoos**		Sean Fleming, Environment Canada
	1320-1340	**Estrogen and Waste Water Treatment: Recent Findings & Next Steps**		Jeff Curtis, UBCO
	1340-1400	**Effects of Zosel Dam Water Regulation on Osoyoos Lake Water Quality**		Marc Beutel, WSU
	1400-1420	**An update of the Osoyoos Lake water quality objectives: reference points for water resource management**		V Jensen, MOE

	1420-1440			Kim Hyatt, DFO
	1440-1500	**BREAK**		
Fisheries and Species at Risk		***Moderator: Chuck Brushwood, Colvile Tribal Fisheries***		**SPEAKER**
	1500-1520	**Salmon return efforts : CCT**		Chris Fisher, CCT
	1520-1540	**Salmon return efforts of the Okanagan Nation Alliance**		Karilyn Alex, ONA
	1540-1600	**Investigating methods for including ecosystem requirements in Orders of Approval (IJC Task 5)**		Cailin Orr, WSU
		Moderator: Anna Warwick Sears		**SPEAKER**
	1600-1700	**Panel Synthesis and questions from the floor**		
	PANEL:	**Denise Neilsen, Brian Guy, Michael Barber, Howie Wright, Cindi Barton, Jeff Curtis, Chris Fisher**		
Day 3				
Tuesday, September 20th				
Ensuring Sustainability				
Welcome and focusing comments	800-810	***Stu Wells***		
Local Actions		***Moderator: Oroville - Ford Waterstrat***		
	810-840	**Osoyoos Lake milfoil control by the Okanagan Basin Wster Board**		Dave Caswell - OBWB
	840-900	**Osoyoos Lake milfoil control by Washington Department of Ecology**		Jennifer Parsons DoE
	900-920	**Okanogan Watershed Plan – Purposefully Taking the Long Road in Water Management**		Craig Nelson, Conservation District
	920-940	**Town of Osoyoos: infrastructure work e.g. Osoyoos Lake Northwest Sewer Project**		Phil Armstrong - Town of Osoyoos
	940-1000	**City of Oroville: development, planning trends, water impacts; what's allowed in terms of foreshore alteration**		Chris Branch Town of Oroville
	1000-1020	**The value and function of natural and constructed wetlands**		Curt Kerns - Wetlands Pacific Corporation
	1020-1040	**BREAK**		
Conservation and Governance		***Moderator: Anna Warwick Sears***		
	1040-1100	**A stakeholder approach to Lake Planning**		Phil Armstrong -Town of Osoyoos
	1100-1120	**Osoyoos Lake Foreshore Inventory Mapping project**		Jason Schleppe - Ecoscape
	1120-1140	**Water Conservation: Attitudes and actions in the Okanagan**		John Janmaat - UBC-O
	1140-1200	**The International Joint Commission's Binational Hydrographic Data Harmonization Effort: International Columbia Basin Perspective**		Michael Laitta - IJC
	1200-1220	**The 'New' Columbia River Treaty: Should the Okanagan be Included?**		John Wagner - UBC-O
	1220-1320	**LUNCH**		
		Moderator: Tom Siddon		
	1320-1340	**The International Joint Commission and the Osoyoos Review of Orders**		T McAuley + Mark Colosimo - IJC
	1340-1400	**Progress since the inaugural 2007 Osoyoos Lake Water Science Forum and the path forward.**		Clint Alexander - ESSA
	1400-1415	**BREAK**		
		Moderator: Tom Siddon		
	1415-1545	**Panel synthesis and questions from the floor**		
	PANEL:	**Stu Wells, Brian Symonds, Anna Warwick Sears, Kim Hyatt, Richard Moy, Chris Branch, Craig Nelson**		
	1545-1600	**Closing Remarks**		Lana Pollack; Lyall Knott - IJC

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MEMORANDUM

Okanagan Basin Water Board
Regular meeting
Sept. 1, 2011
Agenda No: 5.2

File No. 0550.04

To: Board of Directors

From: Nelson R. Jatel, Water Stewardship Director

Date: Sept. 1, 2011

Subject: Water Stewardship Director's Report – September

This memo provides an update on some of the ongoing projects that are being managed through the OBWB office in collaboration with a range of government and non-government partners.

