

Memo

Date: May 17, 2011
File: 1390-90
To: City Manager
From: M. Watt, Manager, Strategic Projects
Subject: Filtration Deferral and Drinking Water Source Protection- Application for Deferral



RECOMMENDATION

THAT Council supports a staff application to Interior Health for Drinking Water Filtration Deferral;

AND THAT Council directs staff to report to Council with an amendment to the Water Regulation Bylaw to finance future water filtration infrastructure and source water quality protection from the Water Quality Improvement Fee.

Purpose:

To secure Council support to comply with Interior Health requirements to apply for water Filtration Deferral by implementing the recommendations from the following reports:

- 1) Filtration Deferral Planning-Associated Engineering (May 2011), and
- 2) Drinking Water Source Protection EBA-Hayco (May 2011).

Both of these reports are available on the City Web site.

Background:

Interior Health (IH) has re-emphasized the expectation of drinking water filtration through Conditions on Permit. This is in addition to the UV treatment that the City utility already provides for the domestic water supply. However, IH can allow a utility to defer installation of water filtration infrastructure if the utility meets several conditions including:

- consistently meets water quality standards,
- implements a plan to protect its water sources, and
- has a contingency plan to construct filtration infrastructure if required

The utility will be monitored annually for compliance in meeting deferral application requirements.

In March of 2011 both Associated Engineering and EBA-Hayco were retained to complete separate reports in support of the deferral application. Integration of the recommendations from both reports forms part of the filtration deferral application. The process has been a collaborative effort of the City Water Utility Operations, Infrastructure Planning, Interior Health Staff and the consultants.

Filtration Deferral and Process:

The deferral of filtration means that the City Water Utility through audit and planning can delay filtration as long as it continues to meet Interior Health Water Quality Objectives (IH 4-3-2-1-0 Drinking Water Objectives). It does not mean exclusion from the filtration requirement. Achieving deferral postpones costly infrastructure upgrades and demonstrates that the City utility has a high quality water supply to serve our customers.

Water suppliers that want to apply for deferral of filtration in accordance with guidelines for Canadian Drinking Water Quality (GCDWQ) criteria must make a proposal to IH that:

- 1) defines the watershed control program, and

- 2) defines how dual barrier treatment infrastructure would be implemented (IH Issue Paper, Feb. 2008).

This direction is based on Federal GCDWQ, Provincial Regulation (BC Drinking Water Protection Act-DWPA and BC Drinking Water Protection Regulation) and Interior Health Drinking Water Filtration Policy. Guidance is provided by the IH "Filtration Deferral Planning Requirements" (Feb. 2008) and from the "Comprehensive Source-To-Tap Assessment Guideline" (MOHLS, 2010) modules #1 through #8.

The following is a summary of the consulting work completed in support of the Filtration Deferral application.

"Filtration Deferral Planning" Conclusions (AE, May 2011):

This study focused on the "Comprehensive Source to Tap Guidelines"; Modules #3-7 (#3-Assessed water supply elements, #4-water system management, operations and maintenance, #5-audited water quality and availability, #6-financial capacity and governance, and #7-treated water quality risk characterization). It included a review of existing and historical water quality data, the overall condition and operation of our utility and the risk of system contamination of our utility. It concluded that the City's current treatment strategy of 2-stage disinfection provides an effective barrier in inactivating known pathogens to the levels required under the Operating Permit under the current known range of source water quality conditions and we have a reliable water supply and a robust utility system.

"Drinking Water Source Protection" Recommendations (EBA-Hayco, May 2011):

This study focused on the "Comprehensive Source to Tap Guidelines"; modules #1, 2, 7 and 8 (#1-delineate and characterize drinking water, #2-conduct contaminant source inventory, #7-source water quality risk characterization and #8-recommended actions to improve drinking water protection). The report concluded that the City Utility water supply (Okanagan Lake) has a low contamination risk for many high risk scenarios, but there is some risk at the depths of the existing intakes, especially during spring runoff and during the winter when the lack of thermal stratification exposes the intakes to pollution events. It also recommended the need to do more towards source protection through additional water quality monitoring within the City limits and to document and measure our existing and ongoing efforts to prevent contamination.

