

AGENDA
TOWN OF LAKE COWICHAN
Public Works and Environmental Services
Committee meeting to be held on
Tuesday, July 5th, 2016 at 5:00 p.m.



Page #

1. CALL TO ORDER

INTRODUCTION OF LATE ITEMS (if applicable)

2. APPROVAL OF AGENDA

3. BUSINESS ARISING AND UNFINISHED BUSINESS

None.

(b) Ongoing Items Still Being Addressed:

- (i) Power outage – Update.
- (ii) Sidewalks and Walking Trail for North Shore Road – Update.
- (iii) BC Rural Dividend Fund grant

4. DELEGATIONS AND REPRESENTATIONS

5. CORRESPONDENCE

None.

6. REPORTS

None.

7. NEW BUSINESS

- (a) Lake Cowichan Water Main Upgrades.
- (b) In-vessel composting and Town's plans on same.
- (c) Stage 3 Water Restrictions?
- (d) Water Conservation Plan.
- (e) Timelines for upgrade of Town's water treatment system.

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8. NOTICES OF MOTION

9. PUBLIC RELATIONS ITEMS

10. MEDIA/PUBLIC QUESTION PERIOD

11. ADJOURNMENT

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February 19, 2015

Nagi Rizk, P.Eng.
Town of Lake Cowichan
39 South Shore Road
Lake Cowichan, BC
V0R 2G0

Dear Mr. Rizk:

**RE: TOWN OF LAKE COWICHAN
2015 Water Main Upgrades – Wilson Road, Park Road, Greendale Road, Ohtaki Bridge and
Greendale Trestle
Our File 2218.008**

The following letter outlines cost estimate prepared for water main upgrades for Wilson Road, Park Road, Greendale Road, Ohtaki Bridge and Greendale Trestle. These upgrades are to replace old and undersized water mains to provide adequate and safe drinking water to the residents in these areas.

Background

The Town of Lake Cowichan (Town) is located approximately 25 km west of Duncan at the eastern end of Cowichan Lake on Vancouver Island, British Columbia. In 2011, the date of the most recent census, the Town had a population of 2,974.

The Town draws water directly from Cowichan Lake through a triplex pump station located on North Shore Road. Disinfection occurs at the pump station. Water is pumped directly to a storage reservoir on Indian Road, which contains an active volume of 5,400 m³. From the reservoir, water is distributed to the Town.

In 2012, the Town installed water meters for all residential and most of the commercial properties. The Town charges for water using bulk rate depending upon land use up to a cap. For water use beyond the cap, a flat rate of \$0.49/m³ is charged. Since installation, total annual water demand has been reduced from 899,270 m³ in 2010 to 640,140 m³ in 2014. The average daily demand (ADD) per capita in 2014 was 580 L.

Project Purpose

Water system modelling has been carried out and has identified several locations where existing system is undersized to maintain adequate pressures in the system to support the required fire flows. The purpose of the proposed upgrades is to increase capacity in these areas to maintain adequate system pressure and to upgrade pipes that are near the end of their service life. Although the water metering program in the Town has been very successful at reducing water demand, breaks and leakage is still resulting in increased water demand. On-going replacement of aging infrastructure will help reduce overall demand through reduction in system water loss. Safe potable water can be ensured through improvements made to that system which is substandard making its immediate replacement a priority. The use of new pipe materials and fittings will not only eliminate the risk of contamination but will eliminate existing leaks that cause unnecessary waste of valuable treated water.



Proposed upgrades are required to protect water supply from contamination, provide adequate fire flows to protect life and property and to replace aging infrastructure to reduce potential leakage.

Water Main Upgrade Project Descriptions

The project involves replacement of water mains in four distinct areas:

1. Wilson Road – 82 linear meter of 250 mm diameter water main to twin the existing undersized 150 mm water main.
2. Park Road – 295 linear meter of 250 mm diameter water main to twin the existing undersized 150 mm water main.
3. Greendale Road - 875 linear meter of 200 mm diameter water main to replace existing undersized 150mm and 50 mm galvanized steel water main installed in the 1940s.
4. Ohtaki Bridge - 52 linear meter of 350 mm diameter insulated water main to replace existing undersized 250 mm diameter water main. This water main will be attached to existing Ohtaki footbridge to replace the existing water main which is buried under the Cowichan River.
5. Greendale Trestle – 75 linear meter of 250 mm diameter insulated water main to replace existing undersized 100 mm diameter water main. This water main will be attached to existing Greendale Trestle footbridge to replace the existing water main which is buried under the Cowichan River.