Water Stewardship Council – Priority discussion areas

The Water Stewardship Council is working on a number of key priorities identified in the Sustainable Water Strategy. The following provides an update on the Groundwater monitoring observation well network project.

1.0 Groundwater management

The groundwater monitoring project consists of 4 agencies working in partnership: BC Government (Ministry of Environment and Ministry of Forests, Lands and Natural Resources Operations), Agriculture and Agri-Food Canada, Environment Canada and the Okanagan Basin Water Board. In addition to the project management team, local governments have been instrumental in providing resources (financial and in-kind) to support this groundwater monitoring initiative.

Final funding approval for this year's observation drilling program has been received from Agriculture and Agri-Food Canada supporting the initiative to a level of $*50,000*. Three observation wells are currently under active planning and include:

- The Corporation of the Township of Spallumcheen: Hullcar aquifer
- Regional District of Central Okanagan: Joe Rich Aquifer
- OBWB: Upper plateau groundwater aquifer: West of Summerland

Two more observation wells are planned for drilling with the support of local governments. Proposed locations for this year's drilling program include:

- West Kelowna
- Penticton
- Summerland

The observation well monitoring initiative provides for a collaborative framework to support the implementation of groundwater observation wells that provide information to support water and land-use management decisions. As identified by Ministry staff,

> *It is recommended that expansion of the network be targeted to those [identified] priority aquifers in the next 3 years where it is anticipated that observation well data will be needed to support water management decision making and local water services planning.*

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MEMORANDUM

Okanagan Basin Water Board
Regular meeting
Sept. 9, 2011
Agenda No: 5.3

File No. 0550.04

To: OBWB Directors

From: Corinne Jackson

Date: Sept. 1, 2011

Subject: Communications and Research Coordinator Report

Summer has been very busy with a number of communications initiatives. Most notably are the beginnings of a valley-wide ad campaign for water conservation. A communications committee was formed with representatives from local governments in the valley. Following on meetings with the committee, some initial radio and print ads were developed. The "Make Water Work" campaign was launched as a pilot in Vernon in August and September. Work will continue build out the campaign through the fall and winter with the intention that it be adopted throughout the Okanagan starting in the spring. To view the Make Water Work posters, hear the radio spots and see the material currently on the WaterWise website, visit http://www.okwaterwise.ca/learn-mww.html.

The Water Board now has a YouTube channel which already includes a number of videos, including "For Our Children's Children" – a 1970s video that explains why the Okanagan Basin Water Board was formed. Interestingly, YouTube is now listed as the second largest search engine, after Google. The channel is intended to be another vehicle to let the public know more about the work of the OBWB. To view the channel go to http://www.youtube.com/user/OKBasinWaterBoard. There, you will also see the latest corporate and WaterWise videos created this summer by our intern, Graham Campbell.

Summary of Recent Media

June 29	"Check irrigation systems for water savings," *Lake Country Calendar*
July 8	"Our Shoreline is changing," *HQKelowna.com, 103.9 The Juice*
July 9	"Natural shore line disappearing," *Castanet*
July 10	"Under half of Okanagan Lake's shore remains in natural state," *Kelowna Daily Courier*
July 12	"Okanagan Lake's natural shoreline slowly vanishing," *Penticton Western News*
July 13	"OBWB asks U.S. to reconsider use of herbicide on Osoyoos Lake milfoil" *Osoyoos Times*
July 13	"Okanagan Lake shoreline at risk," *CHBC News, Global Saskatoon*
July 14	"Eurasian milfoil mechanical harvesters on a tighter leash," *Kelowna Capital News*
July 15	"Rate of shoreline development alarms," *Vernon Morning Star*
July 15	"RDCO board highlights - Water Board program supported," *Castanet*
July 19	"Canada-US lake site of weed battle," *CHBC News, Global Winnipeg*

