

November 8, 2014

**REPORT TO:** HIS WORSHIP THE MAYOR AND MEMBERS OF COUNCIL

**FROM:** FRED C. MANSON, CHIEF ADMINISTRATIVE OFFICER

**SUBJECT:** ERWS WATER INTAKE AND TREATMENT PLANT PROJECT OPTIONS

**PURPOSE:** TO OBTAIN COUNCIL DIRECTION REGARDING ERWS WATER INTAKE AND TREATMENT PLANT PROJECT OPTIONS

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**EXECUTIVE SUMMARY:**

Further to the below referenced June 23, 2014 ERWS Loan Authorization Bylaw report from the Chief Administrative Officer, staff and elected officials have met with numerous senior government staff, MLA's MP's and Ministers to outline the ERWS project and to explore grant opportunities as directed by Council.

Although to date no grants have actually been awarded, promises for assistance from Federal and Provincial sources ranging between \$15 and \$24 million for the project have been discussed that may be announced and awarded in the March to May 2015 time frame.

With the December 31<sup>st</sup>, 2016 deadline for compliance with VIHA's 4-3-2-1 directive and projected water demands vs supply inadequacies looming, regardless of availability of grants, staff recommends the City take action by the summer of 2015 to avoid severe negative impacts on the community. The action recommended is as follows:

- **PLAN A:** In the event that funding in the afore-mentioned range does become available, the optimal full build out of the project currently estimated at \$36,984,484 (with the Parksville share being \$26,938,472) is within prudent fiscal reality.
- **PLAN B:** In the event funding in the \$15 to \$24 million range does not materialize, staff has provided for Council's consideration four less optimal alternative plans to phase the project over a longer period. Two of these options would achieve DWPA (Drinking Water Protection Act) and VIHA operating permit requirements. Staff recommends Option 4 as the best value for the City provided no grants materialise by summer of 2015.

**RECOMMENDATIONS:**

1. **That** the Report from the City of Parksville Chief Administrative Officer dated November 8, 2014 entitled "ERWS Water Intake and Treatment Plant Project Options" be received;
2. **THAT** Council approve Plan A, the Pre-design Report Optimal Solution as outlined in this report (estimated at \$36,984,484 over the period 2015 to 2018) contingent upon the ERWS being awarded a minimum of \$15,000,000 in Federal/Provincial grants by May 31, 2015;
3. **THAT** in the event no Federal/Provincial Grants are awarded by May 31, 2015, Council approve Plan B, Phased Option 4 as outlined in this report (estimated at \$40,713,015 over the period 2015 to 2024).

**REFERENCES:**

Schedule I outlines the estimated capital and operating costs as well as the expected timeline for Plan A, the full project pre-design report, and Plan B, the four phased options 1-4.

Schedule II outlines the projected financial impacts of all the options (Plan A, the full project pre-design report, and Plan B, the four phased options 1-4).

**BACKGROUND:**

As directed by Council at the July 7, 2014 open council meeting, Councillors and staff have met with numerous senior government staff, MLA's MP's and Ministers to outline the ERWS project and to explore grant opportunities. Staff has also met with VIHA representatives to both outline the City's financial constraints and explore VIHA's potential for acceptance of alternatives that may not meet the December 31, 2016 operating rule deadline for surface water treatment.

Meetings with VIHA indicated willingness to review options and possibly amend the operating rule as long as ERWS can provide a reasonable and timely plan that shows progress towards meeting DWPA surface water requirements.

The Provincial and UBCM grant meetings, on the other hand, did not seem very hopeful. Although those involved understood the benefits and potential impacts and risks of not proceeding, they also indicated there was very little provincial funding available and that ERWS would be competing with all other communities in the province when the next provincial grant intake was announced. Their only real contribution was a promise to assist us in our efforts with VIHA to amend the operating rule, and a suggestion that the project be broken down into smaller components with grant applications submitted on the smaller components.

Meetings with the new federal Conservative candidate for our area were, however, much more positive with a strong indication that federal assistance in the \$12 to \$13 million range could be forthcoming, and if so, would be announced in the March to May 2015 time frame.

Based on these discussions staff has concluded that the optimal plan (full project predesign report) is still the best alternative assuming grants in the \$15 to \$24 million range are available. Staff has also concluded that if grants of that magnitude are not available, then the only alternative is to phase the project over a longer period. There are, however, a number of constraints that make phasing the project problematic.

The main factors that need to be addressed are:

- Capacity
  - Peak summer demand is projected to exceed current ground and surface water capacity by 2016.
  - Peak winter demand is projected to exceed ground water capacity by 2024.
  - Larger intake alone does not address winter turbidity, 1/20 draught or VIHA requirement for treatment.
  - Smaller interim intake does not equate to a proportionate decrease in costs and would require equal costs to be spent again in the relatively near future for additional capacity. (The only difference in cost between large and small intake is cost of materials; all other costs are relatively the same. Going back to the river again in the future would also require the same difficult and costly environmental impact process and approvals.)

- The optimal location for the treatment plant is on the east side of the Englishman River, yet the bulk of Parksville's water demand is on the west side of the Englishman River and the well water is supplied at our Springwood Park water facility. There is currently insufficient supply main capacity to move the water from the intake to the Springwood facility. Regardless of the size of the intake or treatment plant, the supply main to the Springwood Park facility will have to be built.
- Treatment
  - The optimal plan already includes a phased treatment plant.
  - A package treatment plant is an available option but would only bridge 8 to 10 years at which point the full plant would need to be constructed.

In addition to the optimal solution (Plan A), Staff and the project consultants have also provided four phased options (Options 1 through 4) for Council's consideration in the event senior government grants do not materialize.