The report also concluded that there is a Provincial responsibility for external watersheds that influence Okanagan Lake water quality and that is beyond the City's ability to control. The Southern Interior Drinking Water Team or other Provincial Water Committees must take action within those jurisdictions (EBA-Hayco; Conclusions & Recommendations, May 2011).The City will continue to engage those stakeholders and others both regionally (OBWB and Region) and provincially.

Capital Infrastructure

The filtration deferral application must include a plan that anticipates the implementation of filtration infrastructure if deferral was no longer granted. This plan must show the location of the facilities and a funding strategy. The application will show locations at the Poplar Point Treatment Facility and adjacent to Adams Reservoir on the Cedar Creek pumping and treatment system. See "financial/budgetary considerations".

MOU with other water utilities within the City

The City is working with the members of the Kelowna Joint Water Committee to examine integrated planning approaches that result in more efficient and effective water treatment and delivery. The probability of a water filtration requirement for surface water sources is a factor being considered in that work.

Internal Circulation:

- General Manager, Community Sustainability
- General Manager, Community Services
- Director, Financial Services
- Director, Community Services
- Manager, Utility Services

Legal/Statutory Authority:

GCDWQ (Federal), BC Drinking Water Protection Regulation, Interior Health Filtration Deferral Policy.

Financial/Budgetary Considerations:

It is anticipated that successful Filtration Deferral from IH will allow the City delay infrastructure costs for filtration facilities at Cedar Creek until 2020 and at Poplar Point until at least 2030. The capital cost of these facilities (including support facilities and source water protection actions) in 2010 dollars is \$129.5 million. Construction of the filtration facilities will require senior government grant funding. The proposed funding model assumes that the facilities will be 2/3rd funded from Provincial and/or Federal contributions and 1/3 funded from the Water Utility users. A separate Council report proposes that the City utility portion of the capital be raised through an increase in the Water Quality Enhancement Fee per Annex 1. The options are designed to raise sufficient funding to pay the City's portion of the anticipated capital without incurring a debt. Option 1 is recommended because it achieves the most consistent annual rate increase in actual dollars among the models explored. The others impose much greater variation in rate increases each year until the rate is stabilized at a sufficient level to raise the required capital. The intent is to fund future capital through the fixed part of the utility rate (water quality enhancement fee) and the operating costs of the additional facilities through the variable part of the utility rate, according to the quantity of water used by each customer. The Water Quality Enhancement Fee would be increased immediately to begin raising capital slowly over time. The operating cost increase would be implemented in the fees only after the need for the facilities is triggered and construction is completed.

Failure to provide a filtration facility capital funding plan could result in the failure of the deferral application.

Considerations not applicable to this report:

Community & Media Relations Comments:

Existing Policy:

Alternate Recommendation:

Submitted by:

M. Watt, Manager, Strategic Projects

Approved for inclusion:

R. Cleveland, Director, Infrastructure Planning

CC: General Manager Community Services
Director, Financial Services
Director, Operations

Attachments:

- 1) Annex 1: Water Quality Enhancement Fee for Filtration Deferral Facility Capital
- 2) PowerPoint Presentation



ANNEX 1: Water Quality Enhancement Fee

(Option 1 to be included in the bylaw through a separate Council submission)

Water Quality Enhancement Fee

OPTION 1

Meter Size	Current Mo. Charge	2011 Mo. Charge (200%)	2012 Mo. Charge (50%)	2013 Mo. Charge (25%)	2014 Mo. Charge (25%)
5/8"	1.32	3.96	5.94	7.43	9.28
1"	2.71	8.13	12.20	15.24	19.05
1 1/2"	5.98	17.94	26.91	33.64	42.05
2"	9.68	29.04	43.56	54.45	68.06
3"	22.69	68.07	102.11	127.63	159.54
4"	37.52	112.56	168.84	211.05	263.81
6"	83.95	251.85	377.78	472.22	590.27
8"	210.87	632.61	948.92	1,186.14	1,482.68
Revenue	\$ 348,000	\$ 1,044,000	\$ 1,566,000	\$ 1,957,500	\$ 2,446,875