July 19 "Milfoil – Proposed U.S. herbicide use, the IJC and the Osoyoos Lake Water Science Forum," *CBC Radio Daybreak South*

July 20 "OBWB Raises Concerns over Okanogan County Weed Control Board," *FrenchTribune.com*

July 20 "Washington cabin owners want poison used in Osoyoos Lake to beat milfoil," *The Province*

July 26 "US Herbicide Plan for Osoyoos Lake Prompts Concern," *The Epoch Times*

July 27 "Evaporation experiment in Okanagan Lake," *103.9 The Juice, HQKelowna.com*

July 27 "Evaporation levels of Okanagan Lake being monitored," *AM1150*

July 27 "Okanagan Lake evaporation factor," *Castanet*

July 28 "Osoyoos mayor in a war over weeds with U.S.," *Penticton Western News*

July 29 "Herbicides not approved for Lake Osoyoos milfoil control," *Oroville Tonasket*

Aug. 2 "Water evaporation study underway," *Kelowna Capital News*

Aug. 3 "U.S. residents say plans for herbicide use about need to eradicate milfoil," *Osoyoos Times*

Aug. 8 "Blinking buoys bring backlash," *Castanet*

Aug. 9 "Water Board excited about study," *AM1150*

Aug. 12 "Early-bird deadline for water forum is Aug. 15," *Osoyoos Times*

Aug. 18 "Osoyoos Lake Water Forum Sept. 18," *Okanogan Valley Gazette-Tribune*

The OkWaterWise series also ran an article in July on how to "Make Water Work," and an article on "Water for Food" in August. The pieces ran in the *Kelowna Capital News*, *Vernon Morning Star, Penticton Western News,* the *Summerland Review*, the *OkFalls/Keremeos Review*, and the *Osoyoos Times*. The articles were also the basis of radio interviews on *AM1150's The Early Edition*.

<u>Summary of Upcoming Presentations</u>

Sept. 14 "Slow it, Spread it, Sink it! A stormwater management guide for Okanagan homeowners," to NRCan Resource Adaptation Collaboratives Webinar Presentation – Dr. Warwick Sears and Ms. Kellie Garcia

Sept. 15 "Set Sail with Science," to Okanagan Science Centre – Dr. Warwick Sears and OBWB Dir. Buffy Baumbrough

Sept. 19 "Water Supply and Demand in the Okanagan," to Osoyoos Lake Water Science Forum – Dr. Warwick Sears

Sept. 19 "Hydrometric Connectivity Project," to Osoyoos Lake Water Science Forum – Mr. Nelson Jatel

Sept. 27 "Update on Okanagan Water," to Okanagan College (Coldstream) – Dr. Warwick Sears

<u>Recently Delivered Presentations</u>

July 12 "Update on OBWB activities," to District of West Kelowna Council (West Kelowna) – Dr. Warwick Sears

July 14 "OBWB Water Management Program Review," to RDCO Governance Committee (Kelowna) – Dr. Warwick Sears

July 21 "OBWB Water Management Program Review," to RDOS Board of Directors (Penticton) – Dr. Warwick Sears

Aug. 3 "OBWB Water Management Program Review," to RDNO Board of Directors (Coldstream) – Dr. Warwick Sears

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MEMORANDUM

Okanagan Basin Water Board
Regular meeting
Sept. 9, 2011
Agenda No: 8.1

File No. 0550.04

To: OBWB Directors

From: Anna Warwick Sears, Executive Director

Date: September 1, 2011

Subject: Letter to Environment Canada

At the July meeting, staff recommended that the OBWB write a letter to the Canadian Environment Minister, Peter Kent, voicing support for Environment Canada's water monitoring programs in the Okanagan – in light of pending job cuts to the agency. Directors requested that a draft letter be brought for approval to the September meeting. A copy is attached.