A map of the proposed water main upgrade locations is shown in attached Figure 1.

Water Main Upgrade Costs

Cost estimates for installation of new water mains have been prepared based on quantities and unit rates from similar past projects. Costs provided are considered to be adequate for budgeting purposes and include a 15% contingency. A summary of the cost estimates for the projects is included in Table 1 below. A detailed breakdown for each of the projects is included in the attached tables.

Table 1 – Water Main Upgrade Cost Estimates

Project	Water Main Upgrade Cost	Road and Site Improvements	Engineering/ Environmental	Total Budget (not including contingency)
Wilson Road	\$59,440	\$26,685	\$17,225	\$103,350
Park Road	\$117,700	\$60,370	\$35,614	\$213,684
Greendale Road	\$323,100	\$236,800	\$139,975	\$699,875
Ohtaki Bridge	\$50,000	\$0	\$20,500	\$70,500
Greendale Trestle	\$79,625	\$45,726	\$23,925	\$149,276
Total	\$629,865	\$369,581	\$237,239	\$1,236,685

Note: Greendale project assumes that water main is placed under centerline of road and road is fully repaved.



February 19, 2015

Nagi Rizk

The budget has been separated to show costs associated with water main upgrades and other costs for road and site improvements as summarized below.

Water Main Upgrade Project Budget

Subtotal (including engineering/environmental)	= \$867,104
Contingency (10%)	= \$86,710
Total	= \$953,814

Total Project Budget (including Road and Site improvements)

Subtotal (including engineering/environmental)	= \$1,236,685
Contingency (10%)	= \$123,669
Total	= \$1,360,354

Project Timelines

The constraints to project timelines include time for preparation of detailed design drawings for Greendale Road, approvals from Island Health and tendering. Both the Wilson Road and Park Road water main upgrade projects have detailed design completed and only require tendering. In addition, both the Greendale Trestle and Ohtaki Bridge water main upgrades will require environmental permitting given proximity to and crossing of the Cowichan River. Therefore, work will have to be undertaken during summer fisheries windows.

The proposed project schedule is as follows:

2015 – Assumes project award notification in fall 2015

- December 2015 – Completion of field work for detailed design of Greendale Road, Ohtaki Bridge and Greendale Trestle Upgrades.

2016

- January to March– Detailed Design of Greendale Road Upgrades.
- January to March – Island Health Review and Approvals/Tendering of Wilson Road and Park Road water main upgrades.
- May to August – Construction of Wilson Road and Park Road water main upgrades.
- April to June – Tendering of Greendale Road water main upgrades.
- August to November – Construction of Greendale Road water main upgrades.
- October to December – Detailed Design of Ohtaki Bridge and Greendale Trestle Upgrades.

2017

- January to March – Approvals from Island Health and Environment Agencies (DFO, MFLNRO).
- April to May –Tendering of Greendale Trestle and Ohtaki Bridge water main upgrades.
- July to September – Construction of Greendale Trestle and Ohtaki Bridge water main upgrades.

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February 19, 2015

Nagi Rizk

Closing

If you have any questions or require clarification of the cost estimates or project schedule outlined above, please contact the undersigned at 250-595-4223.

Yours truly,

KERR WOOD LEIDAL ASSOCIATES LTD.

Craig Sutherland, P.Eng.
Water Resources Engineer

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Town of Lake Cowichan

Water Conservation Plan

Background: Community Water Use Profile

The community's potable water supply is drawn from Cowichan Lake and stored for distribution in a reservoir on Indian Road. Currently, customers used to pay a flat fee per year for unlimited water usage. Town records show that in 2011 885,750 cubic metres of water was consumed. With a population estimated at 3,140 this represents 282 cubic metres per capita annually, or 660 cubic metres per household. This rate of water consumption is considerably higher than the BC average of 155 cubic metres per capita (2004 data).

The Official Community Plan projects a population growth rate of 1 to 1.5% per annum through the year 2035. Under a base "business as usual" case water consumption will increase to 1,269,000 cubic metres annually to support a population of 4,500 people.

