

*GLOBAL PERSPECTIVE.
LOCAL FOCUS.*

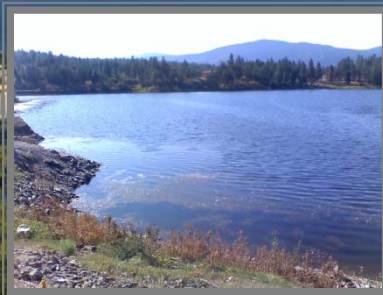
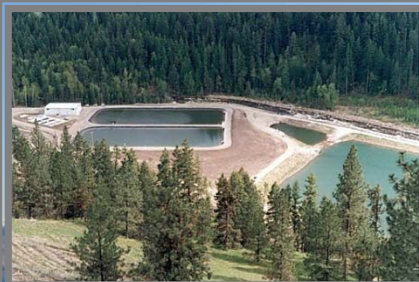


**Associated
Engineering**



City of
Kelowna

**City-wide Water
Supply and Treatment
Options Evaluation –
June 2010**



**Presentation to City Council
July 12, 2010**

Bill Harvey, P.Eng.
Ian Wright, P.Eng.



Study Objectives

- To develop, evaluate, and compare technical options for treating and delivering domestic and irrigation demands on a city-wide basis.
- To identify the technical options which best meet City-wide objectives utilizing a multiple bottom line approach.



Treated Water Quality Goals

- To produce water quality that consistently meets:
 - Health Canada Guidelines for Canadian Drinking Water Quality
 - BC Drinking Water Protection Act
- IHA 4-3-2-1-0 Guidelines
- IHA Filtration Policy - Filtration Deferral
 - Certainty of siting for filtration
 - Draft implementation plan
 - Certainty of capital to undertake filtration
- Future Regulatory Changes



Water Treatment Strategy

- Water Demands – 2030
 - Domestic – 272 MI/d
 - Agricultural Irrigation – 286 MI/d
- Agricultural Irrigation - No additional treatment required
- Domestic - Different water treatment solutions for different water sources
 - Groundwater
 - Uplands water sources
 - Okanagan Lake
- Two treatment strategies evaluated for the drinking water system
 - Filtration
 - Okanagan UV – Uplands Filtration



Area Wide System Issues

- Kelowna's water demands are very high in comparison to other Canadian municipalities
- Current treatment practices by four suppliers don't meet IHA requirements – these suppliers are planning upgrades
- Using a common system for distributing domestic and agricultural demands is not sustainable
- Linkage and reinforcement between systems is weak
- Some suppliers were facing water supply challenges during the study – since alleviated
- Water quality delivered to all ratepayers is inconsistent



Options Development Approach

- Robust system with more than one intake with strong interlinkage and reinforcement
- Must be affordable and cost-effective (life cycle)
- Maximize use of existing infrastructure
- Integrated approach
- Separation of domestic and agricultural systems
- Continued agricultural supply from existing high elevation sources



System Options

- Option 1 – Current Plan per 2005 KJWC Strategic Water Servicing Plan
- Option 2 – Consolidated Domestic Supply from Okanagan Lake
- Option 3 – Unlinked Okanagan Lake and Mission Creek Supplies
- Option 4 – Joint Okanagan Lake & Mission Creek Supply – Supply North Areas From McKinley
- Option 5 – Joint Okanagan Lake & Mission Creek Supply – Maximize System Separation