This letter is very timely, and the situation is complex. While many areas of the country are experiencing cuts, Environment Canada continues to show interest in working in the Okanagan. In July, Michael Keenan, their ADM for Strategic Policy, along with Paul Kluckner, the Director for the Pacific-Yukon region, and the head of the Canadian Wildlife Service for the Pacific-Yukon region, toured the Okanagan and expressed interest in expanding programs here.

Also in July, Environment Canada literally "launched" a very significant lake evaporation study, with three monitoring buoys and two land-based stations on Okanagan Lake. The plan is to run these stations for three years, and collect data that will be useful both for the local area, and for understanding lake evaporation in other mountainous areas in Canada.

In August, OBWB staff met with BC Ministry of Environment and Environment Canada staff about developing a program to reinstate a number of water monitoring stations in the Okanagan – through a cost-sharing initiative similar to the groundwater monitoring station network we developed last year.

Two news articles are attached – the first about staff cuts in the Prairie region, the second about a roll-back of planned cuts in the North. I have also attached an informational piece about Environment Canada's new water quality monitoring station in Osoyoos.

A letter will be very helpful for promoting the Okanagan as a region where Environment Canada investments can have big impacts.

Recommended resolution: *That the OBWB send the attached letter to Minister Kent.*

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August 3, 2011

The Honourable Peter Kent
Minister of the Environment
Member of Parliament for Thornhill (Ontario)
Les Terrasses de la Chaudière
10 Wellington Street, 28th Floor
Gatineau, Quebec K1A 0H3

Re: Environment Canada's Okanagan water programs

Dear Sir:

This letter is to express appreciation for the contributions made by Environment Canada to water science in the Okanagan valley, and our hopes for continued partnerships into the future. Environment Canada's contributions in recent years have ranged from water monitoring, to climate modeling, and the current study of evaporation on Okanagan Lake. We commend your staff for their excellent work.

The Okanagan has emerged as a centre for water science in western Canada. With among the lowest per-capita water supply in the nation, a unique and fragile environment, endangered species and habitats, and many potential competing needs and interests, we have many challenges. However, our small valley is a model system for testing approaches that can be applied across the country.

The Okanagan Basin Water Board is a local watershed agency, established in 1970 to provide coordination and leadership. In the last 5 years, we completed a very significant water supply study to determine the potential effects of population growth and climate change on Okanagan water. We worked closely on the study with Environment Canada, hosting a partnership with the BC Ministry of Environment, the BC Ministry of Agriculture, Agriculture and Agri-Foods Canada, and many other agency and university partners. Each agency brings its own strengths. We have particularly valued your staff's contributions to water monitoring (through the Water Survey), groundwater hydrology, climate change and water balance modeling, and lake evaporation.

Your staff have provided crucial expertise and leadership, supplying essential information that could not be met in any other way. We look forward to continued collaboration and partnerships.

Sincerely,

Stu Wells
Chair, Okanagan Basin Water Board
Mayor, Town of Osoyoos

Cc: Ron Cannan, M.P.
Dan Albus, M.P.
Colin Mayes, M.P.
Paul Kluckner, Director, Pacific and Yukon Region.

Environment Canada job cuts raise concerns

By Meagan Fitzpatrick, CBC News
Posted: Aug 4, 2011 12:49 PM ET
Last Updated: Aug 5, 2011 11:10 AM ET

Beginning of Story Content

The axe is falling at Environment Canada, and around 700 positions are on the chopping block.

Union representatives were advised about the coming cuts in writing Monday and given details about the federal government's plans to eliminate the positions during a meeting Wednesday in Ottawa.