Vision

The Town's vision as expressed in the newly updated Official Community Plan is:

Our vision is to create a vibrant, healthy, sustainable community that exists in harmony with the natural environment, enjoys a balanced economy, supports all generations and provides the opportunities to satisfy diverse social needs.

The vision for a water conservation plan is consistent with and supportive of this overall community vision and can succinctly be stated:

Our vision is to conserve precious water resources in order to achieve sustainable social, economic and environmental benefits.

Goals

1. To use water resources in an environmentally sustainable manner by limiting waste, increasing efficiency and conservation practices.
2. To use water resources in an economically sustainable manner by containing and reducing system operation costs at all points in the distribution system, including treatment, distribution and sanitary treatment for outflows.

3. To use water resources in a socially responsible manner by creating an equitable cost structure and setting an example of good stewardship for neighbouring communities and water user stakeholders.

Objectives/Targets

Qualitative objectives

1. To ensure adequate future quantity and quality of domestic water supply --*Official Community Plan Objective. 15.3 - b).*
2. To encourage studies that evaluate the re-use of grey water --*Official Community Plan policy 15.4 – 11).*
3. Control and monitoring measures should be in place to ensure the continued satisfactory operation of the sewage treatment and disposal systems--*Official Community Plan policy. 15.4 - 6).*

Qualitative objectives

1. Reduce per capita water consumption
 - a) By 2020 to 138 cubic metres per capita; and
 - b) By 2035 to 125 cubic metres per capita.
2. Reduce per capita water consumption in order to achieve reduced GHG emissions (Official Community Plan secondary targets for GHG emission reductions –Section 5.5.1):
 - b) By 2020 reduce greenhouse gas emissions by achieving the following:
 - iii. Reduce water supply operations energy consumption by 30%; and
 - c) By 2050 reduce greenhouse gas emissions by achieving the following:
 - iii. Reduce water supply operations energy consumption by 50%.

Conservation Actions

1. Water Metering

- Beginning in January of 2013 metered water consumption for all water users was instituted. All water customers will be metered on the basis of a base fee for a reasonable “block” of consumption and a fee per cubic metre for usage above and beyond.

2. Toilet Rebate Program

- Continue the rebate program to replace inefficient toilets with “low flow” toilets.

3. Lawn Sprinkling Regulations

- Continue lawn sprinkling regulations generally in accordance with the following:
- During the summer (June 1 to September 30) and prolonged drought conditions the Town will regulate lawn sprinkling for both business and residential customers. Sprinkling is permitted between 6:00 am and 8:00 am and between 6.00 p.m. and 8.00 p.m. only on specified days (even numbered addresses on Tuesday, Thursday, and Saturday; odd numbered addresses on Wednesday, Friday, and Sunday).

Anticipated Savings in Water Usage

The table compares the base case with a conservation plan. It reveals a substantial reduction in water consumption following the introduction of water metering and ongoing water conservation programs. **By 2035 usage should drop to 125 cubic metres per capita annually compared with the current usage of 282 cubic metres per capita annually; a reduction of over 50%. By 2035 total annual water consumption on the conservation plan track should be no greater than 562,500 cubic metres.** This compares to an anticipated 1,270,000 cubic metres under a base case scenario. The conservation plan will be compared to actual results and revised on a periodic basis.

Projected Base Case and Conservation Plan Water Consumption							
	Population	Total Annual Water Consumption (cubic metres)		Annual Per Capita Water Use (cubic metres)		Annual Per Household Water Use (cubic metres)	
		Base Case	Conservation Plan	Base case	Conservation Plan	Base Case	Conservation Plan
2011	3,140	885,750	n/a	282	n/a	660	n/a
2015	3,430	967,260	531,650	282	155	660	363
2020	3,725	1,050,450	514,050	282	138	660	323
2035	4,500	1,269,000	562,500	282	125	660	293

Assumptions

Average household size of 2.34 --based on 2006 Census

Base case water consumption patterns rise with population increase

Population estimate for 2011 derived from BC Stats census data

Population projections for 2015, 2020 and 2035 based on a 1.5 % annual average growth rate

Onset of metering will bring Lake Cowichan consumers in line with the BC average per capita consumption of 155 cubic metres annually by 2015 or 363 cubic metres per household.