### **Pre-design Report Optimal Solution (Plan A)**

The pre-design report optimal solution (Plan A):

- This option is outlined in the pre-design report and provides ERWS with 24 ML/d (firm capacity) of membrane filtration, disinfection with UV and chlorine and corrosion control. All transmission mains to connect to the system reservoirs are included.
- Construction of the ERWS water intake, treatment plant and associated distribution system upgrades total \$36,984,484.
- Will accommodate an estimated residing population of 24,290 and a visiting population of 12,381.
- Is estimated to meet supply demands up to 2035.
- Will spread construction costs over the period 2015 through 2018 with the majority of the cost expected in 2015 and 2016.
- Will comply with the ordered Change in Operating Condition prescribed by Island Health.
- The City of Parksville's share of these costs is estimated to be \$26,938,461 and will be shared roughly 44% from existing water system users and 56% from new development through development cost charge revenues.
- Assuming \$15 million in grants
  - Combined City reserves including prior years' surpluses (existing users), gas tax grant reserves and water development cost charges (DCC's) total approximately \$6.4 million which leaves a City funding shortfall of \$20.6 million.
  - The City's portion of the grants would be \$10.9 million, leaving approximately \$9.7 million to be provided through long-term borrowing, which requires either electorate approval or an "Order" by a Drinking Water Officer (appointed by VIHA) and approval by the Inspector of Municipalities. With this grant:
    - DCC could be decreased by 6.45%;
    - Water rate increases could be maintained at 2% per year; and
    - If DCC revenues totally stopped water rates would need to be increased a further 13% to fund the DCC portion of long-term debt.
- Assuming \$24 million in grants
  - Combined City reserves including prior years surpluses (existing users), Gas Tax grant reserves and water development cost charges (DCC's) total approximately \$5.1 million, which leaves a City funding shortfall of \$21.9 million.

- The City's portion of the grants would be \$17.5 million, leaving approximately \$4.4 million to be provided through long-term borrowing, which requires either electorate approval or an "Order" by a Drinking Water Officer (appointed by VIHA) and approval by the Inspector of Municipalities. With this grant:
  - DCC could be decreased by 34%;
  - Water rate increases could be maintained at 1% per year; and
  - If DCC revenues totally stopped, water rates would need to be increased a further 8% to fund the DCC portion of long-term debt.

### Phased options 1 through 4 (Plan B)

Each of the phased options provides a lower initial cost (Phase 1, 2015 – 2018) compared to the pre-design report optimal solution, but also require further expansion and upgrading of the water treatment plant (Phase 2, 2024 - 2026) within eight years of completing Phase 1 to meet the projected (un-factored) water demands for 2026. The term "un-factored" refers to the absence of an industry standard safety factor placed upon projected demands when sizing facilities of this nature. Without a safety factor, any increase in demands not anticipated by the current data may not be accommodated.

In addition, each of the phased options have an initial treatment capacity limited to 16 ML/day as opposed to that of the pre-design report optimal solution which has an initial treatment capacity of 24 ML/day that is expandable to 48 ML/day.

The reduced initial cost and the short interval between the phases in conjunction with the higher total costs of the phased options offers no financial advantage over the pre-design report optimal solution, assuming significant grants are available for the pre-design report optimal solution.

However, with reduced or no grants, even though the phased options all have a higher total cost than the pre-design report preferred option, they all offer a significantly reduced financial risk compared to that of the pre-design report preferred option, resulting from the debt requirements being spread over a longer time period.

#### Phased Option 1

- Provides the ERWS with 16 ML/d (firm capacity) of disinfection with UV and chlorine and is sufficient to meet un-factored water demand needs to year 2024. Membrane filtration is deferred to Phase 2, after year 2024. In basic terms, Option 1 is the predesign report without membrane filtration. Phase 1 includes the WTP building including foundations and buried tanks. All transmission mains to connect to the system reservoirs are included.
- The initial ERWS Phase 1 costs are \$25,159,374, including potential \$2,600,000 for ASR development. The Phase 2 ERWS costs for the addition of filtration and associated fixtures in year 2024 are \$14,000,908.
- All infrastructure built in Phase 1 is re-usable for the future expansion. There is little waste and/or re-work to implement Phase 2.
- Provides dedicated transmission mains to the existing reservoirs which allows for improved operation of distribution system by mixing different water qualities at the reservoirs.
- Will not comply with the ordered Change in Operating Condition prescribed by Island Health until year 2024. To implement this option the ERWS would need to negotiate a waiver to avoid filtration and will require additional monitoring of disinfection by products (DBP) in the distribution system. The DBPs of primary concern are trihalomethanes (THMs), which are regulated.

- There would be no means to reduce turbidity and colour, water treatment plant operation would be limited to summer operation when DBP precursors and turbidity are lower in the river. However, this would also expose the ERWS to having to issue a boiled water advisory or require water restrictions in the summer if river turbidity is such that the water treatment plant cannot operate and the ERWS has to rely on the ground water supply only.
- Provides less flexibility to control water blend (river/ground water) because the amount of river water will be highly dependent on the river turbidity (which is highly variable). Therefore, this option could result in a higher number of consumer complaints due to aesthetic issues in the distribution system as a result of the variable blended water quality.
- Conversely, ERWS operators would require a higher level of effort to operate the distribution system to maintain a consistent blended water quality.