Meteorologists, chemists, biologists and other scientists are among those who will be receiving letters from the department notifying them that they will either lose their job or be placed on a list of employees deemed "surplus."

After a 90-day period, the roughly 300-person "surplus" list will be formalized, and those workers will be offered positions elsewhere within the government.

Gary Corbett, president of the Professional Institute of the Public Service of Canada, which represents 57,000 scientists and professionals in the federal and some provincial governments, said Thursday there is shock and sadness among his union's members — more than 200 of them — who will be affected by the cuts.

"You can imagine the turmoil with the people in their own personal lives, but also in the department because this affects the whole department, all employees, because they wonder if they're going to be next," Corbett said.

It isn't known yet what programs and services from Environment Canada will shrink, Corbett said, but he warned that the job cuts will not only affect the employees, but Canadians.

"When you start to erode the professionals doing this work, down the road it will certainly hurt Canadians … maybe their water quality, maybe their air quality," Corbett said.

In an internal memo obtained by CBC News, Environment Canada staff in the department's section most affected by the job cuts were told they will be focusing on core areas and forsaking other work they had been doing.

The Environmental Protection Operations Directorate "needs to focus its activities on its core programs areas: environmental assessment, environmental emergencies, federal contaminated sites, marine programs, compliance promotion and environmental effects monitoring," the memo reads.

The cuts announced this week are not part of the strategic and operating review that Ottawa is undertaking in order to balance its budget by 2014. Where exactly the government is going to find those savings within every department has yet to be announced. Sixty-seven government departments and agencies have been asked to identify savings of either five or 10 per cent of their budgets.

Corbett said the union was told the positions were being eliminated because of "fiscal restraint" measures. Environment Canada was asked in the 2010 budget to identify strategic review savings over a three-year period.

Critics blast job cuts

Green Party Leader Elizabeth May issued a statement that expressed concern about the cuts and how they might affect Environment Canada's core activities.

"We are worried that cuts are also impacting other departments. The total impact of this round of layoffs should include parliamentary oversight," May said.

She noted that Environment Canada's website says its expertise strengthens its ability to deal with complex and changing environmental issues.

"The Green Party asks how this latest round of job cuts will affect this ability," the statement said.

The Liberals also reacted to the job cuts, calling them "reckless" and saying they "prove that protecting our fragile environment while building a vibrant green economy is not a Conservative priority."

"These massive cuts are deeply alarming and will result in reduced ability to evaluate scientific issues, such as air quality, climate change and water quality, and could potentially lead to less-informed decision-making," Liberal environment critic Kirsty Duncan said in a statement.

Nycole Turmel, interim NDP leader and the former head of Canada's largest public sector union, said the government is cutting from its environment budget rather than being proactive on environmental issues.

"They're cutting in important files like the environment and social programs, and giving a holiday to big corporations," she said.

Turmel said the Conservatives lack a vision to take care of Canadians' needs.

Treasury Board President Tony Clement, the minister overseeing the government's strategic review, said Environment Canada made the job cuts decision and he knew little about them. He said the government is sympathetic to those put out of work and tries to help them find other employment.

"When there are staff reductions, first of all those decisions are not taken lightly, because we are dealing with human beings and families and we know that this is sometimes a challenging time when these decisions are made for those individuals," Clement said at a news conference in Ottawa.

"But we as a government go out of our way to work with each individual to try to see whether through attrition, whether there's another position available in the government of Canada or at least work with them for retraining. I think that's the right thing to do."

He said it's too soon to tell what impact the widespread review that's underway to reduce the deficit will have on federal public service employment. Every year 11,000 people leave the public service voluntarily, Clement said, and the government will try to match that attrition with any job losses from the review to help people find other jobs, he said.

"I cannot guarantee that that will be 100 per cent of the time, but I can certainly say that we'll use our best efforts," he said.