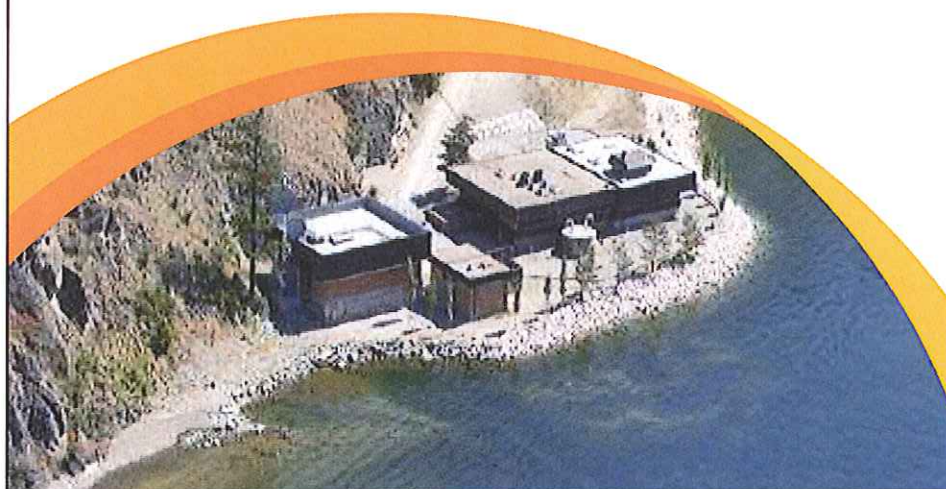
OPTION 2

Meter Size	Current Mo. Charge	2011 Mo. Charge (100%)	2012 Mo. Charge (50%)	2013 Mo. Charge (50%)	2014 Mo. Charge (50%)
5/8"	1.32	2.64	3.96	5.94	8.91
1"	2.71	5.42	8.13	12.20	18.29
1 1/2"	5.98	11.96	17.94	26.91	40.37
2"	9.68	19.36	29.04	43.56	65.34
3"	22.69	45.38	68.07	102.11	153.16
4"	37.52	75.04	112.56	168.84	253.26
6"	83.95	167.90	251.85	377.78	566.66
8"	210.87	421.74	632.61	948.92	1,423.37
Revenue	\$ 348,000	\$ 696,000	\$ 1,044,000	\$ 1,566,000	\$ 2,349,000

OPTION 3

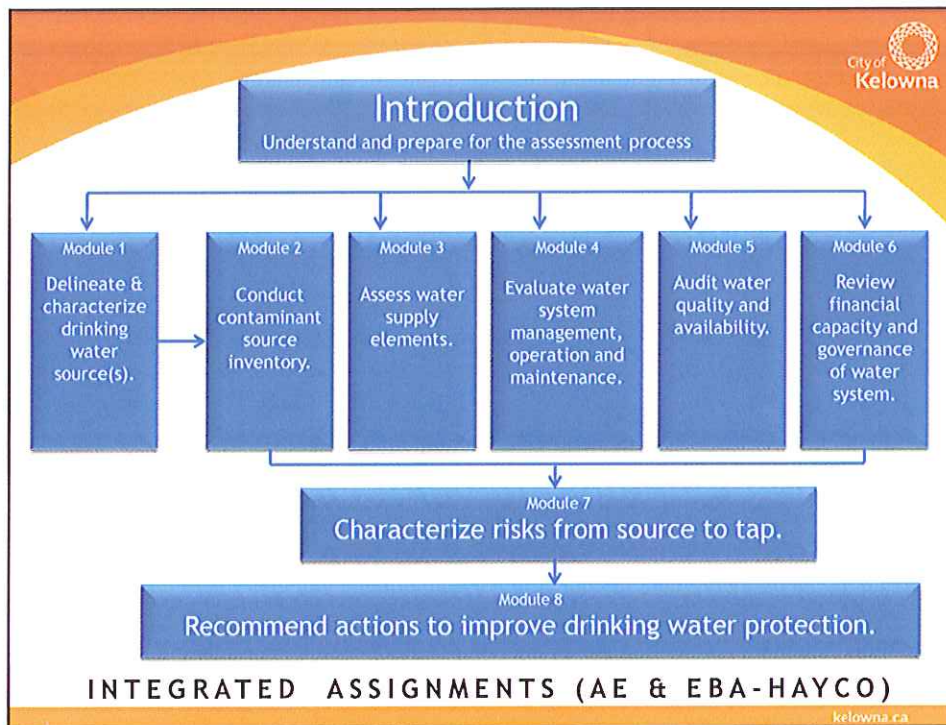
Meter Size	Current Mo. Charge	2011 Mo. Charge (300%)	2012 Mo. Charge (20%)	2013 Mo. Charge (20%)	2014 Mo. Charge (10%)
5/8"	1.32	5.28	6.34	7.60	8.36
1"	2.71	10.84	13.01	15.61	17.17
1 1/2"	5.98	23.92	28.70	34.44	37.89
2"	9.68	38.72	46.46	55.76	61.33
3"	22.69	90.76	108.91	130.69	143.76
4"	37.52	150.08	180.10	216.12	237.73
6"	83.95	335.80	402.96	483.55	531.91
8"	210.87	843.48	1,012.18	1,214.61	1,336.07
Revenue	\$ 348,000	\$ 1,392,000	\$ 1,670,400	\$ 2,004,480	\$ 2,204,928