#### Phased Option 2

- Provides the ERWS with 16 ML/d (firm capacity) of disinfection with UV and chlorine and is sufficient to meet un-factored water demand needs to year 2024. Membrane filtration is deferred to Phase 2, after year 2024. Option 2 provides the same treatment performance and capacity as Option 1, but it defers construction of the water treatment plant foundations and building, except for a chemical storage facility. Disinfection with UV and chlorine will be installed in a temporary location near the proposed river intake pump station.
- The initial ERWS Phase 1 costs are \$21,580,900, including potential \$2,600,000 for ASR development. The Phase 2 ERWS costs for the addition of filtration and associated fixtures in year 2024 are \$17,658,324.
- Provides dedicated transmission mains to the existing reservoirs which allows for improved operation of distribution system by mixing different water qualities at the reservoirs.
- Will not comply with the ordered Change in Operating Condition prescribed by Island Health until year 2024 and will require further discussions with Island Health for filtration deferral that will result in the same aesthetic and DBP water quality control issues as Option 1 until filtration is constructed.

#### Phased Option 3

- Provides the ERWS with 8 ML/d (firm capacity) of coagulation and packaged membrane filtration and 16 ML/d of disinfection with UV and chlorine and corrosion control for the first phase. The membrane filtration system would be purchased as a standard packaged system as opposed to a customized engineered system (per the pre-design report). The standard packaged system is limited in capacity, but because it uses standard components it is more economical at the smaller capacities (<8-16 ML/d).
- The initial ERWS Phase 1 costs are \$23,102,613, including potential \$2,600,000 for ASR development. The Phase 2 ERWS costs for the addition of filtration and associated fixtures in year 2024 are \$17,617,802.
- The water treatment plant is limited to 8 ML/d and is slab on grade. The 2nd stage membranes have been deferred to Phase 2 and all require process tankage constructed as standard steel tanks.
- Defers the construction of the water main to the industrial reservoir and connects instead at the front of the water treatment plant property at Herring Gull Way. The second water main is partially constructed to Martindale Avenue, where it then ties directly into the distribution system as opposed to connecting into the Springwood reservoir.
- Will comply with the ordered Change in Operating Condition prescribed by Island Health.
- At larger capacities, such as required in Phase 2, using packaged systems would not be economical because it would require too many packages (limited capacity). Instead, Phase 2 would use a custom-made engineered system that would use larger capacity components and therefore is more economical.

#### Phased option 4

- This option provides the ERWS with 8 ML/d (firm capacity) of coagulation, packaged membrane filtration and 16 ML/d of disinfection with UV and chlorine and corrosion control for the first phase. Option 3 and 4 are the same except that option 4 builds all the transmission mains require to connect to the Springwood reservoirs.
- The initial ERWS Phase 1 costs are \$24,305,991, including potential \$2,600,000 for ASR development. The Phase 2 ERWS costs for the addition of filtration and associated fixtures in year 2024 are \$16,407,024.
- Will comply with the ordered Change in Operating Condition prescribed by Island Health.

#### **OPTIONS:**

1. Proceed with Plan A as the optimal solution.
2. Proceed with one of the phased options.
3. Provide staff with other direction.

#### **ANALYSIS:**

The optimal solution is still the full project as described by Plan A, assuming grants in the \$15 to \$24 million range are available. Plan A meets all the requirements for capacity, treatment and distribution. With grants in the \$15 million or higher range, annual water rate increase are projected to be 2% or lower, and potential additional increase required to offset potential lower than expected DCC revenue is estimated to be a maximum of 15%.

As grant levels decrease the financial risks of the pre-design optimal solution increase, such that even though the phased options all have a higher total cost than the pre-design report preferred option, they all offer a significantly reduced financial risk compared to that of the pre-design report preferred option, resulting from the debt requirements being spread over a longer time period.

In terms of projected financial impact, each of the four phased options of Plan B is very similar. For each of option staff has done two financial projections; one assuming a 25% grant on the total capital cost, the other assuming no grants.

For all four options annual water rates are projected to increase 3% assuming a 25% grant and 3.5% assuming no grants.

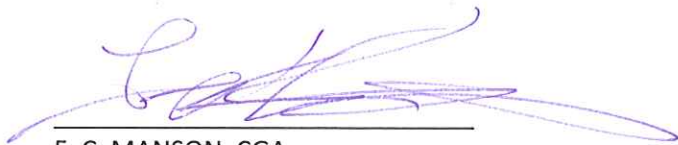
Borrowing ranges between \$12.3 and \$15.3 million assuming a 25% grant and between \$18.9 and 19.9 million assuming no grant.

DCC rate increase range between 2% and 3.57% assuming a 25% grant and between 25.72% and 28.97% assuming no grant.

Additional water rate increases required to off-set potential lower than expected DCC revenues range between 10.25% and 14.15%.

As the financial impacts of the four Phased options are so similar, phased option 4 is recommended as it best meets the City's capacity, treatment and supply requirements.

Respectfully submitted,



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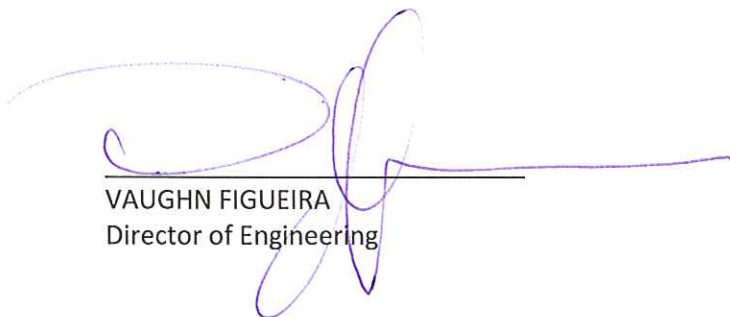
F. C. MANSON, CGA  
Chief Administrative Officer

**DIRECTOR OF FINANCE COMMENTS:**

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G. LUCKY BUTTERWORTH, CGA  
Director of Finance

**DIRECTOR OF ENGINEERING COMMENTS:**



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VAUGHN FIGUEIRA  
Director of Engineering