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Accessibility Links

Harper says minister reversed decision to slash water quality monitoring

BY MIKE DE SOUZA, POSTMEDIA NEWS AUGUST 26, 2011

Prime Minister Stephen Harper speaks during an event in Haines Junction, Yukon August 26, 2011.
Photograph by: Chris Wattie, Reuters

HAINES JUNCTION, Yukon — Prime Minister Stephen Harper said Friday his government has reversed an Environment Canada decision to shut down nearly two dozen water quality monitoring stations in the north.

Wrapping up a tour of the Arctic region at a national park, Harper indicated that the original decision to eliminate 21 out of 23 water quality monitoring sites in the Northwest Territories, on the heels of major budget and job cuts in the department, was not approved by his environment minister, Peter Kent.

"That was not authorized, and the minister has ordered those to be started back up again," Harper said.

The leader of the Dene First Nation, which lives downstream from the Alberta oilsands industry, suggested Thursday that the cuts, revealed earlier this week in the territorial legislature, were made deliberately.

"The prime minister and cabinet are killing environmental monitoring in the name of fiscal restraint while they continue to subsidize oil companies and spend money on foreign lobbying on behalf of the

tarsands," said Dene National Chief Bill Erasmus on Thursday. "The prime minister is in our territory today, but he won't even tell us himself that his government is killing efforts to protect fresh water."

A spokesman for Harper later said the government did not know who made the decision but that officials were looking into the matter.

Harper is on his sixth annual end-of-summer tour of the region, which is undergoing a rapid transformation due to global warming.

Local municipalities and communities have estimated they need massive investments of more than $230 million — equivalent to about $5,000 per resident — to protect vulnerable roads, buildings and other infrastructure that cannot withstand the changing climate and put their economic well-being in jeopardy.

Harper did not publicly speak about climate change on the week-long trip until Friday, when he was asked about it during a scrum with reporters.

"We do already run some climate-change adaptation programs and those will continue," Harper said.

Northwest Territories Premier Floyd Roland said earlier in the week that "partners like the federal government are going to be absolutely critical" in terms of protecting critical public infrastructure and ensuring that, "for example, airport infrastructure, our highway infrastructure and our housing remain safe and stable as we deal with the climate change impacts."

Bureaucrats at Environment Canada have warned the federal government that global warming is the world's greatest environmental challenge, carrying with it significant impacts on human health and safety, the economy, natural resources and ecosystems in the country and around the world.

Harper has acknowledged that some critics are raising valid questions about addressing the balance in his northern strategy between economic, military, environmental protection and social development issues. But he also noted that his government is being praised for paying attention to the Arctic region after decades of neglect from previous governments.

"Over six summer tours, my passion for the north has continued to grow," Harper said as he promoted a new cultural and tourism centre under construction at Kluane National Park that received about $9 million in federal funding in 2009.

He said he's urging Canadians to visit the park, which includes Canada's highest peak, Mount Logan, and discover its pristine ecosystems.

"This is also a perfect place to fish on Lake Kathleen, or to raft on the fresh clear waters of the Alsek River," Harper said. "And yesterday's miners have left behind a real treasure for today's athletes — challenging mountain bike trails on old rail tracks."

Harper later flew down the Alsek River by helicopter to the bottom of the Lowell Glacier, getting a guided tour from Parks Canada as he fished out a piece of ice.

"Sh_t that water is cold," Harper said. "You can't hold onto it very long."

Following a visit that included views of moose, goats, sheep and eagles, he later joked about his environmental credentials, describing a potential photo opportunity for media cameras featuring him on the glacier next to someone setting off some dynamite.

The tour also brought Harper in contact with large patches of trees being ravaged by the pine beetle, which has been spreading in Western Canada due to warming temperatures.