FILTRATION DEFERRAL PLANNING AND
DRINKING WATER SOURCE PROTECTION



CLEAN DRINKING WATER

- ▶ Guidelines Canadian Drinking Water Quality (GCDWQ)
 - ▶ Surface Water Filtration and Filtration Exclusion Criteria
 - ▶ Multiple Barrier Approach to eliminate/minimize risk of contamination
 - ▶ Best Source/Best Treatment/Best Operation
- ▶ Drinking Water Protection Act (DWPA)
 - ▶ Comprehensive Drinking Water Source to-tap Assessments (2010-Ministry of Healthy Living & Sport))
- ▶ Interior Health
 - ▶ Criteria 4,3,2,1,0 (Multiple Barriers for Treatment)
 - ▶ Regulatory function ; Conditions on Permits and Engineering Approvals
 - ▶ Filtration Deferral Policy and Approvals

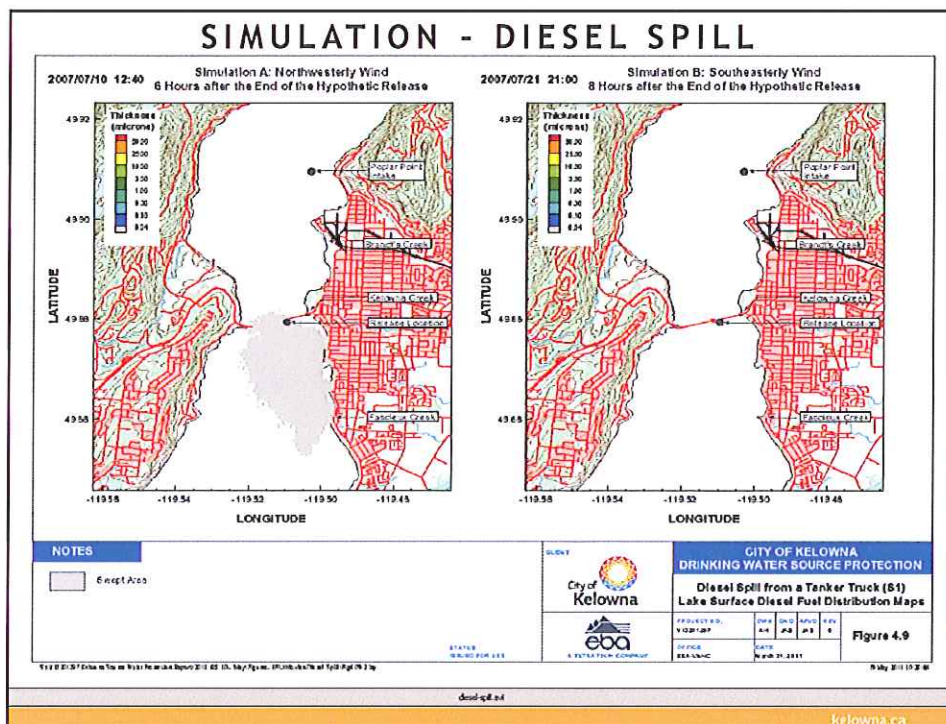


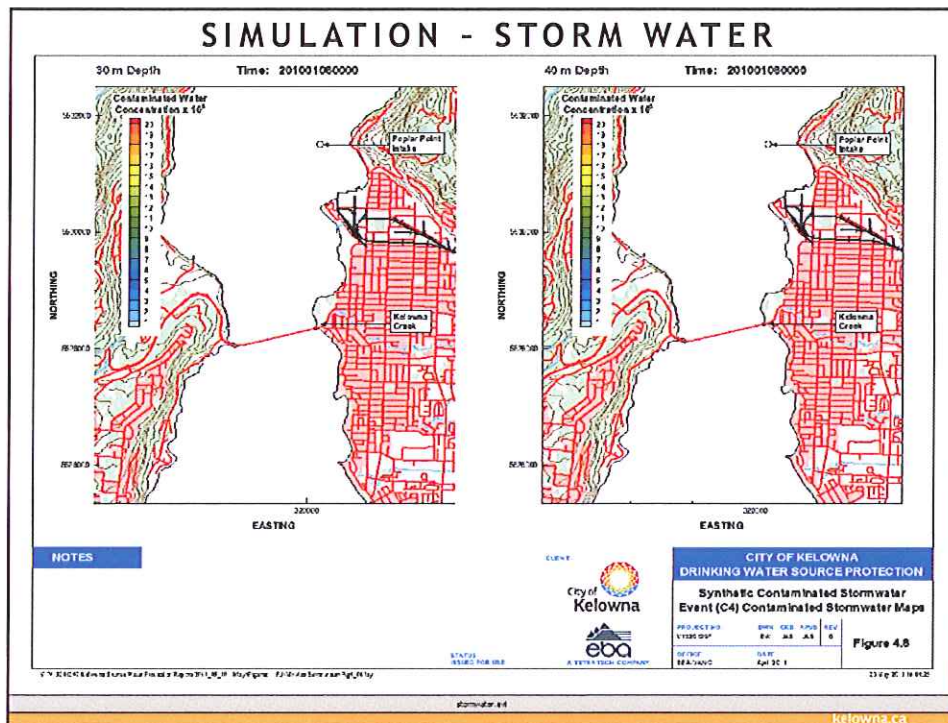
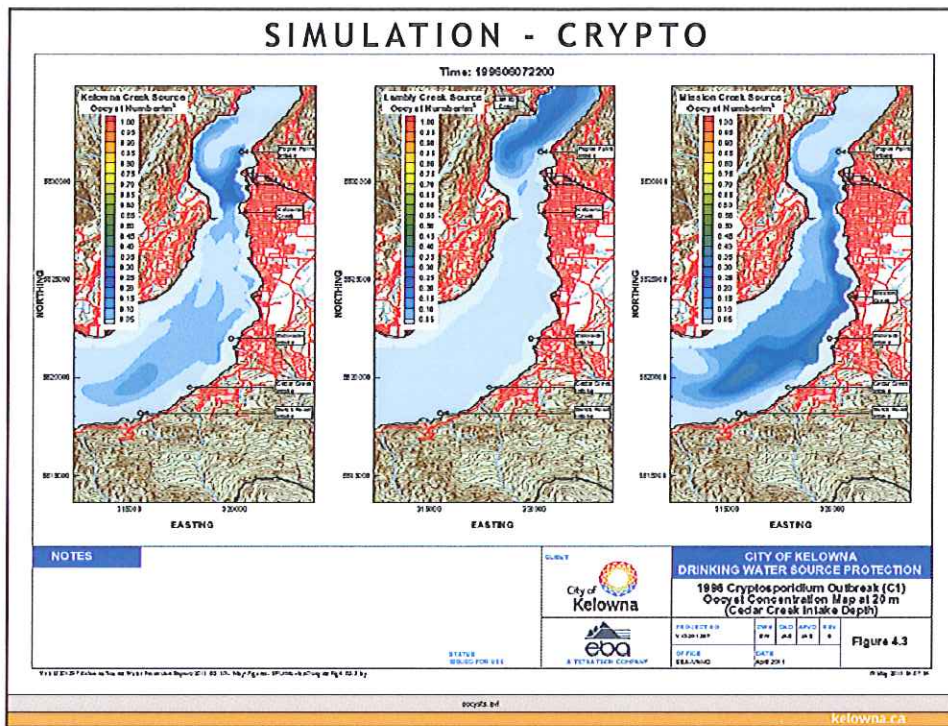