Year	Description	Pre-design		COP Share		RDN Share		Operations		COP Share		RDN Share	
		Cost Estimate		%	\$	%	\$	Cost Estimate	%	\$	%	\$	
<b>River Intake &amp; Treatment Plant</b>													
2015-2016	Intake and Raw Water Pump Station	3,081,983		74%	2,280,667	26%	801,316	140,000	74%	103,600	26%	36,400	
	Existing COP Water Intake							-130,000	85%	-110,500	15%	-19,500	
	Raw Water Main	1,238,748		74%	916,674	26%	322,074	5,000	74%	3,700	26%	1,300	
	Water Treatment Plant	15,174,391		74%	11,229,049	26%	3,945,342	490,000	74%	362,600	26%	127,400	
	Siteworks	3,028,344		74%	2,240,975	26%	787,370	5,000	74%	3,700	26%	1,300	
	Operations Building	562,290		74%	416,095	26%	146,196	20,000	90%	18,000	10%	2,000	
	Joint Transmission Mains	749,978		74%	554,984	26%	194,994	25,000	74%	18,500	26%	6,500	
	Document Preparation / Tendering	3,174,624		74%	2,349,222	26%	825,402			0		0	
	Engineering Construction Services	0		74%	0	26%	0			0		0	
		<b>27,010,359</b>			<b>19,987,666</b>		<b>7,022,693</b>	<b>555,000</b>		<b>399,600</b>		<b>155,400</b>	
<b>Distribution System Improvements</b>													
2016	COP Transmission Main (Springwood)	5,549,111		100%	5,549,111	0%	0	20,000	100%	20,000	0%	0	
2018	COP (Springwood Booster Pump Station)	101,695		100%	101,695	0%	0	5,000	100%	5,000	0%	0	
	Craig Bay Pump Station	1,250,000		0%	0	100%	1,250,000	10,000		0	100%	10,000	
	Joint Transmission Main (Topbridge)	473,330		0%	0	100%	473,330	5,000		0	100%	5,000	
	Fairwinds Reservoir			0%	0	100%	0	5,000		0	100%	5,000	
		<b>7,374,136</b>			<b>5,650,806</b>		<b>1,723,330</b>	<b>45,000</b>		<b>25,000</b>		<b>20,000</b>	
<b>Aquifer Storage and Recovery</b>													
2018 +	Claudet Well Field	2,600,000		50%	1,300,000	50%	1,300,000	30,000	50%	15,000	50%	15,000	
	<b>Total Expenditure Allocation</b>	<b>36,984,495</b>			<b>26,938,472</b>		<b>10,046,023</b>	<b>630,000</b>		<b>439,600</b>		<b>190,400</b>	
<b>Funding</b>													
	Water Reserves	3,848,785			3,848,785								
	Water Development Cost Charge Reserves	630,707			630,707								
	Capital Reserves	548,675			0		548,675						
	Long Term Debt	7,956,328			4,978,052		2,978,276						
	Grants												
	Provincial	12,000,000			8,740,464		3,259,536						
	Federal	12,000,000			8,740,464		3,259,536						
		<b>36,984,495</b>			<b>26,938,472</b>		<b>10,046,023</b>						



Year	Description	Option 1		Operations		Operations		Operations		Operations	
		Predesign Cost Estimate	COP Share		RDN Share		Cost Estimate	COP Share		RDN Share	
			%	\$	%	\$		%	\$	%	\$
<b>River Intake &amp; Treatment Plant</b>											
2015-2016	Intake and Raw Water Pump Station	2,757,900	74%	2,040,846	26%	717,054	117,418	74%	86,889	26%	30,529
	Existing COP Water Intake						-130,000	85%	-110,500	15%	-19,500
	Raw Water Main	1,238,700	74%	916,638	26%	322,062	5,000	74%	3,700	26%	1,300
	Water Treatment Plant	5,520,300	74%	4,085,022	26%	1,435,278	163,400	74%	120,916	26%	42,484
	Siteworks	1,483,860	74%	1,098,056	26%	385,804	2,251	74%	1,666	26%	585
	Operations Building	0	74%	0	26%	0	0	90%	0	10%	0
	Joint Transmission Mains	749,978	74%	554,984	26%	194,994	25,000	74%	18,500	26%	6,500
	Document Preparation / Tendering	3,434,500	74%	2,541,530	26%	892,970			0		0
	Engineering Construction Services	0	74%	0	26%	0			0		0
		<b>15,185,238</b>		<b>11,237,076</b>		<b>3,948,162</b>	<b>183,069</b>		<b>121,171</b>		<b>61,898</b>
<b>Distribution System Improvements</b>											
2016	COP Transmission Main (Springwood)	5,549,111	100%	5,549,111	0%	0	20,000	100%	20,000	0%	0
2018	COP (Springwood Booster Pump Station)	101,695	100%	101,695	0%	0	5,000	100%	5,000	0%	0
	Craig Bay Pump Station	1,250,000	0%	0	100%	1,250,000	10,000		0	100%	10,000
	Joint Transmission Main (Topbridge)	473,330	0%	0	100%	473,330	5,000		0	100%	5,000
		<b>7,374,136</b>		<b>5,650,806</b>		<b>1,723,330</b>	<b>40,000</b>		<b>25,000</b>		<b>15,000</b>
<b>Aquifer Storage and Recovery</b>											
2018 +	Claudet Well Field	2,600,000	50%	1,300,000	50%	1,300,000	30,000	50%	15,000	50%	15,000
2024	Intake and Pump Station	530,400	74%	392,496	26%	137,904	22,582	74%	16,711	26%	5,871
	Water Treatment Plant	11,033,800	74%	8,165,012	26%	2,868,788	326,600	74%	241,684	26%	84,916
	Siteworks	1,812,468	74%	1,341,226	26%	471,242	2,749	74%	2,034	26%	715
	Operations Building	624,240	74%	461,938	26%	162,302	20,000	74%	14,800	26%	5,200
	CoP Transmission Main		100%	0	0%	0	0	100%	0	0%	0
		<b>14,000,908</b>		<b>10,360,672</b>		<b>3,640,236</b>	<b>371,931</b>		<b>275,229</b>		<b>96,702</b>
	<b>Total Expenditure Allocation</b>	<b>39,160,282</b>		<b>28,548,554</b>		<b>10,611,728</b>	<b>625,000</b>		<b>436,400</b>		<b>188,600</b>
<b>Funding</b>											
	Water Reserves	3,848,785		3,848,785							
	Water Development Cost Charge Reserves	630,707		630,707							
	Capital Reserves	548,675		0		548,675					
	Long Term Debt	24,532,115		17,069,062		7,463,053					
	Grants										
	Provincial	4,800,000		3,500,000		1,300,000					
	Federal	4,800,000		3,500,000		1,300,000					
		<b>39,160,282</b>		<b>28,548,554</b>		<b>10,611,728</b>					