Filtration Strategy Options Cost Summary

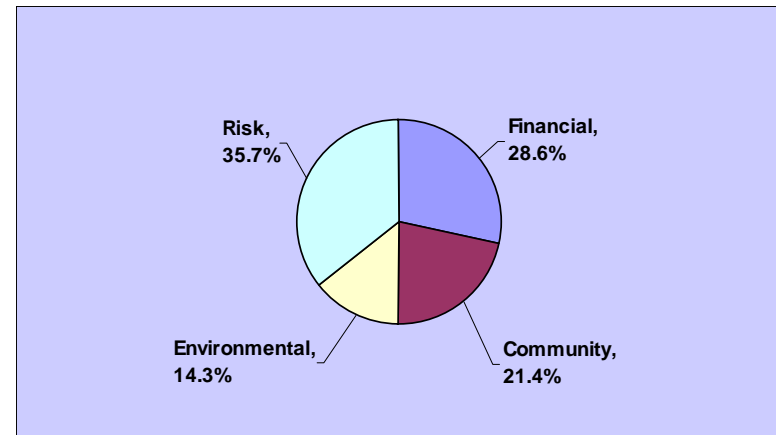
Option No.	Option Name	Capital Cost	Discounted 20 Year Life Cycle Cost
1F	Current Plan	\$261,944,000	\$401,916,000
2F	Consolidated Domestic Supply From Okanagan Lake	\$218,245,000	\$336,709,000
3F	Unlinked Okanagan Lake and Mission Creek Supplies	\$221,496,000	\$329,022,000
4F	Joint Okanagan Lake and Mission Creek Supply - Supply North Areas From McKinley	\$240,242,000	\$351,592,000
5F	Joint Okanagan Lake and Mission Creek Supply - Maximize System Separation	\$227,626,000	\$327,503,000

Okanagan UV – Uplands Filtration Strategy Options Cost Summary

Option No.	Option Name	Capital Cost	Discounted 20 Year Life Cycle Cost
1UVF	Current Plan	\$158,708,000	\$248,010,000
2UVF	Consolidated Domestic Supply From Okanagan Lake	\$108,365,000	\$164,408,000
3UVF	Unlinked Okanagan Lake and Mission Creek Supplies	\$125,597,000	\$184,386,000
4UVF	Joint Okanagan Lake and Mission Creek Supply - Supply North Areas From McKinley	\$142,913,000	\$205,526,000
5UVF	Joint Okanagan Lake and Mission Creek Supply - Maximize System Separation	\$148,334,000	\$207,878,000

Options Evaluation

- Multiple Bottom Line Assessment
 - Financial
 - Social/Community
 - Environmental
- Risk Assessment
- Findings
 - Okanagan UV- Uplands Filtration Strategy – Option 2 ranked highest
 - Filtration Strategy – Option 5 ranked highest





Recommendations

1. Treatment Strategy – base long term planning on filtration
2. Communicate findings to the other four water suppliers – completed in June 2010
3. Collaborate with the other water suppliers to develop a longer-term city-wide approach
 - Incorporate area water suppliers' technical input
 - Combine the best attributes of all options
 - Review groundwater strategy
 - Develop separation concepts
 - Develop migration plan from UV-Filtration to Filtration
4. Assign entire cost burden for improvements to domestic users

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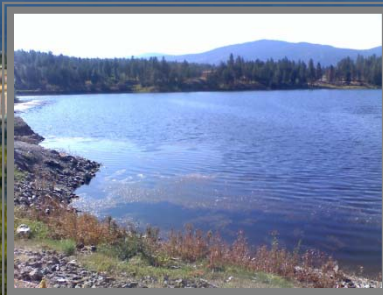
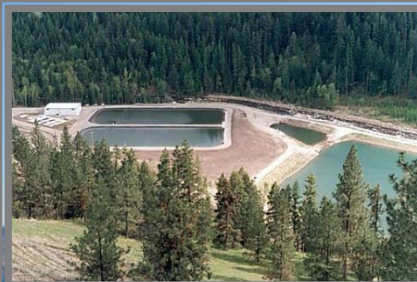
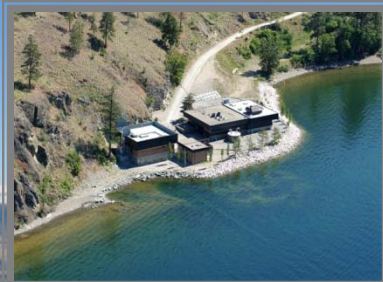


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