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Water

Fresh Water Quality Monitoring

Where We Monitor

Pacific and Yukon Water Quality Monitoring Data

Osoyoos Lake Water Quality Buoy

Automated Monitoring & Surveillance Station

Environment Canada, in partnership with Fisheries and Oceans Canada and the BC Ministry of Environment, has deployed a new water quality monitoring and surveillance buoy in Osoyoos Lake. The buoy provides real-time surface water quality data (such as temperature, conductivity, pH, dissolved oxygen and turbidity), as well as hourly depth profile of temperature and dissolved oxygen.

The data and information collected are transmitted via cellular telemetry and will be available to the public in real-time on this website. The data can also be viewed on your cellphone, Blackberry or other Internet-enabled mobile device here

Current Conditions

Today: 11/09/01 10:21
Last Updated: 11/09/01 10:10

Surface Water Quality Observations

Water Temperature	20.6 °C
Specific Conductivity	269 uS/cm
pH	8.36 pH Units
Turbidity	-0.9 NTU
% Dissolved Oxygen	89.5 %
Dissolved Oxygen	8.03 mg/L

Temperature and Dissolved Oxygen Profile

Depth (m)	Water Temp. (°C)	DO (mg/L)	DO (%)
1	20.6	8.03	89.5
5	20.4	7.86	87.3
10	20.4	7.76	86.0
12	20.2	7.48	82.7
14	19.0	5.03	54.3
15	14.9	4.32	42.8
16	12.7	4.77	45.0
17	11.4	5.00	45.8
19	9.89	5.28	46.6

* N/A - Sensor under maintenance

Date Modified: 2010-01-31

Top of Page

Important Notices

REGIONAL DISTRICT of CENTRAL OKANAGAN

Office of the Administrator

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Agenda No. 9.1
Regular: ☑ In-Camera: ☐
Date Sept. 9, 2011
OBWB

July 20, 2011
File No: 0110-02

Anna Warwick-Sears
Executive Director
Okanagan Basin Water Board
1450 KLO Road
Kelowna, BC
V1W 3Z4

Re: OBWB Water Management Program

Dear Anna:

This will confirm that the Regional Board at its July 14th Regional Board meeting adopted the following resolution:

> "THAT the Regional Board of the Regional District of Central Okanagan reaffirms support for the Okanagan Basin Water Board's Water Management Program under the Terms of Reference given in the OBWB Governance Manual, as adopted by this Board on December 14, 2009, and contingent on mutual agreement by the Regional Districts of North Okanagan and Okanagan-Similkameen."

We look forward to OBWB receiving the same support from the Okanagan Similkameen and North Okanagan Regional District's and working with you as you develop the future plans and budgets to encompass this program.

Yours truly,

Harold Reay
Chief Administrative Officer

DISTRICT OF WEST KELOWNA

Office of the Mayor
2760 Cameron Road, West Kelowna, British Columbia V1Z 2T6
Tel (778) 797.2210 Fax (778) 797.1001

Agenda No: 9.2
Regular: ☑ In-Camera: ☐
Date: Sept. 9, 2011

OBWB

July 15, 2011

Hon. Terry Lake
BC Minister of Environment
PO Box 9339 STN PROV GOVT
Victoria, BC
V8W 9M1

Dear Hon. Mr. Lake:

West Kelowna Council heard a presentation from Dr. Anna Warwick Sears of the Okanagan Basin Water Board on July 12, 2011. The presentation included information about the Watermilfoil (weed) control program which OBWB undertakes for communities of the Okanagan. There was some discussion regarding Ministry of Environment support of this program.

On behalf of West Kelowna Council, I wish to express our interest in keeping this important program and request that the Ministry of Environment continue to provide support. This program is very important for tourism and the general economy of the Central Okanagan. We are most definitely interested in keeping our waterfront as free of these prolific weeds as possible, for the continued enjoyment of recreational users and for the safety of watercraft.

Sincerely,

Doug Findlater
MAYOR

Cc: West Kelowna Council
Jason Johnson, Chief Administrative Officer, District of West Kelowna
Anna Warwick Sears, Okanagan Basin Water Board