Year	Description	Option 2		Operations		COP Share		RDN Share			
		Predesign Cost Estimate	COP Share	RDN Share	Cost Estimate	COP Share	RDN Share				
			%	\$	%	\$	%	\$	%	\$	
<b>River Intake &amp; Treatment Plant</b>											
2015-2016	Intake and Raw Water Pump Station	2,898,800	74%	2,145,112	26%	753,688	118,346	74%	87,576	26%	30,770
	Existing COP Water Intake						-130,000	85%	-110,500	15%	-19,500
	Raw Water Main	1,238,700	74%	916,638	26%	322,062	5,000	74%	3,700	26%	1,300
	Water Treatment Plant	1,884,300	74%	1,394,382	26%	489,918	54,562	74%	40,376	26%	14,186
	Siteworks	1,707,888	74%	1,263,837	26%	444,051	2,691	74%	1,991	26%	700
	Operations Building	0	74%	0	26%	0	0	90%	0	10%	0
	Joint Transmission Mains	749,978	74%	554,984	26%	194,994	25,000	74%	18,500	26%	6,500
	Document Preparation / Tendering	3,127,100	74%	2,314,054	26%	813,046			0		
	Engineering Construction Services	0	74%	0	26%	0			0		
		<b>11,606,766</b>		<b>8,589,007</b>		<b>3,017,759</b>	<b>75,599</b>		<b>41,643</b>		<b>33,956</b>
<b>Distribution System Improvements</b>											
2016	COP Transmission Main (Springwood)	5,549,111	100%	5,549,111	0%	0	20,000	100%	20,000	0%	0
2018	COP (Springwood Booster Pump Station)	101,695	100%	101,695	0%	0	5,000	100%	5,000	0%	0
	Craig Bay Pump Station	1,250,000	0%	0	100%	1,250,000	10,000		0	100%	10,000
	Joint Transmission Main (Topbridge)	473,330	0%	0	100%	473,330	5,000		0	100%	5,000
		<b>7,374,136</b>		<b>5,650,806</b>		<b>1,723,330</b>	<b>40,000</b>		<b>25,000</b>		<b>15,000</b>
<b>Aquifer Storage and Recovery</b>											
2018 +	Claudet Well Field	2,600,000	50%	1,300,000	50%	1,300,000	30,000	50%	15,000	50%	15,000
2024	Intake and Pump Station	530,400	74%	392,496	26%	137,904	21,654	74%	16,024	26%	5,630
	Water Treatment Plant	15,037,800	74%	11,127,972	26%	3,909,828	435,438	74%	322,224	26%	113,214
	Siteworks	1,465,884	74%	1,084,754	26%	381,130	2,309	74%	1,709	26%	600
	Operations Building	624,240	74%	461,938	26%	162,302	20,000	74%	14,800	26%	5,200
	CoP Transmission Main		100%	0	0%	0	0	100%	0	0%	0
		<b>17,658,324</b>		<b>13,067,160</b>		<b>4,591,164</b>	<b>479,401</b>		<b>354,757</b>		<b>124,644</b>
	<b>Total Expenditure Allocation</b>	<b>39,239,226</b>		<b>28,606,973</b>		<b>10,632,253</b>	<b>625,000</b>		<b>436,400</b>		<b>188,600</b>
<b>Funding</b>											
	Water Reserves	3,848,785		3,848,785							
	Water Development Cost Charge Reserves	630,707		630,707							
	Capital Reserves	548,675		0		548,675					
	Long Term Debt	24,411,059		17,127,481		7,483,578					
	Grants										
	Provincial	4,900,000		3,500,000		1,300,000					
	Federal	4,900,000		3,500,000		1,300,000					
		<b>39,239,226</b>		<b>28,606,973</b>		<b>10,632,253</b>					