Water & Wastewater

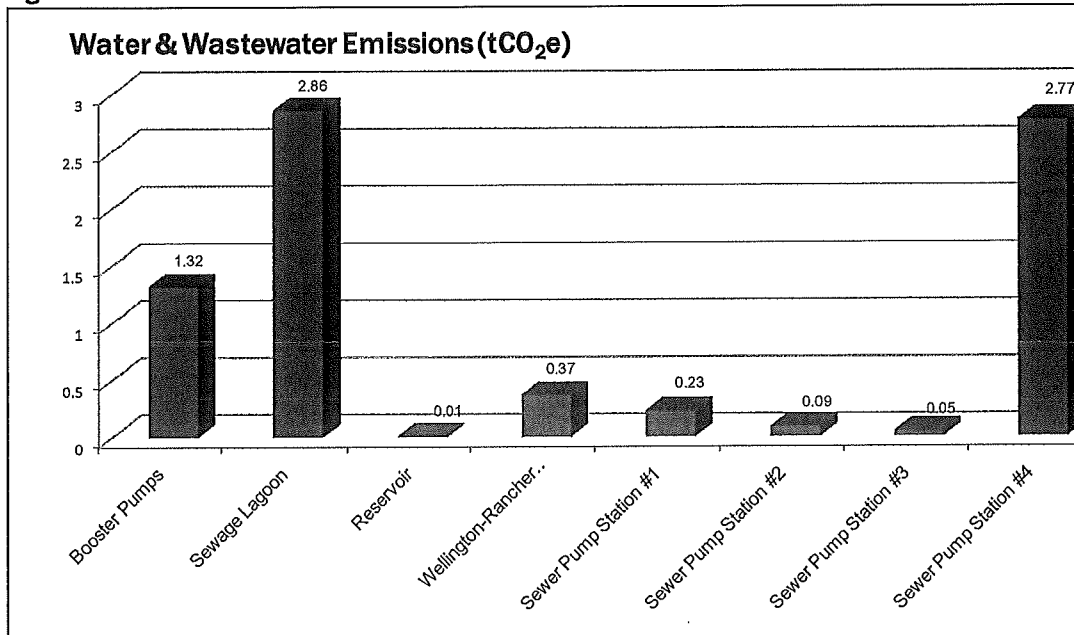
Infrastructure in this sector includes the water reservoir and pumps used to distribute water, as well as the pump stations and sewage lagoon used to remove and treat liquid waste.

The water source is Cowichan Lake, and it is pumped to a reservoir on Indian Road and distributed by throughout the community. Several pump houses carry move liquid waste to the Town's sewage lagoons on Grants Lake Road, where it is treated before effluent is pumped into the Cowichan River.

Lake Cowichan has a high amount of water consumption per capita, which results in demand for liquid waste disposal.

Water and Wastewater services account for 3.75% of total corporate emissions and 32.44% (349,421 kW.h) of electricity consumption.

Figure 9: Water and Wastewater Emissions



The main reason why we have successful of late with infrastructure grant applications is the commitment given by the Town to reduce CO₂ emissions through conservation. The Ministry of Community, Sport and Cultural Development before it would release the water metering grant requested a commitment on how the Town is planning on achieving this technical condition.

RECEIVED MAY 05 2016

APPENDIX A

WATER SYSTEM OPERATING CONDITIONS FOR

TOWN OF LAKE COWICHAN WATER SYSTEM

North Shore Road

Lake Cowichan, BC V0R 2G0

Water Treatment Plant:

1. Submit a water system implementation plan outlining the milestones toward your completion of the installation of the treatment plant. This plan must include, but is not limited to:
 - ♦ A Project completion budget that describes scenarios with and without grant funding. (Deadline: July 31, 2016)
 - ♦ Engineered plans for a detailed design of the proposed treatment plant (Deadline: February 28, 2017)
2. Submit monthly reports outlining your progress toward the completion of installation. (Beginning: June 30, 2016)
3. Submit a Construction Permit Application for the proposed works. (Deadline: February 28, 2017)
4. Construction and commission of proposed works. (Deadline: December 31, 2017)

Daily Operation:

1. Maintain a minimum of 0.2 mg/L of free available chlorine at all points within the distribution system.
2. Monitor turbidity continuously, recording data at a minimum of every 4 hours.

Date: April 28, 2016



Alison Gardner, Environmental Health Officer