SOURCE PROTECTION PLANNING EBA-HAYCO

- ▶ Primary contaminants sources identified include:
 - ▶ Accidental
 - ▶ Transportation corridor spill
 - ▶ Wastewater treatment plant discharge
 - ▶ Intentional
 - ▶ Boat discharge
 - ▶ Natural
 - ▶ Sediment from creeks
 - ▶ Algae in lake
- ▶ Lake response & physical attributes provide significant water quality protection

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SOURCE PROTECTION CONCLUSIONS AND RECOMMENDATIONS

- ▶ Lake has high quality supply however at risk and vulnerable to specific events from local and external watersheds.
- ▶ Redundancy at intakes is very good
- ▶ Brandt, Mill and Mission Creeks can under certain circumstances transport contamination
- ▶ Crypto sampling, coliform and sediment sampling changes at intakes and at the higher risk non-treated discharges
- ▶ Document existing programs and increase awareness
- ▶ Create overall Source Protection Plan from existing and new
- ▶ Adopt formal response plans for high risk scenarios
- ▶ Develop a storm response plan (WQ)
- ▶ Review programs on annual basis for improvements (BMPs)
- ▶ Work and collaborate with other jurisdictions

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SOURCE PROTECTION FINANCIAL

PROGRAM	EXISTING	NEW	\$ADDITION
Source Water (Cedar, Poplar, Switch)	Yes (Water Trucks)	Crypto (weekly Apr. 15-Aug. 15 Cyanobacteria/Monthly)	\$48,000/yr
A - Creek Water	Yes	5/30 (weekly Mission, Mill, and Brandt Creek)	\$3,000/yr
B - Creek Water	Yes (Weekly sampling)	Mouth of Mission, Mill, & Brandt Creek (triggered by raw water quality at intakes)	\$1,000/yr
Storm Water	Yes (Internal Infrastructure and maintenance program)	Mill & Brandt Creek First Flush (measure at storm outfalls)	\$3,000/yr
Cross Connection or Other	No	Fascieux Creek (2 - 3 rain events at 3 locations)	\$1,000/yr
Storm System (WQ Review)	No	IPLAN (to determine timeframe for improvements e.g. Hardy Enterprise)	\$5000/yr
Beach WQ	Yes (Sampling by ISA; adding and testing by OSA)	Increased valley wide addling (OSWB Funded)	N/A
Clean Water Education	Yes (Follow Fish and Adopt a Stream)	Realignment of existing programs to support WQ and WS improvement	\$20,000 /yr (Printed materials and outreach with partners (OSWB Others))
Land-use Planning; Creek Protection	YES (OSWB/ISA/CPA)	Agriculture ditch program. Groundtruth sensitive sections of creeks as part of program.	\$5000/yr

*suggest that WQ samples be tested for the following: SS, conductivity and coliform.

*Assume same time frames April 15 - August 15 unless a severe water quality deviation occurs at intakes.

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NEXT STEPS

- ▶ Amend Water Regulation By-law
 - ▶ filtration funding \$1.0-2.0 million/year
 - ▶ water source protection \$50-100,000/year
 - ▶ Water Quality Improvement Fund
 - ▶ \$1.32 to \$3.96 in 2011
 - ▶ \$5.94 in 2012
- ▶ Apply for Filtration Deferral