Year	Description	Option 3											
		Predesign Cost Estimate		COP Share		RDN Share		Operations Cost Estimate		COP Share		RDN Share	
			Estimate	%	\$	%	\$	Cost Estimate	Estimate	%	\$	%	\$
River Intake & Treatment Plant													
2015-2016	Intake and Raw Water Pump Station	2,776,700	74%	2,054,758	26%	721,942	111,854	74%	82,772	26%	29,082		
	Existing COP Water Intake						-130,000	85%	-110,500	15%	-19,500		
	Raw Water Main	1,238,700	74%	916,638	26%	322,062	5,000	74%	3,700	26%	1,300		
	Water Treatment Plant	6,747,700	74%	4,993,298	26%	1,754,402	193,357	74%	143,084	26%	50,273		
	Siteworks	1,707,888	74%	1,263,837	26%	444,051	2,691	74%	1,991	26%	700		
	Operations Building	0	74%	0	26%	0	0	90%	0	10%	0		
	Joint Transmission Mains		74%	0	26%	0		74%	0	26%	0		
	Document Preparation / Tendering	3,264,600	74%	2,415,804	26%	848,796			0		0		
	Engineering Construction Services	0	74%	0	26%	0			0		0		
		<b>15,735,588</b>		<b>11,644,335</b>		<b>4,091,253</b>	<b>182,902</b>		<b>121,048</b>		<b>61,855</b>		
Distribution System Improvements													
2016	COP Transmission Main (Springwood)	2,942,000	100%	2,942,000	0%	0	8,823	100%	8,823	0%	0		
2018	COP (Springwood Booster Pump Station)	101,695	100%	101,695	0%	0	5,000	100%	5,000	0%	0		
	Craig Bay Pump Station	1,250,000	0%	0	100%	1,250,000	10,000	0%	0	100%	10,000		
	Joint Transmission Main (Topbridge)	473,330	0%	0	100%	473,330	5,000	0%	0	100%	5,000		
	Fairwinds Reservoir		0%	0	100%	0	5,000	0%	0	100%	5,000		
		<b>4,767,025</b>		<b>3,043,695</b>		<b>1,723,330</b>	<b>33,823</b>		<b>13,823</b>		<b>20,000</b>		
Aquifer Storage and Recovery													
2018 +	Claudet Well Field	2,600,000	50%	1,300,000	50%	1,300,000	30,000	50%	15,000	50%	15,000		
2024	Intake and Pump Station	698,700	74%	517,038	26%	181,662	28,146	74%	20,828	26%	7,318		
	Water Treatment Plant	10,352,100	74%	7,660,554	26%	2,691,546	296,643	74%	219,516	26%	77,127		
	Siteworks	1,465,884	74%	1,084,754	26%	381,130	2,309	74%	1,709	26%	600		
	Operations Building	624,240	74%	461,938	26%	162,302	20,000	90%	18,000	10%	2,000		
	CoP Transmission Main	3,726,900	100%	3,726,900	0%	0	11,177	100%	11,177	0%	0		
	Water Developme Joint Transmission Mains (Top Bridge)	749,978	74%	554,984	26%	194,994	25,000	74%	18,500	26%	6,500		
		<b>17,617,802</b>		<b>14,006,167</b>		<b>3,611,635</b>	<b>383,275</b>		<b>289,729</b>		<b>93,545</b>		
	<b>Total Expenditure Allocation</b>	<b>40,720,415</b>		<b>29,994,198</b>		<b>10,726,217</b>	<b>630,000</b>		<b>439,600</b>		<b>190,400</b>		
Funding													
	Water Reserves	3,848,785		3,848,785									
	Water Development Cost Charge Reserves	630,707		630,707									
	Capital Reserves	548,675		0		548,675							
	Long Term Debt	25,692,248		18,114,706		7,577,542							
	Grants												
	Provincial	5,000,000		3,700,000		1,300,000							
	Federal	5,000,000		3,700,000		1,300,000							
		<b>40,720,415</b>		<b>29,994,198</b>		<b>10,726,217</b>							

<b>Option 4</b>											
Year	Description	Predesign Cost Estimate	COP Share		RDN Share		Operations Cost Estimate	COP Share		RDN Share	
			%	\$	%	\$		%	\$	%	\$
<b>River Intake &amp; Treatment Plant</b>											
2015-2016	Intake and Raw Water Pump Station	2,776,700	74%	2,054,758	26%	721,942	111,854	74%	82,772	26%	29,082
	Existing COP Water Intake						-130,000	85%	-110,500	15%	-19,500
	Raw Water Main	1,238,700	74%	916,638	26%	322,062	5,000	74%	3,700	26%	1,300
	Water Treatment Plant	6,747,700	74%	4,993,298	26%	1,754,402	193,357	74%	143,084	26%	50,273
	Siteworks	1,707,888	74%	1,263,837	26%	444,051	2,691	74%	1,991	26%	700
	Operations Building	0	74%	0	26%	0	0	90%	0	10%	0
	Joint Transmission Mains	749,978	74%	554,984	26%	194,994	25,000	74%	18,500	26%	6,500
	Document Preparation / Tendering	3,302,900	74%	2,444,146	26%	858,754			0		0
	Engineering Construction Services	0	74%	0	26%	0			0		0
		<b>16,523,866</b>		<b>12,227,661</b>		<b>4,296,205</b>	<b>207,902</b>		<b>139,548</b>		<b>68,355</b>
<b>Distribution System Improvements</b>											
2016	COP Transmission Main (Springwood)	3,357,100	100%	3,357,100	0%	0	10,137	100%	10,137	0%	0
2018	COP (Springwood Booster Pump Station)	101,695	100%	101,695	0%	0	5,000	100%	5,000	0%	0
	Craig Bay Pump Station	1,250,000	0%	0	100%	1,250,000	10,000		0	100%	10,000
	Joint Transmission Main (Topbridge)	473,330	0%	0	100%	473,330	5,000		0	100%	5,000
		<b>5,182,125</b>		<b>3,458,795</b>		<b>1,723,330</b>	<b>30,137</b>		<b>15,137</b>		<b>15,000</b>
<b>Aquifer Storage and Recovery</b>											
2018 +	Claudet Well Field	2,600,000	50%	1,300,000	50%	1,300,000	30,000	50%	15,000	50%	15,000
2024	Intake and Pump Station	698,700	74%	517,038	26%	181,662	28,146	74%	20,828	26%	7,318
	Water Treatment Plant	10,352,100	74%	7,660,554	26%	2,691,546	296,643	74%	219,516	26%	77,127
	Siteworks	1,465,884	74%	1,084,754	26%	381,130	2,309	74%	1,709	26%	600
	Operations Building	624,240	74%	461,938	26%	162,302	20,000	74%	14,800	26%	5,200
	CoP Transmission Main	3,266,100	100%	3,266,100	0%	0	9,863	100%	9,863	0%	0
		<b>16,407,024</b>		<b>12,990,384</b>		<b>3,416,640</b>	<b>356,960</b>		<b>266,715</b>		<b>90,245</b>
<b>Total Expenditure Allocation</b>		<b>40,713,015</b>		<b>29,976,840</b>		<b>10,736,175</b>	<b>625,000</b>		<b>436,400</b>		<b>188,600</b>
<b>Funding</b>											
	Water Reserves	3,848,785		3,848,785							
	Water Development Cost Charge Reserves	630,707		630,707							
	Capital Reserves	548,675		0		548,675					
	Long Term Debt	25,684,848		18,097,348		7,587,500					
	Grants										
	Provincial	5,000,000		3,700,000		1,300,000					
	Federal	5,000,000		3,700,000		1,300,000					
		<b>40,713,015</b>		<b>29,976,840</b>		<b>10,736,175</b>					

Predesign Report

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total 2028	Debt/grants
<b>24 million grant</b>															
Water Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	
Surplus	4,764,442	3,886,739	3,770,112	2,534,271	2,511,299	2,375,365	1,998,779	2,200,068	2,093,315	1,594,105	414,940	214,621	475,312	765,151	
Future Expenditure Res	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Water Capital Reserve	161,734	165,373	169,094	172,899	176,789	180,767	184,834	188,993	193,245	197,593	202,039	206,585	211,233	215,986	
Water DCC Reserve	359,968	347,538	236,358	-103,046	178,723	103,557	378,572	646,223	-1,429,286	-1,200,452	-981,611	-903,470	-720,299	-550,518	
<b>24 Million Grant</b>	<b>8,740,464</b>	<b>8,740,464</b>													<b>17,480,928</b>
<b>Borrowing</b>	<b>2,400,000</b>	<b>2,000,000</b>													<b>4,400,000</b>
DCC's Change Revenue Short Fall	Decrease 33.76%		8.56%												
<b>15 million grant</b>															
Water Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	1%	1%	0%	
Surplus	4,163,808	2,614,822	2,426,064	1,147,703	1,121,790	1,025,831	735,323	1,072,352	1,154,312	900,542	27,453	149,918	751,313	1,395,080	
Future Expenditure Res	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Water Capital Reserve	161,734	165,373	169,094	172,899	176,789	180,767	184,834	188,993	193,245	197,593	202,039	206,585	211,233	215,986	
Water DCC Reserve	779,205	1,166,568	1,072,112	756,450	1,064,813	1,013,104	1,311,096	1,593,807	-492,629	-279,818	-81,159	-29,260	121,565	256,396	
<b>15 million grant</b>	<b>5,500,000</b>	<b>5,425,580</b>													<b>10,925,580</b>
<b>Borrowing</b>	<b>4,000,000</b>	<b>3,900,000</b>													<b>10,200,000</b>
DCC's Change Revenue Short Fall	Decrease 6.2%		14.91%												

Option 1

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total Debt/grants
<b>25% Grant</b>															
Water Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	0.0%	0.0%	0.0%	0.0%	
Surplus	3,730,480	1,701,119	1,848,561	852,653	1,161,481	1,455,453	1,614,742	2,466,171	3,132,402	2,576,436	29,540	467,704	1,322,986	2,230,619	
Future Expenditure Res	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Water Capital Reserve	161,734	165,373	169,094	172,899	176,789	180,767	184,834	188,993	193,245	197,593	202,039	206,585	211,233	215,986	
Water DCC Reserve	891,034	1,428,956	1,561,101	1,397,663	1,861,676	1,968,007	2,427,294	2,872,421	939,409	1,308,930	1,429,295	1,393,557	1,452,762	1,492,217	
Grant	2,250,000	2,250,000								1,250,000	1,250,000				7,000,000
Borrowing	3,100,000	3,400,000	3,500,000								2,400,000	1300000			15,300,000
											2,900,000				
DCC's Change Revenue Short Fall	Increase 2.00%%		12.66%										14.06%		
<b>No Grant</b>															
Water Rate	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	0.0%	0.0%	0.0%	0.0%	
Surplus	4,566,088	3,241,887	3,206,665	2,055,989	2,229,175	2,409,237	2,478,923	3,267,695	3,901,318	2,241,097	86,924	454,946	1,246,743	2,091,744	
Future Expenditure Res	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Water Capital Reserve	161,734	165,373	169,094	172,899	176,789	180,767	184,834	188,993	193,245	197,593	202,039	206,585	211,233	215,986	
Water DCC Reserve	475,271	295,783	565,465	550,377	1,166,077	1,424,292	2,038,013	2,633,781	850,279	661,792	313,037	393,573	563,939	712,149	
Grant															
Borrowing	3,750,000	3,750,000								2,400,000	1,300,000				18,900,000
	2,000,000	2,000,000								2,500,000	1,200,000				
DCC's Change Revenue Short Fall	Increase 25.72%		13.55%										14.15%		

Option 2

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total 2028 Debt/grants
<b>25% Grant</b>														
Water Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	0.0%	0.0%	0.0%	0.0%
Surplus	4,109,669	2,786,638	2,969,629	2,001,303	2,338,503	2,661,546	2,850,624	3,732,578	4,430,088	2,973,093	42,874	492,825	1,355,249	2270261
Future Expenditure Res	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Capital Reserve	161,734	165,373	169,094	172,899	176,789	180,767	184,834	188,993	193,245	197,593	202,039	206,585	211,233	215985.8
Water DCC Reserve	915,422	1,378,249	1,525,006	1,412,022	1,927,624	2,086,961	2,600,516	3,101,709	1,226,386	958,337	794,031	797,606	897,625	979201.5
Grant	1,900,000	1,900,000								1,600,000	1,600,000			7,000,000
Borrowing	3,100,000	2,800,000								2,400,000	1,300,000			12,400,000
DCC's Change Revenue Short Fall	Increase 3.38%		10.81%									12.73%		
<b>No Grant</b>														
Water Rate	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	0.0%	0.0%	0.0%	0.0%
Surplus	5,118,330	4,652,898	4,659,456	3,544,577	3,754,530	3,972,266	4,080,557	4,908,887	5,583,045	2,903,600	144,703	521,729	1,315,083	2161773
Future Expenditure Res	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Capital Reserve	161,734	165,373	169,094	172,899	176,789	180,767	184,834	188,993	193,245	197,593	202,039	206,585	211,233	215985.8
Water DCC Reserve	992,817	1,626,841	1,879,279	1,882,269	2,516,454	2,793,744	3,427,015	4,043,167	2,280,755	1,250,356	398,528	471,096	633,734	774310.5
Grant														
Borrowing	3,750,000	3,750,000								2,400,000	1,300,000			18,900,000
	2,000,000	2,000,000								2,500,000	1,200,000			
DCC's Change Revenue Short Fall	Increase 28.97%		13.55%									14.15%		

Option 3

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total 2028 Debt/grants
<b>25% Grant</b>														
Water Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	0.0%	0.0%	0.0%	0.0%
Surplus	3,434,407	2,385,861	2,580,332	1,602,130	1,929,474	2,242,414	2,421,140	3,292,486	3,979,126	1,605,461	134,272	528,298	1,352,336	2227783
Future Expenditure Res	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Capital Reserve	161,734	165,373	169,094	172,899	176,789	180,767	184,834	188,993	193,245	197,593	202,039	206,585	211,233	215985.8
Water DCC Reserve	308,643	733,893	983,270	907,678	1,461,513	1,659,501	2,212,459	2,752,939	917,165	243,809	45,457	104,974	261,129	399429.5
Grant	2,050,000	2,050,000								1,650,000	1,650,000			7,400,000
Borrowing	3,100,000	2,500,000								2,000,000	1,300,000			12,300,000
	0	0								1,700,000	1,700,000			
DCC's Change Revenue Short Fall	Increase 3.38%		10.27%									11.80%		
<b>No Grant</b>														
Water Rate	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	0.0%	0.0%	0.0%	0.0%
Surplus	4,365,045	4,078,359	4,093,251	2,964,113	3,159,733	3,362,778	3,456,015	4,268,920	4,927,272	2,758,021	196,353	505,585	1,232,763	2011602
Future Expenditure Res	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Capital Reserve	161,734	165,373	169,094	172,899	176,789	180,767	184,834	188,993	193,245	197,593	202,039	206,585	211,233	215985.8
Water DCC Reserve	329,387	1,165,889	1,515,398	1,550,517	2,217,554	2,527,792	3,194,582	3,843,621	2,113,972	1,100,426	98,948	199,496	389,271	556659.5
Grant														
Borrowing	3,750,000	3,750,000								2,400,000	1,300,000			19,900,000
	2,000,000	2,000,000								3,000,000	1,700,000			
DCC's Change Revenue Short Fall	Increase 28.97%		13.55%									14.15%		



Option 4

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total 2028 Debt/grants
<b>25% Grant</b>														
Water Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	0.0%	0.0%	0.0%	0.0%
Surplus	5,443,731	3,185,596	2,205,511	2,394,618	1,411,841	1,734,485	2,042,609	2,216,400	3,082,690	3,764,149	1,499,487	136,445	529,173	
Future Expenditure Res	0	0	0	0	0	0	0	0	0	0	0	0	0	
Water Capital Reserve	158,244	161,734	165,373	169,094	172,899	176,789	180,767	184,834	188,993	193,245	197,593	202,039	206,585	
Water DCC Reserve	223,357	69,493	559,253	806,351	728,492	1,280,009	1,475,601	2,026,100	2,564,009	725,570	142,532	32,958	93,669	
Grant	2,100,000	2,100,000								1,600,000	1,600,000			7,400,000
Borrowing	3,100,000	2,500,000								2,000,000	1,300,000			12,300,000
DCC's Change Revenue Short Fall	Increase 3.57%		10.25%							1,700,000	1,700,000		11.80%	
<b>No Grant</b>														
Water Rate	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	0.0%	0.0%	0.0%	0.0%
Surplus	4,365,045	4,078,359	4,093,251	2,964,113	3,159,733	3,362,778	3,456,015	4,268,920	4,927,272	2,758,021	196,353	505,585	1,232,763	2011602
Future Expenditure Res	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Capital Reserve	161,734	165,373	169,094	172,899	176,789	180,767	184,834	188,993	193,245	197,593	202,039	206,585	211,233	215985.8
Water DCC Reserve	329,387	1,165,862	1,515,338	1,550,423	2,217,424	2,527,654	3,194,472	3,843,547	2,113,934	1,100,428	98,962	199,514	389,297	556657.5
Grant														
Borrowing	3,750,000	3,750,000								2,400,000	1,300,000			19,900,000
DCC's Change Revenue Short Fall	Increase 28.97%		13.55%							3,000,000	1,700,000		14.15%	